Bridgeton Landfill First Semi-Annual Ambient Air Sampling

Summary of Findings - First Semi-Annual Event 2019

May 22, 2019

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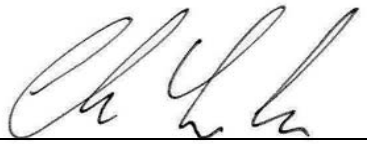
Prepared by 
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Executive Summary

This report describes the methods and presents the findings from the first semi-annual sampling event conducted by Stantec Consulting Services Inc. (Stantec) on January 10, 2019 at the Bridgeton Landfill, LLC (Bridgeton) facility located at 13570 St. Charles Rock Road, Bridgeton, Missouri (the landfill). The first sampling event partially fulfills the requirements of the Final Consent Judgment (Judgement) approved on June 29, 2018 and executed by the State of Missouri Attorney General and the Missouri Department of Natural Resources (MDNR). The Judgment requires Bridgeton to conduct two comprehensive ambient air sampling events on the Site within eighteen months of the date from which the Final Consent Judgment is entered and no sooner than six months apart. In accordance with the requirements of the Judgment and the Sampling Work Plan (submitted to MDNR November 2, 2018), ambient air samples were collected at two locations upwind and two locations downwind of the South Quarry and analyzed for the following prescribed parameters and analytical methods:

- Volatile Organic Compounds (VOCs) by EPA Method T0- 15
- Reduced Sulfur Compounds by ASTM Method 5504
- Aldehydes by EPA Method T0-11A
- Ammonia by OSHA ID 188
- Carboxylic Acids by ALS Global Laboratories (ALS) by Method (AQL 102))
- Amines by ALS Method AQL 101

Conclusions

The following conclusions are based on the laboratory findings of the first semi-annual sampling event conducted January 10, 2019.

- Amines, ammonia, carboxylic acids, and reduced sulfur compounds were not detected at or above laboratory method reporting limits (MRLs) in any upwind or downwind sample.
- Low concentrations of aldehydes and VOCs were detected in ambient air. However, the following evidence indicates that the landfill is not the source of these compounds:
    - Concentrations of aldehydes and VOCs in ambient air are similar when comparing upwind to downwind samples, suggesting that all samples are representative of Constituent of Potential Concern (COPC) concentrations in the regional air mass.
    - The concentrations of aldehydes detected in upwind and downwind ambient air are within the background range for urban areas, including St. Louis.

- Nine different VOCs were detected in ambient air samples: acetonitrile, dichlorodifluoromethane (CFC 12), ethyl acetate, methylene chloride, propene, trichlorofluoromethane (CFC 11), sulfur dioxide, n-pentane, and hexamethylcyclotrisiloxane. VOC concentrations were low and do not pose a risk to human health or the environment. In addition, and with a few exceptions, the same compounds were detected at similar concentrations in ambient air from upwind and downwind sample locations; suggesting that the COPCs in ambient air are representative of the regional air mass. There is no evidence of an impact from the landfill on ambient air quality.

- Benzene is the constituent of greatest potential concern for public health that historically was detected in landfill source gas and had the potential to be released to ambient air. Benzene was not detected above the laboratory MRL in any upwind or downwind sample in the January 2019 sampling event.

- Formaldehyde concentrations slightly exceeded US EPA residential Regional Screening Levels (RSLs) (0.22 µg/m^3); however, concentrations upwind and downwind were similar, suggesting that the formaldehyde concentrations in ambient air are representative of the regional air mass. There is no evidence of an impact from the landfill on ambient air quality.

- The totality of the evidence from the five comprehensive sampling events (2012 to 2015) and the first semi-annual sampling event (January 2019) demonstrates that the remedial measures Ethylene Vinyl Alcohol (EVOH) liner, the leachate treatment system, and the gas collection system/flare) have been effective in controlling the potential for release of landfill gas to ambient air.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienist
ALS	ALS Global Laboratories
ASTM	American Society for Testing and Materials
CFC	Chlorofluorocarbon
COPC	Constituent of Potential Concern
HI	Hazard Index
H_2S	Hydrogen Sulfide
EDD	Electronic Data Deliverable
EVOH	Ethylene Vinyl Alcohol Liner
MDNR	Missouri Department of Natural Resources
mmHg	Millimeters of Mercury
MDL	Laboratory Analytical Method Detection Limit
MPH	Miles per Hour
MRL	Laboratory Analytical Method Reporting Limit
NTIS	National Technical Information service
OEL	Occupational Exposure Limit
OSHA	Occupational Safety and Health Administration
PEL	Permissible Exposure Limit
TICs	Tentatively Identified Compounds
TLV	Threshold Limit Value
RSL	U.S. EPA Regional Screening Levels
US EPA	United States Environmental Protection Agency
VOC	Volatile Organic Compound

1.0 INTRODUCTION

This report describes the methods and presents the findings from the first semi-annual ambient air sampling event conducted by Stantec Consulting Services Inc. (Stantec) on January 10, 2019 at the Bridgeton Landfill, LLC (Bridgeton) facility located at 13570 St. Charles Rock Road, Bridgeton, Missouri (the landfill). The first sampling event partially fulfills the requirements of the Final Consent Judgment (Judgement - approved on June 29, 2018) and executed by the State of Missouri Attorney General and the Missouri Department of Natural Resources (MDNR). The Judgment requires Bridgeton to conduct two comprehensive ambient air sampling events on the Site within eighteen months of the date from which the Final Consent Judgment is entered and no sooner than six months apart. In accordance with the requirements of the Judgment and the Sampling Work Plan (submitted to MDNR November 2, 2018), ambient air samples were collected at two locations upwind and two locations downwind of the South Quarry and analyzed for the following constituents of potential concern (COPCs):

- Volatile Organic Compounds (VOCs) by United States Environmental Protection Agency (US EPA) Method T0- 15
- Reduced Sulfur Compounds by American Society for Testing and Materials (ASTM) Method 5504
- Aldehydes by US EPA Method T0-11A
- Amines by ALS Global Laboratories (ALS) Method AQL 101
- Ammonia by Occupational Safety and Health Administration (OSHA) ID 188
- Carboxylic Acids by ALS Method AQL 102

2.0 CONSTITUENTS OF CONCERN IN AMBIENT AIR

The Judgment prescribed that ambient air samples collected during the semi-annual events be analyzed for the COPCs listed above. These constituents are commonly associated with odors and/or are of concern to public health when present in ambient air. The COPCs evaluated during this sampling event represent a subset of the COPCs that were evaluated in historical ambient air sampling events conducted at the landfill from 2012 through 2015. Historical ambient air sampling events included the evaluation of the following additional COPCs: hydrogen cyanide, hydrogen chloride, sulfur dioxide, mercury, polynuclear aromatic hydrocarbons, dioxins and furans.

In addition, MDNR instituted a regular (daily) community air monitoring program in May 2013. The program consists of an individual who traverses a prescribed path (“daily path”) around the exterior of the landfill (off-site) at 13 pre-determined locations, recording odors and taking real-time measurements of benzene using a UltraRAE® benzene monitor and hydrogen sulfide (H_2S) using a Jerome J-605 monitor®. Historical

ambient air sampling reports and daily path reports are available on the Bridgeton website: http://www.bridgetonlandfill.com.

3.0 SAMPLING METHODOLOGY

The sampling methods for the January 2019 event are detailed in the work plan submitted to MDNR: "*Semi-Annual Air Sampling at the Bridgeton Landfill: Sampling Work Plan"* – approved November 27, 2018. Any deviations from the sampling methodology during the January 2019 sampling event are discussed in section 3.3 of this report.

The following table summarizes the methods and sample collection media and provides links to the analytical methods.

Analytical Methods and Collection Media	
Constituents of Concern	**Analytical Method**
6-Liter Individually Certified Clean Silonite® Summa Canisters – 8-hour samples	
Reduced Sulfur Compounds	ASTM D5504 https://www.astm.org/Standards/D5504.htm
Volatile Organic Compounds + Tentatively Identified Compounds (TICs)	EPA TO-15 https://www.epa.gov/sites/production/files/2015-07/documents/epa-to-15_0.pdf
Sorbent Tube; Low Flow Sampling Pump – 4 hour samples	
Aldehydes (Carbonyl Compounds)	EPA TO-11A https://www3.epa.gov/ttnamti1/files/ambient/airtox/to-11ar.pdf
Amines	ALS Lab Method AQL 101 http://www.caslab.com/Forms-Downloads/Flyers/AMINES_METHOD_101_FLYER.pdf
Ammonia	OSHA ID-188F https://www.osha.gov/dts/sltc/methods/inorganic/id188/id188.html
Carboxylic Acids	ALS Lab Method AQL 102 http://www.caslab.com/Forms-Downloads/Flyers/CARBOXYLIC_SAMPLING_FLYER.pdf

3.1 COLLECTION OF AMBIENT AIR SAMPLES

Samples were collected to characterize the COPCs in the local/regional ambient air mass moving onto the landfill before passing over the South Quarry (upwind or background) and ambient air moving off the landfill towards the surrounding community (downwind). All samples were collected on-site at the perimeter of the Bridgeton property. Sampling methodology was consistent with the historic upwind and downwind sampling events.

The following list describes specific ambient air sample locations and relative wind direction associated with sample location.

Upwind Locations - January 10, 2019

- Upwind 1 - Grassy Knoll North
- Upwind 2 - Grassy Knoll South

Downwind Locations - January 10, 2019

- Downwind 1 - East Fence
- Downwind 2 - South Fence

It should be noted that the portions of ethylene vinyl alcohol (EVOH) liner were being repaired at the South Quarry on the day of sampling.

3.2 QUALITY ASSURANCE PROCEDURES

The Quality Assurance/Quality Control procedures for this project address: field sampling procedures; documentation of sampling conditions, instrument calibration, sample identification, sample custody, and data validation.

3.2.1 Quality Assurance for Field Sampling

Sampling quality assurance encompasses standard procedures used for pre-sample calibration of sampling pumps, care and handling of samples before, during, and after sample collection, post-calibration of sampling pumps, and procedures to minimize potential cross contamination and interferences.

Appendix A, Tables A-1 provide specific details on sample collection times and instrument calibration. ALS laboratories confirmed that the samples were received intact under chain of custody on January 11, 2019 and were stored in accordance with the analytical method requirements.

Table 1 lists all samples collected by analytical group, date, and individual sample identifiers including trip blanks, field blanks and field duplicate samples.

3.2.1.1 Instrument Calibration

Each personal sampling pump was pre-calibrated using a BIOS Defender Model 510-M revC1 (BIOS International, Mesa Labs, Butler New Jersey) mechanical/digital calibration device traceable to the National Technical Information service (NTIS) with representative sampling media in place for each type of sample. After sample collection the pumps were post-calibrated using the same calibration device and analyte-specific sorbent tubes. Where discrepancies between pre- and post-samples were noted, the change was assumed to be linear over time. The sample volumes provided to the analytical laboratory were the arithmetic average of the pre- and post-calibration values.

3.2.2 Independent Data Validation

The laboratory results packages and Electronic Data Deliverables (EDDs) received from ALS Laboratories were reviewed by a Stantec analytical chemist. As part of the review, a data validation report corresponding to the laboratory data package was prepared (see Appendix C). All data were deemed acceptable with regards to precision, sensitivity, accuracy, representativeness, method compliance and completeness.

3.2.3 Trip Blanks, Field Blanks and Field Duplicate Samples

Blank samples are used to identify potential sources of contamination during sampling, shipping, storage and analysis (US EPA, 2014). Trip blanks are prepared by the analytical laboratory prior to the sampling event. Trip blanks are kept with the investigative samples throughout the entire sampling event. However, trip blanks are never opened and are never exposed to ambient air. Then they are packaged and shipped with the investigative samples for analysis. Trip blanks are designed to identify contamination associated with shipping and laboratory sources of contamination. A total of five trip blanks were collected during the first semi-annual sampling event.

Field blanks are samples that are exposed to field and sampling conditions and are kept with the investigative samples throughout the entire sampling event. The sampling media is treated in a manner consistent with the investigative media. For canister sampling, a dedicated flow controller was attached to the canister and then removed, the canister was then packaged and shipped with the investigative samples. In the case of sorbent tubes, the ends of the tubes were breached, recapped and then packaged and shipped with the investigative samples. At no time was any ambient air physically drawn through or into either type of sample media. Field blanks are designed to determine the effectiveness of laboratory decontamination procedures and the effect of exposure to ambient on-site conditions. A total of five field blanks were collected during the first semi-annual sampling event.

Duplicate (co-located) samples are two paired, independent samples, collected at a given point in time and space. Duplicate samples provide information on laboratory precision for the entire sampling process (i.e. sample collection to analysis). A total of five duplicate samples were collected during the first semi-annual sampling event.

3.2.4 Technical Quality Assurance for Report Preparation

This report has undergone both technical quality and independent peer review by appropriate senior level individuals.

- All data tables were checked against the original laboratory analytical reports by a team member who did not compile the original tables. Other quantitative information presented in this report, such as exposure screening levels, were independently verified.
- The Quality Review and Independent Peer Reviews were conducted by senior-level individuals with the appropriate expertise and credentials, and who have minimal or no involvement in preparing the report.

3.3 DEVIATIONS FROM SAMPLING SCHEDULE OR METHODS

The following list details all deviations from the sampling schedule as presented in Table 1:

- The amine sample collected at "Upwind 1" was submitted with an estimated end-time as the sample pump stopped running prior to collection. The pump stopped at some point between 13:44 and 14:14 on January 10, 2019. The duration of pump operation was estimated to be 149 minutes and was based on a stop time of 13:44, yielding a total flow of 14.2 liters.
- Wind direction shifted from north/northeast to east/southeast in the late afternoon. The relative wind direction at upwind locations was cross-gradient to the South Quarry during the last two hours of canister sampling.

No other deviations from the sampling work plan occurred during the January 10, 2019 first semi-annual event.

4.0 SAMPLING LOCATIONS

Table 1 summarizes the ambient air samples collected during the first semi-annual event. Figure 1 shows ambient air sample locations on an aerial view of the landfill. The sampling strategy was designed to characterize the COPCs in the local/regional ambient air mass moving onto the landfill before passing over the landfill (upwind or background) and ambient air moving off the landfill towards the surrounding community (downwind). All downwind sample locations were on the facility boundary (fence-line).

Sampling locations were selected based on wind direction relative to the landfill at onset of sampling.

4.1 UPWIND SAMPLE LOCATION

On January 10, 2019 winds were out of the north/northeast switching to east/southeast in the afternoon. Wind speeds ranged from 0 mph to 8 miles per hour (MPH). Stantec deployed the upwind samples at the former Construction and Demolition Landfill location. The area is also known as the "Grassy Knoll" from previous comprehensive sampling events.

4.2 DOWNWIND SAMPLING LOCATIONS

Downwind ambient air samples represent air moving from the landfill into the surrounding community. Samples were collected on the southern perimeter of the landfill along the south and east fence-lines of the facility.

5.0 ANALYTICAL RESULTS

Review of the laboratory analytical reports, data validation forms, field notes and instrument calibration records indicate that all investigative data are acceptable for the intended purpose. The ALS laboratory analytic results report is presented in appendix B. Table 2 details the sampling results, laboratory method reporting limits (MRLs) and relevant screening levels. Table 3 presents sampling results and screening levels for detected COPCs only. Table 4 presents analytical results for QA/QC samples (trip blanks and field blanks).

Laboratory analytic results for analytes that were not detected above the MRL were reported as less than MRL (ug/m^3). MRLs are derived from the method detection limit, which is defined as the minimum measured concentration of an analyte than can be reported with 99% confidence. MRLs are established by raising the MDL by a "safety factor" of two to ten times. The degree of the safety factor (2-10) is decided by the individual lab. Compounds that are detected at concentrations above the MDL, but below the MRL, are reported as estimated concentrations and are qualified with a "J".

5.1 PUBLIC HEALTH AND OCCUPATIONAL SCREENING LEVELS FOR AMBIENT AIR

Along with the analytical results and MRLs, health based screening levels are provided in four columns on the left-hand side of the ambient air results in Tables 2, 3 and 4, as a "point of reference" for the analyte concentrations in ambient air collected at the perimeter of the landfill. Two general categories of screening levels are presented and discussed: risk-based screening levels and occupational exposure limits.

US EPA risk-based Regional Screening Levels (RSLs) are concentrations of constituents in ambient air in residential (Resident Air RSL) and industrial settings (Industrial Air RSL) considered to be protective of individuals who are exposed to those concentrations over many years. RSLs for carcinogenic chemicals are derived to correspond to an excess lifetime cancer risk of 1 in 1,000,000 (1 in 1 million or 1E-06) for a person who is assumed to be exposed to that concentration on an ongoing basis over an extended period of time (25 years for industrial and 30 years for residential). US EPA updates the RSL tables two times a year. The most recent RSL concentrations (November 2018) were used in this report.

Although the EPA RSLs for carcinogenic chemicals were derived to correspond to a cancer risk of 1 in 1,000,000, many States and other jurisdictions consider a cancer risk of 1 in 100,000 to be a point of departure for regulating chemicals in the environment and mitigating potential risks. For carcinogenic chemicals such as benzene, the RSL concentrations for ambient air would be ten times higher for a target cancer risk of 1 in 100,000. We have conservatively chosen to present the lower concentrations.

For chemicals that may produce adverse non-cancer health effects (and are not considered to be carcinogens) RSLs correspond to concentrations that are very unlikely to produce adverse health effects in people who are exposed to those concentrations over many years. Non-cancer RSL concentrations were derived to correspond to a non-cancer hazard index (HI) of 1. For most States and jurisdictions an

estimated hazard index greater than 1 for non-cancer health effects from potential exposures to chemicals in the ambient environment is the point of departure for further evaluation and consideration of actions to mitigate the exposure.

Concentrations of constituents below applicable RSL concentrations are not a concern for public health. Concentrations above RSLs do not mean that adverse health effects will occur but indicate that additional evaluation may be appropriate. RSLs are extremely conservative and do not account for other (non-environmental) sources of exposure to the same chemicals or personal risk factors for developing disease.

Occupational Exposure Limits (OELs), published as OSHA Permissible Exposure Limits (PELs) and American Conference of Governmental Industrial Hygienists (ACGIH) Threshold Limit Values (TLVs), are exposure limits promulgated to protect a worker that handles these COPCs as part of their regular job duties. Workers on the landfill do not directly handle COPCs; however, PELs and TLVs are presented to help put COPC concentrations detected in ambient air into perspective. ACGIH TLVs are health-based values and refer to concentrations of chemical substances and represent conditions under which it is believed nearly all workers may be repeatedly exposed, day after day, over a working lifetime, without adverse health effects. OSHA PELs are based on 1969 TLVs with the exception that some have been updated as substance specific standards to reflect more current toxicological data and research.

5.2 SILONITE® CANISTER SAMPLING

5.2.1 Volatile Organic Compounds + TICs

The analytical results for the upwind and downwind samples collected on January 10, 2019 and relevant screening levels are presented in tables 2, 3 and 4. A total of nine different VOCs were detected in ambient air samples: acetonitrile, dichlorodifluoromethane (CFC 12), ethyl acetate, methylene chloride, propene, trichlorofluoromethane (CFC 11), sulfur dioxide, n-pentane, and hexamethylcyclotrisiloxane.

With a few exceptions, the same compounds were detected at similar concentrations in ambient air from upwind and downwind sample locations, suggesting that the COPCs in ambient air are representative of the regional air mass. There is no evidence of an impact from the landfill on ambient air quality.

Detected concentrations are very low and near the laboratory MRLs. No detected concentration exceeds US EPA RSLs, ACGIH TLVs or OSHA PELs. Note that laboratory MRLs for several chlorinated and brominated solvents exceed US EPA RSLs. Chlorinated compounds were not detected during historical source gas sampling events or the first semi-annual event and are not expected to be present in ambient air at concentrations exceeding RSLs.

Benzene is the constituent of greatest potential concern for public health. Benzene was not detected above the MRL in any ambient air sample collected during the first semi-annual event of 2019. The MRLs for benzene (<0.74 to <0.80 µg/m^3) slightly exceed the US EPA residential RSL (0.36 µg/m^3).

Both the industrial and residential RSL concentrations for benzene correspond to a target cancer risk of 1 in 1,000,000 for individuals who are exposed on a daily basis over many years. As mentioned in Section

5.1.1, the risk-based RSLs for benzene corresponding to a 1 in 100,000 cancer risk are 16 µg/m^3 for industrial exposure and 3.6 µg/m^3 for residential exposure.

To put the screening level concentrations of benzene in ambient air into context, the annual average benzene concentration reported by the St. Louis Community Air Project (US EPA 2005) was 1.5 µg/m^3. According to US EPA (2010), for the United States as a whole, the mean and 90th percentile concentrations of benzene in ambient air in 2009 were 0.85 µg/m^3 and 1.39 µg/m^3, respectively. Each of these values exceed the USEPA residential RSL at a cancer risk of 1 in 1,000,000.

5.2.2 Reduced Sulfur Compounds

No reduced sulfur compounds including dimethyl sulfide, dimethyldisulfide, hydrogen sulfide and mercaptans, were detected during the first semi-annual sampling event of 2019.

Although hydrogen sulfide was not detected in any sample, the laboratory MRLs for hydrogen sulfide (range of MRLs - <9.9 to <10 µg/m^3) slightly exceed US EPA RSLs (industrial - 8.8 µg/m^3, residential – 2.1 µg/m^3) corresponding to a non-cancer Hazard Quotient of 1.0. However, daily monitoring for hydrogens sulfide is conducted in the communities surrounding Bridgeton using a Jerome J-605 monitor®, which can detect hydrogen sulfide at or below the RSL concentrations. Hydrogen sulfide concentrations collected to date during daily monitoring are consistently below US EPA RSLs. The data are available on the Bridgeton website: http://www.bridgetonlandfill.com.

5.3 SORBENT TUBE; LOW FLOW SAMPLING PUMP

5.3.1 Aldehydes (Carbonyl Compounds)

Low concentrations of three aldehyde compounds (acetaldehyde, formaldehyde and n-hexaldehyde) were detected in 4-hour time weighted samples of ambient air.

Except for n-hexaldehyde, which was only detected in upwind samples, the same compounds were detected at similar concentrations in ambient air from upwind and downwind sample locations, suggesting that the COPCs in ambient air are representative of the regional air mass. The detected concentrations are very low and near the laboratory MRLs.

Formaldehyde concentrations slightly exceeded the US EPA residential RSL (0.22 µg/m^3) at a cancer risk of 1 in 1,000,000; however, concentrations upwind and downwind were similar, suggesting that the formaldehyde concentrations in ambient air are representative of the regional air mass. There is no evidence of an impact from the landfill on ambient air quality.

To put the concentrations of formaldehyde detected in ambient air into context, the annual average formaldehyde concentrations reported by the St. Louis Community Air Project (US EPA 2005) was 4.6 µg/m^3; which is greater than the detected concentrations in upwind/downwind samples and an order of magnitude larger than the US EPA residential RSL.

5.3.2 Amines

No amine compound was detected in any 4-hour time weighted upwind or downwind sample of ambient air at the landfill.

Triethylamine was not detected in any sample. The laboratory MRLs for triethylamine (Range of MRLs - <41 to <74 µg/m^3) slightly exceed US EPA RSLs (industrial - 31 µg/m^3, residential – 7.3 µg/m^3). Triethylamine was not detected during historical source gas sampling events and is not expected to be present in ambient air at concentrations exceeding RSLs.

5.3.3 Ammonia

Ammonia was not detected in any 4-hour time weighted upwind or downwind sample of ambient air at the landfill. The laboratory MRL was below all applicable screening levels.

5.3.4 Carboxylic Acids

No carboxylic acids were detected during the first semi-annual sampling event of 2019. Laboratory MRLs were below applicable screening levels.

5.4 QUALITY ASSURANCE QUALITY CONTROL SAMPLES

Several VOCs were detected in the trip blank and field blank samples collected in laboratory provided Silonite® canisters. Two compounds in the field blank were detected above US EPA residential RSLs (benzene 0.9 µg/m^3 and ethyl acetate 180 µg/m^3). As noted above, benzene was not detected in any upwind or downwind samples, while concentrations of ethyl acetate ranged from <1.6 to 5.2 µg/m^3 in the upwind and downwind samples. The concentrations of ethyl acetate in the investigative samples are two orders of magnitude lower than the ethyl acetate concentration in the field blank. Ethyl acetate is a solvent used to clean chromatography columns and is a common contaminant of laboratory sampling media. The high concentration of ethyl acetate in the field blank as compared to concentrations in the investigative samples suggests the canister may have been contaminated prior to shipment for use during the first sampling event.

A review of the chain of custody revealed that, upon receipt, the field blank canister had an internal pressure of 25 mmHg. This is slightly lower than the other canisters received from ALS which had pressures ranging from 28.5 – 30 mmHg. Given that the canister contained relatively high concentrations of a common laboratory solvent and had a reduced internal pressure as compared to the other canisters received from the laboratory, it is likely that the canister was contaminated prior to shipment from the laboratory.

6.0 SUMMARY AND CONCLUSIONS

The first semi-annual sampling event characterized COPC concentrations present in the ambient air that may contribute to the odors and/or are of potential concern for public health.

BRIDGETON LANDFILL FIRST SEMI-ANNUAL AMBIENT AIR SAMPLING

Summary and Conclusions
May 22, 2019

The following conclusions are based on the findings of the first semi-annual sampling event conducted January 10, 2019.

- Amines, ammonia, carboxylic acids and reduced sulfur compounds were not detected at or above laboratory MRLs in any upwind or downwind sample.

- Low concentrations of aldehydes and VOCs were detected in ambient air. However, the following evidence indicates that the landfill is not the source of these compounds:

    - Concentrations of aldehydes and VOCs in ambient air are similar when comparing upwind to downwind samples, suggesting that all samples are representative of COPC concentrations in the regional air mass.

    - The concentrations of aldehydes detected in upwind and downwind ambient air are within the background range for urban areas, including St. Louis.

    - Nine different VOCs were detected in ambient air samples: acetonitrile, dichlorodifluoromethane (CFC 12), ethyl acetate, methylene chloride, propene, trichlorofluoromethane (CFC 11), sulfur dioxide, n-pentane, and hexamethylcyclotrisiloxane. VOC concentrations were low and do not pose a risk to human health or the environment. In addition, and with a few exceptions, the same compounds were detected at similar concentrations in ambient air from upwind and downwind sample locations; suggesting that the COPCs in ambient air are representative of the regional air mass. There is no evidence of an impact from the landfill on ambient air quality.

    - Benzene is the constituent of greatest potential concern for public health that historically was detected in landfill source gas and had the potential to be released to ambient air. Benzene was not detected above the laboratory MRL in any upwind or downwind sample in the January 2019 sampling event.

    - Formaldehyde concentrations slightly exceeded US EPA RSLs (0.22 µg/m^3); however, concentrations upwind and downwind were similar, suggesting that the formaldehyde concentrations in ambient air are representative of the regional air mass. There is no evidence of an impact from the landfill on ambient air quality.

The totality of the evidence from the five comprehensive sampling events (2012 to 2015) and the first semi-annual sampling event (January 2019) demonstrates that the remedial measures Ethylene Vinyl Alcohol (EVOH) liner, the leachate treatment system, and the gas collection system/flare have been effective in controlling the potential for release of landfill gas to ambient air.

7.0 REFERENCES

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US EPA, Regional Screening Levels (RSL) Tables, November 2018.

