REPORT:
VAPOR INTRUSION INVESTIGATION

FORMER CASCADE LAUNDRY
205 PROSPECT STREET
WHATCOM COUNTY PARCEL 380330111249
BELLINGHAM, WASHINGTON 98225
ECOLOGY FS ID: 21786898

For:
Sonja Max and Oliver Max
914 12th Street
Bellingham, Washington 98225

By:

STRATUM GROUP

PO Box 2546
Bellingham, WA 98227
(360) 714-9409

December 17, 2019

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STRATUM GROUP

PO Box 2546
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December 17, 2019

Sonja Max and Oliver Max
914 12th Street
Bellingham, Washington 98225

Re: Vapor Intrusion Investigation
Former Cascade Laundry
205 Prospect Street
Bellingham, Washington 98225
Ecology FS ID: 21786898

Dear Ms. Max and Mr. Max:

Stratum Group is pleased to provide the results of our indoor air and sub-slab vapor intrusion (VI) investigation at 205 Prospect Street in Bellingham, Washington. The assessment was conducted to evaluate the risk of vapor intrusion on the site.

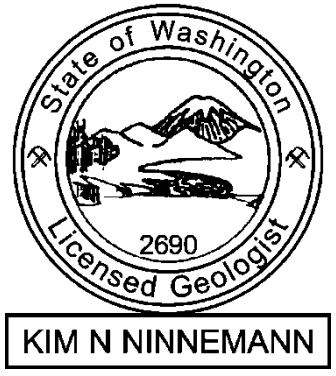
Contaminants within the indoor air of the basement and main floor restaurant exceeded Ecology's indoor air screening levels for benzene, chloroform, PCE and TCE. In combination with results from sub-slab samples, vapor intrusion is suspected to be a contaminant migration pathway for PCE and TCE into the basement. The indoor air concentrations exceed the screening levels for residential use based upon air quality exposure 24 hours/day and 7 days/week; however, comparison of the indoor air quality with Washington State L & I permissible exposure limits indicates that the air quality meets the requirements for workers during an 8-hour day for commercial site use. Based upon comparison of air quality to the permissible exposure limits, the site is safe for workers.

Additional sampling will be required to verify vapor intrusion as the source of the contaminants on the western end of the main floor. Mitigation will be required if site will be used for residential use.

Should you have any questions concerning this report, please contact our office at (360) 714-9409.

Sincerely yours,
Stratum Group

Kim Ninnemann, B.Sc., L.G
Licensed Geologist



1 INTRODUCTION

This vapor intrusion (VI) investigation was conducted to evaluate the risk of VI at the site.

The Former Cascade Laundry site was developed by 1922 and was operated as a commercial laundry and dry cleaning facility from at least 1932 through 1971. The dry cleaning operations were ceased by approximately 1971; however, the site continued use as a laundry facility into the early 2000s. The site is currently listed as a contaminated site due to the presence of dry cleaning solvents and petroleum in the soil and groundwater at the property.

Two air sampling events are summarized in this report including an indoor air quality and sub-slab sampling event in January 2018 and a follow up indoor air sampling event in April 2019. The building is two-stories high with a basement. The basement extends only beneath the westernmost portion of the building. The building was being renovated during the January 2018 sampling event and the main floor and basement have since become occupied by commercial tenants including restaurant and a theater. No tenants currently occupy the 2nd story.

Four sub-slab vapor pins were installed on the site in January 2018. Three of the pins were placed on the main floor of the building and one was installed in the basement. The sub-slab vapor sample collected beneath the basement floor identified PCE and TCE at concentrations above the screening level. Benzene was detected in one of the main floor sub-slab samples, but the concentration was well below the screening level and therefore did not pose a risk of vapor intrusion. No other sub-slab results exceeded the screening levels. Based upon the concentrations of dry cleaning solvents PCE and TCE in the basement, vapor intrusion was deemed a potential migration pathway into the basement.

Contemporaneously with the sub-slab samples, seven indoor air samples and one ambient air sample were collected. Benzene and chloroform exceeded the residential air cleanup standard in most of the seven indoor air samples. Based upon the low or non-detect benzene and chloroform concentrations in the sub-slab samples, a non-VI source is suspected for the benzene and chloroform in the indoor air. Two of the indoor air samples, collected from the basement and restaurant in the western end of the building, exceeded the standards for TCE and PCE.

To further evaluate the air quality, a follow-up indoor air sampling event was conducted in April 2019. The follow-up samples showed that indoor air continued to exceed the residential use cleanup standards for benzene, PCE and TCE in the basement and main floor restaurant in the western end of the building.

The results indicate that vapor intrusion may be the source of the PCE and TCE in the building's basement. The concentrations of these analytes in the restaurant are approximately 10% of the concentration in the basement. The source of the PCE and TCE contaminants in the western end of the main floor is suspected to be due to air flow and circulation from the basement, rather than from vapor intrusion, but would require additional evaluation to verify.

The indoor air concentrations of PCE, TCE, benzene and chloroform exceed the concentrations for residential use, where sensitive persons may be present (i.e. children, child-bearing mothers, elderly) up to 24 hours per day, 7days per week. Additionally, the concentration of TCE in the basement exceeds the short-term (maximum 3-week) mean concentration action level for exposure to women of childbearing age for residential use, but not commercial/industrial use.

The site is currently used as a commercial property. When the indoor air concentrations are compared to the Washington State permissible exposure limits (PEL) based upon a time-weighted average over an eight-hour work day, the site is well below PELs for all contaminants and is therefore considered safe for workers.

2 SITE OVERVIEW

2.1 Site Location and Description

The Cascade Laundry site is located along the west side of Prospect Street between Flora Street and Central Avenue in the commercially developed downtown area of Bellingham, Washington. The property is located at the top of a slope above Maritime Heritage Park.

The property is currently developed with one building that has numerous tenants including Bellingham Cider Company, Sylvia Place theater, and Modern Classics Furniture on the main floor, a currently vacant second floor, and storage and an apple cider distillery in the basement for Bellingham Cider Company.

2.2 Site Environmental History

Cascade Laundry began to utilize the subject property by at least 1932. An addition was added to the south side of the building in the 1966. Cascade Laundry utilized the building for cleaning clothing, rugs, and miscellaneous goods, dry cleaning, and dyeing fabric. The year that the dry cleaning operation began is unknown but is believed to have ended by 1971. The site remained in use as a laundry facility through the early 2000s. The interior of the basement and main floor have been fully remodeled into their current uses, including removal of the building's sub-basement (area lower than the basement that previously held a boiler) with concrete.

Numerous environmental reports have been completed on the site between 1992 and present. The reports document the permanent closure-in-place or removal of four underground storage tanks (3,200-gallon heating oil, 500-gallon gasoline, and a 300 and 600-gallon dry cleaning solvent tanks). Soil testing has been completed within test pits and borings around the site, including two through the floor of the building, since 2006. Contaminants identified within the soil that exceeded MTCA Method A cleanup standards in at least one location include gasoline-range petroleum, benzene, diesel and oil-range petroleum, PCE, and vinyl chloride. Contaminants have largely been located to the south and west of the western end of the building. Gasoline-range petroleum, benzene, diesel-range petroleum, vinyl chloride, PCE, cis 1,2DCE and 1,2-DCP have been found in the groundwater at concentrations that exceed MTCA Method A cleanup standards. No active

cleanup has taken place on the site, except for removal of the underground tanks.

Indoor air sampling was completed by Stratum Group in October 2014. Indoor air samples were collected from six locations, including two locations from the second story and four from the main floor of the building. The indoor air samples identified benzene, carbon tetrachloride, TCE, chloroform and PCE at concentrations that exceeded Ecology's air screening levels. The concentrations exceeded the residential use levels, but were well below the permissible exposure limits for Washington State workers (L & I).

3 SCOPE OF WORK AND METHODOLOGY

In order to evaluate the potential risk to air quality within the building, a combined sub-slab vapor test and indoor air sampling event was completed in January 2018 and the indoor air quality was resampled in two locations in April 2019.

A sub-slab vapor test consists of the collection of air samples from just beneath the concrete building foundation slab, where vapors would potentially accumulate. Sub-slab pins were installed to allow the locations to be re-tested, if needed.

The results of the air samples collected at the site from the sub-slab locations inside the building, indoor air and from the ambient outdoor air were compared to Department of Ecology's standards for unrestricted residential use, short-term action levels for TCE, as well as Washington State's permissible exposure limits for protection of workers.

