November 2, 2020

Jennifer Cha
310 105th Avenue NE
Bellevue, WA 98004

Re: Site Information Data Transmittal, Town and Country Dry Cleaners, 310 105th Avenue NE, Bellevue, Washington

Dear Jennifer,

At your request, SLR International Corporation (SLR) is pleased to transmit the information that we have collected on your behalf to date regarding the subject site. We understand that this information in turn will be provided to the Washington Department of Ecology ("Ecology") as a response to their letters dated October 7, 2020 regarding the subject site.

ENVIRONMENTAL DATA

Initial Soil Sampling Datap

On February 16, 2020, SLR conducted a limited subsurface investigation beneath the floor of the Town and Country Dry Cleaners. SLR cored two six-inch-diameter holes and advanced two hand auger soil borings to depths of approximately two feet below ground surface ("bgs") and collected soil samples for laboratory analysis. The soil samples were analyzed for VOCs by EPA Method 8260C and gasoline-range organics (GRO) by Ecology Method NWTPH-Gx. The sampling locations and laboratory results are shown on the attached figure.

Initial Sub-Slab Soil Vapor Sampling

During the same February 16 mobilization, SLR installed two soil vapor sampling ports (Vapor Pins) in the concrete slab floor to allow for sampling the soil gas beneath the building. Soil vapor samples were collected and submitted for laboratory analysis by EPA Method TO-15. One of the initial samples failed laboratory QA checks, and soil vapor sampling port was resampled on April 26, 2020. The sampling locations and laboratory results are shown on the attached figure.

Soil Sampling During Sewer Line Replacement

On September 15, 2020, SLR visited the site to observe the replacement of a sanitary sewer line north of the Town and Country Dry Cleaners structure. A single soil sample was collected from the base of the area excavated for the utility work (from approximately four feet bgs), and the sample submitted for

laboratory analysis. The sampling locations and sampling results are shown on the attached figure.

VAPOR INTRUSION EVALUATION

At your request, SLR has reviewed the attached letter from Ecology requesting additional soil vapor investigation of four properties, and are preparing a proposal to conduct the appropriate investigation activities, to include a work plan for submittal to Ecology for review.

At a similar site in downtown Seattle, SLR conducted a similar investigation in 2020 at Ecology's request. Due to complicated access negotiations, the investigation took more than 180 days. Based on this and other experiences, it may not be feasible to conduct Ecology's requested steps in the 90-day timeline presented in the October 7, 2020 letter.

RECOMMENDATIONS

Based on our experience working at similar sites and in the area, and due to a variety of circumstances specific to this year and project as relates to obtaining access to the properties identified by Ecology, it is SLR's opinion that an extension to the timeline presented by Ecology is warranted and recommends that this data transmittal letter be submitted to with a request for an extension.

SLR also understands that you may wish to request an extension for your response to Ecology's October 8, 2020 Early Notice Letter.

SLR appreciates the opportunity to provide our services. If you have any questions, please do not hesitate to call me at (206) 510-2736.