TABLES

Table 1.
First Semi-Annual Sampling Event 2019
Summary of Sampling Activities
January 10, 2019

<table>
<tr><th colspan="4">Perimeter</th></tr>
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<tr><th colspan="4">Aldehydes/Carbonyl Compounds – Method: EPA TO-11a</th></tr>
<tr><td>110U1-ALD
110-DUPE01</td><td>110U2-ALD</td><td>110D1-ALD</td><td>110D2-ALD</td></tr>
<tr><th colspan="4">Amine Compounds – AQL 101</th></tr>
<tr><td>110U1-AMINE</td><td>110U2-AMINE</td><td>110D1-AMINE
110-DUPE02</td><td>110D2-AMINE</td></tr>
<tr><th colspan="4">Ammonia – Method: OSHA ID 188</th></tr>
<tr><td>110U1-NH3</td><td>110U2-NH3
110-DUPE03</td><td>110D1-NH3</td><td>110D2-NH3</td></tr>
<tr><th colspan="4">Carboxylic Acid Compounds – Method: CAS AQL 102</th></tr>
<tr><td>110U1-CARBOX</td><td>110U2-CARBOX</td><td>110D1-CARBOX</td><td>110D2-CARBOX
110DUPE-04</td></tr>
<tr><th colspan="4">Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List</th></tr>
<tr><td>110U1-SUMMA</td><td>110U2-SUMMA</td><td>110D1-SUMMA
110-DUPE10</td><td>110D2-SUMMA</td></tr>
<tr><th colspan="4">Reduced Sulfur Compound – ASTM D5504 (Lab Report - P1503125)</th></tr>
<tr><td>110U1-SUMMA</td><td>110U2-SUMMA</td><td>110D1-SUMMA
110-DUPE10</td><td>110D2-SUMMA</td></tr>
<tr><td colspan="4">Notes:
Field Blanks and Trip Blanks were submitted for all analytical methods.</td></tr>
</table>

Table 2.
First Semi-Annual Sampling Event 2019
Ambient Air Sampling Results (Concentrations µg/m^3)
January 10, 2019

Analyte	Screening Levels (ug/m^3)				Perimeter Sampling Locations			
	USEPA Industrial RSL	USEPA Residential RSL	OSHA PEL	ACGIH TLV	Upwind 1 (Old C&D Landfill/Grassy Knoll)	Upwind 2 (Old C&D Landfill/Grassy Knoll)	Downwind 1 (East Fence)	Downwind 2 (South Fence)
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a								
Sample ID					**110U1-ALD (110-DUPE01)**	**110U2-ALD**	**110D1-ALD**	**110D2-ALD**
2,5-Dimethylbenzaldehyde	--	--	--	--	ND (Range of MRLs - <0.31 to <0.42)			
Acetaldehyde	5.6	1.3	360,000	45,000	**0.94 (0.81)**	**0.87**	**0.89**	**0.91**
Benzaldehyde	--	--	--	--	ND (Range of MRLs - <0.31 to <0.42)			
Butyraldehyde	--	--	--	--	ND (Range of MRLs - <0.31 to <0.42)			
Crotonaldehyde, Total	--	--	6,000	860	ND (Range of MRLs - <0.31 to <0.42)			
Formaldehyde	0.94	0.22	920	400	**0.73 (0.77)**	**0.81**	**0.84**	**0.86**
Isovaleraldehyde	--	--	--	--	ND (Range of MRLs - <0.31 to <0.42)			
m,p-Tolualdehyde	--	--	--	--	ND (Range of MRLs - <0.62 to <0.85)			
n-Hexaldehyde	--	--	--	--	**0.42 (0.41)**	**0.50**	<0.35	<0.31
o-Tolualdehyde	--	--	--	--	ND (Range of MRLs - <0.31 to <0.42)			
Propionaldehyde	35	8.3	--	48,000	ND (Range of MRLs - <0.31 to <0.42)			
Valeraldehyde	--	--	--	176,000	ND (Range of MRLs - <0.31 to <0.42)			
Amine Compounds – AQL 101								
Sample ID					**110U1-AMINE**	**110U2-AMINE**	**110D1-AMINE (110-DUPE02)**	**110D2-AMINE**
Diethylamine	--	--	75,000	15,000	ND (Range of MRLs - <41 to <74)			
Diisopropylamine	--	--	20,000	2,100	ND (Range of MRLs - <41 to <73)			
Dimethylamine	--	--	18,000	920	ND (Range of MRLs - <43 to <77)			
Dipropylamine	--	--	--	--	ND (Range of MRLs - <41 to <75)			
Ethylamine	--	--	18,000	9,000	ND (Range of MRLs - <44 to <79)			
Isobutylamine	--	--	--	--	ND (Range of MRLs - <42 to <76)			
Isopropylamine	--	--	12,000	12,000	ND (Range of MRLs - <41 to <75)			
n-Butylamine	--	--	15,000	15,000	ND (Range of MRLs - <41 to <75)			
n-Propylamine	--	--	--	--	ND (Range of MRLs - <43 to <77)			
sec-Butylamine	--	--	--	--	ND (Range of MRLs - <41 to <74)			
tert-Butylamine	--	--	--	--	ND (Range of MRLs - <41 to <74)			
Triethylamine	31	7.3	100,000	2,070	ND (Range of MRLs - <41 to <74)			
Trimethylamine	--	--	--	--	ND (Range of MRLs - <42 to <76)			
Ammonia – Method*: OSHA ID 188*								
Sample ID					**110U1-NH3**	**110U2-NH3 (110-DUPE03)**	**110D1-NH3**	**110D2-NH3**
Ammonia	2,200	520	35,000	17,500	ND (Range of MRLs - <110 to <120)			
Carboxylic Acid Compounds – Method: CAS AQL 102								
Sample ID					**110U1-CARBOX**	**110U2-CARBOX**	**110D1-CARBOX**	**110D2-CARBOX (110DUPE-04)**
2-Ethylhexanoic Acid	--	--	--	--	ND (Range of MRLs - <2.7 to <3.0)			
2-Methylbutanoic Acid	--	--	--	--	ND (Range of MRLs - <2.6 to <3.0)			
2-Methylpentanoic Acid	--	--	--	--	ND (Range of MRLs - <2.6 to <2.9)			
2-Methylpropanoic Acid (Isobutyric)	--	--	--	--	ND (Range of MRLs - <2.7 to <3.0)			
3-Methylbutanoic Acid (Isovaleric)	--	--	--	--	ND (Range of MRLs - <2.7 to <3.0)			
3-Methylpentanoic Acid	--	--	--	--	ND (Range of MRLs - <2.6 to <3.0)			
4-Methylpentanoic Acid (Isocaproic)	--	--	--	--	ND (Range of MRLs - <2.6 to <2.9)			
Acetic Acid	--	--	25,000	2,500	ND (Range of MRLs - <22 to <24)			
Benzoic Acid	--	--	--	--	ND (Range of MRLs - <2.9 to <3.3)			
Butanoic Acid (Butyric)	--	--	--	--	ND (Range of MRLs - <2.7 to <3.0)			
Cyclohexanecarboxylic Acid	--	--	--	--	ND (Range of MRLs - <2.6 to <2.9)			
Heptanoic Acid (Enanthoic)	--	--	--	--	ND (Range of MRLs - <2.6 to <2.9)			
Hexanoic Acid (Caproic)	--	--	--	--	ND (Range of MRLs - <2.6 to <2.9)			
Nonanoic Acid (Pelargonic)	--	--	--	--	ND (Range of MRLs - <2.6 to <2.9)			
Octanoic Acid (Caprylic)	--	--	--	--	ND (Range of MRLs - <2.6 to <3.0)			
Pentanoic Acid (Valeric)	--	--	--	--	ND (Range of MRLs - <2.6 to <3.0)			
Propionic Acid (Propanoic)	--	--	--	--	ND (Range of MRLs - <2.6 to <3.0)			
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List								
Sample ID					**110U1-SUMMA**	**110U2-SUMMA**	**110D1-SUMMA (110-DUPE10)**	**110D2-SUMMA**
1,1,1-Trichloroethane	22,000	5,200	1,900,000	1,900,000	ND (Range of MRLs - <0.77 to <0.83)			
1,1,2,2-Tetrachloroethane	0.21	0.048	35,000	7,000	ND (Range of MRLs - <0.75 to <0.82)			
1,1,2-Trichloroethane	0.77	0.18	45,000	55,000	ND (Range of MRLs - <0.77 to <0.83)			
1,1-Dichloroethane	7.7	1.8	400,000	400,000	ND (Range of MRLs - <0.74 to <0.80)			
1,1-Dichloroethene	880	210	--	--	ND (Range of MRLs - <0.77 to <0.83)			
1,2,4-Trichlorobenzene	8.8	2.1	--	--	ND (Range of MRLs - <0.75 to <0.82)			
1,2,4-Trimethylbenzene	260	63	--	--	ND (Range of MRLs - <0.75 to <0.82)			
1,2-Dibromo-3-chloropropane	0.002	0.00017	10	--	ND (Range of MRLs - <0.74 to <0.80)			
1,2-Dibromoethane	0.02	0.0047	150,000	--	ND (Range of MRLs - <0.77 to <0.83)			
1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	--	--	7,000,000	7,000,000	ND (Range of MRLs - <0.72 to <0.79)			
1,2-Dichlorobenzene	880	210	300,000	150,000	ND (Range of MRLs - <0.77 to <0.83)			
1,2-Dichloroethane	0.47	0.11	200,000	4,000	ND (Range of MRLs - <0.75 to <0.82)			
1,2-Dichloropropane	3.3	0.76	350,000	46,000	ND (Range of MRLs - <0.77 to <0.83)			
1,3,5-Trimethylbenzene	260	63	--	--	ND (Range of MRLs - <0.75 to <0.82)			
1,3-Butadiene	0.41	0.094	2,000	4,400	ND (Range of MRLs - <0.74 to <0.80)			
1,3-Dichlorobenzene	--	--	--	--	ND (Range of MRLs - <0.77 to <0.83)			
1,4-Dichlorobenzene	1.1	0.26	450,000	60,000	ND (Range of MRLs - <0.77 to <0.83)			
1,4-Dioxane	2.5	0.56	360,000	72,000	ND (Range of MRLs - <0.75 to <0.82)			
2-Butanone (MEK)	22,000	5,200	590,000	590,000	ND (Range of MRLs - <1.4 to <1.5)			
2-Hexanone (MBK)	130	31	410,000	20,500	ND (Range of MRLs - <0.77 to <0.83)			
Isopropyl Alcohol	880	210	980,000	490,000	ND (Range of MRLs - <3.0 to <3.2)			
3-Chloro-1-propene	2	0.47	3,000	3,000	ND (Range of MRLs - <0.75 to <0.82)			
4-Ethyltoluene	--	--	--	--	ND (Range of MRLs - <0.75 to <0.82)			
4-Methyl-2-pentanone	13,000	3,100	410,000	82,000	ND (Range of MRLs - <0.75 to <0.82)			
Acetone	140,000	32,000	2,400,000	594,000	ND (Range of MRLs - <7.7 to <8.3)			
Acetonitrile	260	63	70,000	34,000	**1.4**	**0.84**	**0.78 (4.2)**	**2.6**
Acrolein	0.088	0.021	250	250	ND (Range of MRLs - <1.4 to <1.5)			
Acrylonitrile	0.18	0.041	4,300	4,300	ND (Range of MRLs - <0.74 to <0.80)			
alpha-Pinene	--	--	--	--	ND (Range of MRLs - <0.74 to <0.80)			
Benzene	1.6	0.36	3,000	1,600	ND (Range of MRLs - <0.74 to <0.80)			
Benzyl Chloride	0.25	0.057	5,000	5,000	ND (Range of MRLs - <1.6 to <1.7)			
Bromodichloromethane	0.33	0.076	--	--	ND (Range of MRLs - <0.75 to <0.82)			
Bromoform	11	2.6	5,000	5,200	ND (Range of MRLs - <0.75 to <0.82)			

Table 2.
First Semi-Annual Sampling Event 2019
Ambient Air Sampling Results (Concentrations µg/m^3)
January 10, 2019

Analyte	Screening Levels (ug/m^3)				Perimeter Sampling Locations			
	USEPA Industrial RSL	USEPA Residential RSL	OSHA PEL	ACGIH TLV	Upwind 1 (Old C&D Landfill/Grassy Knoll)	Upwind 2 (Old C&D Landfill/Grassy Knoll)	Downwind 1 (East Fence)	Downwind 2 (South Fence)
Bromomethane	22	5.2	80,000c	4,000	ND (Range of MRLs - <0.71 to <0.77)			
Carbon Disulfide	3100	730	62,000	3,000	ND (Range of MRLs - <1.6 to <1.7)			
Carbon Tetrachloride	2	0.47	62,000	31,000	ND (Range of MRLs - <0.74 to <0.80)			
Chlorobenzene	220	52	350,000	46,000	ND (Range of MRLs - <0.75 to <0.82)			
Chloroethane	44,000	10,000	2,600,000	264,000	ND (Range of MRLs - <0.72 to <0.79)			
Chloroform	0.53	0.12	240,000c	49,000	ND (Range of MRLs - <0.77 to <0.83)			
Chloromethane	390	94	206,000	103,000	ND (Range of MRLs - <0.71 to <0.77)			
cis-1,2-Dichloroethene	--	--	800,000	800,000	ND (Range of MRLs - <0.75 to <0.82)			
cis-1,3-Dichloropropene	3.1	0.7	--	--	ND (Range of MRLs - <0.80 to <0.86)			
Cumene	1,800	420	245,000	246,000	ND (Range of MRLs - <0.75 to <0.82)			
Cyclohexane	26,000	6,300	1,050,000	344,000	ND (Range of MRLs - <1.4 to <1.5)			
Dibromochloromethane	--	--	--	--	ND (Range of MRLs - <0.77 to <0.83)			
Dichlorodifluoromethane (CFC 12)	440	100	4,950,000	4,950,000	**2.6**	**2.6**	**2.6 (2.7)**	**2.6**
d-Limonene	--	--	--	--	ND (Range of MRLs - <0.72 to <0.79)			
Ethanol	--	--	1,900,000	1,880,000	ND (Range of MRLs - <7.2 to (7.9)			
Ethyl Acetate	310	73	1,400,000	1,440,000	<1.6	<1.6	**2.2** (<1.7)	**5.2**
Ethylbenzene	4.9	1.1	435,000	87,000	ND (Range of MRLs - <0.74 to <0.80)			
Hexachlorobutadiene	0.56	0.13	--	200	ND (Range of MRLs - <0.75 to <0.82)			
m,p-Xylenes	440	100	435,000	434,000	ND (Range of MRLs - <1.6 to <1.7)			
Methyl Methacrylate	3,100	730	410,000	205,000	ND (Range of MRLs - <1.6 to <1.7)			
Methyl tert-Butyl Ether	47	11	--	180,000	ND (Range of MRLs - <0.77 to <0.83)			
Methylene Chloride	1,200	100	87,000	174,000	**1.4**	**0.81**	<0.78 (<0.83)	<0.81
Naphthalene	0.36	0.083	50,000	52,000	ND (Range of MRLs - <0.72 to <0.79)			
n-Butyl Acetate	--	--	710,000	--	ND (Range of MRLs - <0.77 to <0.83)			
n-Heptane	1,800	420	2,000,000	1,640,000	ND (Range of MRLs - <0.77 to <0.83)			
n-Hexane	3,100	730	1,800,000	176,000	ND (Range of MRLs - <0.77 to <0.83)			
n-Nonane	88	21	--	--	ND (Range of MRLs - <0.77 to <0.83)			
n-Octane	--	--	2,350,000	1,400,000	ND (Range of MRLs - <0.77 to <0.83)			
n-Propylbenzene	4,400	1,000	--	--	ND (Range of MRLs - <0.77 to <0.83)			
o-Xylene	440	100	435,000	434,000	ND (Range of MRLs - <0.75 to <0.82)			
Propene	13,000	3,100	--	--	<0.74	<0.76	**0.91** (<0.80)	**1.0**
Styrene	4,400	1,000	425,000	85,000	ND (Range of MRLs - <0.75 to <0.82)			
Tetrachloroethene	47	11	678,000	170,000	ND (Range of MRLs - <0.75 to <0.82)			
Tetrahydrofuran (THF)	8,800	2,100	590,000	147,500	ND (Range of MRLs - <0.75 to <0.82)			
Toluene	22,000	5,200	753,000	75,000	ND (Range of MRLs - <0.75 to <0.82)			
trans-1,2-Dichloroethene	--	--	790,000	793,000	ND (Range of MRLs - <0.75 to <0.82)			
trans-1,3-Dichloropropene	--	--	--	--	ND (Range of MRLs - <0.75 to <0.82)			
Trichloroethene	3	0.48	537,000	54,000	ND (Range of MRLs - <0.75 to <0.82)			
Trichlorofluoromethane (CFC 11)	--	--	5,600,000	5,620,000c	**1.4**	**1.3**	**1.4 (1.4)**	**1.3**
Trichlorotrifluoroethane	22,000	5,200	7,600,000	7,670,000	ND (Range of MRLs - <0.75 to <0.82)			
Vinyl Acetate	880	210	--	35,000	ND (Range of MRLs - <7.5 to <8.2)			
Vinyl Chloride	2.8	0.17	2,600	2,600	ND (Range of MRLs - <0.75 to <0.82)			
Volatile Organic Compounds (VOCs) –Method: EPA TO15 + TICs - Tentatively Identified Compounds								
				Sample ID	**110U1-SUMMA**	**110U2-SUMMA**	**110D1-SUMMA (110-DUPE10)**	**110D2-SUMMA**
Sulfur Dioxide (4.07)	--	--	13,000	--	ND	ND	**9.4** (ND)	ND
n-Pentane (7.66)	4,400	1,000	2,950,000	2,950,000	ND	ND	**3.0** (ND)	ND
Hexamethylcyclotrisiloxane (17.07)	--	--	--	--	ND	ND	ND **(8.2)**	ND
Reduced Sulfur Compound – ASTM D5504								
				Sample ID	**110U1-SUMMA**	**110U2-SUMMA**	**110D1-SUMMA (110-DUPE10)**	**110D2-SUMMA**
2,5-Dimethylthiophene	--	--	--	--	ND (Range of MRLs - <33 to <35)			
2-Ethylthiophene	--	--	--	--	ND (Range of MRLs - <33 to <35)			
3-Methylthiophene	--	--	--	--	ND (Range of MRLs - <28 to <31)			
Carbon Disulfide	3,100	730	62,000	3,000	ND (Range of MRLs - <11 to <12)			
Carbonyl Sulfide	440	100	--	--	ND (Range of MRLs - <17 to <19)			
Diethyl Disulfide	--	--	--	--	ND (Range of MRLs - <18 to <19)			
Diethyl Sulfide	--	--	--	--	ND (Range of MRLs - <26 to <28)			
Dimethyl Disulfide	--	--	--	--	ND (Range of MRLs - <14 to <15)			
Dimethyl Sulfide	--	--	--	--	ND (Range of MRLs - <18 to <20)			
Ethyl Mercaptan	--	--	25,000c	1,300	ND (Range of MRLs - <18 to <20)			
Ethyl Methyl Sulfide	--	--	--	--	ND (Range of MRLs - <22 to <24)			
Hydrogen Sulfide	8.8	2.1	28,000c	1,400	ND (Range of MRLs - <9.9 to <11)			
Isobutyl Mercaptan	--	--	--	--	ND (Range of MRLs - <26 to <28)			
Isopropyl Mercaptan	--	--	--	--	ND (Range of MRLs - <22 to <24)			
Methyl Mercaptan	--	--	20,000c	1,000	ND (Range of MRLs - <14 to <15)			
n-Butyl Mercaptan	--	--	35,000	1,800	ND (Range of MRLs - <26 to <28)			
n-Propyl Mercaptan	--	--	--	--	ND (Range of MRLs - <22 to <23)			
tert-Butyl Mercaptan	--	--	--	--	ND (Range of MRLs - <26 to <28)			
Tetrahydrothiophene	--	--	--	--	ND (Range of MRLs - <26 to <28)			
Thiophene	--	--	--	--	ND (Range of MRLs - <24 to <26)			

USEPA Industrial RSL: United States Environmental Protection Agency Regional Screening Levels (RSL) for Industrial Air (RSL). (USEPA: November 2018, TR=1E-06, HQ=1).
USEPA Industrial RSL: United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: November 2018, TR=1E-06, HQ=1)
OSHA PEL: Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
ACGIH: American Conference of Governmental Industrial Hygienists- Threshold Limit Value
"--" = Not Available
"<": Compound not detected above Method Reporting Limit (MRL).
Bold indicates that compound was detected above Method Reporting Limits (MRL).
Gray shading indicates concentration exceeds one or more screening values.
J = The result is an estimated concentration that is less than the Method Reporting Limit (MRL) but greater than the Method Detection Limit (MDL).
c: Indicates that the value is an OSHA PEL ceiling limit
"ND": Not Detected
Concentrations in parentheses represent duplicate samples.

Table 3.
First Semi-Annual Sampling Event 2019
Ambient Air Sampling Results - Detected Compounds Only (Concentrations µg/m^3)
January 10, 2019

Analyte	Screening Levels (ug/m^3)				Perimeter Sampling Locations			
	USEPA Industrial RSL	USEPA Residential RSL	OSHA PEL	ACGIH TLV	Upwind 1 (Old C&D Landfill/Grassy Knoll)	Upwind 2 (Old C&D Landfill/Grassy Knoll)	Downwind 1 (East Fence)	Downwind 2 (South Fence)
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a								
Sample ID					**110U1-ALD (110-DUPE01)**	**110U2-ALD**	**110D1-ALD**	**110D2-ALD**
Acetaldehyde	5.6	1.3	360,000	45,000	**0.94 (0.81)**	**0.87**	**0.89**	**0.91**
Formaldehyde	0.94	0.22	920	400	**0.73 (0.77)**	**0.81**	**0.84**	**0.86**
n-Hexaldehyde	--	--	--	--	**0.42 (0.41)**	**0.50**	<0.35	<0.31
Amine Compounds – AQL 101								
No Amine Compounds Detected Above Reporting Limits (Range of Reporting Limits - <41 to <79)								
Ammonia – Method*: OSHA ID 188*								
Ammonia was not Detected Above Reporting Limits (Range of Reporting Limits - <110 to <120)								
Carboxylic Acid Compounds – Method: CAS AQL 102								
No Carboxylic Compounds Detected (Range of Reporting Limits - <2.6 to <24)								
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List								
Sample ID					**110U1-SUMMA**	**110U2-SUMMA**	**110D1-SUMMA (110-DUPE10)**	**110D2-SUMMA**
Acetonitrile	260	63	70,000	34,000	**1.4**	**0.84**	**0.78 (4.2)**	**2.6**
Dichlorodifluoromethane (CFC 12)	440	100	4,950,000	4,950,000	**2.6**	**2.6**	**2.6 (2.7)**	**2.6**
Ethyl Acetate	310	73	1,400,000	1,440,000	<1.6	<1.6	**2.2** (<1.7)	**5.2**
Methylene Chloride	1,200	100	87,000	174,000	**1.4**	**0.81**	<0.78 (<0.83)	<0.81
Propene	13,000	3,100	--	--	<0.74	<0.76	**0.91** (<0.80)	**1.0**
Trichlorofluoromethane (CFC 11)	--	--	5,600,000	5,620,000c	**1.4**	**1.3**	**1.4 (1.4)**	**1.3**
Sulfur Dioxide (4.07)	--	--	13,000	--	ND	ND	**9.4** (ND)	ND
n-Pentane (7.66)	4,400	1,000	2,950,000	2,950,000	ND	ND	**3.0** (ND)	ND
Hexamethylcyclotrisiloxane (17.07)	--	--	--	--	ND	ND	ND **(8.2)**	ND
Reduced Sulfur Compound – ASTM D5504								
Sample ID					**110U1-SUMMA**	**110U2-SUMMA**	**110D1-SUMMA (110-DUPE10)**	**110D2-SUMMA**
No Reduced Sulfur Compounds Detected Above Reporting Limits (Range of Reporting Limits - <9.9 to <34)								

USEPA Industrial RSL: United States Environmental Protection Agency Regional Screening Levels (RSL) for Industrial Air (RSL). (USEPA: November 2018, TR=1E-06, HQ=1).
USEPA Industrial RSL: United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: November 2018, TR=1E-06, HQ=1)
OSHA PEL: Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
ACGIH: American Conference of Governmental Industrial Hygienists- Threshold Limit Value
"--" = Not Available
"<": Compound not detected above Method Reporting Limit (MRL).
Bold indicates that compound was detected above Method Reporting Limits (MRL).
Gray shading indicates concentration exceeds one or more screening values.
J = The result is an estimated concentration that is less than the Method Reporting Limit (MRL) but greater than the Method Detection Limit (MDL).
c: Indicates that the value is an OSHA PEL ceiling limit
"ND": Not Detected
Concentrations in parentheses represent duplicate samples.

Table 4.
First Semi-Annual Sampling Event 2019
Ambient Air Sampling Results - Quality Assurance/Quality Control Samples (Concentrations µg/m^3)
January 10, 2019

Analyte	Screening Levels (ug/m^3)				Quality Assurance/Quality Control Samples		
	USEPA Industrial RSL	USEPA Residential RSL	OSHA PEL	ACGIH TLV			
Aldehydes/Carbonyl Compounds – Method: EPA TO-11a							
				Sample ID	**110TB-Ald**	**110FB-Ald**	**Method Blank**
No Aldehyde Compounds Detected Above MRLs (Range of MRLs - <100 to <200 ng/Sample)							
Amine Compounds – AQL 101							
				Sample ID	**110TB-Amine**	**110FB-Amine**	**Method Blank**
No Amine Compounds Detected Above MRLs (Range of MRLs - <1.0 to <1.1 µg/Sample)							
Ammonia – Method*: OSHA ID 188*							
				Sample ID	**110TB-NH3**	**110FB-NH3**	**Method Blank**
Ammonia was not Detected Above MRLs (Range of MRLs - <10 µg/Sample)							
Carboxylic Acid Compounds – Method: CAS AQL 102							
				Sample ID	**110TB-CARBOX**	**110FB-CARBOX**	**Method Blank**
No Carboxylic Compounds Detected (Range of MRLs - <0.26 to <2.1 µg/Sample)							
Volatile Organic Compounds (VOCs) – Method: EPA TO15 + TICs – Standard Analyte List							
				Sample ID	**110-SUMMA-TB**	**110-SUMMA-FB**	**Method Blank**
2-Propanol (Isopropyl Alcohol)	880	210	980,000	490,000	ND	**35**	ND
Acetone	140,000	32,000	2,400,000	594,000	ND	**10**	ND
alpha-Pinene	--	--	--	--	ND	**1.8**	ND
Benzene	1.6	0.36	3,000	1,600	ND	**0.90**	ND
Dichlorodifluoromethane (CFC 12)	440	100	4,950,000	4,950,000	ND	**0.67**	ND
d-Limonene	--	--	--	--	ND	**2.1**	ND
Ethanol	--	--	1,900,000	1,880,000	ND	**83**	ND
Ethyl Acetate	310	73	1,400,000	1,440,000	ND	**180**	ND
Methylene Chloride	1,200	100	87,000	174,000	ND	**0.84**	ND
n-Butyl Acetate	--	--	710,000	--	ND	**0.99**	ND
Propene	13,000	3,100	--	--	ND	**12**	ND
Toluene	22,000	5,200	753,000	75,000	ND	**9.2**	ND
Isobutane (4.66)	--	--	--	--	ND	**6.00**	ND
n-Pentane (7.66)	810	3,400	3,000,000	3,000,000	ND	**8.6**	ND
Trimethylsilanol (9.92)	--	--	--	--	**11**	ND	ND
Hexamethylcyclotrisiloxane (17.07)	--	--	--	--	**7.2**	ND	ND
unknown (19.93)	--	--	--	--	**2.7**	ND	ND
2-Ethyl-1-hexanol (20.23)	--	--	--	--	ND	**5.1**	ND
2-Ethylhexylacetate (21.47)	--	--	--	--	ND	**12**	ND
unknown Siloxane (21.63)	--	--	--	--	ND	**3.6**	ND
Reduced Sulfur Compound – ASTM D5504							
				Sample ID	**110-SUMMA-TB**	**110-SUMMA-FB**	**Method Blank**
No Reduced Sulfur Compounds Detected Above MRLs (Range of MRLs - <7 to <23)							

USEPA Industrial RSL: United States Environmental Protection Agency Regional Screening Levels (RSL) for Industrial Air (RSL). (USEPA: November 2018, TR=1E-06, HQ=1).
USEPA Industrial RSL: United States Environmental Protection Agency Regional Screening Levels for Residential Air. (USEPA: November 2018, TR=1E-06, HQ=1)
OSHA PEL: Occupational Safety & Health Administration (OSHA) Permissible Exposure Limit
ACGIH: American Conference of Governmental Industrial Hygienists- Threshold Limit Value
"--" = Not Available
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Bold indicates that compound was detected above Method Reporting Limits (MRL).
Gray shading indicates concentration exceeds one or more screening values.
J = The result is an estimated concentration that is less than the Method Reporting Limit (MRL) but greater than the Method Detection Limit (MDL).
c: Indicates that the value is an OSHA PEL ceiling limit
"ND": Not Detected
(ug/m^3) = micrograms per cubic meter
ng = nanogram
TB = Trip Blank
FB = Field Blank

FIGURES

W:\0-GIS\182608020 - Bridgeton Landfill LLC\2019_02\Figure01_Air_Sampling_location_11x17.mxd

Stantec

1500 LAKE SHORE DRIVE, SUITE 100
COLUMBUS, OHIO 43204
PHONE: (614) 486-4383

FOR:
BRIDGETON LANDFILL, LLC
13570 ST. CHARLES ROCK ROAD
BRIDGETON, MISSOURI 63044

AMBIENT AIR SAMPLE LOCATIONS
FIRST SEMI-ANNUAL SMAPLING EVENT
BRIDGETON LANDFILL

FIGURE:
1

JOB NUMBER:	DRAWN BY:	CHECKED BY:	APPROVED BY:	DATE:
182608020	CK	NI	DG	02/28/19

APPENDIX A

Sample Summary

Table A-1.
1st Bridgeton Landfill Sampling Event - Post Settlement Order (January 10, 2019) Summary of Sampling Procedures/Calibration/Methods
Bridgeton Landfill
Bridgeton, Mo