The scope of work included the following:

<u>Sub-Slab Sample Collection</u>

- Coordinate with drilling company to install four vapor pins through the floor of the former Cascade Laundry building. Three pins were placed through the main floor of the building and one was placed through the floor of the basement.
- Conduct leak testing on the laboratory supplied and laboratory cleaned 6-Liter Summo sampling canister
- Purge air from sampling train to remove ambient air from the sample tubing
- Collect sub-slab air sample into the Summo canister that contains a laboratory supplied flow controller, that allows canister to be filled in approximately five minutes

<u>Indoor Air and Ambient Air Sample Collection</u>

- Conduct leak testing on the laboratory supplied and laboratory cleaned 6-Liter Summo sampling canister
- Attach a laboratory calibrated flow controller to canister to allow indoor air to be collected over a 24-hour period

<u>Sample Handling</u>

- Document specific canister and flow meter bar codes, results of leak testing, time of sample start and finish, pressure within canister before and after sample collection
- Deliver samples to ALS Laboratory in Simi Valley, California for analysis.

- January 2018 samples were analyzed for volatile petroleum compounds benzene, carbon tetrachloride, TCE, chloroform and PCE using Method TO-15
- April 2019 samples were analyzed for benzene, TCE, PCE, vinyl chloride, cis1,2DCE and 1,2 DCE using Method TO-15

Documentation

- Evaluate laboratory results and compare results to indoor air screening levels for short-term action levels, residential use, commercial/industrial use
- Provide a written report of our findings including laboratory reports, analysis of results, and recommendations for further testing, if needed

4 ENVIRONMENTAL CHARACTERIZATION

4.1 Contaminants of Concern

The contaminants of concern at the site for indoor air quality are:

- Benzene
- TCE (trichloroethylene)
- PCE (tetrachloroethylene, PERC)
- Chloroform

A complete suite of seventy-seven (77) volatile organic compounds was originally tested within the indoor air samples in October 2014. The January 2018 sampling event focused on the compounds detected during the 2014 sampling event (chloroform, benzene, TCE, PCE, carbon tetrachloride). The April 2019 event further focused on the contaminants previously detected in the air and/or break down products of these contaminants (benzene, TCE, PCE, vinyl chloride, cis 1,2DCE and 1,2DCE).

4.2 Sample Locations

Seven indoor air samples and an ambient air sample were collected in 2018. Six of the indoor air samples are in approximately the same locations as an October 2014 indoor air sampling event. Additionally, four locations were chosen for sub-slab sampling. Three of the sub-slab sample locations coincide with indoor air sample locations.

A summary of the sample locations is provided in Table 1, along with information regarding why the sample location was chosen and how often it has been sampled. The sample locations from 2018 and 2019 are mapped on Figure 1, below. Figure 1 identifies the current layout of the building and its uses. Significant interior upgrades and subdivisions have taken place since original air sampling was collected in 2014.

Table 1. Indoor and Sub-slab Sample Location Descriptions

Sample Location	Reason for Sampling	Type of Sample Collected	Dates Sampled	Map ID (referenced on Figure 1)
2nd story - western end	Historical tanning area	Indoor air	2018	1
2nd story - eastern end	No previous chemical usage, general info	Indoor air	2018	2
1st story - west end restaurant	Former equipment room for cleaners	Indoor air	2018 2019	3
1st story - west end restroom	Former equipment area for cleaners, close to restaurant	Sub-slab	2018	4
1st story – southwest portion of annex	Former sump room, near fill material with USTs and subsurface contamination	Indoor air	2018	5
1st story –central portion of annex	No previous chemical usage, general info	Indoor air Sub-slab	2018	6
1st story – central area	Main laundry equipment area	Indoor air Sub-slab	2018	7
Basement - central	Former boiler room, potential vapor intrusion	Indoor air Sub-slab	2018 2019	8
Ambient	Outdoor air sample to check background concentrations	Outdoor air	2018	9

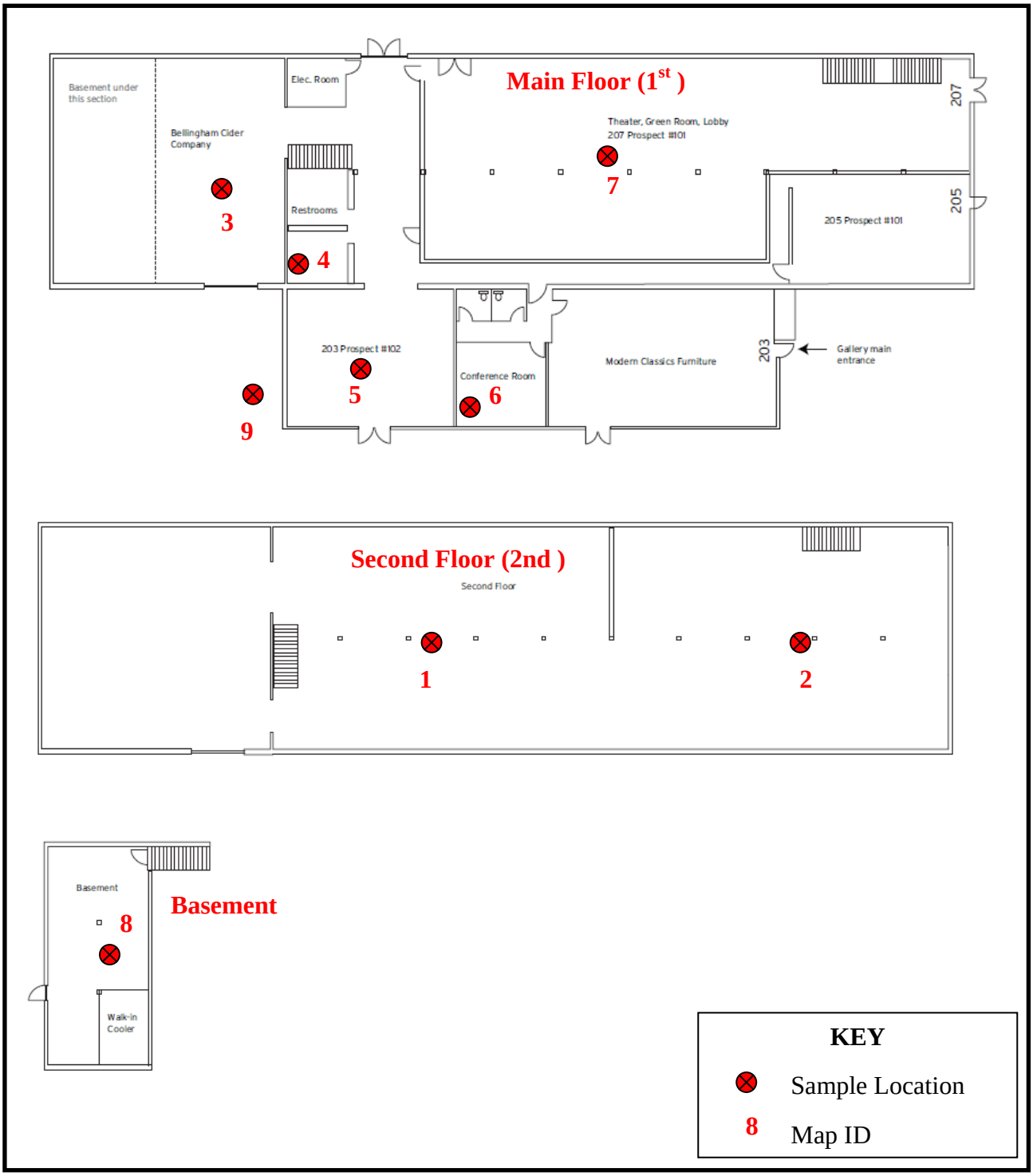


Figure 1. Location of indoor air and/or sub-slab vapor samples in January 2018 or April 2019

4.3 SUB-SLAB SOIL VAPOR SAMPLING

Kim Ninnemann of Stratum Group was onsite on January 8, 2019 to oversee the installation of four vapor pins by ESN Northwest of Olympia, Washington. The pins were placed in areas where soil contamination was deemed most likely to be present, based upon historical site use and previous sampling efforts.

Following installation of the vapor pins, a tygon tubing connector and Nyloflow tubing was connected to the vapor pin. A hand pump was used to remove approximately three volumes of air from the tubing before it was connected to a 6L summa canister. The canister was fitted with a flow regulator to allow the canister to fill over five minutes.

Four sub-slab samples were collected on January 8, 2019. The sample canisters were shipped to ALS Laboratory in Simi Valley via Fed Ex, which were received for analysis on January 12, 2018.

4.3.1 Sub-Slab Sample Results

A total of four sub-slab samples were collected and analyzed from the January 2018 sampling event. Three of the samples were collected through the concrete floor of the main level of the building and one was completed through the basement floor. Each sample was analyzed for chloroform, carbon tetrachloride, benzene, TCE and PCE (chemicals detected during the October 2014 sampling event).