Sincerely,

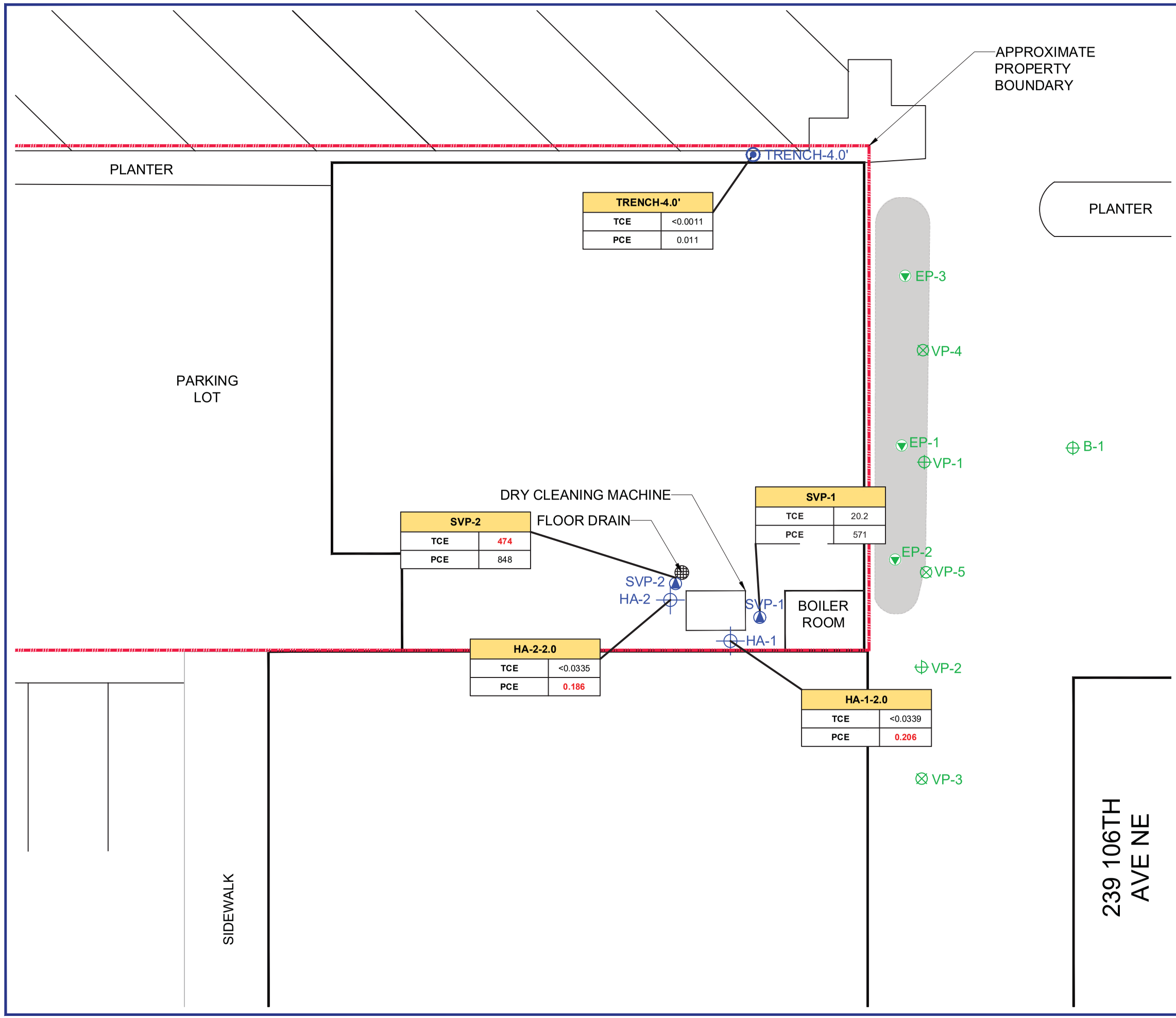
SLR International Corporation

John H. McCorkle, CEP
Principal

Attachments: Figure 1, Investigation Results
Laboratory Reports –

- Apex Laboratories AOB0598 Soil Samples collected February 16, 2020
- Fremont Analytical 2002350 Sub Slab Vapor Samples collected February 16, 2020
- Fremont Analytical 2004359 Sub Slab Vapor Samples collected April 26, 2020
- OnSite Environmental 2009-168 Soil Sample collected September 15, 2020

October 7, 2020 Request for Evaluation of Trichloroethene Risks letter from Ecology



LEGEND

- PROPERTY BOUNDARY
- FLOOR DRAIN
- 1990 AESI ESTIMATED EXTENT OF REMEDIAL EXCAVATION
- EP-2 — 1989-1990 AESI EXCAVATION SOIL SAMPLE
- VP-5 — 1990 AESI SOIL BORING
- B-1 — 1990 EEC SOIL BORING
- SVP-1 — 2020 SLR SUB-SLAB SOIL VAPOR PIN LOCATION AND DESIGNATION
- HA-1 — 2020 SLR HAND AUGER BORING LOCATION AND DESIGNATION
- TRENCH-4.0' — 2020 SLR SOIL SAMPLE LOCATION AND DESIGNATION