Upwind Location 1																	
Sample ID	**Sample Date**	**Start Time**	**Stop Time**	**Duration**	**Compound**	**Analytical Method**	**Canister ID**	**Regulator ID**	**Start Pres**	**End Pres**	**Pump ID**	**Pre-Cal**	**Post-Cal**	**mean flow**	**PD**	**Total Volume**	**Total Volume COC**	**Comments**
				Minutes					**psi**	**psi**		**ml/min**	**ml/min**	**ml/min**	**%**	**ml**	**liters**	
110U1-Summa	1/10/2019	7:48	15:57	489	VOCs	TO-15 + TICs	as00956	sfc00065	-30	-7	NA	NA	NA	NA	NA	NA	1	
					Reduced Sulfur	ASTM D5504												
110U1-Ald	1/10/2019	11:15	15:08	233	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b22014b	1208	1210	1209	0.2%	281,697	281.7	
110U1-Amine	1/10/2019	11:15	13:44	149	Amines	AQL 101	NA	NA	NA	NA	b20584b	103	88	96	-17.0%	14,230	14.2	Stopped between 13:44 and 14:14, flow recorded at 13:44
110U1-NH3	1/10/2019	11:15	15:08	233	Ammonia	OSHA ID 188	NA	NA	NA	NA	b22017b	392	367	380	-6.8%	88,424	88.4	
110U1-Carbox	1/10/2019	11:15	15:08	233	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b21868b	410	405	408	-1.2%	94,948	94.9	
110-Dupe01	1/10/2019	11:15	15:08	233	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b21860b	1244	1260	1252	1.3%	291,716	291.7	Aldehyde Duplicate Sample (Upland Location 1)
Downwind Location 1																		
Sample ID	**Sample Date**	**Start Time**	**Stop Time**	**Duration**	**Compound**	**Analytical Method**	**Canister ID**	**Regulator ID**	**Start Pres**	**End Pres**	**Pump ID**	**Pre-Cal**	**Post-Cal**	**mean flow**	**PD**	**Total Volume**	**Total Volume COC**	**Comments**
				Minutes					**psi**	**psi**		**ml/min**	**ml/min**	**ml/min**	**%**	**ml**	**liters**	
110D1-Summa	1/10/2019	8:06	15:34	448	VOCs	TO-15 + TICs	as00091	sfc00284	-29.5	-6	NA	NA	NA	NA	NA	NA	1	
					Reduced Sulfur	ASTM D5504												
110-Dupe10	1/10/2019	8:06	15:34	448	VOCs	TO-15 + TICs	as00220	sfc00342	-29.5	-7	NA	NA	NA	NA	NA	NA	1	Downwind 1 - Summa Duplicate VOCs and Reduced Sulfur Compounds
					Reduced Sulfur	ASTM D5504												
110D1-Ald	1/10/2019	11:46	15:34	228	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b22016b	1260	1270	1265	0.8%	288,420	288.4	
110D1-Amine	1/10/2019	11:46	15:34	228	Amines	AQL 101	NA	NA	NA	NA	b20586b	102	104	103	1.9%	23,484	23.5	
110D1-NH3	1/10/2019	11:46	15:34	228	Ammonia	OSHA ID 188	NA	NA	NA	NA	b21866b	399	400	400	0.3%	91,086	91.1	
110D1-Carbox	1/10/2019	11:46	15:34	228	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b21864b	395	371	383	-6.5%	87,324	87.3	
110-Dupe02	1/10/2019	11:46	15:34	228	Amines	AQL 101	NA	NA	NA	NA	b20067b	108	115	112	6.1%	25,422	25.4	Amine Duplicate Sample (Downwind Location 1)
Upwind Location 2																		
Sample ID	**Sample Date**	**Start Time**	**Stop Time**	**Duration**	**Compound**	**Analytical Method**	**Canister ID**	**Regulator ID**	**Start Pres**	**End Pres**	**Pump ID**	**Pre-Cal**	**Post-Cal**	**mean flow**	**PD**	**Total Volume**	**Total Volume COC**	**Comments**
				Minutes					**psi**	**psi**		**ml/min**	**ml/min**	**ml/min**	**%**	**ml**	**liters**	
110U2-Summa	1/10/2019	7:54	15:23	449	VOCs	TO-15 + TICs	as00835	sfc00264	-30	-6	NA	NA	NA	NA	NA	NA	1	
					Reduced Sulfur	ASTM D5504												
110U2-Ald	1/10/2019	11:24	15:20	236	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b21867b	1000	995	998	-0.5%	235,410	235.4	
110U2-Amine	1/10/2019	11:24	15:20	236	Amines	AQL 101	NA	NA	NA	NA	b20585b	104	114	109	8.8%	25,724	25.7	
110U2-NH3	1/10/2019	11:24	15:20	236	Ammonia	OSHA ID 188	NA	NA	NA	NA	b21861b	388	393	391	1.3%	92,158	92.2	
110U2-Carbox	1/10/2019	11:24	15:20	236	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b22013b	418	415	417	-0.7%	98,294	98.3	
110-Dupe03	1/10/2019	11:24	15:20	236	Ammonia	OSHA ID 188	NA	NA	NA	NA	b21861b	384	387	386	0.8%	90,978	91.0	Ammonia Duplicate Sample (Upwind Location 2)
Downwind Location 2																		
Sample ID	**Sample Date**	**Start Time**	**Stop Time**	**Duration**	**Compound**	**Analytical Method**	**Canister ID**	**Regulator ID**	**Start Pres**	**End Pres**	**Pump ID**	**Pre-Cal**	**Post-Cal**	**mean flow**	**PD**	**Total Volume**	**Total Volume COC**	**Comments**
				Minutes					**psi**	**psi**		**ml/min**	**ml/min**	**ml/min**	**%**	**ml**	**liters**	
110D2-Summa	1/10/2019	8:16	15:44	448	VOCs	TO-15 + TICs	as00942	sfc00316	-28.5	-9	NA	NA	NA	NA	NA	NA	1	
					Reduced Sulfur	ASTM D5504												
110D2-Ald	1/10/2019	11:37	15:44	247	Aldehydes	EPA TO 11a	NA	NA	NA	NA	b21869b	1300	1300	1300	0.0%	321,100	321.1	
110D2-Amine	1/10/2019	11:37	15:44	247	Amines	AQL 101	NA	NA	NA	NA	b21865b	101	103	102	1.9%	25,194	25.2	
110D2-NH3	1/10/2019	11:37	15:44	247	Ammonia	OSHA ID 188	NA	NA	NA	NA	b21863b	385	384	385	-0.3%	94,972	95.0	
110D2-Carbox	1/10/2019	11:37	15:44	247	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b18592b	407	395	401	-3.0%	99,047	99.0	
110-Dupe04	1/10/2019	11:37	15:44	247	Carboxylic Acids	AQL 102	NA	NA	NA	NA	b18589b	400	394	397	-1.5%	98,059	98.1	Carboxylic Acid Duplicate Sample (Downwind Location 2)

APPENDIX B

Laboratory Analytical Report

LABORATORY REPORT

January 25, 2019

Nick Iannaggi
Stantec Consulting Services, Inc.
1500 Lake Shore Drive Suite 100
Columbus, OH 43204

RE: Bridgeton Air Monitoring / 182608047

Dear Nick:

Enclosed are the results of the samples submitted to our laboratory on January 11, 2019. For your reference, these analyses have been assigned our service request number P1900123.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

ALS | Environmental

By Sue Anderson at 3:19 pm, Jan 25, 2019

Sue Anderson
Project Manager

Client: Stantec Consulting Services, Inc. Service Request No: P1900123
Project: Bridgeton Air Monitoring / 182608047

CASE NARRATIVE

The samples were received intact under chain of custody on January 11, 2019 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

Aldehyde Analysis

The DNPH silica gel tube samples were analyzed for aldehydes according to EPA Method TO-11A using high performance liquid chromatography (HPLC). This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Amine Analysis

The Alumina tube samples were analyzed for amines using a gas chromatograph equipped with a nitrogen phosphorus detector (NPD). This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Ammonia Analysis

The Anasorb tube samples were prepared in accordance with OSHA ID-188 and analyzed for ammonia in air by Ion Selective Electrode per OSHA ID-164. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Carboxylic Acids Analysis

The Silica gel tube samples were analyzed for carboxylic acids using combined gas chromatography/mass spectrometry (GC/MS) in accordance with laboratory operating procedures. This method is not included on the laboratory's NELAP or DoD-ELAP scope of accreditation.

Sulfur Analysis

TheSilonite canister samples were analyzed for twenty sulfur compounds per ASTM D 5504-12 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD). All compounds with the exception of hydrogen sulfide and carbonyl sulfide are quantitated against the initial calibration curve for methyl mercaptan. This method is included on the laboratory's NELAP scope of accreditation, however it is not part of the DoD-ELAP accreditation.

Client: Stantec Consulting Services, Inc. Service Request No: P1900123
Project: Bridgeton Air Monitoring / 182608047

CASE NARRATIVE

Volatile Organic Compound Analysis

The Silonite canister samples were also analyzed for volatile organic compounds and tentatively identified compounds in accordance with EPA Method TO-15 from the Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air, Second Edition (EPA/625/R-96/010b), January, 1999. This procedure is described in laboratory SOP VOA-TO15. The analytical system was comprised of a gas chromatograph / mass spectrometer (GC/MS) interfaced to a whole-air preconcentrator. This method is included on the laboratory's NELAP and DoD-ELAP scope of accreditation. Any analytes flagged with an X are not included on the NELAP or DoD-ELAP accreditation.

The spike recovery of methylene chloride in the Laboratory Control Samples (LCS) was outside the laboratory generated control criterion. The recovery error equates to a potential high bias. However, the recovery in question was within the method criteria, therefore, the data quality has not been significantly affected. The recovery has been flagged accordingly. No further corrective action was taken.

The containers were cleaned, prior to sampling, down to the method reporting limit (MRL) reported for this project. For projects requiring DoD QSM 5.1 compliance canisters were cleaned to <1/2 the MRL. Please note, projects which require reporting below the MRL could have results between the MRL and method detection limit (MDL) that are biased high.

ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Alaska DEC	http://dec.alaska.gov/eh/lab.aspx	17-019
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.floridahealth.gov/licensing-and-regulation/environmental-laboratories/index.html	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/page/la-lab-accreditation	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/professionals/labCert.shtml	2018027
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1521096
New Jersey DEP (NELAP)	http://www.nj.gov/dep/enforcement/oqa.html	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://www.oregon.gov/oha/ph/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-005
Pennsylvania DEP	http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/agency/qa/env_lab_accreditation.html	T104704413-18-9
Utah DOH (NELAP)	http://health.utah.gov/lab/lab_cert_env	CA016272018-9
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C946

Analyses were performed according to our laboratory's NELAP and DoD-ELAP approved quality assurance program. A complete listing of specific NELAP and DoD-ELAP certified analytes can be found in the certifications section at www.alsglobal.com, or at the accreditation body's website.

Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact the laboratory for information corresponding to a particular certification.

ALS ENVIRONMENTAL

DETAIL SUMMARY REPORT

Client: Stantec Consulting Services, Inc. Service Request: P1900123

Project ID: Bridgeton Air Monitoring / 182608047

Date Received: 1/11/2019

Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-11A - Carbonyls	Amines - Amines	OSHA ID-164 Modified - Ammonia	Carbox Acids - Carboxy Acids	ASTM D 5504-12 - Sulfur Can	TO-15 - VOC Cans
110U1-ALD	P1900123-001	Air	1/10/2019	15:08				X					
110U2-ALD	P1900123-002	Air	1/10/2019	15:20				X					
110D1-ALD	P1900123-003	Air	1/10/2019	15:34				X					
110D2-ALD	P1900123-004	Air	1/10/2019	15:44				X					
110U1-Amine	P1900123-005	Air	1/10/2019	13:44					X				
110U2-Amine	P1900123-006	Air	1/10/2019	15:20					X				
110D1-Amine	P1900123-007	Air	1/10/2019	15:34					X				
110D2-Amine	P1900123-008	Air	1/10/2019	15:44					X				
110U1-NH3	P1900123-009	Air	1/10/2019	15:08						X			
110U2-NH3	P1900123-010	Air	1/10/2019	15:20						X			
110D1-NH3	P1900123-011	Air	1/10/2019	15:34						X			
110D2-NH3	P1900123-012	Air	1/10/2019	15:44						X			
110U1-CARBOX	P1900123-013	Air	1/10/2019	15:08							X		
110U2-CARBOX	P1900123-014	Air	1/10/2019	15:20							X		
110D1-CARBOX	P1900123-015	Air	1/10/2019	15:34							X		
110D2-CARBOX	P1900123-016	Air	1/10/2019	15:44							X		
110-DUPE01	P1900123-017	Air	1/10/2019	00:00				X					
110-DUPE02	P1900123-018	Air	1/10/2019	00:00					X				
110-DUPE03	P1900123-019	Air	1/10/2019	00:00						X			
110-DUPE04	P1900123-020	Air	1/10/2019	00:00							X		
110U1-Summa	P1900123-021	Air	1/10/2019	15:57	AS00956	-1.70	3.70					X	X
110D1-Summa	P1900123-022	Air	1/10/2019	15:34	AS00091	-1.83	3.78					X	X
110U2-Summa	P1900123-023	Air	1/10/2019	15:23	AS00835	-1.96	3.85					X	X
110D2-Summa	P1900123-024	Air	1/10/2019	15:44	AS00942	-2.40	3.80					X	X
110-DUPE 10	P1900123-025	Air	1/10/2019	00:00	AS00220	-2.52	4.10					X	X
110-Summa-TB	P1900123-026	Air	1/10/2019	00:00	AS01042	-14.45	4.30					X	X
110-Summa-FB	P1900123-027	Air	1/10/2019	00:00	AS01340	-10.85	3.74					X	X
110FB-Ald	P1900123-028	Air	1/10/2019	17:00				X					
110FB-Amine	P1900123-029	Air	1/10/2019	17:00					X				
110FB-NH3	P1900123-030	Air	1/10/2019	17:00						X			
110FB-CARBOX	P1900123-031	Air	1/10/2019	17:00							X		
110TB-Ald	P1900123-032	Air	1/10/2019	17:00				X					
110TB-Amine	P1900123-033	Air	1/10/2019	17:00					X				
110TB-NH3	P1900123-034	Air	1/10/2019	17:00						X			
110TB-CARBOX	P1900123-035	Air	1/10/2019	17:00							X		

Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. P19 00123

Company Name & Address (Reporting Information)	Stantec Consulting Services Inc. 1500 Lake Shore Drive, Suite 100 Columbus, Ohio 43204
Project Manager	Nick Iannaggi
Phone	614-643-4369
Fax	
Email Address for Result Reporting	Nick.Iannaggi@Stantec.com
Project Name	Bridgeton Air Monitoring
Project Number	18760804 7
P.O. # / Billing Information	Bridgeton Landfill LLC
Sampler (Print & Sign)	Nick Iannaggi
ALS Contact:	

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Analysis Method		Comments e.g. Actual Preservative or specific instructions
110U1-ALD	1	1/10/19	15:08					281.7L	TO-11		
110U2-ALD	2		15:20					235.4L			
110D1-ALD	3		15:34					288.9L			
110D2-ALD	4		15:44					321.1L			
110U1-Amine	5	1/10/19	13:44					14.2L	AQL-	101	Pump stop 15:44 Pump start 16:14
110U2-Amine	6		15:20					25.7L			
110D1-Amine	7		15:34					23.5L			
110D2-Amine	8		15:44				98.4 G	25.2L			
110U1-NH3	9	1/10/19	15:08					90.5L	OSHA	ID 188	
110U2-NH3	10		15:20					92.2L			
110D1-NH3	11		15:34					91.1L			
110D2-NH3	12		15:44					95.0L			
110U1-CARBOX	13	1/10/19	15:08					94.9L	AQL	102	
110U2-CARBOX	14		15:20					98.3L	AQL	102	

Report Tier Levels - please select

Tier I - Results (Default if not specified) ____ Tier III (Results + QC & Calibration Summaries) X
Tier II (Results + QC Summaries) X Tier IV (Data Validation Package) 10% Surcharge ____

EDD required Yes / No
Type: _____ Units: PPB / UG/M3

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

	Date	Time		Date	Time
Relinquished by: (Signature)	1/10/19	1800	Received by: (Signature)		
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	1/11/19	0730

Cooler / Blank Temperature 10 °C

GW PSCI

Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. P1900123

Company Name & Address (Reporting Information)	Stantec
Project Name	Bridgeton Air Monitor
Project Number	182608047
Project Manager	Nick Iannaggi
P.O # / Billing Information	Bill to Bridgeton Landfill LLC
Phone	614-643-4569
Fax	
Email Address for Result Reporting	Nick.Iannaggi@Stantec.com
Sampler (Print & Sign)	Nick Iannaggi / Chris Rolando
ALS Contact:	

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Analysis Method: ASTM 5504	Analysis Method: TO15+TICs	Comments e.g. Actual Preservative or specific instructions
110DI-CARBOX	15	1/10/19	15:34					87.3L	AQL	102	
110DZ-CARBOX	16	1/10/19	15:44					99.0L	AQL	102	
110DUPE01	17	1/10/19	—					291.7L	TO-	11	
110DUPE02	18	1/10/19	"					25.4L	AQL-	101	
110-DUPE03	19	1/10/19	"					91.0L	OSHA ID	188	
110-DUPE04	20	1/10/19	"	↓	↓	↓		98.1L	AQL-	102	
110 UI-SUMMA	21	1/10/19	7:49-15:57	as00956	sfc00065	-30	-7	1L	X	X	
110DI-SUMMA	22	1/10/19	8:06-15:34	as00091	sfc00284	-29.5	-6		ASTM5504	TO15+TICS	
110UZ-SUMMA	23	1/10/19	7:54-15:23	as00835	sfc00264	-30	-6				
110DZ-Summa	24	1/10/19	8:16-15:44	as00942	sfc00316	-28.5	-7				
[redacted] 110-DUPE10	25	1/10/19	—	as00220	sfc00342	-29.5	-7				
110-SUMMA-TB	26	1/10/19	—	as16042	NA	NA					
110-SUMMA-FB	27	1/10/19	—	as01340	sfc00357	-25	-25	↓	↓	↓	

Report Tier Levels - please select
Tier I - Results (Default if not specified) ____ Tier III (Results + QC & Calibration Summaries) X
Tier II (Results + QC Summaries) X Tier IV (Data Validation Package) 10% Surcharge ____

EDD required (Yes) / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date: 1/10/19	Time: 18:00	Received by: (Signature)	Date:	Time:	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date: 1/11/19	Time: 0930	Cooler / Blank Temperature ____ °C

Air - Chain of Custody Record & Analytical Service Request

2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Requested Turnaround Time in Business Days (Surcharges) please circle
1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard

ALS Project No. P1900123

Company Name & Address (Reporting Information): Stantec

Project Name: Bridgeton Air Monitoring

Project Number: 182608547

Project Manager: Nick Iannaggi

P.O. # / Billing Information: Bill to Bridgeton Landfill LLC

Phone: 614-643-4369 Fax:

Email Address for Result Reporting: Nick.Iannaggi@Stantec.com

Sampler (Print & Sign): Nick Iannaggi

ALS Contact:

Client Sample ID	Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code # - AC, SC, etc.)	Flow Controller ID (Bar code # - FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume	Analysis Method	Comments e.g. Actual Preservative or specific instructions
110FB-Ald	28	1/10/19	17:00					0L	TO-11	
110FB-Amine	29	"	"					"	AQL 101	
110FB-NH3	30	"	"					"	OSHA-188	
110FB-CARBOX	31	"	"					"	AQL-102	
110FB-Ald	32	"	"					"	TO-11	
110TB-Amine	33	"	"					"	AQL-101	
110TB-NH3	34	"	"					"	OSHA10-188	
110TB-CARBOX	35	"	"					"	AQL-102	

Report Tier Levels - please select

Tier I - Results (Default if not specified) ____
Tier II (Results + QC Summaries) X
Tier III (Results + QC & Calibration Summaries) C
Tier IV (Data Validation Package) 10% Surcharge ____

EDD required (Yes) / No
Type: _____ Units: _____

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Project Requirements (MRLs, QAPP)

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
	11/16/19	1800			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:
				1/11/19	0830

Cooler / Blank Temperature ____ °C

ALS Environmental

Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1900123

Project: Bridgeton Air Monitoring / 182608047

Sample(s) received on: 1/11/19 Date opened: 1/11/19 by: ADAVID

Note: This form is used for all samples received by ALS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

		Yes	No	N/A
1	Were **sample containers** properly marked with client sample ID?	☒	☐	☐
2	Did **sample containers** arrive in good condition?	☒	☐	☐
3	Were **chain-of-custody** papers used and filled out?	☒	☐	☐
4	Did **sample container labels** and/or tags agree with custody papers?	☒	☐	☐
5	Was **sample volume** received adequate for analysis?	☒	☐	☐
6	Are samples within specified holding times?	☒	☐	☐
7	Was proper **temperature** (thermal preservation) of cooler at receipt adhered to?	☐	☒	☐
	Cooler Temperature: 10° C Blank Temperature: ° C Thermometer ID CO907034581 Gel Pa			
8	Were **custody seals** on outside of cooler/Box/Container?	☒	☐	☐
	Location of seal(s)? _____ Sealing Lid?	☒	☐	☐
	Were signature and date included?	☒	☐	☐
	Were seals intact?	☒	☐	☐
9	Do containers have appropriate **preservation**, according to method/SOP or Client specified information?	☐	☐	☒
	Is there a client indication that the submitted samples are **pH** preserved?	☐	☐	☒
	Were **VOA vials** checked for presence/absence of air bubbles?	☐	☐	☒
	Does the client/method/SOP require that the analyst check the sample pH and if necessary alter it?	☐	☐	☒
10	**Tubes:** Are the tubes capped and intact?	☒	☐	☐
11	**Badges:** Are the badges properly capped and intact?	☐	☐	☒
	Are dual bed badges separated and individually capped and intact?	☐	☐	☒

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1900123-001.01	Silica Gel DNPH Tube					
P1900123-002.01	Silica Gel DNPH Tube					
P1900123-003.01	Silica Gel DNPH Tube					
P1900123-004.01	Silica Gel DNPH Tube					
P1900123-005.01	Treated Alumina Tube					
P1900123-006.01	Treated Alumina Tube					
P1900123-007.01	Treated Alumina Tube					
P1900123-008.01	Treated Alumina Tube					
P1900123-009.01	Anasorb 747 Tube					
P1900123-010.01	Anasorb 747 Tube					
P1900123-011.01	Anasorb 747 Tube					
P1900123-012.01	Anasorb 747 Tube					
P1900123-013.01	Silica Gel (C. Acids)					
P1900123-014.01	Silica Gel (C. Acids)					
P1900123-015.01	Silica Gel (C. Acids)					

Explain any discrepancies: (include lab sample ID numbers): _____

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS Environmental
Sample Acceptance Check Form

Client: Stantec Consulting Services, Inc. Work order: P1900123

Project: Bridgeton Air Monitoring / 182608047

Sample(s) received on: 1/11/19 Date opened: 1/11/19 by: ADAVID

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1900123-016.01	Silica Gel (C. Acids)					
P1900123-017.01	Silica Gel DNPH Tube					
P1900123-018.01	Treated Alumina Tube					
P1900123-019.01	Anasorb 747 Tube					
P1900123-020.01	Silica Gel (C. Acids)					
P1900123-021.01	6.0 L Silonite Can					
P1900123-022.01	6.0 L Silonite Can					
P1900123-023.01	6.0 L Silonite Can					
P1900123-024.01	6.0 L Silonite Can					
P1900123-025.01	6.0 L Silonite Can					
P1900123-026.01	6.0 L Silonite Can					
P1900123-027.01	6.0 L Silonite Can					
P1900123-028.01	Silica Gel DNPH Tube					
P1900123-029.01	Treated Alumina Tube					
P1900123-030.01	Anasorb 747 Tube					
P1900123-031.01	Silica Gel (C. Acids)					
P1900123-032.01	Silica Gel DNPH Tube					
P1900123-033.01	Treated Alumina Tube					
P1900123-034.01	Anasorb 747 Tube					
P1900123-035.01	Silica Gel (C. Acids)					

Explain any discrepancies: (include lab sample ID numbers):

RSK - MEEPP, HCL (pH<2); RSK - CO2, (pH 5-8); Sulfur (pH>4)

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-ALD**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-001

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Ralph Torres
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/14/19
Desorption Volume: 1.0 ml
Volume Sampled: 281.7 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	210	**0.73**	0.35	**0.59**	0.29	
75-07-0	Acetaldehyde	260	**0.94**	0.35	**0.52**	0.20	
123-38-6	Propionaldehyde	< 100	ND	0.35	ND	0.15	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.35	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.35	ND	0.12	
100-52-7	Benzaldehyde	< 100	ND	0.35	ND	0.082	
590-86-3	Isovaleraldehyde	< 100	ND	0.35	ND	0.10	
110-62-3	Valeraldehyde	< 100	ND	0.35	ND	0.10	
529-20-4	o-Tolualdehyde	< 100	ND	0.35	ND	0.072	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.71	ND	0.14	
66-25-1	n-Hexaldehyde	120	**0.42**	0.35	**0.10**	0.087	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.35	ND	0.065	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-ALD**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-002

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Ralph Torres
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/14/19
Desorption Volume: 1.0 ml
Volume Sampled: 235.4 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	190	**0.81**	0.42	**0.66**	0.35	
75-07-0	Acetaldehyde	200	**0.87**	0.42	**0.48**	0.24	
123-38-6	Propionaldehyde	< 100	ND	0.42	ND	0.18	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.42	ND	0.15	
123-72-8	Butyraldehyde	< 100	ND	0.42	ND	0.14	
100-52-7	Benzaldehyde	< 100	ND	0.42	ND	0.098	
590-86-3	Isovaleraldehyde	< 100	ND	0.42	ND	0.12	
110-62-3	Valeraldehyde	< 100	ND	0.42	ND	0.12	
529-20-4	o-Tolualdehyde	< 100	ND	0.42	ND	0.086	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.85	ND	0.17	
66-25-1	n-Hexaldehyde	120	**0.50**	0.42	**0.12**	0.10	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.42	ND	0.077	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-ALD**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-003

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Ralph Torres
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/14/19
Desorption Volume: 1.0 ml
Volume Sampled: 288.4 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	240	**0.84**	0.35	**0.69**	0.28	
75-07-0	Acetaldehyde	260	**0.89**	0.35	**0.50**	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.35	ND	0.15	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.35	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.35	ND	0.12	
100-52-7	Benzaldehyde	< 100	ND	0.35	ND	0.080	
590-86-3	Isovaleraldehyde	< 100	ND	0.35	ND	0.098	
110-62-3	Valeraldehyde	< 100	ND	0.35	ND	0.098	
529-20-4	o-Tolualdehyde	< 100	ND	0.35	ND	0.071	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.69	ND	0.14	
66-25-1	n-Hexaldehyde	< 100	ND	0.35	ND	0.085	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.35	ND	0.063	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-ALD**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-004

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Ralph Torres
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/14/19
Desorption Volume: 1.0 ml
Volume Sampled: 321.1 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	280	**0.86**	0.31	**0.70**	0.25	
75-07-0	Acetaldehyde	290	**0.91**	0.31	**0.51**	0.17	
123-38-6	Propionaldehyde	< 100	ND	0.31	ND	0.13	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.31	ND	0.11	
123-72-8	Butyraldehyde	< 100	ND	0.31	ND	0.11	
100-52-7	Benzaldehyde	< 100	ND	0.31	ND	0.072	
590-86-3	Isovaleraldehyde	< 100	ND	0.31	ND	0.088	
110-62-3	Valeraldehyde	< 100	ND	0.31	ND	0.088	
529-20-4	o-Tolualdehyde	< 100	ND	0.31	ND	0.063	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.62	ND	0.13	
66-25-1	n-Hexaldehyde	< 100	ND	0.31	ND	0.076	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.31	ND	0.057	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE01**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-017

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Ralph Torres
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/14/19
Desorption Volume: 1.0 ml
Volume Sampled: 291.7 Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	220	**0.77**	0.34	**0.63**	0.28	
75-07-0	Acetaldehyde	240	**0.81**	0.34	**0.45**	0.19	
123-38-6	Propionaldehyde	< 100	ND	0.34	ND	0.14	
4170-30-3	Crotonaldehyde, Total	< 100	ND	0.34	ND	0.12	
123-72-8	Butyraldehyde	< 100	ND	0.34	ND	0.12	
100-52-7	Benzaldehyde	< 100	ND	0.34	ND	0.079	
590-86-3	Isovaleraldehyde	< 100	ND	0.34	ND	0.097	
110-62-3	Valeraldehyde	< 100	ND	0.34	ND	0.097	
529-20-4	o-Tolualdehyde	< 100	ND	0.34	ND	0.070	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	ND	0.69	ND	0.14	
66-25-1	n-Hexaldehyde	120	**0.41**	0.34	**0.10**	0.084	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	ND	0.34	ND	0.062	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110FB-Ald**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-028

Test Code:	EPA Method TO-11A	Date Collected:	1/10/19
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	1/11/19
Analyst:	Ralph Torres	Date Analyzed:	1/14/19
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
NA = Not applicable.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110TB-Ald**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-032

Test Code: EPA Method TO-11A
Instrument ID: Agilent Infinity LC 1220/LC3
Analyst: Ralph Torres
Sample Type: Silica Gel DNPH Tube
Test Notes: **BC**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/14/19
Desorption Volume: 1.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
NA = Not applicable.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190114-MB

Test Code:	EPA Method TO-11A	Date Collected:	NA
Instrument ID:	Agilent Infinity LC 1220/LC3	Date Received:	NA
Analyst:	Ralph Torres	Date Analyzed:	01/14/19
Sample Type:	Silica Gel DNPH Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result ng/Sample	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
50-00-0	Formaldehyde	< 100	NA	NA	NA	NA	
75-07-0	Acetaldehyde	< 100	NA	NA	NA	NA	
123-38-6	Propionaldehyde	< 100	NA	NA	NA	NA	
4170-30-3	Crotonaldehyde, Total	< 100	NA	NA	NA	NA	
123-72-8	Butyraldehyde	< 100	NA	NA	NA	NA	
100-52-7	Benzaldehyde	< 100	NA	NA	NA	NA	
590-86-3	Isovaleraldehyde	< 100	NA	NA	NA	NA	
110-62-3	Valeraldehyde	< 100	NA	NA	NA	NA	
529-20-4	o-Tolualdehyde	< 100	NA	NA	NA	NA	
620-23-5							
104-87-0	m,p-Tolualdehyde	< 200	NA	NA	NA	NA	
66-25-1	n-Hexaldehyde	< 100	NA	NA	NA	NA	
5779-94-2	2,5-Dimethylbenzaldehyde	< 100	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
NA = Not applicable.