The samples were labeled SS1 through SS4. The results from the sampling event are summarized in Table 2. Table 2 includes screening levels gathered from Department of Ecology's Table of Vapor Intrusion (VI) Screening Levels for sub-slab soil gas screening levels (Method B). Some contaminants had both cancer and non-cancer screening levels; however, the most stringent screening level are provided. The screening level tables in Ecology's CLARC database were mostly recently updated in May 2019. The screening levels were developed to determine if vapor intrusion is likely and generally assumes a sub-slab attenuation factor of 0.03 from the sub-slab concentrations to indoor air.

The results are presented in Figure 2, below. The results are discussed in Section 4.6 of this report. A copy of the laboratory report is provided in Appendix I.

Table 2. Sub-Slab Soil Gas Sample Results

Contaminants of Concern	Sub-Slab Soil Gas Concentrations (µg/m^3)				*Ecology's Sub-Slab Screening Level (µg/m^3)*
	SS1	SS2	SS3	SS4	
	Map ID #4	Map ID#8	Map ID#7	Map ID#6	
Chloroform	U	U	U	U	***3.6***
Benzene	U	U	**2.6**	U	***11***
Carbon Tetrachloride	U	U	U	U	***14***
Trichloroethene (TCE)	U	**1,200**	U	U	***12***
Tetrachloroethene (PCE)	**100**	**11,000**	**42**	**160**	***320***

U = analyte was not detected at reporting limits; shaded boxes = concentration exceeds screening levels

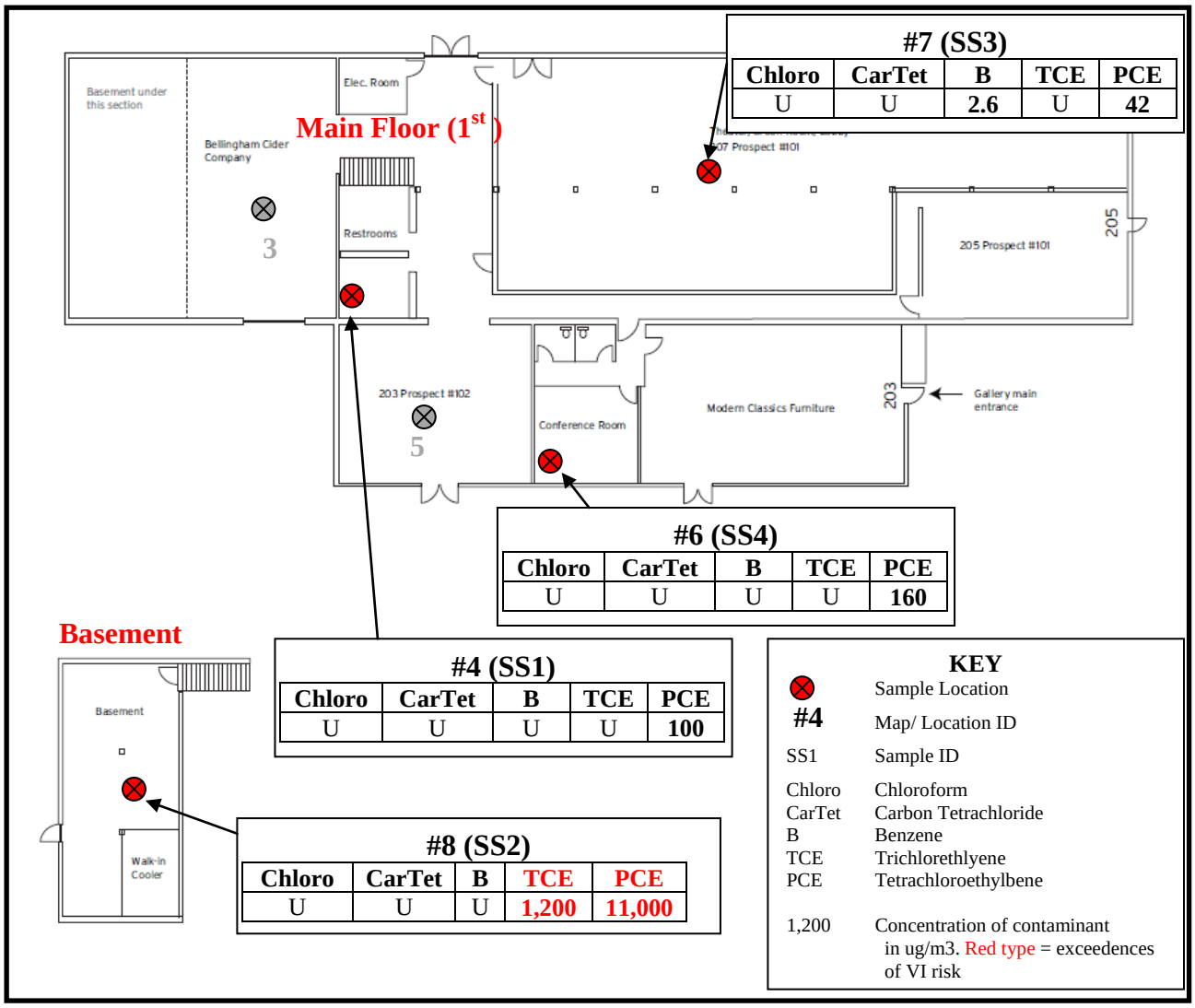


Figure 2. Sub-slab sample results

4.4 INDOOR AIR SAMPLING

Kim Ninnemann of Stratum Group was onsite on January 8, 2018 to collect seven indoor air samples and one ambient air sample and again on April 19, 2019 to collect two indoor air samples. The samples were collected by placing a 6L summa canister with a 24-hour flow meter into each room of interest. Containers were largely placed on the floor during the January 2018 event, but were placed within the breathing zone (~4' high) during the April 2019 event. Indoor air was allowed to enter the canister over a 24-hour period.

The sample canisters were shipped to ALS Laboratory in Simi Valley via Fed Ex for analysis. The 2018 samples arrived for analysis at the laboratory on January 12, 2018 and the 2019 samples arrived at the laboratory on May 3, 2019.

4.4.1 Indoor Air Sample Results

A total of eight indoor air samples and one ambient air sample were collected during the January 2018 and April 2019 sampling events. Each January 2018 sample was analyzed for chloroform, carbon tetrachloride, benzene, TCE and PCE (chemicals detected during the October 2014 sampling event). The April 2019 samples were analyzed for benzene, TCE, PCE, vinyl chloride, cis 1,2DCE and 1,2DCE.

The results from the sampling event are summarized in Table 3, Table 4 and Table 5. The results in Table 3 and 4 summarize the January 2018 ambient air and indoor air samples. Table 5 provides the data from the April 2015 indoor air sampling event. Tables 4 and 5 include Department of Ecology's Cleanup Level for Indoor Air (Method B). Results in Tables 4 show the calculated concentration of each contaminant (measured concentrations minus the ambient air results from Table 3). No ambient air sample was collected in April 2019, so the data in Table 5 is a direct measurement. Raw results are provided in the laboratory reports in Appendix I. Some contaminants had both cancer and non-cancer screening levels; however, the most stringent screening level are provided. The cleanup levels in Ecology's CLARC database were most recently updated in May 2019. The Washington State PELs are provided in WAC Chapter 296-841 "Safety Standards for Airborne Contaminants" and give time weighted averages for 8 hour work days in parts per million (ppm). The PEL concentrations in Tables 4 & 5 have been converted from ppm to $\mu g/m^3$. Please note that the PELs are multiple orders of magnitude greater than the cleanup levels set by Ecology.

The results are discussed in Section 4.6 of this report.