TCE	TRICHLOROETHENE
PCE	TETRACHLOROETHENE
MTCA	MODEL TOXICS CONTROL ACT
mg/kg	MILLIGRAMS PER KILOGRAM
µg/m^3	MICROGRAMS PER CUBIC METER

SVP-2	
TCE	474
PCE	848

SAMPLE ID

SAMPLE RESULTS (µg/m^3 or mg/kg)

ANALYTE

848 — SAMPLE **DOES NOT EXCEEDED** THE APPLICABLE MTCA CLEANUP LEVELS FOR RESPECTIVE CONTAMINANT

474 — SAMPLE HAS **EXCEEDED** THE APPLICABLE MTCA CLEANUP LEVELS FOR RESPECTIVE CONTAMINANT

NOTES

1. SITE MAP DEVELOPED AND REFERENCED FROM GOOGLE EARTH, 2019.
2. APPROXIMATE LOCATION OF FORMER INVESTIGATION LOCATIONS REFERENCED FROM EXPLORATION LOCATIONS AND ESTIMATED EXTENT OF PCE-IMPACTED SOIL, SOUND EARTH STRATEGIES (5/1/2019).
3. SOIL RESULTS ARE IN UNITS mg/kg. SOIL VAPOR RESULTS ARE IN µg/m^3.

N

SCALE: 1" = 10'
WHEN PLOTTED AT 11 x 17 PAGE SIZE
0 10' 20' 30'

THIS DRAWING IS FOR CONCEPTUAL PURPOSES ONLY. ACTUAL LOCATIONS MAY VARY AND NOT ALL STRUCTURES ARE SHOWN.

Site
TOWN AND COUNTRY CLEANERS
310 105TH AVE NE
BELLEVUE, WASHINGTON 98004

Drawing
INVESTIGATION RESULTS

Date October 6, 2020 | Scale AS SHOWN | Fig. No. 1
File Name 02-02 | Project No. 101.02216.00001

SLR

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

Friday, February 28, 2020

John McCorkle
SLR Corporation-Bothell
22118 20th Ave SE
Bothell, WA 98021

RE: A0B0598 - Bellevue Dry Cleaner - 101.02216.00001

Thank you for using Apex Laboratories. We greatly appreciate your business and strive to provide the highest quality services to the environmental industry.

Enclosed are the results of analyses for work order A0B0598, which was received by the laboratory on 2/21/2020 at 10:25:00AM.

If you have any questions concerning this report or the services we offer, please feel free to contact me by email at: ldomenighini@apex-labs.com, or by phone at 503-718-2323.

Please note: All samples will be disposed of within 30 days of sample reciept, unless prior arrangements have been made.

Cooler Receipt Information

(See Cooler Receipt Form for details)

Cooler#1	5.3	degC

This Final Report is the official version of the data results for this sample submission, unless superseded by a subsequent, labeled amended report.
All other deliverables derived from this data, including Electronic Data Deliverables (EDDs), CLP-like forms, client requested summary sheets, and all other products are considered secondary to this report.

Apex Laboratories

Lisa A Domenighini

Lisa Domenighini, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Apex Laboratories, LLC

6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

ANALYTICAL REPORT FOR SAMPLES

SAMPLE INFORMATION

Client Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
HA-1-2.0	A0B0598-01	Soil	02/16/20 11:15	02/21/20 10:25
HA-2-2.0	A0B0598-02	Soil	02/16/20 13:00	02/21/20 10:25

Apex Laboratories

Lisa A Domenighini

Lisa Domenighini, Client Services Manager

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SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