Response Factor Report GCI

Method Path : J:\LC03\METHODS\
Method File : TO11A112918.M
Title : TO-11A Method for Aldehydes/Ketones by HPLC
Last Update : Fri Nov 30 09:08:21 2018
Response Via : Initial Calibration

Calibration Files
100 =1129180000017.D 500 =1129180000020.D 1500 =1129180000023.D
5000 =1129180000026.D 10K =1129180000029.D

		Compound	100	500	1500	5000	10K	Avg		%RSD
1)	T	Formaldehyde	2.432	2.485	2.525	2.429	2.419	2.458	E4	1.85
2)	T	Acetaldehyde	1.692	1.649	1.670	1.608	1.602	1.644	E4	2.37
3)	T	Acetone	1.290	1.197	1.181	1.137	1.132	1.187	E4	5.36
4)	T	Acrolein	1.450	1.383	1.364	1.317	1.309	1.365	E4	4.17
5)	T	Propionaldehyde	1.156	1.140	1.140	1.123	1.108	1.133	E4	1.63
6)	T	Crotonaldehyde	8.091	8.296	8.424	8.362	8.311	8.297	E3	1.52
7)	T	Butyraldehyde	8.217	8.552	8.640	8.516	8.549	8.495	E3	1.91
8)	T	Benzaldehyde	5.343	5.608	5.666	5.464	5.508	5.518	E3	2.28
9)	T	Isovaleraldehyde	8.343	8.474	8.594	8.326	8.380	8.423	E3	1.32
10)	T	Valeraldehyde	7.563	7.094	7.305	7.071	7.225	7.252	E3	2.74
11)	T	o-Tolualdehyde	4.727	4.509	4.537	4.380	4.512	4.533	E3	2.75
12)	T	m,p-Tolualdehyde	4.826	4.907	4.916	4.734	4.834	4.843	E3	1.52
13)	T	Hexaldehyde	6.568	6.424	6.430	6.197	6.265	6.377	E3	2.31
14)	T	2,5-Dimethylbenzal...	3.656	3.896	4.046	3.947	4.013	3.912	E3	3.95

(#) = Out of Range

1st RRT 01/15/19
2nd [illegible] 01/15/19

ALS Environmental

TO11A Aldehyde & Ketone DNPH Analysis by HPLC

Client : Stantec Consulting Services, Inc.
Instrument : LC 03
Detector : UV-VIS 360
Analyst : RRT

Service Request : P1900123
Date Acquired : 1/14/2019
Sample Amount : 3.0uL

QC

Sample Information	MRL	TO-11A 1500ng/ml S33-12261802	% Diff	ACN Blank lot#DU874-US	MB Back lot#11945/11794 1.0ml	MB Front lot#11945/11794 1.0ml			TO-11A 1500ng/ml S33-12261802	% Diff	TO-11A 1500ng/ml S33-12261802	% Diff	TO-11A 1500ng/ml S33-12261802	% Diff	TO-11A 1500ng/ml S33-12261802	% Diff
Dilution	1.0			1.0	1.0	1.0	1.0	1.0								
Sample Volume (L)	NA			NA	NA	NA	NA	NA								
Final Vol.(mL)	1.0			1.0	1.0	1.0	1.0	1.0								
Data File		0114190000 005.D		011419000000 6.D	011419000000 7.D	011419000000 8.D	0.0	0.0	0114190000 014.D		0114190000 021.D		0114190000 028.D		0114190000 034.D	
	ng/sample	ng/sample		ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample		ng/sample		ng/sample		ng/sample	
Formaldehyde	100.00	1513.7	0.9%	ND	ND	ND			1460.5	2.6%	1463.5	2.4%	1439.0	4.1%	1434.7	4.4%
Acetaldehyde	100.00	1483.6	1.1%	ND	ND	ND			1437.3	4.2%	1448.8	3.4%	1420.0	5.3%	1424.5	5.0%
Propionaldehyde	100.00	1580.7	5.4%	ND	ND	ND			1513.0	0.9%	1513.3	0.9%	1557.1	3.8%	1469.8	2.0%
Crotonaldehyde	100.00	1521.3	1.4%	ND	ND	ND			1490.8	0.6%	1491.7	0.6%	1467.2	2.2%	1465.7	2.3%
Butyraldehyde	100.00	1521.5	1.4%	ND	ND	ND			1503.8	0.3%	1488.0	0.8%	1476.3	1.6%	1466.7	2.2%
Benzaldehyde	100.00	1535.6	2.4%	ND	ND	ND			1467.5	2.2%	1457.5	2.8%	1435.9	4.3%	1448.5	3.4%
Isovaleraldehyde	100.00	1565.8	4.4%	ND	ND	ND			1472.8	1.8%	1468.0	2.1%	1448.2	3.5%	1426.9	4.9%
Valeraldehyde	100.00	1580.2	5.3%	ND	ND	ND			1496.2	0.3%	1482.1	1.2%	1464.2	2.4%	1440.2	4.0%
o-Tolualdehyde	100.00	1499.6	0.0%	ND	ND	ND			1330.1	11.3%	1345.4	10.3%	1343.6	10.4%	1292.5	13.8%
m,p-Tolualdehyde	200.00	3173.4	5.8%	ND	ND	ND			3229.2	7.6%	3209.7	7.0%	3154.8	5.2%	3076.8	2.6%
Hexaldehyde	100.00	1577.2	5.1%	ND	ND	ND			1440.2	4.0%	1484.7	1.0%	1405.9	6.3%	1430.1	4.7%
2,5-Dimethylbenzaldehyde	100.00	1519.8	1.3%	ND	ND	ND			1568.7	4.6%	1547.1	3.1%	1497.5	0.2%	1547.3	3.2%

1st RRT 01/15/19
2nd 01/15/19

ALS Environmental

TO11A Aldehyde & Ketone DNPH Analysis by HPLC

Client : Stantec Consulting Services, Inc.
Instrument : LC 03
Detector : UV-VIS 360
Analyst : RRT

Service Request : P1900123
Date Acquired : 1/14/2019
Sample Amount : 3.0uL

QC

Sample Information	MRL	TO-11A 1500ng/ml S33-12261802	% Diff	ACN Blank lot#DU874-US	MB Back lot#11945/11794 1.0ml	MB Front lot#11945/11794 1.0ml			TO-11A 1500ng/ml S33-12261802	% Diff	TO-11A 1500ng/ml S33-12261802	% Diff	TO-11A 1500ng/ml S33-12261802	% Diff	% Diff
Dilution	1.0			1.0	1.0	1.0	1.0	1.0							
Sample Volume (L)	NA			NA	NA	NA	NA	NA							
Final Vol.(mL)	1.0			1.0	1.0	1.0	1.0	1.0							
Data File		0114190000 005.D		011419000000 6.D	011419000000 7.D	011419000000 8.D	0.0	0.0	0114190000 014.D		0114190000 034.D		0114190000 040.D		0.0
	ng/sample	ng/sample		ng/sample	ng/sample	ng/sample	ng/sample	ng/sample	ng/sample		ng/sample		ng/sample		ng/sample
Formaldehyde	100.00	1513.7	0.9%	ND	ND	ND			1460.5	2.6%	1434.7	4.4%	1436.4	4.2%	
Acetaldehyde	100.00	1483.6	1.1%	ND	ND	ND			1437.3	4.2%	1424.5	5.0%	1424.7	5.0%	
Propionaldehyde	100.00	1580.7	5.4%	ND	ND	ND			1513.0	0.9%	1469.8	2.0%	1463.9	2.4%	
Crotonaldehyde	100.00	1521.3	1.4%	ND	ND	ND			1490.8	0.6%	1465.7	2.3%	1451.2	3.3%	
Butyraldehyde	100.00	1521.5	1.4%	ND	ND	ND			1503.8	0.3%	1466.7	2.2%	1461.2	2.6%	
Benzaldehyde	100.00	1535.6	2.4%	ND	ND	ND			1467.5	2.2%	1448.5	3.4%	1431.3	4.6%	
Isovaleraldehyde	100.00	1565.8	4.4%	ND	ND	ND			1472.8	1.8%	1426.9	4.9%	1432.2	4.5%	
Valeraldehyde	100.00	1580.2	5.3%	ND	ND	ND			1496.2	0.3%	1440.2	4.0%	1423.7	5.1%	
o-Tolualdehyde	100.00	1499.6	0.0%	ND	ND	ND			1330.1	11.3%	1292.5	13.8%	1299.5	13.4%	
m,p-Tolualdehyde	200.00	3173.4	5.8%	ND	ND	ND			3229.2	7.6%	3076.8	2.6%	2980.3	0.7%	
Hexaldehyde	100.00	1577.2	5.1%	ND	ND	ND			1440.2	4.0%	1430.1	4.7%	1385.0	7.7%	
2,5-Dimethylbenzaldehyde	100.00	1519.8	1.3%	ND	ND	ND			1568.7	4.6%	1547.3	3.2%	1497.4	0.2%	

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-Amine**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-005

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: 14.2 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	ND	77	ND	42	
75-04-7	Ethylamine	< 1.1	ND	79	ND	43	
75-50-3	Trimethylamine	< 1.1	ND	76	ND	31	
75-31-0	Isopropylamine	< 1.1	ND	75	ND	31	
75-64-9	tert-Butylamine	< 1.1	ND	74	ND	25	
107-10-8	n-Propylamine	< 1.1	ND	77	ND	32	
109-89-7	Diethylamine	< 1.0	ND	74	ND	25	
13952-84-6	sec-Butylamine	< 1.0	ND	74	ND	25	
78-81-9	Isobutylamine	< 1.1	ND	76	ND	25	
109-73-9	n-Butylamine	< 1.1	ND	75	ND	25	
108-18-9	Diisopropylamine	< 1.0	ND	73	ND	18	
121-44-8	Triethylamine	< 1.1	ND	74	ND	18	
142-84-7	Dipropylamine	< 1.1	ND	75	ND	18	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-Amine**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-006

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: 25.7 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	ND	43	ND	23	
75-04-7	Ethylamine	< 1.1	ND	44	ND	24	
75-50-3	Trimethylamine	< 1.1	ND	42	ND	17	
75-31-0	Isopropylamine	< 1.1	ND	41	ND	17	
75-64-9	tert-Butylamine	< 1.1	ND	41	ND	14	
107-10-8	n-Propylamine	< 1.1	ND	43	ND	18	
109-89-7	Diethylamine	< 1.0	ND	41	ND	14	
13952-84-6	sec-Butylamine	< 1.0	ND	41	ND	14	
78-81-9	Isobutylamine	< 1.1	ND	42	ND	14	
109-73-9	n-Butylamine	< 1.1	ND	41	ND	14	
108-18-9	Diisopropylamine	< 1.0	ND	41	ND	9.8	
121-44-8	Triethylamine	< 1.1	ND	41	ND	9.9	
142-84-7	Dipropylamine	< 1.1	ND	41	ND	10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-Amine**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-007

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: 23.5 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	ND	47	ND	25	
75-04-7	Ethylamine	< 1.1	ND	48	ND	26	
75-50-3	Trimethylamine	< 1.1	ND	46	ND	19	
75-31-0	Isopropylamine	< 1.1	ND	45	ND	19	
75-64-9	tert-Butylamine	< 1.1	ND	45	ND	15	
107-10-8	n-Propylamine	< 1.1	ND	47	ND	19	
109-89-7	Diethylamine	< 1.0	ND	45	ND	15	
13952-84-6	sec-Butylamine	< 1.0	ND	45	ND	15	
78-81-9	Isobutylamine	< 1.1	ND	46	ND	15	
109-73-9	n-Butylamine	< 1.1	ND	45	ND	15	
108-18-9	Diisopropylamine	< 1.0	ND	44	ND	11	
121-44-8	Triethylamine	< 1.1	ND	45	ND	11	
142-84-7	Dipropylamine	< 1.1	ND	45	ND	11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-Amine**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-008

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: 25.2 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	ND	44	ND	24	
75-04-7	Ethylamine	< 1.1	ND	45	ND	24	
75-50-3	Trimethylamine	< 1.1	ND	43	ND	18	
75-31-0	Isopropylamine	< 1.1	ND	42	ND	17	
75-64-9	tert-Butylamine	< 1.1	ND	42	ND	14	
107-10-8	n-Propylamine	< 1.1	ND	43	ND	18	
109-89-7	Diethylamine	< 1.0	ND	42	ND	14	
13952-84-6	sec-Butylamine	< 1.0	ND	42	ND	14	
78-81-9	Isobutylamine	< 1.1	ND	43	ND	14	
109-73-9	n-Butylamine	< 1.1	ND	42	ND	14	
108-18-9	Diisopropylamine	< 1.0	ND	41	ND	10	
121-44-8	Triethylamine	< 1.1	ND	42	ND	10	
142-84-7	Dipropylamine	< 1.1	ND	42	ND	10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE02**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-018

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: 25.4 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	ND	43	ND	23	
75-04-7	Ethylamine	< 1.1	ND	44	ND	24	
75-50-3	Trimethylamine	< 1.1	ND	42	ND	17	
75-31-0	Isopropylamine	< 1.1	ND	42	ND	17	
75-64-9	tert-Butylamine	< 1.1	ND	42	ND	14	
107-10-8	n-Propylamine	< 1.1	ND	43	ND	18	
109-89-7	Diethylamine	< 1.0	ND	41	ND	14	
13952-84-6	sec-Butylamine	< 1.0	ND	41	ND	14	
78-81-9	Isobutylamine	< 1.1	ND	42	ND	14	
109-73-9	n-Butylamine	< 1.1	ND	42	ND	14	
108-18-9	Diisopropylamine	< 1.0	ND	41	ND	9.9	
121-44-8	Triethylamine	< 1.1	ND	41	ND	10	
142-84-7	Dipropylamine	< 1.1	ND	42	ND	10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110FB-Amine**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-029

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.1	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.1	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.0	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.1	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.1	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110TB-Amine**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-033

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.1	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.1	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.0	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.1	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.1	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P190121-MB

Test Code: GC/NPD
Instrument ID: Agilent 6890N/GC15/NPD
Analyst: Ralph Torres
Sampling Media: Treated Alumina Tube
Test Notes: **BC, DE**

Date Collected: NA
Date Received: NA
Date Analyzed: 1/21/19
Desorption Volume: 2.0 ml
Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
124-40-3	Dimethylamine	< 1.1	NA	NA	NA	NA	
75-04-7	Ethylamine	< 1.1	NA	NA	NA	NA	
75-50-3	Trimethylamine	< 1.1	NA	NA	NA	NA	
75-31-0	Isopropylamine	< 1.1	NA	NA	NA	NA	
75-64-9	tert-Butylamine	< 1.1	NA	NA	NA	NA	
107-10-8	n-Propylamine	< 1.1	NA	NA	NA	NA	
109-89-7	Diethylamine	< 1.0	NA	NA	NA	NA	
13952-84-6	sec-Butylamine	< 1.0	NA	NA	NA	NA	
78-81-9	Isobutylamine	< 1.1	NA	NA	NA	NA	
109-73-9	n-Butylamine	< 1.1	NA	NA	NA	NA	
108-18-9	Diisopropylamine	< 1.0	NA	NA	NA	NA	
121-44-8	Triethylamine	< 1.1	NA	NA	NA	NA	
142-84-7	Dipropylamine	< 1.1	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190121-DLCS

Test Code: GC/NPD Date Collected: NA
Instrument ID: Agilent 6890N/GC15/NPD Date Received: NA
Analyst: Ralph Torres Date Analyzed: 1/21/19
Sampling Media: Treated Alumina Tube Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/ml	Result LCS µg/ml	Result DLCS µg/ml	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
124-40-3	Dimethylamine	9.52	8.92	9.04	**94**	**95**	79-108	1	13	
75-04-7	Ethylamine	9.93	9.13	9.23	**92**	**93**	77-105	1	15	
75-50-3	Trimethylamine	8.79	8.32	8.50	**95**	**97**	78-112	2	12	
75-31-0	Isopropylamine	9.71	9.27	9.26	**95**	**95**	84-107	0	11	
75-64-9	tert-Butylamine	9.60	9.57	9.55	**100**	**99**	83-110	1	11	
107-10-8	n-Propylamine	10.0	9.30	9.48	**93**	**95**	81-107	2	12	
109-89-7	Diethylamine	9.73	9.31	9.17	**96**	**94**	86-108	2	9	
13952-84-6	sec-Butylamine	9.85	9.35	9.47	**95**	**96**	85-108	1	10	
78-81-9	Isobutylamine	9.97	9.37	9.47	**94**	**95**	83-107	1	11	
109-73-9	n-Butylamine	10.3	10.1	9.98	**98**	**97**	83-108	1	12	
108-18-9	Diisopropylamine	9.40	9.11	8.74	**97**	**93**	83-111	4	13	
121-44-8	Triethylamine	9.28	8.83	8.85	**95**	**95**	85-109	0	12	
142-84-7	Dipropylamine	9.38	9.39	9.55	**100**	**102**	86-110	2	9	

Response Factor Report GC15

Method Path : J:\GC15\METHODS\
Method File : AMINE022818.M
Title : GC #15/ NPD Method For Volatile Amines
Last Update : Wed Feb 28 11:35:16 2018
Response Via : Initial Calibration

Calibration Files
0.5 =02281807.D 5 =02281808.D 10 =02281809.D
25 =02281810.D 50 =02281811.D 100 =02281812.D

		Compound	0.5	5	10	25	50	100	Avg	%RSD
										<20%
1)	I	3-Chloropyridine	----------ISTD----------							
2)		Dimethylamine	2.902	3.888	4.143	4.158	4.182	4.135	3.901	12.85
3)		Ethylamine	3.092	3.948	4.124	4.118	4.086	4.018	3.898	10.27
4)		Trimethylamine	3.442	3.349	3.365	3.103	3.114	3.081	3.242	4.94
5)		Isopropylamine	2.079	2.110	2.126	2.152	2.111	2.075	2.109	1.37
6)		t-Butylamine	0.888	0.922	0.908	0.954	0.905	0.895	0.912	2.57
7)		Propylamine	1.994	2.637	2.719	2.777	2.726	2.691	2.591	11.43
8)		Diethylamine	2.333	2.307	2.352	2.351	2.304	2.258	2.318	1.55
9)		s-Butylamine	1.535	1.585	1.633	1.634	1.595	1.575	1.593	2.36
10)		Isobutylamine	1.950	2.155	2.180	2.193	2.138	2.123	2.123	4.18
11)		Butylamine	1.438	1.771	1.849	1.916	1.888	1.894	1.793	10.09
12)		Diisopropylamine	1.510	1.345	1.331	1.306	1.279	1.248	1.337	6.88
13)		Triethylamine	1.786	1.663	1.640	1.591	1.562	1.524	1.628	5.69
14)		Dipropylamine	1.598	1.568	1.501	1.532	1.492	1.475	1.528	3.12

(#) = Out of Range

1st ZW 01/22/19
2nd hsr 01/23/19

ALS Environmental

Client : Stantec Consulting Services, Inc. | **Service Request : P1900123**

Method : GC #15/ NPD Method For Volatile Amines | **Analyst : ZW/RRT**

Instrument : GC15 | **Date Acquired : 1/21/2019**

QC SAMPLE REPORT SUMMARY

Compounds	ug/ml	% Diff		ug/ml	ug/ml	ug/ml	% Diff	ug/ml	% Diff	ug/ml	% Diff	ug/ml	% Diff
Sample Information	10ug/ml Amine Std	10	Control Limits (%)	RB 0.05N NaOH/MeOH	MB	10ug/ml Amine Std	10						
Desorption Volume (mL)			2.0	2.0	2.0	2.0		2.0		2.0		2.0	
Dilution			1.0	1.0	1.0	1.0		1.0		1.0		1.0	
3-Chloropyridine IS	5536			5696	5820	5711							
% Relative to CCV	100.0%			102.9%	105.1%	103.2%							
Dimethylamine	9.360	6.4%	Pass	ND	ND	9.750	2.5%						
Ethylamine	9.421	5.8%	Pass	ND	ND	9.797	2.0%						
Trimethylamine	9.002	10.0%	Pass	ND	ND	9.372	6.3%						
Isopropylamine	8.983	10.2%	Pass	ND	ND	9.447	5.5%						
t-Butylamine	9.062	9.4%	Pass	ND	ND	9.676	3.2%						
Propylamine	9.437	5.6%	Pass	ND	ND	9.905	1.0%						
Diethylamine	9.045	9.6%	Pass	ND	ND	9.530	4.7%						
s-Butylamine	9.230	7.7%	Pass	ND	ND	9.680	3.2%						
Isobutylamine	9.439	5.6%	Pass	ND	ND	9.809	1.9%						
Butylamine	9.787	2.1%	Pass	ND	ND	10.230	2.3%						
Diisopropylamine	8.981	10.2%	Pass	ND	ND	9.475	5.3%						
Triethylamine	8.932	10.7%	Pass	ND	ND	9.241	7.6%						
Dipropylamine	9.675	3.2%	Pass	ND	ND	9.727	2.7%						
Acqisition Time	10:10			9:55	11:26	13:58							
Analyst	ZW/RRT		ZW/RRT	ZW/RRT	ZW/RRT	ZW/RRT							

MRL CHECK & LCS/ LCSD RESULT SUMMARIES

0	%						%		%		%	%	
0	0.5ug/ml Amine MRL Check Std	recovery	Control Limits (%)	SS 10ug/ml Amine	LCS 10ug/ml Amine	LCSD 10ug/ml Amine	recovery		recovery		Average Recovery	RPD	RPD (Control Limits)
Desorption Volume (mL)	2.0			2.0	2.0	2.0							
Dilution	1.0			1.0	1.0	1.0							
3-Chloropyridine IS	5474			5868	5592	5706							
% Relative to CCV	98.9%			106.0%	101.0%	103.1%							
Dimethylamine	0.340	68.0%	P 39-94%	9.518	8.918	9.043	93.7%	Pass	95.0%	Pass	94.4%	1.4%	Pass
Ethylamine	0.349	69.8%	P 44-103%	9.930	9.133	9.227	92.0%	Pass	92.9%	Pass	92.4%	1.0%	Pass
Trimethylamine	0.492	98.4%	P 68-139%	8.794	8.323	8.501	94.6%	Pass	96.7%	Pass	95.7%	2.1%	Pass
Isopropylamine	0.402	80.4%	P 60-124%	9.710	9.270	9.261	95.5%	Pass	95.4%	Pass	95.4%	0.1%	Pass
t-Butylamine	0.516	103.2%	P 60-148%	9.596	9.567	9.546	99.7%	Pass	99.5%	Pass	99.6%	0.2%	Pass
Propylamine	0.388	77.6%	P 43-122%	10.019	9.300	9.477	92.8%	Pass	94.6%	Pass	93.7%	1.9%	Pass
Diethylamine	0.428	85.6%	P 65-123%	9.728	9.313	9.166	95.7%	Pass	94.2%	Pass	95.0%	1.6%	Pass
s-Butylamine	0.436	87.2%	P 63-127%	9.851	9.346	9.465	94.9%	Pass	96.1%	Pass	95.5%	1.3%	Pass
Isobutylamine	0.418	83.6%	P 70-119%	9.974	9.367	9.474	93.9%	Pass	95.0%	Pass	94.5%	1.1%	Pass
Butylamine	0.421	84.2%	P 52-112%	10.310	10.073	9.980	97.7%	Pass	96.8%	Pass	97.3%	0.9%	Pass
Diisopropylamine	0.519	103.8%	P 73-129%	9.395	9.107	8.744	96.9%	Pass	93.1%	Pass	95.0%	4.1%	Pass
Triethylamine	0.513	102.6%	P 72-137%	9.282	8.828	8.851	95.1%	Pass	95.4%	Pass	95.2%	0.3%	Pass
Dipropylamine	0.567	113.4%	P 54-141%	9.378	9.385	9.548	100.1%	Pass	101.8%	Pass	100.9%	1.7%	Pass
Acqisition Time	10:25			10:41	10:56	11:11							
Analyst	ZW/RRT			ZW/RRT	ZW/RRT	ZW/RRT							

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Project ID: P1900123

Ammonia

Test Code: OSHA ID-188/ID-164 Date(s) Collected: 1/10/19
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE Date Received: 1/11/19
Analyst: Sue Anderson Date Analyzed: 1/17/19
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated) Desorption Volume: 0.10 Liter(s)
Test Notes: **BC, DE**

Client Sample ID	ALS Sample ID	Sample Volume Liter(s)	Dilution Factor	Result mg/Tube	Result mg/m³	MRL mg/m³	**Result ppmV**	MRL ppmV	Data Qualifier
110U1-NH3	P1900123-009	88.4	1.0	< 0.010	ND	0.12	ND	0.17	
110U2-NH3	P1900123-010	92.2	1.0	< 0.010	ND	0.11	ND	0.16	
110D1-NH3	P1900123-011	91.1	1.0	< 0.010	ND	0.11	ND	0.16	
110D2-NH3	P1900123-012	95.0	1.0	< 0.010	ND	0.11	ND	0.15	
110-DUPE03	P1900123-019	91.0	1.0	< 0.010	ND	0.11	ND	0.16	
110FB-NH3	P1900123-030	NA	1.0	< 0.010	NA	NA	NA	NA	
110TB-NH3	P1900123-034	NA	1.0	< 0.010	NA	NA	NA	NA	
Method Blank	P190117-MB	NA	1.0	< 0.010	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190117-LCS, P190117-DLCS

Laboratory Control Sample/Duplicate Laboratory Control Sample Summary

Test Code: OSHA ID-188/ID-164 Date Sampled: N/A
Instrument ID: PH01/Thermo Orion 920A+/Ammonia ISE Date Received: N/A
Analyst: Sue Anderson Date Analyzed: 1/17/19
Sampling Media: Anasorb 747 Tube(s) (Sulfuric Treated) Volume(s) Analyzed: N/A
Test Notes:

Compound	Spike Amount LCS / DLCS mg/L	Result LCS mg/L	Result DLCS mg/L	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	Relative Percent Difference	RPD Limit	Data Qualifier
Ammonia	1.00	1.01	0.976	101	98	83-111	3	4	

Ammonia in Air
OSHA ID-188/ID-164

Filling solution changed prior to analysis: Yes ☒ No ☐

Prep. Run#	122998	Run #	622392

Stds.	Conc. mg/L	millivolts mV	Slope: Range [-54~-60]
Std 1:	0.10	148.0	-59.9
Std 2:	1.00	108.2	
Std 3:	5.00	69.1	
Std 4:	10.00	50.9	
Std 5:	100.00	-6.8	

	Ref#	Exp.Date	Prep
Stock 1000 ppm	524-0117/901	6/5/19	—
ICV/CCV 1214 ppm	524-122418	06/20	1/10 0.05/50 => 0.121 mg/L
pH Buffer; ISA	524-0103/902A	1/3/20	--
Filling Soln	524-0709/803A	7/9/19	--