Table 3. Ambient Air Sample Results (January 2018)

Contaminants of Concern	Outdoor Air Concentrations ($\mu g/m^3$)[1]
	Ambient
Chloroform	U
Benzene	0.57
Carbon Tetrachloride	0.39
Trichloroethene (TCE)	U
Tetrachloroethene (PCE)	U

U = analyte was not detected at reporting limits

Table 4. Indoor Air Sample Results (January 2018)

Contaminants of Concern	Measured Indoor Air Concentrations ($\mu g/m^3$)[a]							*Ecology's Indoor Cleanup Level ($\mu g/m^3$)*	*Indoor Air Quality (L&I/DOSH)[a] ($\mu g/m^3$)*
	B1	B2	B3	B4	B5	B6	B7		
	Map ID #1	Map ID#2	Map ID#3	Map ID#5	Map ID#7	Map ID#6	Map ID#8		
	2nd story		restaurant, 1st story	1st story			basement		
Benzene	**3.83**	**3.53**	**9.23**	**1.33**	**2.83**	**1.73**	**0.42**	***0.32***	***3,190***
Trichloroethene (TCE)	**0.45**	**0.38**	**1.5**	0.17	0.33	0.21	**6.8**	***0.37***	***268,700***
Tetrachloroethene (PCE)	5.0	4.5	**15**	6.3	3.7	4.2	**66**	***9.6***	***169,560***
Chloroform	**0.62**	**0.60**	U	**0.36**	**0.49**	**0.52**	**0.29**	***0.11***	***9,765***
Carbon Tetrachloride	0.02	0.01	0.06	0.02	U	0.01	0.02	***0.42***	***12,582***

a = concentrations are the indoor air sample results at each location minus the ambient air concentrations for chloroform and benzene. U = analyte was not detected at reporting limits; shaded boxes = concentration exceeds indoor cleanup level for residential use

Table 5. Indoor Air Sample Results (April 2019)

Contaminants of Concern		Measured Indoor Air Concentrations (µg/m^3)		*Ecology's Indoor Cleanup Level (µg/m^3)*	*Indoor Air Quality (L&I/DOSH)$_a$ (µg/m^3)*
		041919-2	**041919-1**		
		Map ID #3	**Map ID#8**		
		restaurant	**basement**		
Benzene		**12**	**0.83**	***0.32***	***3,190***
Trichloroethene (TCE)		**0.79**	**3.5**	***0.37***	***268,700***
Tetrachloroethene (PCE)		**11**	**49**	***9.6***	***169,560***
Breakdown products of PCE, TCE	**Vinyl Chloride**	U	U	***0.28***	***2,556***
	Cis 1,2DCE	0.35	1.6	***Not available***	***Not available***
	1,2DCE	0.085	0.083	***0.96***	***3,965***

a = *TWA Permissible Exposure Limits for Airborne Contaminants (Table 3, WAC 296-841);* U = analyte was not detected at reporting limits; shaded boxes = concentration exceeds indoor cleanup level for residential use

The results of the contaminants of concern (chloroform, benzene, TCE and PCE) are presented in Figure 3.

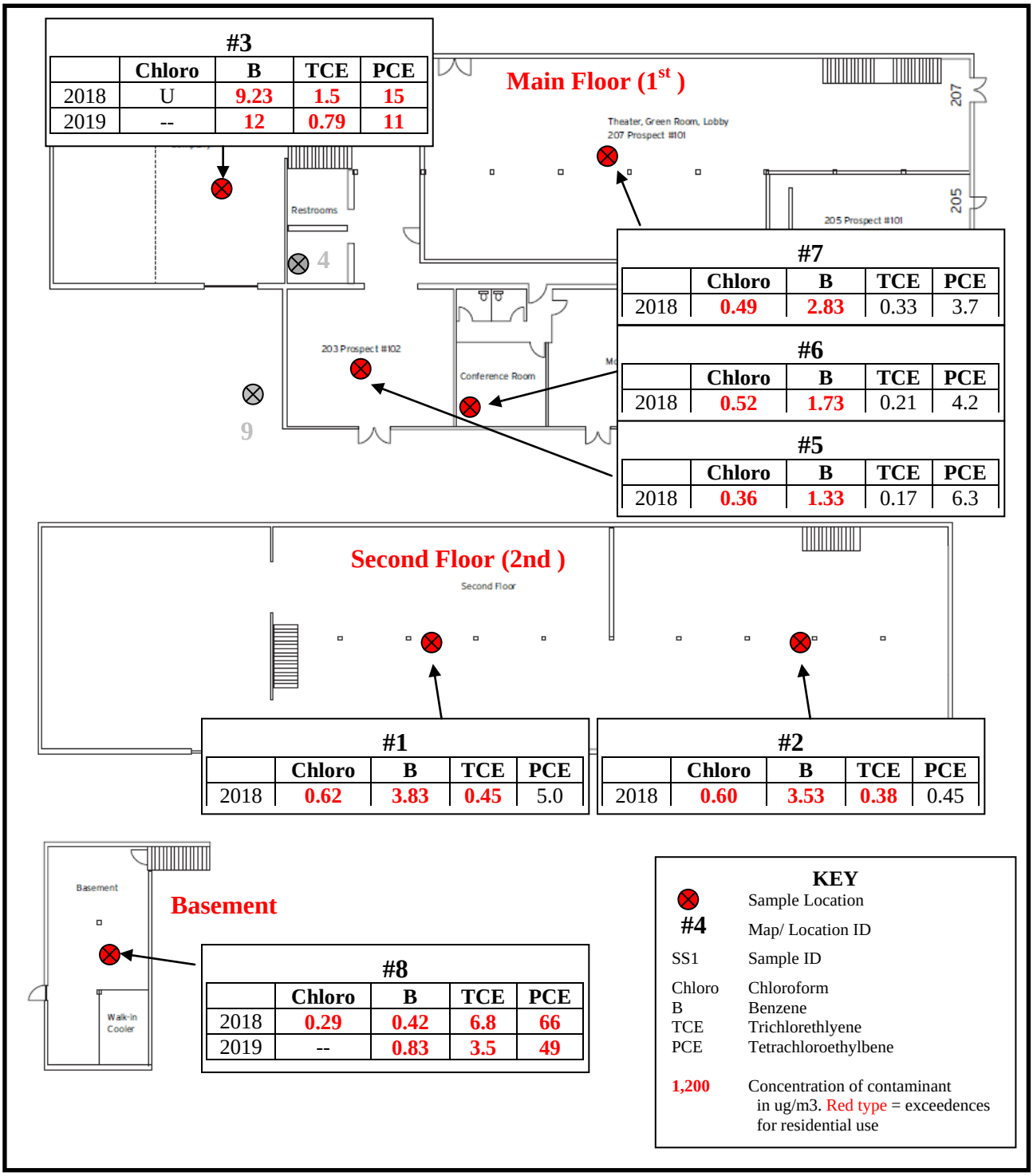


Figure 3. Indoor air sample results from January 2018 and April 2019 (only contaminants detected are presented in Figure 4).

4.5 Quality Control Assessment

ALS Laboratory in Simi Valley, California provided the pre-cleaned Summo canisters, which were cleaned down to the method reporting limit (MRL), and conducted the air quality analyses. A case narrative, provided by the laboratory, with each laboratory report did not identify any issues during the analyses. One data qualifier was noted on sample Subslab-2 for tetrachloroethylene. The qualifier "D" was marked on the lab report due to the need for a dilution during analysis. No other data qualifiers were identified. No contaminants were identified in the method blank tests and the surrogate recoveries and lab control samples were within acceptable recovery limits. It is our opinion that the results are reflective of the site conditions.

4.6 Sample Results Discussion

Benzene and carbon tetrachloride were detected in the ambient air sample, which was collected from the exterior of the site, near the southwest corner of the building during the January 2018 sampling event. The benzene concentration in the ambient air was measured as 0.57 µg/m^3, which exceeds the indoor air cleanup value for residential use of 0.37 µg/m^3. The carbon tetrachloride in the ambient air was detected at 0.39 µg/m^3, which is just below the residential cleanup value of 0.42 µg/m^3. Concentrations of TCE, PCE and chloroform were below the reporting limit in the ambient air sample.

The indoor air quality results were calculated by subtracting the ambient air concentrations for benzene and carbon tetrachloride from the indoor air quality results for these analytes for the January 2018 event. Therefore, the concentrations of benzene and carbon tetrachloride were calculated to be lower than the laboratory results.

4.6.1 Discussion of Sub-Slab Gas Sample Results

Four samples were collected from the sub-slab of the building in January 2018. The three samples collected from beneath the main floor of the building all met Ecology's screening levels. Based upon these results, no vapor intrusion risk is suspected from beneath the main floor of the building.

The concentrations of TCE and PCE in the basement sub-slab samples exceeded the screening levels. TCE was detected at 1,200 µg/m^3, which is 100 times greater than the screening level of 12 µg/m^3 for TCE. PCE was detected in the sub-slab sample from the basement at 11,000 µg/m^3, which is 34 times greater than the screening level of 320 µg/m^3 for PCE. Based upon the results, vapor intrusion is suspected as a contaminant pathway into the basement.

The sub-slab gas samples collected from the three locations on the main floor met all the screening levels and therefore vapor intrusion is not suspected around those sample areas.

4.6.2 Discussion of Indoor Air Quality Results

Eight contaminants were evaluated during the January 2018 and April 2019 sampling events. Each contaminant is discussed below.

Chloroform

Chloroform was tested in all the indoor air samples collected in January 2018. Chloroform was detected in six of the seven samples at concentrations that ranged from 0.29 to 0.62 µg/m^3. All the detections exceeded the indoor air cleanup level of 0.11 µg/m^3 for residential use, but is well below the PEL for workers. Chloroform was not detected in any of the sub-slab samples and has not been previously detected in the soil or groundwater of the Former Cascade Laundry site. Therefore, the source of the chloroform is suspected to be due to off-gassing from construction materials such as fiberglass and sheet rock mud, use of bleach, or release of chlorinated tap water vapors into the environment. The source of the chloroform is not suspected to be from vapor intrusion.