ANALYTICAL SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA-1-2.0 (A0B0598-01)				**Matrix: Soil**		**Batch: 0020794**		
Gasoline Range Organics	ND	---	6.77	mg/kg dry	50	02/26/20 17:57	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)		*Recovery: 106 %*		*Limits: 50-150 %*	*1*	*02/26/20 17:57*	*NWTPH-Gx (MS)*	
1,4-Difluorobenzene (Sur)			*93 %*	*50-150 %*	*1*	*02/26/20 17:57*	*NWTPH-Gx (MS)*	
HA-2-2.0 (A0B0598-02)				**Matrix: Soil**		**Batch: 0020794**		
Gasoline Range Organics	ND	---	6.70	mg/kg dry	50	02/26/20 18:50	NWTPH-Gx (MS)	
Surrogate: 4-Bromofluorobenzene (Sur)		*Recovery: 105 %*		*Limits: 50-150 %*	*1*	*02/26/20 18:50*	*NWTPH-Gx (MS)*	
1,4-Difluorobenzene (Sur)			*93 %*	*50-150 %*	*1*	*02/26/20 18:50*	*NWTPH-Gx (MS)*	

Apex Laboratories

Lisa A Domenighini

Lisa Domenighini, Client Services Manager

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SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA-1-2.0 (A0B0598-01)				**Matrix: Soil**		**Batch: 0020794**		
Bromobenzene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Bromochloromethane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Bromodichloromethane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Bromoform	ND	---	0.135	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Bromomethane	ND	---	0.677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Carbon tetrachloride	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Chlorobenzene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Chloroethane	ND	---	0.677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Chloroform	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Chloromethane	ND	---	0.339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
2-Chlorotoluene	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
4-Chlorotoluene	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Dibromochloromethane	ND	---	0.135	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	0.339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Dibromomethane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2-Dichlorobenzene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,3-Dichlorobenzene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,4-Dichlorobenzene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Dichlorodifluoromethane	ND	---	0.135	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,1-Dichloroethane	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,1-Dichloroethene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2-Dichloropropane	ND	---	0.135	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,3-Dichloropropane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
2,2-Dichloropropane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,1-Dichloropropene	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Hexachlorobutadiene	ND	---	0.135	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Methylene chloride	ND	---	0.677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Tetrachloroethene (PCE)	**0.206**	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	0.339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	0.339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,1,1-Trichloroethane	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	

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Lisa Domenighini, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA-1-2.0 (A0B0598-01)				**Matrix: Soil**		**Batch: 0020794**		
1,1,2-Trichloroethane	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Trichloroethene (TCE)	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Trichlorofluoromethane	ND	---	0.135	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
1,2,3-Trichloropropane	ND	---	0.0677	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Vinyl chloride	ND	---	0.0339	mg/kg dry	50	02/26/20 17:57	5035A/8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery: 105 %*		*Limits: 80-120 %*	*1*	*02/26/20 17:57*	*5035A/8260C*	
Toluene-d8 (Surr)			*94 %*	*80-120 %*	*1*	*02/26/20 17:57*	*5035A/8260C*	
4-Bromofluorobenzene (Surr)			*106 %*	*80-120 %*	*1*	*02/26/20 17:57*	*5035A/8260C*	
HA-2-2.0 (A0B0598-02)				**Matrix: Soil**		**Batch: 0020794**		
Bromobenzene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Bromochloromethane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Bromodichloromethane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Bromoform	ND	---	0.134	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Bromomethane	ND	---	0.670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Carbon tetrachloride	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Chlorobenzene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Chloroethane	ND	---	0.670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Chloroform	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Chloromethane	ND	---	0.335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
2-Chlorotoluene	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
4-Chlorotoluene	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Dibromochloromethane	ND	---	0.134	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2-Dibromo-3-chloropropane	ND	---	0.335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2-Dibromoethane (EDB)	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Dibromomethane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2-Dichlorobenzene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,3-Dichlorobenzene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,4-Dichlorobenzene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Dichlorodifluoromethane	ND	---	0.134	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,1-Dichloroethane	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2-Dichloroethane (EDC)	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,1-Dichloroethene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
cis-1,2-Dichloroethene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
trans-1,2-Dichloroethene	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2-Dichloropropane	ND	---	0.134	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,3-Dichloropropane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
2,2-Dichloropropane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	

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Lisa Domenighini, Client Services Manager

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22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