DE = 0.980

Sample I.D.	Volume mL	Millivolts mV	Conc. mg/L	DE Corrected Conc. mg/L	Final Value mg	Final Value mg/m³	Final Value ppmV
ICB	50	160.1	0.0055	<0.1			
ICV 0.121 mg/L	—	145.6	0.122	101%			
MB		177.6	0.000	—	<0.010		
LCS 1.00 mg/L		108.4	0.987	1.01	0.101	3%	101%
DLCS J		109.1	0.956	0.976	0.0976	RPD	98%
P1900123-9.01B		164.2	0.000	<0.1	<0.010	<0.12	<0.17
-9.01F		160.2	0.0043	0.0044		J	J
-10.01B		163.2	0.000	<0.1		<0.12	<0.16
-10.01F		152.5	0.0586	0.0598		J	J
-11.01B		161.0	0.0002	0.0002		<0.12	<0.16
-11.01F		162.9	0.000	<0.1		J	J
-12.01B		160.9	0.0008	0.0008		<0.11	<0.16
CCV1 0.121 mg/L		145.6	0.122	101%			
CCB1		162.1	0.000	<0.1			
P1900123-12.01F		159.5	0.0067	0.0068	<0.010	<0.11	<0.16
-19.01B		162.4	0.000	<0.1		<0.12	<0.16
-19.01F		155.7	0.0343	0.0350		J	J
-30.01B		160.9	0.0008	0.0008			
-30.01F		160.1	0.0055	0.0056			
-34.01B		162.5	0.000	<0.1			
-34.01F		159.9	0.0067	0.0068			
CCV2 0.121 mg/L		145.6	0.122				
CCB2		162.2	0.000				

Comments: B = Back, F = Front

Analyst: _____ Date/Time: 1/17/19 @ 1200 Reviewer: ZW Date: 1/18/19

ALS Environmental

ISE Method for Ammonia in Air

Printed: 1/17/19
Client: Stantec Consulting Group, Inc.
Analyst: SMA
CAS Job: P1900123
Method: OSHA ID-188/ ID-164

Instrument: pH02
Date Analyzed: 1/17/19
Sample Amt: 0.100 L
Solvent: 0.1 N H2SO4
Matrix: Anasorb 747 (sulfuric treated)

SAMPLE RESULTS

Sample		Ammonia (mg/L)	Desorption Vol (L)	Dilution	Sample Vol (L)	Ammonia (mg/tube)*	Ammonia mg/m3	Ammonia ppm
	MW	17.03						
	MRL	0.100	0.1	1.0	NA	0.01		
RB		0.0055	NA	NA	NA			
MB		0.000	0.100	1.0	NA	ND	ND	ND
P1900123-009.01	back	0.000	0.050	1.0	88.4	ND	ND	ND
P1900123-010.01	back	0.000	0.050	1.0	92.2	ND	ND	ND
P1900123-011.01	back	0.0002	0.050	1.0	91.1	ND	ND	ND
P1900123-012.01	back	0.0008	0.050	1.0	95.0	ND	ND	ND
P1900123-019.01	back	0.000	0.050	1.0	91.0	ND	ND	ND
P1900123-030.01	back	0.0008	0.050	1.0	NA	ND	ND	ND
P1900123-034.01	back	0.000	0.050	1.0	NA	ND	ND	ND
P1900123-009.01	front	0.0043	0.100	1.0	88.4	ND	ND	ND
P1900123-010.01	front	0.0586	0.100	1.0	92.2	ND	ND	ND
P1900123-011.01	front	0.000	0.100	1.0	91.1	ND	ND	ND
P1900123-012.01	front	0.0067	0.100	1.0	95.0	ND	ND	ND
P1900123-019.01	front	0.0343	0.100	1.0	91.0	ND	ND	ND
P1900123-030.01	front	0.0055	0.100	1.0	NA	ND	ND	ND
P1900123-034.01	front	0.0067	0.100	1.0	NA	ND	ND	ND

*Samples are DE corrected
Desorption Efficiency (DE): 0.980

QC RESULTS

0.121 mg/L NH3 ICV S24-12241801 (06/20)	0.121	LCS		1.00
ACTUAL	0.122	SPIKE STD		1.01
% RECOVERY	100.8%	% RECOVERY		101.0%
0.121 mg/L NH3 CCV1 S24-12241801 (06/20)	0.121	LCSD		1.00
ACTUAL	0.122	SPIKE STD		0.976
% RECOVERY	100.8%	% RECOVERY		97.6%
			%RPD:	3.4%
0.121 mg/L NH3 CCV2 S24-12241801 (06/20)	0.121			
ACTUAL	0.122			
% RECOVERY	100.8%			

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-CARBOX**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-013

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS10
Analyst: Ralph Torres
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/17/19
Desorption Volume: 1.0 ml
Volume Sampled: 94.9 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	ND	22	ND	9.2	
79-09-4	Propionic Acid (Propanoic)	< 0.26	ND	2.7	ND	0.90	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	ND	2.8	ND	0.78	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.8	ND	0.77	
116-53-0	2-Methylbutanoic Acid	< 0.26	ND	2.7	ND	0.66	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	ND	2.7	ND	0.66	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.7	ND	0.65	
97-61-0	2-Methylpentanoic Acid	< 0.26	ND	2.7	ND	0.57	
105-43-1	3-Methylpentanoic Acid	< 0.26	ND	2.7	ND	0.57	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	ND	2.7	ND	0.57	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	ND	2.7	ND	0.57	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	ND	2.7	ND	0.51	
149-57-5	2-Ethylhexanoic Acid	< 0.26	ND	2.8	ND	0.47	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	ND	2.7	ND	0.52	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	ND	2.7	ND	0.46	
65-85-0	Benzoic Acid	< 0.28	ND	3.0	ND	0.60	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	ND	2.7	ND	0.42	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-CARBOX** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-014

Test Code: GC/MS Date Collected: 1/10/19
Instrument ID: Agilent 5973/Agilent 6890/MS10 Date Received: 1/11/19
Analyst: Ralph Torres Date Analyzed: 1/17/19
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: 98.3 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	ND	22	ND	8.8	
79-09-4	Propionic Acid (Propanoic)	< 0.26	ND	2.6	ND	0.87	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	ND	2.7	ND	0.75	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.7	ND	0.74	
116-53-0	2-Methylbutanoic Acid	< 0.26	ND	2.6	ND	0.63	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	ND	2.7	ND	0.64	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.63	
97-61-0	2-Methylpentanoic Acid	< 0.26	ND	2.6	ND	0.55	
105-43-1	3-Methylpentanoic Acid	< 0.26	ND	2.6	ND	0.55	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	ND	2.6	ND	0.55	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	ND	2.6	ND	0.55	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	ND	2.6	ND	0.49	
149-57-5	2-Ethylhexanoic Acid	< 0.26	ND	2.7	ND	0.46	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	ND	2.6	ND	0.50	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	ND	2.6	ND	0.45	
65-85-0	Benzoic Acid	< 0.28	ND	2.9	ND	0.58	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-CARBOX**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-015

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS10
Analyst: Ralph Torres
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/17/19
Desorption Volume: 1.0 ml
Volume Sampled: 87.3 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	ND	24	ND	10	
79-09-4	Propionic Acid (Propanoic)	< 0.26	ND	3.0	ND	0.98	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	ND	3.0	ND	0.85	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	3.0	ND	0.83	
116-53-0	2-Methylbutanoic Acid	< 0.26	ND	3.0	ND	0.71	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	ND	3.0	ND	0.72	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	3.0	ND	0.71	
97-61-0	2-Methylpentanoic Acid	< 0.26	ND	2.9	ND	0.62	
105-43-1	3-Methylpentanoic Acid	< 0.26	ND	3.0	ND	0.62	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	ND	2.9	ND	0.62	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	ND	2.9	ND	0.62	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	ND	2.9	ND	0.55	
149-57-5	2-Ethylhexanoic Acid	< 0.26	ND	3.0	ND	0.51	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	ND	2.9	ND	0.56	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	ND	3.0	ND	0.50	
65-85-0	Benzoic Acid	< 0.28	ND	3.3	ND	0.65	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	ND	2.9	ND	0.45	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-CARBOX** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-016

Test Code: GC/MS Date Collected: 1/10/19
Instrument ID: Agilent 5973/Agilent 6890/MS10 Date Received: 1/11/19
Analyst: Ralph Torres Date Analyzed: 1/17/19
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: 99.0 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	ND	22	ND	8.8	
79-09-4	Propionic Acid (Propanoic)	< 0.26	ND	2.6	ND	0.86	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	ND	2.7	ND	0.75	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.6	ND	0.73	
116-53-0	2-Methylbutanoic Acid	< 0.26	ND	2.6	ND	0.63	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	ND	2.6	ND	0.63	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.63	
97-61-0	2-Methylpentanoic Acid	< 0.26	ND	2.6	ND	0.55	
105-43-1	3-Methylpentanoic Acid	< 0.26	ND	2.6	ND	0.55	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	ND	2.6	ND	0.55	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	ND	2.6	ND	0.55	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	ND	2.6	ND	0.49	
149-57-5	2-Ethylhexanoic Acid	< 0.26	ND	2.7	ND	0.45	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	ND	2.6	ND	0.50	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	ND	2.6	ND	0.44	
65-85-0	Benzoic Acid	< 0.28	ND	2.9	ND	0.57	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE04**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P1900123-020

Test Code: GC/MS
Instrument ID: Agilent 5973/Agilent 6890/MS10
Analyst: Ralph Torres
Sampling Media: Silica Gel Tube
Test Notes: **BC, DE**

Date Collected: 1/10/19
Date Received: 1/11/19
Date Analyzed: 1/17/19
Desorption Volume: 1.0 ml
Volume Sampled: 98.1 Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	ND	22	ND	8.9	
79-09-4	Propionic Acid (Propanoic)	< 0.26	ND	2.6	ND	0.87	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	ND	2.7	ND	0.75	
107-92-6	Butanoic Acid (Butyric)	< 0.26	ND	2.7	ND	0.74	
116-53-0	2-Methylbutanoic Acid	< 0.26	ND	2.7	ND	0.64	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	ND	2.7	ND	0.64	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	ND	2.6	ND	0.63	
97-61-0	2-Methylpentanoic Acid	< 0.26	ND	2.6	ND	0.55	
105-43-1	3-Methylpentanoic Acid	< 0.26	ND	2.6	ND	0.56	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	ND	2.6	ND	0.55	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	ND	2.6	ND	0.55	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	ND	2.6	ND	0.49	
149-57-5	2-Ethylhexanoic Acid	< 0.26	ND	2.7	ND	0.46	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	ND	2.6	ND	0.50	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	ND	2.6	ND	0.45	
65-85-0	Benzoic Acid	< 0.28	ND	2.9	ND	0.58	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	ND	2.6	ND	0.40	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110FB-CARBOX** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-031

Test Code: GC/MS Date Collected: 1/10/19
Instrument ID: Agilent 5973/Agilent 6890/MS10 Date Received: 1/11/19
Analyst: Ralph Torres Date Analyzed: 1/17/19
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.26	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.26	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.26	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.26	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.26	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.28	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110TB-CARBOX** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-035

Test Code: GC/MS Date Collected: 1/10/19
Instrument ID: Agilent 5973/Agilent 6890/MS10 Date Received: 1/11/19
Analyst: Ralph Torres Date Analyzed: 1/17/19
Sampling Media: Silica Gel Tube Desorption Volume: 1.0 ml
Test Notes: **BC, DE** Volume Sampled: NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.26	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.26	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.26	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.26	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.26	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.28	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190117-MB

Test Code:	GC/MS	Date Collected:	NA
Instrument ID:	Agilent 5973/Agilent 6890/MS10	Date Received:	NA
Analyst:	Ralph Torres	Date Analyzed:	1/17/19
Sampling Media:	Silica Gel Tube	Desorption Volume:	1.0 ml
Test Notes:	**BC, DE**	Volume Sampled:	NA Liter(s)

CAS #	Compound	Result µg/Tube	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
64-19-7	Acetic Acid	< 2.1	NA	NA	NA	NA	
79-09-4	Propionic Acid (Propanoic)	< 0.26	NA	NA	NA	NA	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	< 0.27	NA	NA	NA	NA	
107-92-6	Butanoic Acid (Butyric)	< 0.26	NA	NA	NA	NA	
116-53-0	2-Methylbutanoic Acid	< 0.26	NA	NA	NA	NA	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	< 0.26	NA	NA	NA	NA	
109-52-4	Pentanoic Acid (Valeric)	< 0.26	NA	NA	NA	NA	
97-61-0	2-Methylpentanoic Acid	< 0.26	NA	NA	NA	NA	
105-43-1	3-Methylpentanoic Acid	< 0.26	NA	NA	NA	NA	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	< 0.26	NA	NA	NA	NA	
142-62-1	Hexanoic Acid (Caproic)	< 0.26	NA	NA	NA	NA	
111-14-8	Heptanoic Acid (Enanthoic)	< 0.26	NA	NA	NA	NA	
149-57-5	2-Ethylhexanoic Acid	< 0.26	NA	NA	NA	NA	
98-89-5	Cyclohexanecarboxylic Acid	< 0.26	NA	NA	NA	NA	
124-07-2	Octanoic Acid (Caprylic)	< 0.26	NA	NA	NA	NA	
65-85-0	Benzoic Acid	< 0.28	NA	NA	NA	NA	
112-05-0	Nonanoic Acid (Pelargonic)	< 0.26	NA	NA	NA	NA	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.
NA = Not applicable.
BC = Results reported are not blank corrected.
DE = Results reported are corrected for desorption efficiency.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE / DUPLICATE LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Duplicate Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190117-DLCS

Test Code: GC/MS Date Collected: NA
Instrument ID: Agilent 5973/Agilent 6890/MS10 Date Received: NA
Analyst: Ralph Torres Date Analyzed: 1/17/19
Sampling Media: Silica Gel Tube Volume(s) Analyzed: NA Liter(s)
Test Notes:

CAS #	Compound	Spike Amount LCS / DLCS µg/ml	Result LCS µg/ml	Result DLCS µg/ml	% Recovery LCS	% Recovery DLCS	ALS Acceptance Limits	RPD	RPD Limit	Data Qualifier
64-19-7	Acetic Acid	18.6	18.1	17.7	**97**	**95**	69-131	2	29	
79-09-4	Propionic Acid (Propanoic)	10.2	10.3	10.3	**101**	**101**	78-121	0	19	
79-31-2	2-Methylpropanoic Acid (Isobutyric)	10.1	10.1	10.3	**99**	**102**	83-116	3	15	
107-92-6	Butanoic Acid (Butyric)	10.7	10.7	10.8	**100**	**101**	85-113	1	12	
116-53-0	2-Methylbutanoic Acid	10.8	10.7	10.8	**100**	**101**	86-113	1	14	
503-74-2	3-Methylbutanoic Acid (Isovaleric)	9.95	9.95	10.1	**100**	**101**	85-113	1	12	
109-52-4	Pentanoic Acid (Valeric)	10.6	10.5	10.7	**100**	**101**	87-113	1	11	
97-61-0	2-Methylpentanoic Acid	10.6	10.6	10.6	**100**	**100**	86-112	0	12	
105-43-1	3-Methylpentanoic Acid	10.4	10.4	10.5	**100**	**100**	87-112	0	12	
646-07-1	4-Methylpentanoic Acid (Isocaproic)	10.4	10.4	10.3	**100**	**99**	86-113	1	14	
142-62-1	Hexanoic Acid (Caproic)	10.4	10.5	10.5	**100**	**101**	85-113	1	13	
111-14-8	Heptanoic Acid (Enanthoic)	10.7	10.7	10.6	**100**	**99**	86-113	1	11	
149-57-5	2-Ethylhexanoic Acid	10.4	10.1	9.87	**97**	**95**	81-114	2	20	
98-89-5	Cyclohexanecarboxylic Acid	10.5	10.7	10.5	**102**	**100**	87-113	2	14	
124-07-2	Octanoic Acid (Caprylic)	10.4	10.4	10.3	**100**	**100**	85-114	0	13	
65-85-0	Benzoic Acid	9.45	8.85	8.57	**94**	**91**	67-118	3	21	
112-05-0	Nonanoic Acid (Pelargonic)	9.96	9.98	9.88	**100**	**99**	84-112	1	17	

Response Factor Report MS10

Method Path : J:\MS10\METHODS\
Method File : CA090718.M
Title : Short Chain Carboxylic Acids in Air
Last Update : Mon Sep 10 09:44:55 2018
Response Via : Initial Calibration

Calibration Files
0.5 =09071816.D 1 =09071817.D 5 =09071818.D 10 =09071819.D 25 =09071820.D 50 =09071821.D
0.25=09071815.D

		Compound	0.5	1	5	10	25	50	0.25	Avg	%RSD
											<30%
1)	I	IS1 Bromofluoroben...	----------ISTD----------								
2)	T	Acetic acid		0.088	0.077	0.074	0.072	0.077		0.078	7.64
3)	T	Propanoic acid	0.626	0.604	0.637	0.624	0.617	0.653	0.557	0.617	4.98
4)	T	2-Methylpropan...	0.401	0.386	0.381	0.383	0.376	0.394	0.384	0.387	2.13
5)	T	Butanoic acid	0.637	0.622	0.632	0.638	0.638	0.668	0.582	0.631	4.09
6)		2-Methylbutano...	1.114	1.099	1.061	1.087	1.080	1.117	1.138	1.099	2.33
7)	T	3-Methylbutano...	1.296	1.262	1.210	1.236	1.227	1.269	1.279	1.254	2.45
8)	T	Pentanoic acid	1.154	1.145	1.134	1.162	1.178	1.220	1.143	1.162	2.51
9)	T	2-Methylpentan...	1.742	1.743	1.666	1.721	1.717	1.769	1.781	1.734	2.19
10)	T	3-Methylpentan...	1.807	1.803	1.761	1.806	1.814	1.862	1.918	1.825	2.78
11)	T	4-Methylpentan...	0.905	0.865	0.803	0.812	0.819	0.840	0.875	0.846	4.44
12)	T	Hexanoic acid	1.545	1.573	1.507	1.577	1.583	1.639	1.580	1.572	2.55
13)	I	IS2 1,4-Dibromoben...	----------ISTD----------								
14)	T	Heptanoic acid	4.224	4.203	3.983	4.194	4.277	4.408	4.329	4.231	3.16
15)	T	2-Ethylhexanoi...	4.089	3.990	3.714	3.805	3.906	4.031	4.355	3.984	5.25
16)	T	Cyclohexanecar...	1.646	1.629	1.601	1.669	1.711	1.744	1.780	1.683	3.86
17)	T	Octanoic acid	4.629	4.595	4.450	4.635	4.763	4.890	4.802	4.681	3.15
18)	T	Benzoic acid	5.135	4.624	4.490	4.714	4.837	4.958	4.606	4.766	4.72
19)	I	IS3 Biphenyl	----------ISTD----------								
20)	T	Nonanoic acid	0.610	0.598	0.568	0.584	0.593	0.613	0.668	0.605	5.26
21)	T	Decanoic Acid	0.590	0.605	0.590	0.614	0.619	0.645	0.612	0.611	3.12

(#) = Out of Range

Evaluate Continuing Calibration Report

1st RRT 01/18/19
2nd 01/21/19

Data Path : J:\MS10\DATA\ACIDS\2019_01\17\
Data File : 01171903.D
Acq On : 17 Jan 2019 8:24 am
Operator : RRT
Sample : 10/20ug/ml Acids
Misc :
ALS Vial : 3 Sample Multiplier: 1

Quant Time: Jan 18 13:10:47 2019
Quant Method : J:\MS10\METHODS\CA090718.M
Quant Title : Short Chain Carboxylic Acids in Air
QLast Update : Mon Sep 10 09:44:55 2018
Response via : Initial Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1	I	IS1 Bromofluorobenzene (BFB	10.000	10.000	0.0	105	0.00
2	T	Acetic acid	20.000	16.131	19.3	89	-0.03
3	T	Propanoic acid	10.000	8.862	11.4	92	-0.04
4	T	2-Methylpropanoic acid	10.000	8.994	10.1	95	-0.03
5	T	Butanoic acid	10.000	9.520	4.8	99	-0.03
6		2-Methylbutanoic acid	10.000	9.840	1.6	105	-0.03
7	T	3-Methylbutanoic acid	10.000	9.070	9.3	97	-0.03
8	T	Pentanoic acid	10.000	9.930	0.7	105	-0.03
9	T	2-Methylpentanoic acid	10.000	10.027	-0.3	106	-0.03
10	T	3-Methylpentanoic acid	10.000	9.886	1.1	105	-0.03
11	T	4-Methylpentanoic acid	10.000	9.953	0.5	109	-0.03
12	T	Hexanoic acid	10.000	9.886	1.1	104	-0.02
13	I	IS2 1,4-Dibromobenzene	10.000	10.000	0.0	107	0.00
14	T	Heptanoic acid	10.000	9.945	0.5	108	-0.02
15	T	2-Ethylhexanoic acid	10.000	9.947	0.5	112	-0.02
16	T	Cyclohexanecarboxylic acid	10.000	9.880	1.2	107	-0.02
17	T	Octanoic acid	10.000	9.753	2.5	106	-0.02
18	T	Benzoic acid	10.000	9.650	3.5	105	0.00
19	I	IS3 Biphenyl	10.000	10.000	0.0	107	0.00
20	T	Nonanoic acid	10.000	9.465	5.4	105	0.00
21	T	Decanoic Acid	10.000	9.720	2.8	104	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-021

Test Code: ASTM D 5504-12 Date Collected: 1/10/19
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 15:57
Analyst: Magaly Rodriguez Date Received: 1/11/19
Sample Type: 6.0 L Silonite Canister Date Analyzed: 1/14/19
Test Notes: Time Analyzed: 10:46
Container ID: AS00956 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.70 Final Pressure (psig): 3.70

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	9.9	ND	7.1	
463-58-1	Carbonyl Sulfide	ND	17	ND	7.1	
74-93-1	Methyl Mercaptan	ND	14	ND	7.1	
75-08-1	Ethyl Mercaptan	ND	18	ND	7.1	
75-18-3	Dimethyl Sulfide	ND	18	ND	7.1	
75-15-0	Carbon Disulfide	ND	11	ND	3.6	
75-33-2	Isopropyl Mercaptan	ND	22	ND	7.1	
75-66-1	tert-Butyl Mercaptan	ND	26	ND	7.1	
107-03-9	n-Propyl Mercaptan	ND	22	ND	7.1	
624-89-5	Ethyl Methyl Sulfide	ND	22	ND	7.1	
110-02-1	Thiophene	ND	24	ND	7.1	
513-44-0	Isobutyl Mercaptan	ND	26	ND	7.1	
352-93-2	Diethyl Sulfide	ND	26	ND	7.1	
109-79-5	n-Butyl Mercaptan	ND	26	ND	7.1	
624-92-0	Dimethyl Disulfide	ND	14	ND	3.6	
616-44-4	3-Methylthiophene	ND	28	ND	7.1	
110-01-0	Tetrahydrothiophene	ND	26	ND	7.1	
638-02-8	2,5-Dimethylthiophene	ND	33	ND	7.1	
872-55-9	2-Ethylthiophene	ND	33	ND	7.1	
110-81-6	Diethyl Disulfide	ND	18	ND	3.6	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-022

Test Code: ASTM D 5504-12 Date Collected: 1/10/19
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 15:34
Analyst: Magaly Rodriguez Date Received: 1/11/19
Sample Type: 6.0 L Silonite Canister Date Analyzed: 1/14/19
Test Notes: Time Analyzed: 11:07
Container ID: AS00091 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.83 Final Pressure (psig): 3.78

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	ND	7.2	
463-58-1	Carbonyl Sulfide	ND	18	ND	7.2	
74-93-1	Methyl Mercaptan	ND	14	ND	7.2	
75-08-1	Ethyl Mercaptan	ND	18	ND	7.2	
75-18-3	Dimethyl Sulfide	ND	18	ND	7.2	
75-15-0	Carbon Disulfide	ND	11	ND	3.6	
75-33-2	Isopropyl Mercaptan	ND	22	ND	7.2	
75-66-1	tert-Butyl Mercaptan	ND	27	ND	7.2	
107-03-9	n-Propyl Mercaptan	ND	22	ND	7.2	
624-89-5	Ethyl Methyl Sulfide	ND	22	ND	7.2	
110-02-1	Thiophene	ND	25	ND	7.2	
513-44-0	Isobutyl Mercaptan	ND	27	ND	7.2	
352-93-2	Diethyl Sulfide	ND	27	ND	7.2	
109-79-5	n-Butyl Mercaptan	ND	27	ND	7.2	
624-92-0	Dimethyl Disulfide	ND	14	ND	3.6	
616-44-4	3-Methylthiophene	ND	29	ND	7.2	
110-01-0	Tetrahydrothiophene	ND	26	ND	7.2	
638-02-8	2,5-Dimethylthiophene	ND	33	ND	7.2	
872-55-9	2-Ethylthiophene	ND	33	ND	7.2	
110-81-6	Diethyl Disulfide	ND	18	ND	3.6	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-023

Test Code: ASTM D 5504-12 Date Collected: 1/10/19
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 15:23
Analyst: Magaly Rodriguez Date Received: 1/11/19
Sample Type: 6.0 L Silonite Canister Date Analyzed: 1/14/19
Test Notes: Time Analyzed: 12:05
Container ID: AS00835 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.85

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	ND	7.3	
463-58-1	Carbonyl Sulfide	ND	18	ND	7.3	
74-93-1	Methyl Mercaptan	ND	14	ND	7.3	
75-08-1	Ethyl Mercaptan	ND	19	ND	7.3	
75-18-3	Dimethyl Sulfide	ND	19	ND	7.3	
75-15-0	Carbon Disulfide	ND	11	ND	3.7	
75-33-2	Isopropyl Mercaptan	ND	23	ND	7.3	
75-66-1	tert-Butyl Mercaptan	ND	27	ND	7.3	
107-03-9	n-Propyl Mercaptan	ND	23	ND	7.3	
624-89-5	Ethyl Methyl Sulfide	ND	23	ND	7.3	
110-02-1	Thiophene	ND	25	ND	7.3	
513-44-0	Isobutyl Mercaptan	ND	27	ND	7.3	
352-93-2	Diethyl Sulfide	ND	27	ND	7.3	
109-79-5	n-Butyl Mercaptan	ND	27	ND	7.3	
624-92-0	Dimethyl Disulfide	ND	14	ND	3.7	
616-44-4	3-Methylthiophene	ND	29	ND	7.3	
110-01-0	Tetrahydrothiophene	ND	26	ND	7.3	
638-02-8	2,5-Dimethylthiophene	ND	33	ND	7.3	
872-55-9	2-Ethylthiophene	ND	33	ND	7.3	
110-81-6	Diethyl Disulfide	ND	18	ND	3.7	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-024

Test Code: ASTM D 5504-12 Date Collected: 1/10/19
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: 15:44
Analyst: Magaly Rodriguez Date Received: 1/11/19
Sample Type: 6.0 L Silonite Canister Date Analyzed: 1/14/19
Test Notes: Time Analyzed: 13:06
Container ID: AS00942 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.40 Final Pressure (psig): 3.80

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	10	ND	7.5	
463-58-1	Carbonyl Sulfide	ND	18	ND	7.5	
74-93-1	Methyl Mercaptan	ND	15	ND	7.5	
75-08-1	Ethyl Mercaptan	ND	19	ND	7.5	
75-18-3	Dimethyl Sulfide	ND	19	ND	7.5	
75-15-0	Carbon Disulfide	ND	12	ND	3.8	
75-33-2	Isopropyl Mercaptan	ND	23	ND	7.5	
75-66-1	tert-Butyl Mercaptan	ND	28	ND	7.5	
107-03-9	n-Propyl Mercaptan	ND	23	ND	7.5	
624-89-5	Ethyl Methyl Sulfide	ND	23	ND	7.5	
110-02-1	Thiophene	ND	26	ND	7.5	
513-44-0	Isobutyl Mercaptan	ND	28	ND	7.5	
352-93-2	Diethyl Sulfide	ND	28	ND	7.5	
109-79-5	n-Butyl Mercaptan	ND	28	ND	7.5	
624-92-0	Dimethyl Disulfide	ND	14	ND	3.8	
616-44-4	3-Methylthiophene	ND	30	ND	7.5	
110-01-0	Tetrahydrothiophene	ND	27	ND	7.5	
638-02-8	2,5-Dimethylthiophene	ND	34	ND	7.5	
872-55-9	2-Ethylthiophene	ND	34	ND	7.5	
110-81-6	Diethyl Disulfide	ND	19	ND	3.8	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE 10** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-025

Test Code: ASTM D 5504-12 Date Collected: 1/10/19
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: NA
Analyst: Magaly Rodriguez Date Received: 1/11/19
Sample Type: 6.0 L Silonite Canister Date Analyzed: 1/14/19
Test Notes: Time Analyzed: 13:26
Container ID: AS00220 Volume(s) Analyzed: 1.0 ml(s)