Carbon Tetrachloride

Carbon tetrachloride was detected in all of the indoor air samples in January 2018. Once the ambient concentration of carbon tetrachloride was subtracted from the measured indoor air values, the concentrations were well below the cleanup levels. Carbon tetrachloride is not suspected to pose a vapor intrusion risk at the site and is not a contaminant of concern at the site.

Benzene

Benzene was detected in all the indoor samples collected within the building in January 2018 and April 2019. The concentrations measured within the building range from 0.42 to 12 µg/m^3, following subtraction of the ambient air concentration. These concentrations are above Ecology's indoor air cleanup level of 0.32 µg/m^3, but below the PEL for workers. The lowest concentration was detected in the basement of the building with levels at 0.42 µg/m^3 in January 2018 and 0.83 µg/m^3 in the April 2019 samples (April 2019 level would likely have been lower if ambient air sample had been collected).

The highest concentrations of benzene are present in the restaurant portion of the building with a detection of 9.23 µg/m^3in January 2018 and 12 µg/m^3 in April 2019.

Benzene was detected in one of the sub-slab samples in the middle portion of the main floor of the building, but was well below the screening level for vapor intrusion. Based upon the limited detection of benzene in the sub-slab, the source of the benzene is assumed to be from an interior source. Significant building renovations were being completed during our January 2018 sampling event with new staining of floors, new furniture, placement of fiberglass and the use of various adhesives. In April 2019, the restaurant was in operation with food being cooked on a wood-fired oven, with some charring, which could be a source of benzene. Additionally, a slight natural gas odor was noted in the hallway near the north end of the restaurant, which could be a source of benzene. The concentrations of benzene are well above the cleanup levels for

residential use; however, the concentration is well below the PEL for worker protection. The source of benzene is not suspected to be from vapor intrusion through the foundation slab.

TCE (trichloroethylene)

TCE was detected in all the indoor air samples collected in January 2018 and April 2019; however, only the concentrations on the 2nd story, within the restaurant and within the basement exceeded the cleanup standards for indoor air quality for residential use. The source of the TCE in the 2nd story samples is assumed to be due to the historic use of the floor for tanning purposes. It is possible tanning chemicals may have soaked into the 2nd story floor are being released out of the wood floors. In the basement, the source of TCE is suspected to be vapor intrusion, due to the elevated TCE concentration in the sub-slab sample. The source of TCE in the western end of the main floor (restaurant), has not been determined. The concentration of TCE in the restaurant is approximately 10% of the concentration in the basement and no TCE was detected above the standards in the closest main floor sub-slab sample. The TCE measured in the restaurant area may be due to indoor air flow from the basement; however, more testing would be required to determine if it is an indoor air source or from vapor intrusion.

A technical guidance (#22) was published in October 2019 that identified a short-term exposure (3-week) level for women of child-bearing age for TCE. The short-term action level for TCE was identified as 2.0 µg/m^3 for residential use (non carcinogenic effect based upon 24 hours/day, 7 days/week) and 7.5 µg/m^3 TCE for commercial or industrial workplace scenario. TCE was measured in the restaurant at 1.5 and 0.79 µg/m^3 in the January 2018 and April 2019 sampling events, respectively. Both of these concentrations are below the residential use short term action level. The TCE concentrations in the basement were 6.8 and 3.5 µg/m^3 in the January 2018 and April 2019 sampling events, respectively. The air quality in the basement exceeds the residential short term action level, but meets the workplace scenario standards. All of the indoor air sample results for TCE are below the Washington State PEL.

PCE (tetracholoroethylene)

PCE concentrations exceeded the indoor air quality cleanup standards for residential use in the basement and restaurant during the January 2018 and April 2019 sampling events. The basement had a detection of PCE at 66 µg/m^3 in January 2018 and 49 µg/m^3 in April 2019, which exceed the standard of 9.6 µg/m^3. The restaurant had a detection of PCE at 15 µg/m^3 in January 2019 and at 11 µg/m^3in April 2019, which slightly exceed the standard of 9.6 µg/m^3. The source of the PCE is suspected to be vapor intrusion into the basement. The concentration of PCE in the restaurant is approximately 10% of the basement concentration. The source of the PCE on the main floor is not known, but is suspected to be indoor air circulating from the basement; however, additional testing would be required to determine if it is an indoor or vapor intrusion source.

Vinyl Chloride, 1,2 DCE and cis 1,2DCE

Vinyl chloride, 1,2DCE and cis 1,2DCE are break down products of PCE and were analyzed for in the basement and restaurant samples collected in April 2019. Vinyl chloride was not detected

in the two samples. 1,2 DCE and cis 1,2DCE were detected in both samples, but the concentrations were well below the cleanup level for 1,2 DCE and no cleanup value was available for cis 1,2 DCE. The results of the air sampling from the locations where vapor intrusion is most likely did not identify significant concentrations of 1,2 DCE or cis 1,2 DCE. Therefore these chemicals are not considered contaminants of concern or vapor intrusion risks.

Summary

The indoor air samples exceeded the Ecology Method B (carcinogenic compounds) screening levels for chloroform, benzene, TCE and PCE with indoor or vapor intrusion sources for unrestricted residential use. However, the site is zoned and used as a commercial building. Table 6 provides the highest concentrations of the contaminants identified in the indoor air at the site compared to the residential/unrestricted land use cleanup standards and the Washington State permissible exposure limits (PELs) for protection of workers.

Table 6. Comparison of Indoor Air Standards of Site vs. Residential and Commercial Use

Analyte	**Highest Measured Indoor Air** *(µg/m^3)*	**Indoor Air Quality (L&I/DOSH)**a *TWA Permissible Exposure Limits for Airborne Contaminants (Table 3, WAC 296-841)* *(µg/m^3)*	**Indoor Air Quality, Cleanup Level (Ecology)**b *Indoor Air, Method B, cancer* *(µg/m^3)*	**Short-Term Exposure Action Level for workplace (Ecology)** *(µg/m^3)*
Benzene	**12**	*3,190*	*0.32*	--
Trichloroethene (TCE)	**6.8**	*268,700*	*0.37*	*7.5*
Tetrachloroethene (PCE)	**66**	*169,560*	*9.6*	--
Chloroform	**0.62**	*9,765*	*0.11*	--

a = protection of workers based up on assumed 8 hour work day (less stringent than residential or occupancy by sensitive populations); TWA = time weighted average over 8 hours work day (ppm values from table were converted to ug/m3; b = Ecology cleanup standards are based upon residential use/most restrictive; U = concentration was not detected at reporting limit provided in paretheses; -- = comparison value not available

Table 6 highlights that the concentrations of contaminants within the Former Cascade Laundry building are well below the threshold required for protection of workers over an 8 hour day.

5 CONCLUSIONS

Indoor air sampling and sub-slab sampling results from January 2018 and April 2019 at the Former Cascade Laundry facility indicate that contaminants within the indoor air of the basement and main floor restaurant exceeded Ecology's indoor air screening levels for benzene, chloroform, PCE and TCE for residential/unrestricted land use. In combination with results from sub-slab samples, vapor intrusion is suspected to be a contaminant migration pathway for PCE and TCE into the basement. The sources of benzene and chloroform are suspected to be interior sources not associated with vapor intrusion.

The indoor air concentrations exceed the screening levels for residential use based upon air quality exposure 24 hours/day and 7 days/week; however, comparison of the indoor air quality with Washington State L & I permissible exposure limits indicates that the air quality meets the requirements for workers during an 8-hour day for commercial site use.

Additional sampling will be required to verify vapor intrusion as the source of the contaminants on the western end of the main floor. If residential use is desired at the property, mitigation will be required to manage the indoor air quality.

APPENDIX I

Site Photographs

Laboratory Reports

View of the indoor sampling location in the west end of the 2nd story of the building, Jan 2018 (map ID#1)

View of the indoor sampling location in the east end of the 2nd story of the building, Jan 2018 (map ID#2)

View of the indoor air sample location within the restaurant in the western portion of the main floor of the building (map ID#3). The restaurant is in process of remodel and has not currently in use, Jan 2018

View of the sub-slab sample location within the restroom on the 1st floor (map ID#4), Jan 2018

View of the sub-slab sample location within the conference room on the 1st floor (map ID#6), Jan 2018. Indoor air and sub-slab sample collected from this location.

View of the indoor air sample location within the central portion of the main floor (map ID#7), Jan 2018. Sub-slab sample also collected from this location.