ANALYTICAL SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA-2-2.0 (A0B0598-02)				**Matrix: Soil**		**Batch: 0020794**		
1,1-Dichloropropene	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
cis-1,3-Dichloropropene	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
trans-1,3-Dichloropropene	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Hexachlorobutadiene	ND	---	0.134	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Methylene chloride	ND	---	0.670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,1,1,2-Tetrachloroethane	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,1,2,2-Tetrachloroethane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Tetrachloroethene (PCE)	**0.186**	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2,3-Trichlorobenzene	ND	---	0.335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2,4-Trichlorobenzene	ND	---	0.335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,1,1-Trichloroethane	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,1,2-Trichloroethane	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Trichloroethene (TCE)	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Trichlorofluoromethane	ND	---	0.134	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
1,2,3-Trichloropropane	ND	---	0.0670	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Vinyl chloride	ND	---	0.0335	mg/kg dry	50	02/26/20 18:50	5035A/8260C	
Surrogate: 1,4-Difluorobenzene (Surr)		*Recovery:*	*106 %*	*Limits: 80-120 %*	*1*	*02/26/20 18:50*	*5035A/8260C*	
Toluene-d8 (Surr)			*94 %*	*80-120 %*	*1*	*02/26/20 18:50*	*5035A/8260C*	
4-Bromofluorobenzene (Surr)			*106 %*	*80-120 %*	*1*	*02/26/20 18:50*	*5035A/8260C*	

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22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

ANALYTICAL SAMPLE RESULTS

Percent Dry Weight

Analyte	Sample Result	Detection Limit	Reporting Limit	Units	Dilution	Date Analyzed	Method Ref.	Notes
HA-1-2.0 (A0B0598-01)				**Matrix: Soil**		**Batch: 0020764**		
% Solids	**81.6**	---	1.00	%	1	02/26/20 08:27	EPA 8000C	
HA-2-2.0 (A0B0598-02)				**Matrix: Soil**		**Batch: 0020764**		
% Solids	**79.4**	---	1.00	%	1	02/26/20 08:27	EPA 8000C	

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Lisa Domenighini, Client Services Manager

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6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A												**Soil**
Blank (0020794-BLK1)		Prepared: 02/26/20 09:00		Analyzed: 02/26/20 15:14								
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	3.33	mg/kg wet	50	---	---	---	---	---	---	
Surr: 4-Bromofluorobenzene (Sur)		*Recovery: 103 %*		*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*94 %*		*50-150 %*		*"*					
LCS (0020794-BS2)		Prepared: 02/26/20 09:00		Analyzed: 02/26/20 14:47								
NWTPH-Gx (MS)												
Gasoline Range Organics	20.7	---	5.00	mg/kg wet	50	25.0	---	83	80 - 120%	---	---	
Surr: 4-Bromofluorobenzene (Sur)		*Recovery: 98 %*		*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*91 %*		*50-150 %*		*"*					
Duplicate (0020794-DUP2)		Prepared: 02/16/20 11:15		Analyzed: 02/26/20 18:23								
QC Source Sample: HA-1-2.0 (A0B0598-01)												
NWTPH-Gx (MS)												
Gasoline Range Organics	ND	---	6.75	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 4-Bromofluorobenzene (Sur)		*Recovery: 104 %*		*Limits: 50-150 %*			*Dilution: 1x*					
1,4-Difluorobenzene (Sur)			*93 %*		*50-150 %*		*"*					