Initial Pressure (psig): -2.52 Final Pressure (psig): 4.10

Container Dilution Factor: 1.54

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	11	ND	7.7	
463-58-1	Carbonyl Sulfide	ND	19	ND	7.7	
74-93-1	Methyl Mercaptan	ND	15	ND	7.7	
75-08-1	Ethyl Mercaptan	ND	20	ND	7.7	
75-18-3	Dimethyl Sulfide	ND	20	ND	7.7	
75-15-0	Carbon Disulfide	ND	12	ND	3.9	
75-33-2	Isopropyl Mercaptan	ND	24	ND	7.7	
75-66-1	tert-Butyl Mercaptan	ND	28	ND	7.7	
107-03-9	n-Propyl Mercaptan	ND	24	ND	7.7	
624-89-5	Ethyl Methyl Sulfide	ND	24	ND	7.7	
110-02-1	Thiophene	ND	26	ND	7.7	
513-44-0	Isobutyl Mercaptan	ND	28	ND	7.7	
352-93-2	Diethyl Sulfide	ND	28	ND	7.7	
109-79-5	n-Butyl Mercaptan	ND	28	ND	7.7	
624-92-0	Dimethyl Disulfide	ND	15	ND	3.9	
616-44-4	3-Methylthiophene	ND	31	ND	7.7	
110-01-0	Tetrahydrothiophene	ND	28	ND	7.7	
638-02-8	2,5-Dimethylthiophene	ND	35	ND	7.7	
872-55-9	2-Ethylthiophene	ND	35	ND	7.7	
110-81-6	Diethyl Disulfide	ND	19	ND	3.9	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-TB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-026

Test Code:	ASTM D 5504-12	Date Collected:	1/10/19
Instrument ID:	Agilent 7890A/GC22/SCD	Time Collected:	NA
Analyst:	Magaly Rodriguez	Date Received:	1/11/19
Sample Type:	6.0 L Silonite Canister	Date Analyzed:	1/14/19
Test Notes:		Time Analyzed:	13:45
Container ID:	AS01042	Volume(s) Analyzed:	1.0 ml(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-FB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-027

Test Code: ASTM D 5504-12 Date Collected: 1/10/19
Instrument ID: Agilent 7890A/GC22/SCD Time Collected: NA
Analyst: Magaly Rodriguez Date Received: 1/11/19
Sample Type: 6.0 L Silonite Canister Date Analyzed: 1/14/19
Test Notes: Time Analyzed: 14:11
Container ID: AS01340 Volume(s) Analyzed: 1.0 ml(s)

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank**
Client Project ID: **Bridgeton Air Monitoring / 182608047**

ALS Project ID: P1900123
ALS Sample ID: P190114-MB

Test Code: ASTM D 5504-12
Instrument ID: Agilent 7890A/GC22/SCD
Analyst: Magaly Rodriguez
Sample Type: 6.0 L Silonite Canister
Test Notes:

Date Collected: NA
Time Collected: NA
Date Received: NA
Date Analyzed: 1/14/19
Time Analyzed: 09:38
Volume(s) Analyzed: 1.0 ml(s)

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
7783-06-4	Hydrogen Sulfide	ND	7.0	ND	5.0	
463-58-1	Carbonyl Sulfide	ND	12	ND	5.0	
74-93-1	Methyl Mercaptan	ND	9.8	ND	5.0	
75-08-1	Ethyl Mercaptan	ND	13	ND	5.0	
75-18-3	Dimethyl Sulfide	ND	13	ND	5.0	
75-15-0	Carbon Disulfide	ND	7.8	ND	2.5	
75-33-2	Isopropyl Mercaptan	ND	16	ND	5.0	
75-66-1	tert-Butyl Mercaptan	ND	18	ND	5.0	
107-03-9	n-Propyl Mercaptan	ND	16	ND	5.0	
624-89-5	Ethyl Methyl Sulfide	ND	16	ND	5.0	
110-02-1	Thiophene	ND	17	ND	5.0	
513-44-0	Isobutyl Mercaptan	ND	18	ND	5.0	
352-93-2	Diethyl Sulfide	ND	18	ND	5.0	
109-79-5	n-Butyl Mercaptan	ND	18	ND	5.0	
624-92-0	Dimethyl Disulfide	ND	9.6	ND	2.5	
616-44-4	3-Methylthiophene	ND	20	ND	5.0	
110-01-0	Tetrahydrothiophene	ND	18	ND	5.0	
638-02-8	2,5-Dimethylthiophene	ND	23	ND	5.0	
872-55-9	2-Ethylthiophene	ND	23	ND	5.0	
110-81-6	Diethyl Disulfide	ND	12	ND	2.5	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190114-LCS

Test Code: ASTM D 5504-12 Date Collected: NA
Instrument ID: Agilent 7890A/GC22/SCD Date Received: NA
Analyst: Magaly Rodriguez Date Analyzed: 1/14/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: NA ml(s)
Test Notes:

CAS #	Compound	Spike Amount ppbV	Result ppbV	% Recovery	ALS Acceptance Limits	Data Qualifier
7783-06-4	Hydrogen Sulfide	989	**946**	**96**	81-141	
463-58-1	Carbonyl Sulfide	1,050	**990**	**94**	81-147	
74-93-1	Methyl Mercaptan	1,050	**1,000**	**95**	80-144	

Response Factor Report GC #22

Method Path : J:\GC22\METHODS\
Method File : GC22_Quan 10012018.M
Title : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD
Last Update : Mon Oct 01 15:32:16 2018
Response Via : Initial Calibration

Calibration Files
2.5 =10011803.d 10 =10011804.d 50 =10011805.d
250 =10011806.d 1000 =10011807.d 2500 =10011808.d

		Compound	2.5	10	50	250	1000	2500	Avg		%RSD
1)	Z	Hydrogen_Sulfide	4.692	4.280	3.491	3.440	4.011	3.822	3.869	E4	10.42
2)	W	Carbonyl_Sulfide	4.369	4.753	4.104	3.973	4.411	4.078	4.171	E4	7.19
3)	T	Methyl_Mercaptan	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
4)	T	Ethyl_Mercaptan	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
5)	T	Dimethyl_Sulfide	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
6)	T	Carbon_Disulfide	7.829	7.913	6.715	6.326	7.959	7.588	7.392	E4	7.46
7)	T	2-Propyl_Merc...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
8)	T	t-Butyl_Merca...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
9)	T	Propyl_Mercaptan	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
10)	T	Ethyl_Methyl_...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
11)	T	Thiophene	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
12)	T	i-Butyl_Merca...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
13)	T	Diethyl_Sulfide	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
14)	T	n-Butyl_Merca...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
15)	T	Dimethyl_Disu...	7.829	7.913	6.715	6.326	7.959	7.588	7.392	E4	7.46
16)	T	2-Methylthiop...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
17)	T	3-Methylthiop...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
18)	T	Tetrahydrothi...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
19)	T	2,5-Dimethylt...	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
20)	T	2-Ethylthiophene	3.914	3.956	3.358	3.163	3.980	3.794	3.696	E4	7.46
21)	T	Diethyl_Disul...	7.829	7.913	6.715	6.326	7.959	7.588	7.392	E4	7.46
22)	T	Methyltrisulfide	1.174	1.187	1.007	0.949	1.194	1.138	1.109	E5	7.46

(#) = Out of Range ### Number of calibration levels exceeded format ###

GC22_Quan 10012018.M Mon Oct 01 15:55:36 2018

ALS Environmental

REPORT SUMMARY

Method : ASTM D5504, VOA-S307M_SCD, VOA SH2O_SCD

Client : Stantec Consulting Services, Inc.

Analyst : MR

Service Request : P1900123

Instrument : GC #22

Date Acquired : 1/14/19

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Compounds	MDL	RL	MB QC		Dry Wall QC		Lab Dup			Continuing Calibration Standards Summary (ppbv)											
			MB					dup	%RSD	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff	ppbv	% Diff
Sample Information :	ppb	ppb	mb 1ml							std s32-12171801		std s32-12171801		std s32-12171801							
Inj. Vol. (ml)	1.0	1.0	1.00		1.0	1.0				0.10		0.10		0.10		0.10		0.10		0.10	
Dilution	1.0	1.0	1.00		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
Pi:	1.0	1.0	1.0		1.0	1.0															
PiPf DF:	1.0	1.0	1.0		1.0	1.0															
Hydrogen_Sulfide	1.900	5.000	ND	P						1063.31	6.3%	923.490	7.7%	923.377	7.7%						
Carbonyl_Sulfide	1.700	5.000	ND	P						1121.64	12.2%	971.711	2.8%	967.412	3.3%						
Methyl_Mercaptan	1.200	5.000	ND	P						1104.84	10.5%	954.707	4.5%	946.996	5.3%						
Ethyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Sulfide	1.200	5.000	ND	P						7:58 AM		11:35 AM		2:29 PM							
Carbon_Disulfide	0.600	2.500	ND	P						01141901.d		01141914.d		01141920.d							
2-Propyl_Mercaptan	1.200	5.000	ND	P																	
t-Butyl_Mercaptan	1.200	5.000	ND	P																	
Propyl_Mercaptan	1.200	5.000	ND	P																	
Ethyl_Methyl_Sulfide	1.200	5.000	ND	P																	
Thiophene	1.200	5.000	ND	P																	
i-Butyl_Mercaptan	1.200	5.000	ND	P																	
Diethyl_Sulfide	1.200	5.000	ND	P																	
n-Butyl_Mercaptan	1.200	5.000	ND	P																	
Dimethyl_Disulfide	0.600	2.500	ND	P																	
2-Methylthiophene	1.200	5.000	ND	P																	
3-Methylthiophene	1.200	5.000	ND	P																	
Tetrahydrothiophene	1.200	5.000	ND	P																	
2,5-Dimethylthiophene	1.200	5.000	ND	P																	
2-Ethylthiophene	1.200	5.000	ND	P																	
Diethyl_Disulfide	0.600	2.500	ND	P																	
Methyltrisulfide	0.600	2.500	ND	P																	
Acqisition Time			9:38 AM																		
DataFile			01141909.d																		

LCS / LCS Dup Summary (ppbv)

	ppbv	%R		ppbv	% R	%RPD	Actual
Hydrogen_Sulfide	945.60	95.6%		957.21	96.8%	**1.22%**	**989.00**
Carbonyl_Sulfide	989.97	94.3%		992.53	94.5%	**0.26%**	**1050.00**
Methyl_Mercaptan	1002.55	95.5%		1009.78	96.2%	**0.72%**	**1050.00**
Acqisition Time	8:09 AM			8:16 AM			
DataFile	01141903.d			01141904.d			

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-021

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00956

Initial Pressure (psig): -1.70 Final Pressure (psig): 3.70

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.74	ND	0.43	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.6**	0.74	**0.53**	0.15	
74-87-3	Chloromethane	ND	0.71	ND	0.34	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.72	ND	0.10	
75-01-4	Vinyl Chloride	ND	0.75	ND	0.29	
106-99-0	1,3-Butadiene	ND	0.74	ND	0.33	
74-83-9	Bromomethane	ND	0.71	ND	0.18	
75-00-3	Chloroethane	ND	0.72	ND	0.27	
64-17-5	Ethanol	ND	7.2	ND	3.8	
75-05-8	Acetonitrile	**1.4**	0.74	**0.83**	0.44	
107-02-8	Acrolein	ND	1.4	ND	0.62	
67-64-1	Acetone	ND	7.7	ND	3.2	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.4**	0.75	**0.24**	0.13	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	3.0	ND	1.2	
107-13-1	Acrylonitrile	ND	0.74	ND	0.34	
75-35-4	1,1-Dichloroethene	ND	0.77	ND	0.19	
75-09-2	Methylene Chloride	**1.4**	0.77	**0.42**	0.22	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.75	ND	0.24	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.75	ND	0.098	
75-15-0	Carbon Disulfide	ND	1.6	ND	0.50	
156-60-5	trans-1,2-Dichloroethene	ND	0.75	ND	0.19	
75-34-3	1,1-Dichloroethane	ND	0.74	ND	0.18	
1634-04-4	Methyl tert-Butyl Ether	ND	0.77	ND	0.21	
108-05-4	Vinyl Acetate	ND	7.5	ND	2.1	
78-93-3	2-Butanone (MEK)	ND	1.4	ND	0.48	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-021

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00956

Initial Pressure (psig): -1.70 Final Pressure (psig): 3.70

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.75	ND	0.19	
141-78-6	Ethyl Acetate	ND	1.6	ND	0.43	
110-54-3	n-Hexane	ND	0.77	ND	0.22	
67-66-3	Chloroform	ND	0.77	ND	0.16	
109-99-9	Tetrahydrofuran (THF)	ND	0.75	ND	0.26	
107-06-2	1,2-Dichloroethane	ND	0.75	ND	0.19	
71-55-6	1,1,1-Trichloroethane	ND	0.77	ND	0.14	
71-43-2	Benzene	ND	0.74	ND	0.23	
56-23-5	Carbon Tetrachloride	ND	0.74	ND	0.12	
110-82-7	Cyclohexane	ND	1.4	ND	0.41	
78-87-5	1,2-Dichloropropane	ND	0.77	ND	0.17	
75-27-4	Bromodichloromethane	ND	0.75	ND	0.11	
79-01-6	Trichloroethene	ND	0.75	ND	0.14	
123-91-1	1,4-Dioxane	ND	0.75	ND	0.21	
80-62-6	Methyl Methacrylate	ND	1.6	ND	0.38	
142-82-5	n-Heptane	ND	0.77	ND	0.19	
10061-01-5	cis-1,3-Dichloropropene	ND	0.80	ND	0.18	
108-10-1	4-Methyl-2-pentanone	ND	0.75	ND	0.18	
10061-02-6	trans-1,3-Dichloropropene	ND	0.75	ND	0.17	
79-00-5	1,1,2-Trichloroethane	ND	0.77	ND	0.14	
108-88-3	Toluene	ND	0.75	ND	0.20	
591-78-6	2-Hexanone	ND	0.77	ND	0.19	
124-48-1	Dibromochloromethane	ND	0.77	ND	0.090	
106-93-4	1,2-Dibromoethane	ND	0.77	ND	0.10	
123-86-4	n-Butyl Acetate	ND	0.77	ND	0.16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-021

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00956

Initial Pressure (psig): -1.70 Final Pressure (psig): 3.70

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.77	ND	0.16	
127-18-4	Tetrachloroethene	ND	0.75	ND	0.11	
108-90-7	Chlorobenzene	ND	0.75	ND	0.16	
100-41-4	Ethylbenzene	ND	0.74	ND	0.17	
179601-23-1	m,p-Xylenes	ND	1.6	ND	0.36	
75-25-2	Bromoform	ND	0.75	ND	0.073	
100-42-5	Styrene	ND	0.75	ND	0.18	
95-47-6	o-Xylene	ND	0.75	ND	0.17	
111-84-2	n-Nonane	ND	0.77	ND	0.15	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.75	ND	0.11	
98-82-8	Cumene	ND	0.75	ND	0.15	
80-56-8	alpha-Pinene	ND	0.74	ND	0.13	
103-65-1	n-Propylbenzene	ND	0.77	ND	0.16	
622-96-8	4-Ethyltoluene	ND	0.75	ND	0.15	
108-67-8	1,3,5-Trimethylbenzene	ND	0.75	ND	0.15	
95-63-6	1,2,4-Trimethylbenzene	ND	0.75	ND	0.15	
100-44-7	Benzyl Chloride	ND	1.6	ND	0.30	
541-73-1	1,3-Dichlorobenzene	ND	0.77	ND	0.13	
106-46-7	1,4-Dichlorobenzene	ND	0.77	ND	0.13	
95-50-1	1,2-Dichlorobenzene	ND	0.77	ND	0.13	
5989-27-5	d-Limonene	ND	0.72	ND	0.13	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.74	ND	0.076	
120-82-1	1,2,4-Trichlorobenzene	ND	0.75	ND	0.10	
91-20-3	Naphthalene	ND	0.72	ND	0.14	
87-68-3	Hexachlorobutadiene	ND	0.75	ND	0.071	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110U1-Summa** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-021

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			
Container ID:	AS00956		

Initial Pressure (psig): -1.70 Final Pressure (psig): 3.70

Container Dilution Factor: 1.42

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-022

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00091

Initial Pressure (psig): -1.83 Final Pressure (psig): 3.78

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**0.91**	0.75	**0.53**	0.44	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.6**	0.75	**0.54**	0.15	
74-87-3	Chloromethane	ND	0.72	ND	0.35	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.73	ND	0.11	
75-01-4	Vinyl Chloride	ND	0.76	ND	0.30	
106-99-0	1,3-Butadiene	ND	0.75	ND	0.34	
74-83-9	Bromomethane	ND	0.72	ND	0.19	
75-00-3	Chloroethane	ND	0.73	ND	0.28	
64-17-5	Ethanol	ND	7.3	ND	3.9	
75-05-8	Acetonitrile	**0.78**	0.75	**0.46**	0.45	
107-02-8	Acrolein	ND	1.4	ND	0.63	
67-64-1	Acetone	ND	7.8	ND	3.3	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.4**	0.76	**0.24**	0.14	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	3.0	ND	1.2	
107-13-1	Acrylonitrile	ND	0.75	ND	0.35	
75-35-4	1,1-Dichloroethene	ND	0.78	ND	0.20	
75-09-2	Methylene Chloride	ND	0.78	ND	0.22	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.76	ND	0.24	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.76	ND	0.10	
75-15-0	Carbon Disulfide	ND	1.6	ND	0.51	
156-60-5	trans-1,2-Dichloroethene	ND	0.76	ND	0.19	
75-34-3	1,1-Dichloroethane	ND	0.75	ND	0.19	
1634-04-4	Methyl tert-Butyl Ether	ND	0.78	ND	0.22	
108-05-4	Vinyl Acetate	ND	7.6	ND	2.2	
78-93-3	2-Butanone (MEK)	ND	1.4	ND	0.49	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-022

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00091

Initial Pressure (psig): -1.83 Final Pressure (psig): 3.78

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.76	ND	0.19	
141-78-6	Ethyl Acetate	**2.2**	1.6	**0.61**	0.44	
110-54-3	n-Hexane	ND	0.78	ND	0.22	
67-66-3	Chloroform	ND	0.78	ND	0.16	
109-99-9	Tetrahydrofuran (THF)	ND	0.76	ND	0.26	
107-06-2	1,2-Dichloroethane	ND	0.76	ND	0.19	
71-55-6	1,1,1-Trichloroethane	ND	0.78	ND	0.14	
71-43-2	Benzene	ND	0.75	ND	0.23	
56-23-5	Carbon Tetrachloride	ND	0.75	ND	0.12	
110-82-7	Cyclohexane	ND	1.4	ND	0.42	
78-87-5	1,2-Dichloropropane	ND	0.78	ND	0.17	
75-27-4	Bromodichloromethane	ND	0.76	ND	0.11	
79-01-6	Trichloroethene	ND	0.76	ND	0.14	
123-91-1	1,4-Dioxane	ND	0.76	ND	0.21	
80-62-6	Methyl Methacrylate	ND	1.6	ND	0.39	
142-82-5	n-Heptane	ND	0.78	ND	0.19	
10061-01-5	cis-1,3-Dichloropropene	ND	0.81	ND	0.18	
108-10-1	4-Methyl-2-pentanone	ND	0.76	ND	0.19	
10061-02-6	trans-1,3-Dichloropropene	ND	0.76	ND	0.17	
79-00-5	1,1,2-Trichloroethane	ND	0.78	ND	0.14	
108-88-3	Toluene	ND	0.76	ND	0.20	
591-78-6	2-Hexanone	ND	0.78	ND	0.19	
124-48-1	Dibromochloromethane	ND	0.78	ND	0.091	
106-93-4	1,2-Dibromoethane	ND	0.78	ND	0.10	
123-86-4	n-Butyl Acetate	ND	0.78	ND	0.16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D1-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-022

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00091

Initial Pressure (psig): -1.83 Final Pressure (psig): 3.78

Container Dilution Factor: 1.44

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.78	ND	0.17	
127-18-4	Tetrachloroethene	ND	0.76	ND	0.11	
108-90-7	Chlorobenzene	ND	0.76	ND	0.17	
100-41-4	Ethylbenzene	ND	0.75	ND	0.17	
179601-23-1	m,p-Xylenes	ND	1.6	ND	0.36	
75-25-2	Bromoform	ND	0.76	ND	0.074	
100-42-5	Styrene	ND	0.76	ND	0.18	
95-47-6	o-Xylene	ND	0.76	ND	0.18	
111-84-2	n-Nonane	ND	0.78	ND	0.15	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.76	ND	0.11	
98-82-8	Cumene	ND	0.76	ND	0.16	
80-56-8	alpha-Pinene	ND	0.75	ND	0.13	
103-65-1	n-Propylbenzene	ND	0.78	ND	0.16	
622-96-8	4-Ethyltoluene	ND	0.76	ND	0.16	
108-67-8	1,3,5-Trimethylbenzene	ND	0.76	ND	0.16	
95-63-6	1,2,4-Trimethylbenzene	ND	0.76	ND	0.16	
100-44-7	Benzyl Chloride	ND	1.6	ND	0.31	
541-73-1	1,3-Dichlorobenzene	ND	0.78	ND	0.13	
106-46-7	1,4-Dichlorobenzene	ND	0.78	ND	0.13	
95-50-1	1,2-Dichlorobenzene	ND	0.78	ND	0.13	
5989-27-5	d-Limonene	ND	0.73	ND	0.13	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.75	ND	0.078	
120-82-1	1,2,4-Trichlorobenzene	ND	0.76	ND	0.10	
91-20-3	Naphthalene	ND	0.73	ND	0.14	
87-68-3	Hexachlorobutadiene	ND	0.76	ND	0.072	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110D1-Summa** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-022

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00091		

Initial Pressure (psig): -1.83 Final Pressure (psig): 3.78

Container Dilution Factor: 1.44

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.07	Sulfur Dioxide	**9.4**	
7.66	n-Pentane	**3.0**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-023

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00835

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.85

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.76	ND	0.44	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.6**	0.76	**0.52**	0.15	
74-87-3	Chloromethane	ND	0.73	ND	0.35	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.74	ND	0.11	
75-01-4	Vinyl Chloride	ND	0.77	ND	0.30	
106-99-0	1,3-Butadiene	ND	0.76	ND	0.34	
74-83-9	Bromomethane	ND	0.73	ND	0.19	
75-00-3	Chloroethane	ND	0.74	ND	0.28	
64-17-5	Ethanol	ND	7.4	ND	4.0	
75-05-8	Acetonitrile	**0.84**	0.76	**0.50**	0.45	
107-02-8	Acrolein	ND	1.5	ND	0.64	
67-64-1	Acetone	ND	7.9	ND	3.3	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.3**	0.77	**0.24**	0.14	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	3.1	ND	1.2	
107-13-1	Acrylonitrile	ND	0.76	ND	0.35	
75-35-4	1,1-Dichloroethene	ND	0.79	ND	0.20	
75-09-2	Methylene Chloride	**0.81**	0.79	**0.23**	0.23	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.77	ND	0.25	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.77	ND	0.10	
75-15-0	Carbon Disulfide	ND	1.6	ND	0.52	
156-60-5	trans-1,2-Dichloroethene	ND	0.77	ND	0.20	
75-34-3	1,1-Dichloroethane	ND	0.76	ND	0.19	
1634-04-4	Methyl tert-Butyl Ether	ND	0.79	ND	0.22	
108-05-4	Vinyl Acetate	ND	7.7	ND	2.2	
78-93-3	2-Butanone (MEK)	ND	1.5	ND	0.50	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-023

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00835

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.85

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.77	ND	0.20	
141-78-6	Ethyl Acetate	ND	1.6	ND	0.45	
110-54-3	n-Hexane	ND	0.79	ND	0.22	
67-66-3	Chloroform	ND	0.79	ND	0.16	
109-99-9	Tetrahydrofuran (THF)	ND	0.77	ND	0.26	
107-06-2	1,2-Dichloroethane	ND	0.77	ND	0.19	
71-55-6	1,1,1-Trichloroethane	ND	0.79	ND	0.14	
71-43-2	Benzene	ND	0.76	ND	0.24	
56-23-5	Carbon Tetrachloride	ND	0.76	ND	0.12	
110-82-7	Cyclohexane	ND	1.5	ND	0.42	
78-87-5	1,2-Dichloropropane	ND	0.79	ND	0.17	
75-27-4	Bromodichloromethane	ND	0.77	ND	0.12	
79-01-6	Trichloroethene	ND	0.77	ND	0.14	
123-91-1	1,4-Dioxane	ND	0.77	ND	0.21	
80-62-6	Methyl Methacrylate	ND	1.6	ND	0.39	
142-82-5	n-Heptane	ND	0.79	ND	0.19	
10061-01-5	cis-1,3-Dichloropropene	ND	0.82	ND	0.18	
108-10-1	4-Methyl-2-pentanone	ND	0.77	ND	0.19	
10061-02-6	trans-1,3-Dichloropropene	ND	0.77	ND	0.17	
79-00-5	1,1,2-Trichloroethane	ND	0.79	ND	0.14	
108-88-3	Toluene	ND	0.77	ND	0.21	
591-78-6	2-Hexanone	ND	0.79	ND	0.19	
124-48-1	Dibromochloromethane	ND	0.79	ND	0.093	
106-93-4	1,2-Dibromoethane	ND	0.79	ND	0.10	
123-86-4	n-Butyl Acetate	ND	0.79	ND	0.17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110U2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-023

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00835

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.85

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.79	ND	0.17	
127-18-4	Tetrachloroethene	ND	0.77	ND	0.11	
108-90-7	Chlorobenzene	ND	0.77	ND	0.17	
100-41-4	Ethylbenzene	ND	0.76	ND	0.17	
179601-23-1	m,p-Xylenes	ND	1.6	ND	0.37	
75-25-2	Bromoform	ND	0.77	ND	0.075	
100-42-5	Styrene	ND	0.77	ND	0.18	
95-47-6	o-Xylene	ND	0.77	ND	0.18	
111-84-2	n-Nonane	ND	0.79	ND	0.15	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.77	ND	0.11	
98-82-8	Cumene	ND	0.77	ND	0.16	
80-56-8	alpha-Pinene	ND	0.76	ND	0.14	
103-65-1	n-Propylbenzene	ND	0.79	ND	0.16	
622-96-8	4-Ethyltoluene	ND	0.77	ND	0.16	
108-67-8	1,3,5-Trimethylbenzene	ND	0.77	ND	0.16	
95-63-6	1,2,4-Trimethylbenzene	ND	0.77	ND	0.16	
100-44-7	Benzyl Chloride	ND	1.6	ND	0.31	
541-73-1	1,3-Dichlorobenzene	ND	0.79	ND	0.13	
106-46-7	1,4-Dichlorobenzene	ND	0.79	ND	0.13	
95-50-1	1,2-Dichlorobenzene	ND	0.79	ND	0.13	
5989-27-5	d-Limonene	ND	0.74	ND	0.13	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.76	ND	0.079	
120-82-1	1,2,4-Trichlorobenzene	ND	0.77	ND	0.10	
91-20-3	Naphthalene	ND	0.74	ND	0.14	
87-68-3	Hexachlorobutadiene	ND	0.77	ND	0.073	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110U2-Summa** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-023

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			
Container ID:	AS00835		

Initial Pressure (psig): -1.96 Final Pressure (psig): 3.85

Container Dilution Factor: 1.46

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-024

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00942

Initial Pressure (psig): -2.40 Final Pressure (psig): 3.80

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**1.0**	0.78	**0.60**	0.45	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.6**	0.78	**0.52**	0.16	
74-87-3	Chloromethane	ND	0.75	ND	0.36	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.77	ND	0.11	
75-01-4	Vinyl Chloride	ND	0.80	ND	0.31	
106-99-0	1,3-Butadiene	ND	0.78	ND	0.35	
74-83-9	Bromomethane	ND	0.75	ND	0.19	
75-00-3	Chloroethane	ND	0.77	ND	0.29	
64-17-5	Ethanol	ND	7.7	ND	4.1	
75-05-8	Acetonitrile	**2.6**	0.78	**1.6**	0.46	
107-02-8	Acrolein	ND	1.5	ND	0.65	
67-64-1	Acetone	ND	8.1	ND	3.4	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.3**	0.80	**0.24**	0.14	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	3.2	ND	1.3	
107-13-1	Acrylonitrile	ND	0.78	ND	0.36	
75-35-4	1,1-Dichloroethene	ND	0.81	ND	0.20	
75-09-2	Methylene Chloride	ND	0.81	ND	0.23	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.80	ND	0.25	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.80	ND	0.10	
75-15-0	Carbon Disulfide	ND	1.7	ND	0.53	
156-60-5	trans-1,2-Dichloroethene	ND	0.80	ND	0.20	
75-34-3	1,1-Dichloroethane	ND	0.78	ND	0.19	
1634-04-4	Methyl tert-Butyl Ether	ND	0.81	ND	0.22	
108-05-4	Vinyl Acetate	ND	8.0	ND	2.3	
78-93-3	2-Butanone (MEK)	ND	1.5	ND	0.51	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-024