View of the indoor air sample location within the basement of the building, Jan 2018 (map ID#8).
Sub-slab sample also collected from this location

View of the ambient air sample location near southwestern portion of building, Jan 2018 (map ID#9)

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LABORATORY REPORT

January 26, 2018

Kim Ninnemann
Stratum Group, Inc.
P.O. Box 2546
Bellingham, WA 98227

RE: Cascade Laundry

Dear Kim:

Enclosed are the results of the samples submitted to our laboratory on January 12, 2018. For your reference, these analyses have been assigned our service request number P1800148.

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

Kate Kaneko
By Kate Kaneko at 9:48 am, 01/26/18

Kate Kaneko
Project Manager

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
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F: +1 805 526 7270
www.alsglobal.com

Client: Stratum Group, Inc. Service Request No: P1800148
Project: Cascade Laundry

CASE NARRATIVE

The samples were received intact under chain of custody on January 12, 2018 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.

Volatile Organic Compound Analysis

The samples were analyzed for selected volatile organic 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 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.

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ALS Environmental – Simi Valley

CERTIFICATIONS, ACCREDITATIONS, AND REGISTRATIONS

Agency	Web Site	Number
Arizona DHS	http://www.azdhs.gov/preparedness/state-laboratory/lab-licensure-certification/index.php#laboratory-licensure-home	AZ0694
Florida DOH (NELAP)	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E871020
Louisiana DEQ (NELAP)	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	05071
Maine DHHS	http://www.maine.gov/dhhs/mecdc/environmental-health/water/dwp-services/labcert/labcert.htm	2016036
Minnesota DOH (NELAP)	http://www.health.state.mn.us/accreditation	1347317
New Jersey DEP (NELAP)	http://www.nj.gov/dep/oqa/	CA009
New York DOH (NELAP)	http://www.wadsworth.org/labcert/elap/elap.html	11221
Oregon PHD (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	4068-004
Pennsylvania DEP	http://www.depweb.state.pa.us/labs	68-03307 (Registration)
PJLA (DoD ELAP)	http://www.pjlabs.com/search-accredited-labs	65818 (Testing)
Texas CEQ (NELAP)	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704413-17-8
Utah DOH (NELAP)	http://health.utah.gov/lab/environmental-lab-certification/	CA016272017-8
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: Stratum Group, Inc. Service Request: P1800148
Project ID: Cascade Laundry

Date Received: 1/12/2018
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-15 - VOC Cans
B1	P1800148-001	Air	1/8/2018	11:18	AS00241	-2.17	3.55	X
B2	P1800148-002	Air	1/8/2018	11:20	AS00997	-1.74	3.55	X
B3	P1800148-003	Air	1/8/2018	11:45	AC01867	-2.27	3.61	X
B4	P1800148-004	Air	1/8/2018	11:58	AS00638	-3.05	3.67	X
B5	P1800148-005	Air	1/8/2018	12:21	AC02053	-1.77	3.60	X
B6	P1800148-006	Air	1/8/2018	12:50	AS01108	-2.85	3.71	X
B7	P1800148-007	Air	1/8/2018	11:35	AS00873	-2.91	3.56	X
Ambient	P1800148-008	Air	1/8/2018	12:35	AS00837	-2.43	3.66	X
Subslab-1	P1800148-009	Soil Gas	1/8/2018	14:35	1SC00496	-1.10	5.78	X
Subslab-2	P1800148-010	Soil Gas	1/8/2018	13:38	1SS00691	-0.18	5.48	X
Subslab-3	P1800148-011	Soil Gas	1/8/2018	14:02	1SC01293	-1.26	5.19	X
Subslab-4	P1800148-012	Soil Gas	1/8/2018	14:22	1SS00733	-1.08	5.35	X

Air - Chain of Custody Record & Analytical Service Request

Page 1 of 1

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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. R1800148

Company Name & Address (Reporting Information)	Stratum Group Po Box 2546, Bellingham, WA 98227
Project Name	Cascade Laundry
Project Number	
Project Manager	Kim Ninnemann
P.O. # / Billing Information	to Stratum Group
Phone	360 714 9409
Fax	
Email Address for Result Reporting	kim@stratumgroup.net
Sampler (Print & Sign)	Kim Ninnemann Kim
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: Chloroform, benzene, carbon tetrachloride (TO-15)	Analysis Method: TCE, PCE (TO-15)	Comments e.g. Actual Preservative or specific instructions
B1	1	1/8/18	11:18	AS00241	FLR00283	30.5	6.5	6L	X	X	
B2	2	"	11:20	AS00997	FLR00239	30.5	5.5	"	X	X	
B3	3	"	11:45	AC01867	FLR00084	30	5.5	"	X	X	
B4	4	"	11:58	AS00638	FLR00343	30.5	7	"	X	X	
B5	5	"	12:21	AC02053	FLR00338	29.5	5.5	"	X	X	
B6	6	"	12:50	AS01108	FLR00036	29.5	6	"	X	X	
B7	7	"	11:35	AS00813	FLR0038	30	5.5	"	X	X	
Ambient	8	"	12:35	AS00837	FLR00334	30	6.5	↓	X	X	
Subslab-1	9	"	14:35	ISC00496	OA01867	29.5	4	1L	X	X	
Subslab 2	10	"	13:38	ISS00691	OA01243	26	1	"	X	X	
Subslab 3	11	"	14:02	ISC01293	OA01007	29	4	"	X	X	
Subslab 4	12	↓	14:22	ISS00733	OA01530	28.5	3.5	↓	X	X	
								—			

Report Tier Levels - please select

Tier I - Results (Default in not specified) _____
Tier II (Results + QC Summaries ✓
Tier III (Results + QC & Calibration Summaries) _____
Tier IV (Date 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: 1/10/18	Time: 10:30a	Received by: (Signature)		Date:	Time:
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date: 1-12-18	Time: 0930

Cooler / Blank Temperature _____ °C

ALS Environmental
Sample Acceptance Check Form

Client: Stratum Group, Inc. Work order: P1800148

Project: Cascade Laundry

Sample(s) received on: 1/12/18 Date opened: 1/12/18 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?	☐	☐	☒
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
P1800148-001.01	6.0 L Silonite Can					
P1800148-002.01	6.0 L Silonite Can					
P1800148-003.01	6.0 L Ambient Can					
P1800148-004.01	6.0 L Silonite Can					
P1800148-005.01	6.0 L Ambient Can					
P1800148-006.01	6.0 L Silonite Can					
P1800148-007.01	6.0 L Silonite Can					
P1800148-008.01	6.0 L Silonite Can					
P1800148-009.01	1.0 L Source Can					
P1800148-010.01	1.0 L Source Silonite Canister					
P1800148-011.01	1.0 L Source Can					
P1800148-012.01	1.0 L Source Silonite Canister					

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: **Stratum Group, Inc.**
Client Sample ID: **B1** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-001

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00241

Initial Pressure (psig): -2.17 Final Pressure (psig): 3.55

Container Dilution Factor: 1.46

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	**0.62**	0.15	**0.13**	0.030	
71-43-2	Benzene	**4.4**	0.15	**1.4**	0.046	
56-23-5	Carbon Tetrachloride	**0.41**	0.15	**0.065**	0.023	
79-01-6	Trichloroethene	**0.45**	0.15	**0.085**	0.027	
127-18-4	Tetrachloroethene	**5.0**	0.15	**0.74**	0.022	

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: **Stratum Group, Inc.**
Client Sample ID: **B2** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-002

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00997

Initial Pressure (psig): -1.74 Final Pressure (psig): 3.55

Container Dilution Factor: 1.41

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	**0.60**	0.14	**0.12**	0.029	
71-43-2	Benzene	**4.1**	0.14	**1.3**	0.044	
56-23-5	Carbon Tetrachloride	**0.40**	0.14	**0.064**	0.022	
79-01-6	Trichloroethene	**0.38**	0.14	**0.070**	0.026	
127-18-4	Tetrachloroethene	**4.5**	0.14	**0.66**	0.021	

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: **Stratum Group, Inc.**
Client Sample ID: **B3** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-003

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 0.75 Liter(s)
Test Notes:
Container ID: AC01867

Initial Pressure (psig): -2.27 Final Pressure (psig): 3.61

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	ND	0.20	ND	0.040	
71-43-2	Benzene	**9.8**	0.20	**3.1**	0.061	
56-23-5	Carbon Tetrachloride	**0.45**	0.20	**0.071**	0.031	
79-01-6	Trichloroethene	**1.5**	0.20	**0.27**	0.036	
127-18-4	Tetrachloroethene	**15**	0.20	**2.3**	0.029	

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: **Stratum Group, Inc.**
Client Sample ID: **B4** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-004