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00942

Initial Pressure (psig): -2.40 Final Pressure (psig): 3.80

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.80	ND	0.20	
141-78-6	Ethyl Acetate	**5.2**	1.7	**1.4**	0.46	
110-54-3	n-Hexane	ND	0.81	ND	0.23	
67-66-3	Chloroform	ND	0.81	ND	0.17	
109-99-9	Tetrahydrofuran (THF)	ND	0.80	ND	0.27	
107-06-2	1,2-Dichloroethane	ND	0.80	ND	0.20	
71-55-6	1,1,1-Trichloroethane	ND	0.81	ND	0.15	
71-43-2	Benzene	ND	0.78	ND	0.24	
56-23-5	Carbon Tetrachloride	ND	0.78	ND	0.12	
110-82-7	Cyclohexane	ND	1.5	ND	0.44	
78-87-5	1,2-Dichloropropane	ND	0.81	ND	0.18	
75-27-4	Bromodichloromethane	ND	0.80	ND	0.12	
79-01-6	Trichloroethene	ND	0.80	ND	0.15	
123-91-1	1,4-Dioxane	ND	0.80	ND	0.22	
80-62-6	Methyl Methacrylate	ND	1.7	ND	0.40	
142-82-5	n-Heptane	ND	0.81	ND	0.20	
10061-01-5	cis-1,3-Dichloropropene	ND	0.84	ND	0.19	
108-10-1	4-Methyl-2-pentanone	ND	0.80	ND	0.19	
10061-02-6	trans-1,3-Dichloropropene	ND	0.80	ND	0.18	
79-00-5	1,1,2-Trichloroethane	ND	0.81	ND	0.15	
108-88-3	Toluene	ND	0.80	ND	0.21	
591-78-6	2-Hexanone	ND	0.81	ND	0.20	
124-48-1	Dibromochloromethane	ND	0.81	ND	0.095	
106-93-4	1,2-Dibromoethane	ND	0.81	ND	0.11	
123-86-4	n-Butyl Acetate	ND	0.81	ND	0.17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110D2-Summa** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-024

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00942

Initial Pressure (psig): -2.40 Final Pressure (psig): 3.80

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.81	ND	0.17	
127-18-4	Tetrachloroethene	ND	0.80	ND	0.12	
108-90-7	Chlorobenzene	ND	0.80	ND	0.17	
100-41-4	Ethylbenzene	ND	0.78	ND	0.18	
179601-23-1	m,p-Xylenes	ND	1.7	ND	0.38	
75-25-2	Bromoform	ND	0.80	ND	0.077	
100-42-5	Styrene	ND	0.80	ND	0.19	
95-47-6	o-Xylene	ND	0.80	ND	0.18	
111-84-2	n-Nonane	ND	0.81	ND	0.15	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.80	ND	0.12	
98-82-8	Cumene	ND	0.80	ND	0.16	
80-56-8	alpha-Pinene	ND	0.78	ND	0.14	
103-65-1	n-Propylbenzene	ND	0.81	ND	0.16	
622-96-8	4-Ethyltoluene	ND	0.80	ND	0.16	
108-67-8	1,3,5-Trimethylbenzene	ND	0.80	ND	0.16	
95-63-6	1,2,4-Trimethylbenzene	ND	0.80	ND	0.16	
100-44-7	Benzyl Chloride	ND	1.7	ND	0.32	
541-73-1	1,3-Dichlorobenzene	ND	0.81	ND	0.13	
106-46-7	1,4-Dichlorobenzene	ND	0.81	ND	0.13	
95-50-1	1,2-Dichlorobenzene	ND	0.81	ND	0.13	
5989-27-5	d-Limonene	ND	0.77	ND	0.14	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.78	ND	0.081	
120-82-1	1,2,4-Trichlorobenzene	ND	0.80	ND	0.11	
91-20-3	Naphthalene	ND	0.77	ND	0.15	
87-68-3	Hexachlorobutadiene	ND	0.80	ND	0.075	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110D2-Summa** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-024

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			
Container ID:	AS00942		

Initial Pressure (psig): -2.40 Final Pressure (psig): 3.80

Container Dilution Factor: 1.50

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE 10** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-025

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00220

Initial Pressure (psig): -2.52 Final Pressure (psig): 4.10

Container Dilution Factor: 1.54

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.80	ND	0.47	
75-71-8	Dichlorodifluoromethane (CFC 12)	**2.7**	0.80	**0.54**	0.16	
74-87-3	Chloromethane	ND	0.77	ND	0.37	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.79	ND	0.11	
75-01-4	Vinyl Chloride	ND	0.82	ND	0.32	
106-99-0	1,3-Butadiene	ND	0.80	ND	0.36	
74-83-9	Bromomethane	ND	0.77	ND	0.20	
75-00-3	Chloroethane	ND	0.79	ND	0.30	
64-17-5	Ethanol	ND	7.9	ND	4.2	
75-05-8	Acetonitrile	**4.2**	0.80	**2.5**	0.48	
107-02-8	Acrolein	ND	1.5	ND	0.67	
67-64-1	Acetone	ND	8.3	ND	3.5	
75-69-4	Trichlorofluoromethane (CFC 11)	**1.4**	0.82	**0.24**	0.15	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	3.2	ND	1.3	
107-13-1	Acrylonitrile	ND	0.80	ND	0.37	
75-35-4	1,1-Dichloroethene	ND	0.83	ND	0.21	
75-09-2	Methylene Chloride	ND	0.83	ND	0.24	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.82	ND	0.26	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.82	ND	0.11	
75-15-0	Carbon Disulfide	ND	1.7	ND	0.54	
156-60-5	trans-1,2-Dichloroethene	ND	0.82	ND	0.21	
75-34-3	1,1-Dichloroethane	ND	0.80	ND	0.20	
1634-04-4	Methyl tert-Butyl Ether	ND	0.83	ND	0.23	
108-05-4	Vinyl Acetate	ND	8.2	ND	2.3	
78-93-3	2-Butanone (MEK)	ND	1.5	ND	0.52	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE 10** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-025

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00220

Initial Pressure (psig): -2.52 Final Pressure (psig): 4.10

Container Dilution Factor: 1.54

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.82	ND	0.21	
141-78-6	Ethyl Acetate	ND	1.7	ND	0.47	
110-54-3	n-Hexane	ND	0.83	ND	0.24	
67-66-3	Chloroform	ND	0.83	ND	0.17	
109-99-9	Tetrahydrofuran (THF)	ND	0.82	ND	0.28	
107-06-2	1,2-Dichloroethane	ND	0.82	ND	0.20	
71-55-6	1,1,1-Trichloroethane	ND	0.83	ND	0.15	
71-43-2	Benzene	ND	0.80	ND	0.25	
56-23-5	Carbon Tetrachloride	ND	0.80	ND	0.13	
110-82-7	Cyclohexane	ND	1.5	ND	0.45	
78-87-5	1,2-Dichloropropane	ND	0.83	ND	0.18	
75-27-4	Bromodichloromethane	ND	0.82	ND	0.12	
79-01-6	Trichloroethene	ND	0.82	ND	0.15	
123-91-1	1,4-Dioxane	ND	0.82	ND	0.23	
80-62-6	Methyl Methacrylate	ND	1.7	ND	0.41	
142-82-5	n-Heptane	ND	0.83	ND	0.20	
10061-01-5	cis-1,3-Dichloropropene	ND	0.86	ND	0.19	
108-10-1	4-Methyl-2-pentanone	ND	0.82	ND	0.20	
10061-02-6	trans-1,3-Dichloropropene	ND	0.82	ND	0.18	
79-00-5	1,1,2-Trichloroethane	ND	0.83	ND	0.15	
108-88-3	Toluene	ND	0.82	ND	0.22	
591-78-6	2-Hexanone	ND	0.83	ND	0.20	
124-48-1	Dibromochloromethane	ND	0.83	ND	0.098	
106-93-4	1,2-Dibromoethane	ND	0.83	ND	0.11	
123-86-4	n-Butyl Acetate	ND	0.83	ND	0.18	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-DUPE 10** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-025

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00220

Initial Pressure (psig): -2.52 Final Pressure (psig): 4.10

Container Dilution Factor: 1.54

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.83	ND	0.18	
127-18-4	Tetrachloroethene	ND	0.82	ND	0.12	
108-90-7	Chlorobenzene	ND	0.82	ND	0.18	
100-41-4	Ethylbenzene	ND	0.80	ND	0.18	
179601-23-1	m,p-Xylenes	ND	1.7	ND	0.39	
75-25-2	Bromoform	ND	0.82	ND	0.079	
100-42-5	Styrene	ND	0.82	ND	0.19	
95-47-6	o-Xylene	ND	0.82	ND	0.19	
111-84-2	n-Nonane	ND	0.83	ND	0.16	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.82	ND	0.12	
98-82-8	Cumene	ND	0.82	ND	0.17	
80-56-8	alpha-Pinene	ND	0.80	ND	0.14	
103-65-1	n-Propylbenzene	ND	0.83	ND	0.17	
622-96-8	4-Ethyltoluene	ND	0.82	ND	0.17	
108-67-8	1,3,5-Trimethylbenzene	ND	0.82	ND	0.17	
95-63-6	1,2,4-Trimethylbenzene	ND	0.82	ND	0.17	
100-44-7	Benzyl Chloride	ND	1.7	ND	0.33	
541-73-1	1,3-Dichlorobenzene	ND	0.83	ND	0.14	
106-46-7	1,4-Dichlorobenzene	ND	0.83	ND	0.14	
95-50-1	1,2-Dichlorobenzene	ND	0.83	ND	0.14	
5989-27-5	d-Limonene	ND	0.79	ND	0.14	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.80	ND	0.083	
120-82-1	1,2,4-Trichlorobenzene	ND	0.82	ND	0.11	
91-20-3	Naphthalene	ND	0.79	ND	0.15	
87-68-3	Hexachlorobutadiene	ND	0.82	ND	0.077	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110-DUPE 10** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-025

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS00220		

Initial Pressure (psig): -2.52 Final Pressure (psig): 4.10

Container Dilution Factor: 1.54

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
17.07	Hexamethylcyclotrisiloxane	**8.2**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-TB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-026

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01042

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.52	ND	0.30	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	ND	0.11	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.51	ND	0.073	
75-01-4	Vinyl Chloride	ND	0.53	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.52	ND	0.24	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.51	ND	0.19	
64-17-5	Ethanol	ND	5.1	ND	2.7	
75-05-8	Acetonitrile	ND	0.52	ND	0.31	
107-02-8	Acrolein	ND	1.0	ND	0.44	
67-64-1	Acetone	ND	5.4	ND	2.3	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	ND	0.85	
107-13-1	Acrylonitrile	ND	0.52	ND	0.24	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.54	ND	0.16	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.53	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.53	ND	0.069	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.52	ND	0.13	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.3	ND	1.5	
78-93-3	2-Butanone (MEK)	ND	1.0	ND	0.34	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-TB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-026

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01042

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.1	ND	0.31	
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.53	ND	0.18	
107-06-2	1,2-Dichloroethane	ND	0.53	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	ND	0.52	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.52	ND	0.083	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.53	ND	0.079	
79-01-6	Trichloroethene	ND	0.53	ND	0.099	
123-91-1	1,4-Dioxane	ND	0.53	ND	0.15	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.56	ND	0.12	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	ND	0.53	ND	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
123-86-4	n-Butyl Acetate	ND	0.54	ND	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-TB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-026

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01042

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.54	ND	0.12	
127-18-4	Tetrachloroethene	ND	0.53	ND	0.078	
108-90-7	Chlorobenzene	ND	0.53	ND	0.12	
100-41-4	Ethylbenzene	ND	0.52	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.53	ND	0.051	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.53	ND	0.12	
111-84-2	n-Nonane	ND	0.54	ND	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	ND	0.077	
98-82-8	Cumene	ND	0.53	ND	0.11	
80-56-8	alpha-Pinene	ND	0.52	ND	0.093	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.53	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.53	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
5989-27-5	d-Limonene	ND	0.51	ND	0.092	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.52	ND	0.054	
120-82-1	1,2,4-Trichlorobenzene	ND	0.53	ND	0.071	
91-20-3	Naphthalene	ND	0.51	ND	0.097	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110-Summa-TB** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-026

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS01042		

Container Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
9.92	Trimethylsilanol	**11**	
17.07	Hexamethylcyclotrisiloxane	**7.2**	
19.93	unknown	**2.7**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-FB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-027

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/24/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01340

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	**12**	0.52	**7.1**	0.30	
75-71-8	Dichlorodifluoromethane (CFC 12)	**0.67**	0.52	**0.14**	0.11	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.51	ND	0.073	
75-01-4	Vinyl Chloride	ND	0.53	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.52	ND	0.24	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.51	ND	0.19	
64-17-5	Ethanol	**83**	5.1	**44**	2.7	
75-05-8	Acetonitrile	ND	0.52	ND	0.31	
107-02-8	Acrolein	ND	1.0	ND	0.44	
67-64-1	Acetone	**10**	5.4	**4.2**	2.3	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	**35**	2.1	**14**	0.85	
107-13-1	Acrylonitrile	ND	0.52	ND	0.24	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	**0.84**	0.54	**0.24**	0.16	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.53	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.53	ND	0.069	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.52	ND	0.13	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.3	ND	1.5	
78-93-3	2-Butanone (MEK)	ND	1.0	ND	0.34	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-FB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-027

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/24/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01340

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	
141-78-6	Ethyl Acetate	**180**	1.1	**51**	0.31	
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.53	ND	0.18	
107-06-2	1,2-Dichloroethane	ND	0.53	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	**0.90**	0.52	**0.28**	0.16	
56-23-5	Carbon Tetrachloride	ND	0.52	ND	0.083	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.53	ND	0.079	
79-01-6	Trichloroethene	ND	0.53	ND	0.099	
123-91-1	1,4-Dioxane	ND	0.53	ND	0.15	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.56	ND	0.12	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	**9.2**	0.53	**2.4**	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
123-86-4	n-Butyl Acetate	**0.99**	0.54	**0.21**	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **110-Summa-FB** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-027

Test Code: EPA TO-15 Date Collected: 1/10/19
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: 1/11/19
Analyst: Wida Ang Date Analyzed: 1/24/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01340

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
111-65-9	n-Octane	ND	0.54	ND	0.12	
127-18-4	Tetrachloroethene	ND	0.53	ND	0.078	
108-90-7	Chlorobenzene	ND	0.53	ND	0.12	
100-41-4	Ethylbenzene	ND	0.52	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.53	ND	0.051	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.53	ND	0.12	
111-84-2	n-Nonane	ND	0.54	ND	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	ND	0.077	
98-82-8	Cumene	ND	0.53	ND	0.11	
80-56-8	alpha-Pinene	**1.8**	0.52	**0.33**	0.093	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.53	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.53	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
5989-27-5	d-Limonene	**2.1**	0.51	**0.38**	0.092	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.52	ND	0.054	
120-82-1	1,2,4-Trichlorobenzene	ND	0.53	ND	0.071	
91-20-3	Naphthalene	ND	0.51	ND	0.097	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **110-Summa-FB** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P1900123-027

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	1/10/19
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	1/11/19
Analyst:	Wida Ang	Date Analyzed:	1/24/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:	**T**		
Container ID:	AS01340		

Container Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
4.66	Isobutane	**6.0**	
7.66	n-Pentane	**8.6**	
20.23	2-Ethyl-1-hexanol	**5.1**	
21.47	2-Ethylhexylacetate	**12**	
21.63	unknown Siloxane	**3.6**	

T = Analyte is a tentatively identified compound, result is estimated.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190123-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
115-07-1	Propene	ND	0.52	ND	0.30	
75-71-8	Dichlorodifluoromethane (CFC 12)	ND	0.52	ND	0.11	
74-87-3	Chloromethane	ND	0.50	ND	0.24	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	ND	0.51	ND	0.073	
75-01-4	Vinyl Chloride	ND	0.53	ND	0.21	
106-99-0	1,3-Butadiene	ND	0.52	ND	0.24	
74-83-9	Bromomethane	ND	0.50	ND	0.13	
75-00-3	Chloroethane	ND	0.51	ND	0.19	
64-17-5	Ethanol	ND	5.1	ND	2.7	
75-05-8	Acetonitrile	ND	0.52	ND	0.31	
107-02-8	Acrolein	ND	1.0	ND	0.44	
67-64-1	Acetone	ND	5.4	ND	2.3	
75-69-4	Trichlorofluoromethane (CFC 11)	ND	0.53	ND	0.094	
67-63-0	2-Propanol (Isopropyl Alcohol)	ND	2.1	ND	0.85	
107-13-1	Acrylonitrile	ND	0.52	ND	0.24	
75-35-4	1,1-Dichloroethene	ND	0.54	ND	0.14	
75-09-2	Methylene Chloride	ND	0.54	ND	0.16	
107-05-1	3-Chloro-1-propene (Allyl Chloride)	ND	0.53	ND	0.17	
76-13-1	Trichlorotrifluoroethane (CFC 113)	ND	0.53	ND	0.069	
75-15-0	Carbon Disulfide	ND	1.1	ND	0.35	
156-60-5	trans-1,2-Dichloroethene	ND	0.53	ND	0.13	
75-34-3	1,1-Dichloroethane	ND	0.52	ND	0.13	
1634-04-4	Methyl tert-Butyl Ether	ND	0.54	ND	0.15	
108-05-4	Vinyl Acetate	ND	5.3	ND	1.5	
78-93-3	2-Butanone (MEK)	ND	1.0	ND	0.34	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.
MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190123-MB

Test Code: EPA TO-15 Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA

Analyst: Wida Ang Date Analyzed: 1/23/19

Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	ND	0.53	ND	0.13	
141-78-6	Ethyl Acetate	ND	1.1	ND	0.31	
110-54-3	n-Hexane	ND	0.54	ND	0.15	
67-66-3	Chloroform	ND	0.54	ND	0.11	
109-99-9	Tetrahydrofuran (THF)	ND	0.53	ND	0.18	
107-06-2	1,2-Dichloroethane	ND	0.53	ND	0.13	
71-55-6	1,1,1-Trichloroethane	ND	0.54	ND	0.099	
71-43-2	Benzene	ND	0.52	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.52	ND	0.083	
110-82-7	Cyclohexane	ND	1.0	ND	0.29	
78-87-5	1,2-Dichloropropane	ND	0.54	ND	0.12	
75-27-4	Bromodichloromethane	ND	0.53	ND	0.079	
79-01-6	Trichloroethene	ND	0.53	ND	0.099	
123-91-1	1,4-Dioxane	ND	0.53	ND	0.15	
80-62-6	Methyl Methacrylate	ND	1.1	ND	0.27	
142-82-5	n-Heptane	ND	0.54	ND	0.13	
10061-01-5	cis-1,3-Dichloropropene	ND	0.56	ND	0.12	
108-10-1	4-Methyl-2-pentanone	ND	0.53	ND	0.13	
10061-02-6	trans-1,3-Dichloropropene	ND	0.53	ND	0.12	
79-00-5	1,1,2-Trichloroethane	ND	0.54	ND	0.099	
108-88-3	Toluene	ND	0.53	ND	0.14	
591-78-6	2-Hexanone	ND	0.54	ND	0.13	
124-48-1	Dibromochloromethane	ND	0.54	ND	0.063	
106-93-4	1,2-Dibromoethane	ND	0.54	ND	0.070	
123-86-4	n-Butyl Acetate	ND	0.54	ND	0.11	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client: **Stantec Consulting Services, Inc.**

Client Sample ID: **Method Blank** ALS Project ID: P1900123

Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190123-MB

Test Code: EPA TO-15 Date Collected: NA

Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA

Analyst: Wida Ang Date Analyzed: 1/23/19

Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)

Test Notes:

Container Dilution Factor: 1.00

CAS #	Compound	**Result µg/m³**	MRL µg/m³	**Result ppbV**	MRL ppbV	**Data Qualifier**
111-65-9	n-Octane	ND	0.54	ND	0.12	
127-18-4	Tetrachloroethene	ND	0.53	ND	0.078	
108-90-7	Chlorobenzene	ND	0.53	ND	0.12	
100-41-4	Ethylbenzene	ND	0.52	ND	0.12	
179601-23-1	m,p-Xylenes	ND	1.1	ND	0.25	
75-25-2	Bromoform	ND	0.53	ND	0.051	
100-42-5	Styrene	ND	0.53	ND	0.12	
95-47-6	o-Xylene	ND	0.53	ND	0.12	
111-84-2	n-Nonane	ND	0.54	ND	0.10	
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.53	ND	0.077	
98-82-8	Cumene	ND	0.53	ND	0.11	
80-56-8	alpha-Pinene	ND	0.52	ND	0.093	
103-65-1	n-Propylbenzene	ND	0.54	ND	0.11	
622-96-8	4-Ethyltoluene	ND	0.53	ND	0.11	
108-67-8	1,3,5-Trimethylbenzene	ND	0.53	ND	0.11	
95-63-6	1,2,4-Trimethylbenzene	ND	0.53	ND	0.11	
100-44-7	Benzyl Chloride	ND	1.1	ND	0.21	
541-73-1	1,3-Dichlorobenzene	ND	0.54	ND	0.090	
106-46-7	1,4-Dichlorobenzene	ND	0.54	ND	0.090	
95-50-1	1,2-Dichlorobenzene	ND	0.54	ND	0.090	
5989-27-5	d-Limonene	ND	0.51	ND	0.092	
96-12-8	1,2-Dibromo-3-chloropropane	ND	0.52	ND	0.054	
120-82-1	1,2,4-Trichlorobenzene	ND	0.53	ND	0.071	
91-20-3	Naphthalene	ND	0.51	ND	0.097	
87-68-3	Hexachlorobutadiene	ND	0.53	ND	0.050	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

Client:	**Stantec Consulting Services, Inc.**		
Client Sample ID:	**Method Blank**	ALS Project ID:	P1900123
Client Project ID:	**Bridgeton Air Monitoring / 182608047**	ALS Sample ID:	P190123-MB

Tentatively Identified Compounds

Test Code:	EPA TO-15	Date Collected:	NA
Instrument ID:	Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13	Date Received:	NA
Analyst:	Wida Ang	Date Analyzed:	1/23/19
Sample Type:	6.0 L Silonite Canister	Volume(s) Analyzed:	1.00 Liter(s)
Test Notes:			

Container Dilution Factor: 1.00

GC/MS Retention Time	**Compound Identification**	**Concentration µg/m³**	**Data Qualifier**
	No Compounds Detected		

ALS ENVIRONMENTAL

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stantec Consulting Services, Inc.**
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Project ID: P1900123

Test Code: EPA TO-15
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date(s) Collected: 1/10/19
Analyst: Wida Ang Date(s) Received: 1/11/19
Sample Type: 6.0 L Silonite Canister(s) Date(s) Analyzed: 1/23 - 1/24/19
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 Percent Recovered	Toluene-d8 Percent Recovered	Bromofluorobenzene Percent Recovered	Acceptance Limits	Data Qualifier
Method Blank	P190123-MB	**101**	**98**	**102**	70-130	
Lab Control Sample	P190123-LCS	**99**	**98**	**103**	70-130	
110U1-Summa	P1900123-021	**103**	**99**	**100**	70-130	
110D1-Summa	P1900123-022	**104**	**99**	**102**	70-130	
110U2-Summa	P1900123-023	**101**	**99**	**101**	70-130	
110D2-Summa	P1900123-024	**101**	**99**	**102**	70-130	
110-DUPE 10	P1900123-025	**104**	**99**	**100**	70-130	
110-Summa-TB	P1900123-026	**104**	**99**	**99**	70-130	
110-Summa-FB	P1900123-027	**104**	**98**	**98**	70-130	

Surrogate percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly from the on-column percent recovery.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190123-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
115-07-1	Propene	211	**202**	**96**	53-112	
75-71-8	Dichlorodifluoromethane (CFC 12)	210	**203**	**97**	62-103	
74-87-3	Chloromethane	211	**219**	**104**	51-121	
76-14-2	1,2-Dichloro-1,1,2,2-tetrafluoroethane (CFC 114)	211	**208**	**99**	56-111	
75-01-4	Vinyl Chloride	214	**230**	**107**	57-117	
106-99-0	1,3-Butadiene	210	**230**	**110**	53-134	
74-83-9	Bromomethane	212	**218**	**103**	65-110	
75-00-3	Chloroethane	214	**213**	**100**	64-111	
64-17-5	Ethanol	1,020	**1030**	**101**	57-124	
75-05-8	Acetonitrile	206	**216**	**105**	57-126	
107-02-8	Acrolein	205	**218**	**106**	62-121	
67-64-1	Acetone	1,060	**1010**	**95**	60-113	
75-69-4	Trichlorofluoromethane (CFC 11)	211	**204**	**97**	63-104	
67-63-0	2-Propanol (Isopropyl Alcohol)	413	**424**	**103**	60-124	
107-13-1	Acrylonitrile	207	**250**	**121**	66-125	
75-35-4	1,1-Dichloroethene	218	**221**	**101**	68-107	
75-09-2	Methylene Chloride	217	**231**	**106**	66-105	**L**
107-05-1	3-Chloro-1-propene (Allyl Chloride)	216	**234**	**108**	63-127	
76-13-1	Trichlorotrifluoroethane (CFC 113)	216	**209**	**97**	59-109	
75-15-0	Carbon Disulfide	218	**203**	**93**	67-109	
156-60-5	trans-1,2-Dichloroethene	214	**240**	**112**	70-115	
75-34-3	1,1-Dichloroethane	216	**211**	**98**	66-106	
1634-04-4	Methyl tert-Butyl Ether	214	**213**	**100**	67-109	
108-05-4	Vinyl Acetate	1,060	**1120**	**106**	68-136	
78-93-3	2-Butanone (MEK)	208	**218**	**105**	71-116	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.
L = Laboratory control sample recovery outside the specified limits, results may be biased high.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190123-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
156-59-2	cis-1,2-Dichloroethene	211	**218**	**103**	67-110	
141-78-6	Ethyl Acetate	436	**447**	**103**	64-127	
110-54-3	n-Hexane	216	**201**	**93**	60-115	
67-66-3	Chloroform	217	**213**	**98**	66-105	
109-99-9	Tetrahydrofuran (THF)	216	**206**	**95**	65-110	
107-06-2	1,2-Dichloroethane	215	**218**	**101**	60-110	
71-55-6	1,1,1-Trichloroethane	215	**212**	**99**	64-108	
71-43-2	Benzene	211	**202**	**96**	67-106	
56-23-5	Carbon Tetrachloride	212	**213**	**100**	64-112	
110-82-7	Cyclohexane	416	**404**	**97**	67-110	
78-87-5	1,2-Dichloropropane	216	**213**	**99**	66-112	
75-27-4	Bromodichloromethane	215	**226**	**105**	67-113	
79-01-6	Trichloroethene	213	**214**	**100**	66-108	
123-91-1	1,4-Dioxane	214	**221**	**103**	70-116	
80-62-6	Methyl Methacrylate	431	**483**	**112**	73-118	
142-82-5	n-Heptane	215	**212**	**99**	66-110	
10061-01-5	cis-1,3-Dichloropropene	214	**223**	**104**	75-120	
108-10-1	4-Methyl-2-pentanone	209	**221**	**106**	65-124	
10061-02-6	trans-1,3-Dichloropropene	213	**233**	**109**	77-123	
79-00-5	1,1,2-Trichloroethane	215	**221**	**103**	68-112	
108-88-3	Toluene	212	**189**	**89**	62-111	
591-78-6	2-Hexanone	214	**221**	**103**	59-128	
124-48-1	Dibromochloromethane	213	**230**	**108**	67-123	
106-93-4	1,2-Dibromoethane	216	**231**	**107**	66-122	
123-86-4	n-Butyl Acetate	219	**217**	**99**	64-128	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

ALS ENVIRONMENTAL

LABORATORY CONTROL SAMPLE SUMMARY

Client: **Stantec Consulting Services, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1900123
Client Project ID: **Bridgeton Air Monitoring / 182608047** ALS Sample ID: P190123-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5975Binert/6890N/MS13 Date Received: NA
Analyst: Wida Ang Date Analyzed: 1/23/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 0.125 Liter(s)
Test Notes:

CAS #	Compound	Spike Amount µg/m³	Result µg/m³	% Recovery	ALS Acceptance Limits	Data Qualifier
111-65-9	n-Octane	217	**201**	**93**	65-114	
127-18-4	Tetrachloroethene	213	**204**	**96**	55-120	
108-90-7	Chlorobenzene	215	**202**	**94**	61-114	
100-41-4	Ethylbenzene	212	**196**	**92**	64-113	
179601-23-1	m,p-Xylenes	426	**394**	**92**	64-114	
75-25-2	Bromoform	213	**236**	**111**	65-132	
100-42-5	Styrene	212	**220**	**104**	67-124	
95-47-6	o-Xylene	214	**198**	**93**	65-114	
111-84-2	n-Nonane	215	**199**	**93**	64-117	
79-34-5	1,1,2,2-Tetrachloroethane	214	**207**	**97**	66-119	
98-82-8	Cumene	214	**195**	**91**	61-116	
80-56-8	alpha-Pinene	211	**205**	**97**	65-120	
103-65-1	n-Propylbenzene	218	**203**	**93**	63-117	
622-96-8	4-Ethyltoluene	214	**209**	**98**	63-124	
108-67-8	1,3,5-Trimethylbenzene	214	**191**	**89**	60-117	
95-63-6	1,2,4-Trimethylbenzene	215	**201**	**93**	61-122	
100-44-7	Benzyl Chloride	217	**232**	**107**	77-142	
541-73-1	1,3-Dichlorobenzene	216	**212**	**98**	61-125	
106-46-7	1,4-Dichlorobenzene	216	**206**	**95**	59-123	
95-50-1	1,2-Dichlorobenzene	216	**210**	**97**	61-126	
5989-27-5	d-Limonene	211	**216**	**102**	66-124	
96-12-8	1,2-Dibromo-3-chloropropane	209	**221**	**106**	67-138	
120-82-1	1,2,4-Trichlorobenzene	214	**222**	**104**	62-141	
91-20-3	Naphthalene	203	**228**	**112**	62-145	
87-68-3	Hexachlorobutadiene	209	**187**	**89**	49-131	

Laboratory Control Sample percent recovery is verified and accepted based on the on-column result.
Reported results are shown in concentration units and as a result of the calculation, may vary slightly.

Response Factor Report MS13

Method Path : I:\MS13\METHODS\
Method File : R13012319.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
Last Update : Wed Jan 23 11:21:29 2019
Response Via : Initial Calibration

Calibration Files
0.1 =01231906.D 0.2 =01231907.D 0.5 =01231904.D 1.0 =01231905.D 5.0 =01231908.D 25 =01231909.D 50 =01231910.D
100 =01231911.D

		Compound	0.1	0.2	0.5	1.0	5.0	25	50	100	Avg	%RSD
1)	IR	Bromochloromethane...	----------	ISTD	----------							
2)	T	Propene	1.086	1.026	1.144	1.076	1.116	1.075	1.030	1.147	1.088	4.25
3)	T	Dichlorodifluo...	1.809	1.904	1.983	1.928	1.929	1.844	1.767	1.701	1.858	5.11
4)	T	Chloromethane	1.367	1.297	1.705	1.481	1.555	1.501	1.434	1.201	1.443	10.85
5)	T	1,2-Dichloro-1...	1.133	1.207	1.294	1.236	1.216	1.182	1.162	1.150	1.198	4.37
6)	T	Vinyl Chloride	1.155	1.181	1.541	1.425	1.493	1.456	1.420	1.394	1.383	10.16
7)	T	1,3-Butadiene	0.839	0.766	1.099	1.063	1.193	1.139	1.130	1.094	1.040	14.71
8)	T	Bromomethane	0.974	0.896	1.022	1.000	1.047	1.027	0.990	0.981	0.992	4.64
9)	T	Chloroethane		0.661	0.806	0.783	0.799	0.786	0.755	0.739	0.761	6.58
10)	T	Ethanol	0.911	0.684	0.807	0.723	0.751	0.725	0.683	0.649	0.741	11.27
11)	T	Acetonitrile			1.720	1.655	1.785	1.902	1.857	1.846	1.794	5.19
12)	T	Acrolein			0.478	0.578	0.638	0.674	0.656	0.654	0.613	12.08
13)	T	Acetone	0.982	0.849	0.832	0.785	0.777	0.745	0.696	0.636	0.788	13.31
14)	T	Trichlorofluor...	1.578	1.534	1.687	1.609	1.592	1.510	1.479	1.468	1.557	4.73
15)	T	2-Propanol (Is...	2.391	2.376	2.589	2.458	2.558	2.520	2.371	1.931	2.399	8.63
16)	T	Acrylonitrile			0.607	0.939	1.196	1.397	1.378	1.374	1.149	27.66
17)	T	1,1-Dichloroet...	0.916	0.965	1.102	1.059	1.091	1.081	1.057	1.042	1.039	6.27
18)	T	2-Methyl-2-Pro...	2.156	2.284	2.524	2.464	2.470	2.451	2.336	2.181	2.358	5.95
19)	T	Methylene Chlo...	0.813	0.834	1.045	1.041	1.089	1.092	1.059	1.016	0.999	11.11
20)	T	3-Chloro-1-pro...	1.150	1.232	1.363	1.307	1.435	1.433	1.410	1.377	1.338	7.65
21)	T	Trichlorotrifl...	1.080	1.074	1.186	1.111	1.119	1.090	1.067	1.062	1.099	3.70
22)	T	Carbon Disulfide		4.632	4.512	4.217	3.870	3.906	3.766	3.653	4.079	9.31
23)	T	trans-1,2-Dich...	0.797	0.909	1.278	1.306	1.364	1.394	1.357	1.323	1.216	18.81
24)	T	1,1-Dichloroet...	1.655	1.724	1.814	1.782	1.815	1.738	1.683	1.631	1.730	4.07
25)	T	Methyl tert-Bu...	2.784	2.946	3.175	3.042	3.063	2.981	2.866	2.785	2.955	4.70
26)	T	Vinyl Acetate			0.227	0.242	0.266	0.276	0.263	0.247	0.253	7.11
27)	T	2-Butanone (MEK)			0.655	0.676	0.731	0.772	0.757	0.743	0.722	6.47
28)	T	cis-1,2-Dichlo...	0.980	1.145	1.394	1.307	1.349	1.337	1.291	1.259	1.258	10.69
29)	T	Diisopropyl Ether	0.828	1.007	1.104	1.080	1.089	1.048	1.001	0.953	1.014	8.96
30)	T	Ethyl Acetate			0.354	0.361	0.386	0.376	0.352	0.317	0.358	6.66
31)	T	n-Hexane	1.711	1.805	1.894	1.762	1.738	1.540	1.477	1.354	1.660	11.07
32)	T	Chloroform	1.574	1.527	1.735	1.661	1.672	1.656	1.611	1.575	1.626	4.12
33)	S	1,2-Dichloroet...	1.071	1.072	1.080	1.077	1.066	1.048	1.051	1.061	1.066	1.09
34)	T	Tetrahydrofura...	0.744	0.728	0.765	0.749	0.745	0.731	0.707	0.695	0.733	3.15
35)	T	Ethyl tert-But...	1.153	1.191	1.333	1.335	1.301	1.285	1.248	1.225	1.259	5.27
36)	T	1,2-Dichloroet...	0.877	0.970	1.089	1.066	1.085	1.092	1.051	1.028	1.032	7.24
37)	IR	1,4-Difluorobenzen...	----------	ISTD	----------							
38)	T	1,1,1-Trichlor...	0.312	0.333	0.341	0.331	0.341	0.340	0.328	0.315	0.330	3.42
39)	T	Isopropyl Acetate	0.156	0.166	0.173	0.164	0.164	0.160	0.149	0.135	0.159	7.45
40)	T	1-Butanol	0.226	0.166	0.225	0.207	0.226	0.243	0.227	0.207	0.216	10.78
41)	T	Benzene	1.172	1.072	1.088	1.054	1.046	1.017	0.954	0.856	1.032	9.16
42)	T	Carbon Tetrach...	0.273	0.287	0.314	0.310	0.310	0.321	0.311	0.302	0.304	5.24

VOA 1/23/19

Method Path : I:\MS13\METHODS\
Method File : R13012319.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

43)	T	Cyclohexane	0.426	0.420	0.439	0.416	0.413	0.403	0.380	0.348	0.406	7.13
44)	T	tert-Amyl Meth...	0.678	0.651	0.721	0.679	0.685	0.690	0.660	0.625	0.674	4.29
45)	T	1,2-Dichloropr...	0.231	0.230	0.253	0.241	0.245	0.241	0.230	0.218	0.236	4.61
46)	T	Bromodichlorom...	0.259	0.263	0.291	0.282	0.299	0.307	0.298	0.287	0.286	6.04
47)	T	Trichloroethene	0.276	0.295	0.318	0.297	0.306	0.308	0.299	0.288	0.298	4.31
48)	T	1,4-Dioxane	0.174	0.209	0.215	0.213	0.219	0.219	0.212	0.203	0.208	7.11
49)	T	2,2,4-Trimethy...	1.112	1.075	1.125	1.030	1.029	0.979	0.925	0.847	1.015	9.36
50)	T	Methyl Methacr...	0.066	0.083	0.103	0.104	0.110	0.115	0.112	0.106	0.100	16.93
51)	T	n-Heptane	0.253	0.254	0.268	0.250	0.257	0.248	0.238	0.223	0.249	5.39
52)	T	cis-1,3-Dichlo...			0.351	0.354	0.379	0.402	0.388	0.370	0.374	5.29
53)	T	4-Methyl-2-pen...	0.190	0.198	0.219	0.223	0.218	0.230	0.218	0.206	0.213	6.41
54)	T	trans-1,3-Dich...			0.265	0.263	0.325	0.355	0.345	0.333	0.314	12.77
55)	T	1,1,2-Trichlor...	0.212	0.228	0.255	0.243	0.251	0.252	0.244	0.235	0.240	6.04
56)	IR	Chlorobenzene-d5 (...	----------	----------	ISTD	----------	----------	----------	----------	----------	----------	
57)	S	Toluene-d8 (SS2)	2.709	2.667	2.686	2.684	2.659	2.667	2.697	2.647	2.677	0.78
58)	T	Toluene	3.569	3.054	3.117	2.710	2.713	2.647	2.581	2.371	2.845	13.36
59)	T	2-Hexanone	1.016	0.984	1.177	1.131	1.162	1.212	1.175	1.087	1.118	7.34
60)	T	Dibromochlorom...	0.567	0.610	0.682	0.676	0.736	0.771	0.764	0.740	0.693	10.69
61)	T	1,2-Dibromoethane	0.500	0.541	0.666	0.643	0.687	0.721	0.710	0.684	0.644	12.51
62)	T	n-Butyl Acetate	1.351	1.230	1.328	1.275	1.299	1.371	1.315	1.212	1.298	4.33
63)	T	n-Octane	0.639	0.526	0.539	0.516	0.521	0.507	0.488	0.446	0.523	10.53
64)	T	Tetrachloroethene	0.899	0.856	0.899	0.866	0.877	0.872	0.862	0.836	0.871	2.46
65)	T	Chlorobenzene	2.099	1.980	1.951	1.847	1.858	1.871	1.804	1.687	1.887	6.56
66)	T	Ethylbenzene	3.471	3.201	3.189	2.987	3.071	3.034	2.893	2.653	3.062	7.86
67)	T	m- & p-Xylenes	2.904	2.484	2.444	2.292	2.308	2.288	2.200	1.993	2.364	11.20
68)	T	Bromoform	0.510	0.516	0.587	0.587	0.669	0.737	0.736	0.724	0.633	15.11
69)	T	Styrene	1.735	1.728	1.842	1.740	1.943	2.016	1.956	1.824	1.848	6.08
70)	T	o-Xylene	2.815	2.470	2.499	2.262	2.304	2.281	2.196	2.020	2.356	10.14
71)	T	n-Nonane	1.296	1.341	1.217	1.136	1.168	1.110	1.035	0.910	1.152	12.08
72)	T	1,1,2,2-Tetrac...	1.151	1.109	1.120	1.089	1.120	1.137	1.092	1.014	1.104	3.80
73)	S	Bromofluoroben...	0.951	0.952	0.964	0.966	0.975	0.968	0.971	0.963	0.964	0.89
74)	T	Cumene	4.039	3.577	3.252	3.091	3.121	3.070	2.928	2.641	3.215	13.24
75)	T	alpha-Pinene	1.583	1.666	1.507	1.443	1.553	1.590	1.545	1.425	1.539	5.17
76)	T	n-Propylbenzene	4.309	3.923	3.746	3.483	3.571	3.520	3.335	2.961	3.606	11.13
77)	T	3-Ethyltoluene	3.393	3.262	3.058	2.956	3.092	3.023	3.040	2.621	3.056	7.40
78)	T	4-Ethyltoluene	3.821	3.378	3.085	2.892	2.962	3.011	2.714	2.565	3.053	12.89
79)	T	1,3,5-Trimethy...	3.551	3.021	2.644	2.458	2.558	2.529	2.437	2.241	2.680	15.54
80)	T	alpha-Methylst...	1.239	1.204	1.192	1.141	1.458	1.514	1.472	1.364	1.323	11.07
81)	T	2-Ethyltoluene	4.069	3.458	3.397	2.986	3.033	3.007	2.883	2.606	3.180	14.17
82)	T	1,2,4-Trimethy...	3.299	2.774	2.702	2.437	2.554	2.535	2.395	2.102	2.600	13.41
83)	T	n-Decane	1.426	1.437	1.289	1.214	1.301	1.262	1.176	1.016	1.265	10.76
84)	T	Benzyl Chloride			1.612	1.503	1.912	2.206	2.171	2.005	1.901	15.22
85)	T	1,3-Dichlorobe...	1.822	1.622	1.645	1.478	1.603	1.674	1.651	1.557	1.631	6.06
86)	T	1,4-Dichlorobe...	2.044	1.716	1.776	1.575	1.653	1.699	1.670	1.568	1.713	8.82
87)	T	sec-Butylbenzene	4.377	4.182	3.654	3.422	3.532	3.473	3.303	2.930	3.609	12.97
88)	T	4-Isopropyltol...	3.963	3.909	3.479	3.234	3.401	3.315	3.076	2.574	3.369	13.26
89)	T	1,2,3-Trimethy...	3.027	2.856	2.585	2.417	2.580	2.563	2.431	2.117	2.572	10.79
90)	T	1,2-Dichlorobe...	1.866	1.629	1.643	1.471	1.553	1.601	1.552	1.425	1.592	8.38
91)	T	d-Limonene	0.921	0.995	0.823	0.795	0.987	1.001	0.938	0.799	0.907	9.79
92)	T	1,2-Dibromo-3-...	0.588	0.498	0.569	0.501	0.584	0.630	0.626	0.609	0.576	8.91
93)	T	n-Undecane	1.106	1.062	1.086	1.030	1.352	1.349	1.256	1.092	1.167	11.25
94)	T	1,2,4-Trichlor...	1.429	0.899	1.295	0.974	1.227	1.320	1.301	1.254	1.212	14.95

Method Path : I:\MS13\METHODS\
Method File : R13012319.M
Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)

95)	T	Naphthalene		2.338	3.658	2.347	3.720	4.006	3.800	3.281	3.307	20.98
96)	T	n-Dodecane			1.159	0.696	1.263	1.298	1.178	0.952	1.091	20.92
97)	T	Hexachlorobuta...	1.262	0.980	0.893	0.755	0.816	0.834	0.840	0.829	0.901	17.74
98)	T	Cyclohexanone	1.010	0.860	0.896	0.836	0.762	0.872	0.854	0.802	0.862	8.50
99)	T	tert-Butylbenzene	3.242	3.109	2.704	2.543	2.601	2.548	2.391	2.067	2.651	14.23
100)	T	n-Butylbenzene	2.961	2.833	2.655	2.498	2.706	2.682	2.550	2.272	2.645	7.96

(#) = Out of Range

Evaluate Continuing Calibration Report

Data File : I:\MS13\DATA\2019 01\23\01231913.D Vial: 16
Acq On : 23 Jan 2019 12:17 Operator: WA
Sample : CCV R13012319 5ng Inst : MS13
Misc : S31-01221908/S31-01161903 (2/14)

Quant Time: Jan 23 13:23:31 2019
Quant Method : I:\MS13\METHODS\R13012319.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Jan 23 11:21:29 2019
Response via : Initial Calibration
DataAcq Meth:TO15.M

WSA 1/23/19

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1	IR	Bromochloromethane (IS1)	1.000	1.000	0.0	104	-0.03
2	T	Propene	1.088	1.049	3.6	98	-0.01
3	T	Dichlorodifluoromethane (CF	1.858	1.765	5.0	95	-0.02
4	T	Chloromethane	1.443	1.485	-2.9	99	-0.02
5	T	1,2-Dichloro-1,1,2,2-tetraf	1.198	1.150	4.0	98	-0.02
6	T	Vinyl Chloride	1.383	1.452	-5.0	101	-0.02
7	T	1,3-Butadiene	1.040	1.181	-13.6	103	-0.02
8	T	Bromomethane	0.992	0.994	-0.2	99	-0.03
9	T	Chloroethane	0.761	0.748	1.7	97	-0.03
10	T	Ethanol	0.741	0.714	3.6	99	-0.12
11	T	Acetonitrile	1.794	1.692	5.7	99	-0.06
12	T	Acrolein	0.613	0.620	-1.1	101	-0.03
13	T	Acetone	0.788	0.720	8.6	96	-0.07
14	T	Trichlorofluoromethane	1.557	1.425	8.5	93	-0.03
15	T	2-Propanol (Isopropanol)	2.399	2.389	0.4	97	-0.08
16	T	Acrylonitrile	1.149	1.189	-3.5	103	-0.05
17	T	1,1-Dichloroethene	1.039	1.018	2.0	97	-0.02
18	T	2-Methyl-2-Propanol (tert-B	2.358	2.311	2.0	97	-0.08
19	T	Methylene Chloride	0.999	1.007	-0.8	96	-0.05
20	T	3-Chloro-1-propene (Allyl C	1.338	1.297	3.1	94	-0.03
21	T	Trichlorotrifluoroethane	1.099	1.022	7.0	95	-0.02
22	T	Carbon Disulfide	4.079	3.627	11.1	97	-0.03
23	T	trans-1,2-Dichloroethene	1.216	1.282	-5.4	98	-0.03
24	T	1,1-Dichloroethane	1.730	1.639	5.3	94	-0.03
25	T	Methyl tert-Butyl Ether	2.955	2.786	5.7	95	-0.01
26	T	Vinyl Acetate	0.253	0.246	2.8	96	-0.05
27	T	2-Butanone (MEK)	0.722	0.689	4.6	98	-0.02
28	T	cis-1,2-Dichloroethene	1.258	1.241	1.4	96	-0.03
29	T	Diisopropyl Ether	1.014	0.977	3.6	93	-0.02
30	T	Ethyl Acetate	0.358	0.351	2.0	95	-0.03
31	T	n-Hexane	1.660	1.463	11.9	88	-0.01
32	T	Chloroform	1.626	1.551	4.6	96	-0.03
33	S	1,2-Dichloroethane-d4(SS1)	1.066	1.036	2.8	101	-0.02
34	T	Tetrahydrofuran (THF)	0.733	0.691	5.7	97	0.00
35	T	Ethyl tert-Butyl Ether	1.259	1.187	5.7	95	-0.02
36	T	1,2-Dichloroethane	1.032	1.006	2.5	96	-0.02
37	IR	1,4-Difluorobenzene (IS2)	1.000	1.000	0.0	102	-0.02
38	T	1,1,1-Trichloroethane	0.330	0.316	4.2	94	-0.02
39	T	Isopropyl Acetate	0.159	0.154	3.1	95	-0.01
40	T	1-Butanol	0.216	0.225	-4.2	101	-0.05
41	T	Benzene	1.032	0.982	4.8	95	-0.02
42	T	Carbon Tetrachloride	0.304	0.294	3.3	96	-0.02
43	T	Cyclohexane	0.406	0.386	4.9	95	-0.02
44	T	tert-Amyl Methyl Ether	0.674	0.653	3.1	97	-0.01
45	T	1,2-Dichloropropane	0.236	0.229	3.0	95	-0.02
46	T	Bromodichloromethane	0.286	0.285	0.3	97	-0.02
47	T	Trichloroethene	0.298	0.289	3.0	96	-0.02
48	T	1,4-Dioxane	0.208	0.205	1.4	95	0.00
49	T	2,2,4-Trimethylpentane (Iso	1.015	0.939	7.5	93	-0.02
50	T	Methyl Methacrylate	0.100	0.106	-6.0	97	-0.02
51	T	n-Heptane	0.249	0.230	7.6	91	-0.02
52	T	cis-1,3-Dichloropropene	0.374	0.368	1.6	99	0.00
53	T	4-Methyl-2-pentanone	0.213	0.212	0.5	99	-0.01
54	T	trans-1,3-Dichloropropene	0.314	0.311	1.0	97	-0.01
55	T	1,1,2-Trichloroethane	0.240	0.235	2.1	95	-0.01

Evaluate Continuing Calibration Report

Data File : I:\MS13\DATA\2019 01\23\01231913.D Vial: 16
Acq On : 23 Jan 2019 12:17 Operator: WA
Sample : CCV R13012319 5ng Inst : MS13
Misc : S31-01221908/S31-01161903 (2/14)

Quant Time: Jan 23 13:23:31 2019
Quant Method : I:\MS13\METHODS\R13012319.M
Quant Title : EPA TO-15 per SOP VOA-TO15 (CASS TO-15/GC-MS)
QLast Update : Wed Jan 23 11:21:29 2019
Response via : Initial Calibration
DataAcq Meth:TO15.M

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.33min
Max. RRF Dev : 30% Max. Rel. Area : 200%

		Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
56	IR	Chlorobenzene-d5 (IS3)	1.000	1.000	0.0	103	0.00
57	S	Toluene-d8 (SS2)	2.677	2.631	1.7	102	-0.01
58	T	Toluene	2.845	2.520	11.4	96	-0.01
59	T	2-Hexanone	1.118	1.098	1.8	98	-0.01
60	T	Dibromochloromethane	0.693	0.690	0.4	97	0.00
61	T	1,2-Dibromoethane	0.644	0.655	-1.7	98	0.00
62	T	n-Butyl Acetate	1.298	1.254	3.4	100	0.00
63	T	n-Octane	0.523	0.482	7.8	95	-0.01
64	T	Tetrachloroethene	0.871	0.806	7.5	95	0.00
65	T	Chlorobenzene	1.887	1.732	8.2	96	0.00
66	T	Ethylbenzene	3.062	2.859	6.6	96	0.00
67	T	m- & p-Xylenes	2.364	2.128	10.0	95	-0.01
68	T	Bromoform	0.633	0.640	-1.1	99	-0.01
69	T	Styrene	1.848	1.829	1.0	97	0.00
70	T	o-Xylene	2.356	2.134	9.4	96	-0.01
71	T	n-Nonane	1.152	1.071	7.0	95	0.00
72	T	1,1,2,2-Tetrachloroethane	1.104	1.052	4.7	97	0.00
73	S	Bromofluorobenzene (SS3)	0.964	0.997	-3.4	106	0.00
74	T	Cumene	3.215	2.897	9.9	96	0.00
75	T	alpha-Pinene	1.539	1.441	6.4	96	0.00
76	T	n-Propylbenzene	3.606	3.332	7.6	96	0.00
77	T	3-Ethyltoluene	3.056	2.906	4.9	97	0.00
78	T	4-Ethyltoluene	3.053	2.732	10.5	95	-0.01
79	T	1,3,5-Trimethylbenzene	2.680	2.378	11.3	96	0.00
80	T	alpha-Methylstyrene	1.323	1.376	-4.0	97	-0.01
81	T	2-Ethyltoluene	3.180	2.845	10.5	97	0.00
82	T	1,2,4-Trimethylbenzene	2.600	2.382	8.4	96	-0.01
83	T	n-Decane	1.265	1.211	4.3	96	-0.01
84	T	Benzyl Chloride	1.901	1.874	1.4	101	-0.01
85	T	1,3-Dichlorobenzene	1.631	1.527	6.4	98	-0.01
86	T	1,4-Dichlorobenzene	1.713	1.555	9.2	97	0.00
87	T	sec-Butylbenzene	3.609	3.288	8.9	96	0.00
88	T	4-Isopropyltoluene (p-Cymen	3.369	3.168	6.0	96	0.00
89	T	1,2,3-Trimethylbenzene	2.572	2.410	6.3	96	-0.01
90	T	1,2-Dichlorobenzene	1.592	1.482	6.9	98	-0.01
91	T	d-Limonene	0.907	0.930	-2.5	97	0.00
92	T	1,2-Dibromo-3-Chloropropane	0.576	0.563	2.3	99	0.00
93	T	n-Undecane	1.167	1.283	-9.9	98	0.00
94	T	1,2,4-Trichlorobenzene	1.212	1.239	-2.2	104	0.00
95	T	Naphthalene	3.307	3.798	-14.8	105	0.00
96	T	n-Dodecane	1.091	1.247	-14.3	102	0.00
97	T	Hexachlorobutadiene	0.901	0.770	14.5	97	0.00
98	T	Cyclohexanone	0.862	0.755	12.4	102	-0.01
99	T	tert-Butylbenzene	2.651	2.425	8.5	96	-0.01
100	T	n-Butylbenzene	2.645	2.527	4.5	96	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0

APPENDIX C

Data Validation Report

Stantec Analytical Validation Checklist — Report No. 013018-EC-01

Project Name: Bridgeton, MO	Project Number: 182608047
Stantec Validator: Elizabeth A. Crowley	Laboratory: ALS –Semi-Valley, CA
Date Validated: 01/29/19	Laboratory Project Number: P1900123
Sample Start-End Date: 01/10/19	Laboratory Report Date: 01/25/19

Parameters Validated: Aldehydes by TO-11A, Amines by GC/NPD, Ammonia by ID-188/ID-164, Carboxylic Acids by GC/MS, Sulfur Compounds by ASTM D5504-12 and Volatile Organic Compounds with TICs by EPA TO-15

Samples Validated: 5 air field samples, 1 Field Blank and 1 Trip Blank

VALIDATION CRITERIA CHECK

Validation Flags Applicable to this Review:

U The analyte was analyzed for, but not detected above the reported sample quantitation limit.

J The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

B The analyte was detected in the method, field, and/or trip blank.

R The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

	Yes	No
1. Were all the analyses requested for the samples submitted with each COC completed by the lab?	X	
Comments:		
2. Did the laboratory identify any non-conformances related to the analytical result?	X	
Comments: Refer to laboratory report "Case Narrative" for minor issues.		
3. Were sample Chain-of-Custody forms complete?	X	
Comments:		
4. Were samples received in good condition and at the appropriate temperature?	X	
Comments:		
5. Were sample holding times met?	X	
Comments:		
6. Were correct concentration units reported?	X	
Comments:		
7. Were detections found in laboratory blank samples?		X

Comments:			
8. Were detections found in field blank, equipment rinse blank, and/or trip blank samples?		Yes X	No
Comments: Field Blank – Propane = 12 µg/m³, Dichlorodifluoromethane = 0.67 µg/m³, Ethanol = 83 µg/m³, Acetone = 10 µg/m³, 2-Propanol = 35 µg/m³, Methylene Chloride = 0.84 µg/m³, Ethyl Acetate = 180 µg/m³, Benzene = 0.90 µg/m³, Toluene = 9.2 µg/m³, n-Butyl Acetate = 0.99 µg/m³, alpha-Pinene = 1.8 µg/m³, and delta-Limonene = 2.1 µg/m³,. Associated sample results below the blank concentration are validated to non-detect and flagged “UJB”. Sample results greater than the blank concentration are flagged “JB”. The reporting limit and/or the detection limit is changed to the blank concentration. Sample results greater than 10 times the blank concentration require no qualifying action. Reason Code – FB			
9. Were instrument calibrations within method criteria?		Yes X	No
Comments:			
10. Were surrogate recoveries within control limits?		Yes X	No
Comments:			
11. Were laboratory control (LC/LD) sample recoveries within control limits?		Yes X	No
Comments:			
12. Were site specific matrix spike (MS/MD) recoveries within control limits?	NA	Yes	No
Comment: No matrix samples required by method.			
13. Were RPDs within control limits?		Yes X	No
Comments:			
14. Were dilutions required on any samples?		Yes X	No
Comments: No qualifying action required.			
15. Were Tentatively Identified Compounds (TIC) present?		Yes	No X
Comments:			
16. Were organic system performance criteria met?	NA	Yes	No
Comments: Level II data package, no data provided.			
17. Were GC/MS internal standards within method criteria?	NA	Yes	No
Comments: Level II data package, no data provided.			
18. Were inorganic system performance criteria met?	NA	Yes	No

Comments: Level II data package, no data provided.		
19. Were blind field duplicates collected? If so, discuss the precision (RPD) of the results.	Yes X	No
Duplicate Sample Nos. 110-Dupe01 110U1-ALD 110-Dupe02 110D1-Amines 110-Dupe03 110U2-NH3 110-Dupe04 110D2-Carbox 100-Dupe10 110D1-Summa (sulfur and TO-15)		
Comments: All RPDs within limits except Acetonitrile. Acetonitrile results flagged "J". Reason Code – FDUP		
20. Were at least 10 percent of the hard copy results compared to the Electronic Data Deliverable Results?	Yes X	No / Initials EAC
Comments:		
21. Other:	Yes	No X
Comments:		

PRECISION, ACCURACY, METHOD COMPLIANCE AND COMPLETENESS ASSESSMENT

Precision:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Sensitivity:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Accuracy:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Representativeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Method Compliance:	Acceptable X	Unacceptable	Initials EAC
Comments:			
Completeness:	Acceptable X	Unacceptable	Initials EAC
Comments:			