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00638

Initial Pressure (psig): -3.05 Final Pressure (psig): 3.67

Container Dilution Factor: 1.58

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	**0.36**	0.16	**0.073**	0.032	
71-43-2	Benzene	**1.9**	0.16	**0.60**	0.049	
56-23-5	Carbon Tetrachloride	**0.41**	0.16	**0.065**	0.025	
79-01-6	Trichloroethene	**0.17**	0.16	**0.032**	0.029	
127-18-4	Tetrachloroethene	**6.3**	0.16	**0.92**	0.023	

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: **Stratum Group, Inc.**
Client Sample ID: **B5** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-005

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC02053

Initial Pressure (psig): -1.77 Final Pressure (psig): 3.60

Container Dilution Factor: 1.42

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	**0.49**	0.14	**0.099**	0.029	
71-43-2	Benzene	**3.4**	0.14	**1.1**	0.044	
56-23-5	Carbon Tetrachloride	**0.38**	0.14	**0.061**	0.023	
79-01-6	Trichloroethene	**0.33**	0.14	**0.062**	0.026	
127-18-4	Tetrachloroethene	**3.7**	0.14	**0.55**	0.021	

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: **Stratum Group, Inc.**
Client Sample ID: **B6** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-006

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01108

Initial Pressure (psig): -2.85 Final Pressure (psig): 3.71

Container Dilution Factor: 1.55

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	**0.52**	0.16	**0.11**	0.032	
71-43-2	Benzene	**2.3**	0.16	**0.73**	0.049	
56-23-5	Carbon Tetrachloride	**0.40**	0.16	**0.064**	0.025	
79-01-6	Trichloroethene	**0.21**	0.16	**0.039**	0.029	
127-18-4	Tetrachloroethene	**4.2**	0.16	**0.63**	0.023	

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: **Stratum Group, Inc.**
Client Sample ID: **B7** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-007

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00873

Initial Pressure (psig): -2.91 Final Pressure (psig): 3.56

Container Dilution Factor: 1.55

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	**0.29**	0.16	**0.059**	0.032	
71-43-2	Benzene	**0.99**	0.16	**0.31**	0.049	
56-23-5	Carbon Tetrachloride	**0.41**	0.16	**0.066**	0.025	
79-01-6	Trichloroethene	**6.8**	0.16	**1.3**	0.029	
127-18-4	Tetrachloroethene	**66**	0.16	**9.7**	0.023	

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: **Stratum Group, Inc.**
Client Sample ID: **Ambient** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-008

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS00837

Initial Pressure (psig): -2.43 Final Pressure (psig): 3.66

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	ND	0.15	ND	0.031	
71-43-2	Benzene	**0.57**	0.15	**0.18**	0.047	
56-23-5	Carbon Tetrachloride	**0.39**	0.15	**0.062**	0.024	
79-01-6	Trichloroethene	ND	0.15	ND	0.028	
127-18-4	Tetrachloroethene	ND	0.15	ND	0.022	

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: **Stratum Group, Inc.**
Client Sample ID: **Subslab-1** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-009

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 1.0 L Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SC00496

Initial Pressure (psig): -1.10 Final Pressure (psig): 5.78

Container Dilution Factor: 1.51

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	ND	1.9	ND	0.39	
71-43-2	Benzene	ND	1.9	ND	0.59	
56-23-5	Carbon Tetrachloride	ND	1.9	ND	0.30	
79-01-6	Trichloroethene	ND	1.9	ND	0.35	
127-18-4	Tetrachloroethene	**100**	1.9	**15**	0.28	

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: **Stratum Group, Inc.**
Client Sample ID: **Subslab-2** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-010

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16 - 1/17/18
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.015 Liter(s)
Test Notes: 0.0050 Liter(s)
Container ID: 1SS00691

Initial Pressure (psig): -0.18 Final Pressure (psig): 5.48

Container Dilution Factor: 1.39

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	ND	46	ND	9.5	
71-43-2	Benzene	ND	46	ND	15	
56-23-5	Carbon Tetrachloride	ND	46	ND	7.4	
79-01-6	Trichloroethene	**1,200**	46	**230**	8.6	
127-18-4	Tetrachloroethene	**11,000**	140	**1,600**	21	**D**

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.
D = The reported result is from a dilution.

ALS ENVIRONMENTAL

RESULTS OF ANALYSIS

Client: **Stratum Group, Inc.**
Client Sample ID: **Subslab-3** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-011

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
Sample Type: 1.0 L Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SC01293

Initial Pressure (psig): -1.26 Final Pressure (psig): 5.19

Container Dilution Factor: 1.48

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	ND	1.9	ND	0.38	
71-43-2	Benzene	**2.6**	1.9	**0.81**	0.58	
56-23-5	Carbon Tetrachloride	ND	1.9	ND	0.29	
79-01-6	Trichloroethene	ND	1.9	ND	0.34	
127-18-4	Tetrachloroethene	**42**	1.9	**6.2**	0.27	

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: **Stratum Group, Inc.**
Client Sample ID: **Subslab-4** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P1800148-012

Test Code: EPA TO-15 Date Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: 1/12/18
Analyst: Anusha Bayyarapu Date Analyzed: 1/17/18
Sample Type: 1.0 L Silonite Summa Canister Volume(s) Analyzed: 0.40 Liter(s)
Test Notes:
Container ID: 1SS00733

Initial Pressure (psig): -1.08 Final Pressure (psig): 5.35

Container Dilution Factor: 1.47

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
67-66-3	Chloroform	ND	1.8	ND	0.38	
71-43-2	Benzene	ND	1.8	ND	0.58	
56-23-5	Carbon Tetrachloride	ND	1.8	ND	0.29	
79-01-6	Trichloroethene	ND	1.8	ND	0.34	
127-18-4	Tetrachloroethene	**160**	1.8	**23**	0.27	

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: **Stratum Group, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P180116-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: NA
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
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
67-66-3	Chloroform	ND	0.10	ND	0.020	
71-43-2	Benzene	ND	0.10	ND	0.031	
56-23-5	Carbon Tetrachloride	ND	0.10	ND	0.016	
79-01-6	Trichloroethene	ND	0.10	ND	0.019	
127-18-4	Tetrachloroethene	ND	0.10	ND	0.015	

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: **Stratum Group, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P180117-MB

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: NA
Analyst: Anusha Bayyarapu Date Analyzed: 1/17/18
Sample Type: 1.0 L Summa 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
67-66-3	Chloroform	ND	0.50	ND	0.10	
71-43-2	Benzene	ND	0.50	ND	0.16	
56-23-5	Carbon Tetrachloride	ND	0.50	ND	0.080	
79-01-6	Trichloroethene	ND	0.50	ND	0.093	
127-18-4	Tetrachloroethene	ND	0.50	ND	0.074	

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

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stratum Group, Inc.**
Client Project ID: **Cascade Laundry** ALS Project ID: P1800148

Test Code: EPA TO-15 Date(s) Collected: 1/8/18
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date(s) Received: 1/12/18
Analyst: Anusha Bayyarapu Date(s) Analyzed: 1/16 - 1/17/18
Sample Type: 6.0 L Silonite Canister(s) / 6.0 L Summa Canister(s) / 1.0 L Summa Canister(s) / 1.0 L Silonite Summa Canister(s)
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	P180116-MB	**104**	**102**	**95**	70-130	
Method Blank	P180117-MB	**106**	**101**	**95**	70-130	
Lab Control Sample	P180116-LCS	**99**	**100**	**98**	70-130	
Lab Control Sample	P180117-LCS	**103**	**100**	**98**	70-130	
B1	P1800148-001	**105**	**98**	**97**	70-130	
B2	P1800148-002	**104**	**100**	**95**	70-130	
B3	P1800148-003	**106**	**98**	**95**	70-130	
B4	P1800148-004	**104**	**100**	**95**	70-130	
B5	P1800148-005	**103**	**100**	**94**	70-130	
B6	P1800148-006	**103**	**101**	**94**	70-130	
B7	P1800148-007	**102**	**96**	**94**	70-130	
Ambient	P1800148-008	**102**	**101**	**94**	70-130	
Subslab-1	P1800148-009	**98**	**97**	**97**	70-130	
Subslab-2	P1800148-010	**102**	**99**	**95**	70-130	
Subslab-3	P1800148-011	**92**	**90**	**104**	70-130	
Subslab-4	P1800148-012	**91**	**89**	**106**	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: **Stratum Group, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P180116-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: NA
Analyst: Anusha Bayyarapu Date Analyzed: 1/16/18
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**
67-66-3	Chloroform	212	**180**	**85**	69-113	
71-43-2	Benzene	213	**181**	**85**	66-111	
56-23-5	Carbon Tetrachloride	214	**199**	**93**	64-122	
79-01-6	Trichloroethene	212	**182**	**86**	69-112	
127-18-4	Tetrachloroethene	212	**182**	**86**	62-119	

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: **Stratum Group, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1800148
Client Project ID: **Cascade Laundry** ALS Sample ID: P180117-LCS

Test Code: EPA TO-15 Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973inert/6890N/MS8 Date Received: NA
Analyst: Anusha Bayyarapu Date Analyzed: 1/17/18
Sample Type: 1.0 L Summa 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
67-66-3	Chloroform	212	**185**	**87**	69-113	
71-43-2	Benzene	213	**178**	**84**	66-111	
56-23-5	Carbon Tetrachloride	214	**200**	**93**	64-122	
79-01-6	Trichloroethene	212	**182**	**86**	69-112	
127-18-4	Tetrachloroethene	212	**183**	**86**	62-119	

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.

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www.alsglobal.com

LABORATORY REPORT

May 17, 2019

Kim Ninnemann
Stratum Group, Inc.
P.O. Box 2546
Bellingham, WA 98227

RE: Cascade Laundry

Dear Kim:

Enclosed are the results of the samples submitted to our laboratory on May 3, 2019. For your reference, these analyses have been assigned our service request number P1902527.

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

Kate Kaneko
By Kate Kaneko at 3:38 pm, 05/17/19

Kate Kaneko
Laboratory Director

2655 Park Center Dr., Suite A
Simi Valley, CA 93065
T: +1 805 526 7161
www.alsglobal.com

Client: Stratum Group, Inc.
Project: Cascade Laundry

Service Request No: P1902527

CASE NARRATIVE

The samples were received intact under chain of custody on May 3, 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.

Volatile Organic Compound Analysis

The samples were analyzed in SIM mode for volatile organic 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 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.

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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	4068-006
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: Stratum Group, Inc. Service Request: P1902527

Project ID: Cascade Laundry

Date Received: 5/3/2019

Time Received: 09:16

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-15 - VOC SIM
042919-1	P1902527-001	Air	4/29/2019	17:12	AS01286	-1.64	3.62	X
042919-2	P1902527-002	Air	4/29/2019	17:14	AC01105	-2.31	3.90	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. P1902527

Company Name & Address (Reporting Information)
Stratum Group
2102 Young St. Bellingham, WA 98225

Project Name: Cascade Laundry

Project Number:

ALS Contact: Kak K

Project Manager: Kim Ninnemann

P.O. # / Billing Information: Same

Phone: 360-714-9409

Fax:

Email Address for Result Reporting: kim@stratumgroup.net

Sampler (Print & Sign):

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: TO-15 SIM*		Comments e.g. Actual Preservative or specific instructions
042919-1		4/29/19	908-1712	AS01286	SFC0047	29	5		X		*please analyze for: vinyl chloride 1,2 DCE TCE (trichloroethene) PCE (tetrachloroethene) 1,2 Dichloroethane benzene
042919-2		4/29/19	910-1714	AC01105	SFC00024	29	5.5		X		

5 of 11

Report Tier Levels - please select

Tier I - Results (Default In not specified) ____
Tier II (Results + QC Summaries ✓
Tier III (Results + QC & Calibration Summaries) ____
Tier IV (Date 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:
	4/30/19	1045a		5-3-19	0916
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Date:	Time:

Cooler / Blank Temperature ____°C

ALS Environmental
Sample Acceptance Check Form

Client: Stratum Group, Inc. Work order: P1902527

Project: Cascade Laundry

Sample(s) received on: 5/3/19 Date opened: 5/3/19 by: CHRIS.GLEASON

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?	☐	☐	☒
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
P1902527-001.01	6.0 L Silonite Can					
P1902527-002.01	6.0 L Ambient Can					

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: **Stratum Group, Inc.**
Client Sample ID: **042919-1** ALS Project ID: P1902527
Client Project ID: **Cascade Laundry** ALS Sample ID: P1902527-001

Test Code: EPA TO-15 SIM Date Collected: 4/29/19
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19 Date Received: 5/3/19
Analyst: Topacio De Leon Date Analyzed: 5/10/19
Sample Type: 6.0 L Silonite Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AS01286

Initial Pressure (psig): -1.64 Final Pressure (psig): 3.62

Container Dilution Factor: 1.40

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.035	ND	0.014	
156-59-2	cis-1,2-Dichloroethene	**1.6**	0.035	**0.40**	0.0088	
107-06-2	1,2-Dichloroethane	**0.083**	0.035	**0.021**	0.0087	
71-43-2	Benzene	**0.83**	0.11	**0.26**	0.033	
79-01-6	Trichloroethene	**3.5**	0.035	**0.66**	0.0065	
127-18-4	Tetrachloroethene	**49**	0.035	**7.2**	0.0052	

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: **Stratum Group, Inc.**
Client Sample ID: **042919-2** ALS Project ID: P1902527
Client Project ID: **Cascade Laundry** ALS Sample ID: P1902527-002

Test Code: EPA TO-15 SIM Date Collected: 4/29/19
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19 Date Received: 5/3/19
Analyst: Topacio De Leon Date Analyzed: 5/10/19
Sample Type: 6.0 L Summa Canister Volume(s) Analyzed: 1.00 Liter(s)
Test Notes:
Container ID: AC01105
Initial Pressure (psig): -2.31 Final Pressure (psig): 3.90

Container Dilution Factor: 1.50

CAS #	Compound	Result µg/m³	MRL µg/m³	Result ppbV	MRL ppbV	Data Qualifier
75-01-4	Vinyl Chloride	ND	0.038	ND	0.015	
156-59-2	cis-1,2-Dichloroethene	**0.35**	0.038	**0.089**	0.0095	
107-06-2	1,2-Dichloroethane	**0.085**	0.038	**0.021**	0.0093	
71-43-2	Benzene	**12**	0.11	**3.7**	0.035	
79-01-6	Trichloroethene	**0.79**	0.038	**0.15**	0.0070	
127-18-4	Tetrachloroethene	**11**	0.038	**1.7**	0.0055	

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: **Stratum Group, Inc.**
Client Sample ID: **Method Blank** ALS Project ID: P1902527
Client Project ID: **Cascade Laundry** ALS Sample ID: P190510-MB

Test Code: EPA TO-15 SIM Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19 Date Received: NA
Analyst: Topacio De Leon Date Analyzed: 5/10/19
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
75-01-4	Vinyl Chloride	ND	0.025	ND	0.0098	
156-59-2	cis-1,2-Dichloroethene	ND	0.025	ND	0.0063	
107-06-2	1,2-Dichloroethane	ND	0.025	ND	0.0062	
71-43-2	Benzene	ND	0.075	ND	0.023	
79-01-6	Trichloroethene	ND	0.025	ND	0.0047	
127-18-4	Tetrachloroethene	ND	0.025	ND	0.0037	

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

SURROGATE SPIKE RECOVERY RESULTS

Client: **Stratum Group, Inc.**
Client Project ID: **Cascade Laundry** ALS Project ID: P1902527

Test Code: EPA TO-15 SIM
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19 Date(s) Collected: 4/29/19
Analyst: Topacio De Leon Date(s) Received: 5/3/19
Sample Type: 6.0 L Silonite Canister(s) / 6.0 L Summa Canister(s) Date(s) Analyzed: 5/10/19
Test Notes:

Client Sample ID	ALS Sample ID	1,2-Dichloroethane-d4 % Recovered	Toluene-d8 % Recovered	Bromofluorobenzene % Recovered	Acceptance Limits	Data Qualifier
Method Blank	P190510-MB	**88**	**100**	**88**	70-130	
Lab Control Sample	P190510-LCS	**90**	**96**	**97**	70-130	
042919-1	P1902527-001	**86**	**99**	**95**	70-130	
042919-2	P1902527-002	**85**	**98**	**97**	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: **Stratum Group, Inc.**
Client Sample ID: **Lab Control Sample** ALS Project ID: P1902527
Client Project ID: **Cascade Laundry** ALS Sample ID: P190510-LCS

Test Code: EPA TO-15 SIM Date Collected: NA
Instrument ID: Tekmar AUTOCAN/Agilent 5973N/HP6890A/MS19 Date Received: NA
Analyst: Topacio De Leon Date Analyzed: 5/10/19
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
75-01-4	Vinyl Chloride	8.55	**7.22**	**84**	56-138	
156-59-2	cis-1,2-Dichloroethene	8.43	**7.18**	**85**	79-116	
107-06-2	1,2-Dichloroethane	8.59	**7.05**	**82**	74-123	
71-43-2	Benzene	8.44	**7.23**	**86**	73-125	
79-01-6	Trichloroethene	8.54	**7.61**	**89**	79-116	
127-18-4	Tetrachloroethene	8.51	**7.66**	**90**	77-117	

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.