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22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A							**Soil**					
Blank (0020794-BLK1)		Prepared: 02/26/20 09:00 Analyzed: 02/26/20 15:14										
5035A/8260C												
Bromobenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Bromochloromethane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromodichloromethane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Bromoform	ND	---	0.0667	mg/kg wet	50	---	---	---	---	---	---	
Bromomethane	ND	---	0.333	mg/kg wet	50	---	---	---	---	---	---	
Carbon tetrachloride	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Chlorobenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Chloroethane	ND	---	0.333	mg/kg wet	50	---	---	---	---	---	---	
Chloroform	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Chloromethane	ND	---	0.167	mg/kg wet	50	---	---	---	---	---	---	
2-Chlorotoluene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
4-Chlorotoluene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Dibromochloromethane	ND	---	0.0667	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dibromo-3-chloropropane	ND	---	0.167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dibromoethane (EDB)	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Dibromomethane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichlorobenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,3-Dichlorobenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,4-Dichlorobenzene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Dichlorodifluoromethane	ND	---	0.0667	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethane	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichloroethane (EDC)	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloroethene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
cis-1,2-Dichloroethene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
trans-1,2-Dichloroethene	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2-Dichloropropane	ND	---	0.0667	mg/kg wet	50	---	---	---	---	---	---	
1,3-Dichloropropane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
2,2-Dichloropropane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
1,1-Dichloropropene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
cis-1,3-Dichloropropene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
trans-1,3-Dichloropropene	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Hexachlorobutadiene	ND	---	0.0667	mg/kg wet	50	---	---	---	---	---	---	
Methylene chloride	ND	---	0.333	mg/kg wet	50	---	---	---	---	---	---	

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Lisa Domenighini, Client Services Manager

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EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A							**Soil**					
Blank (0020794-BLK1)		Prepared: 02/26/20 09:00		Analyzed: 02/26/20 15:14								
1,1,1,2-Tetrachloroethane	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,1,2,2-Tetrachloroethane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Tetrachloroethene (PCE)	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,2,3-Trichlorobenzene	ND	---	0.167	mg/kg wet	50	---	---	---	---	---	---	
1,2,4-Trichlorobenzene	ND	---	0.167	mg/kg wet	50	---	---	---	---	---	---	
1,1,1-Trichloroethane	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
1,1,2-Trichloroethane	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Trichloroethene (TCE)	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Trichlorofluoromethane	ND	---	0.0667	mg/kg wet	50	---	---	---	---	---	---	
1,2,3-Trichloropropane	ND	---	0.0333	mg/kg wet	50	---	---	---	---	---	---	
Vinyl chloride	ND	---	0.0167	mg/kg wet	50	---	---	---	---	---	---	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery:*	*101 %*	*Limits:*	*80-120 %*		*Dilution:*	*1x*				
Toluene-d8 (Surr)			*98 %*		*80-120 %*			*"*				
4-Bromofluorobenzene (Surr)			*106 %*		*80-120 %*			*"*				
LCS (0020794-BS1)		Prepared: 02/26/20 09:00		Analyzed: 02/26/20 14:20								
5035A/8260C												
Bromobenzene	1.10	---	0.0250	mg/kg wet	50	1.00	---	110	80 - 120%	---	---	
Bromochloromethane	0.901	---	0.0500	mg/kg wet	50	1.00	---	90	80 - 120%	---	---	
Bromodichloromethane	1.09	---	0.0500	mg/kg wet	50	1.00	---	109	80 - 120%	---	---	
Bromoform	1.15	---	0.100	mg/kg wet	50	1.00	---	115	80 - 120%	---	---	
Bromomethane	0.972	---	0.500	mg/kg wet	50	1.00	---	97	80 - 120%	---	---	
Carbon tetrachloride	1.11	---	0.0500	mg/kg wet	50	1.00	---	111	80 - 120%	---	---	
Chlorobenzene	1.03	---	0.0250	mg/kg wet	50	1.00	---	103	80 - 120%	---	---	
Chloroethane	0.863	---	0.500	mg/kg wet	50	1.00	---	86	80 - 120%	---	---	
Chloroform	0.945	---	0.0500	mg/kg wet	50	1.00	---	94	80 - 120%	---	---	
Chloromethane	0.713	---	0.250	mg/kg wet	50	1.00	---	**71**	**80 - 120%**	---	---	Q-55
2-Chlorotoluene	1.08	---	0.0500	mg/kg wet	50	1.00	---	108	80 - 120%	---	---	
4-Chlorotoluene	1.04	---	0.0500	mg/kg wet	50	1.00	---	104	80 - 120%	---	---	
Dibromochloromethane	1.09	---	0.100	mg/kg wet	50	1.00	---	109	80 - 120%	---	---	
1,2-Dibromo-3-chloropropane	0.982	---	0.250	mg/kg wet	50	1.00	---	98	80 - 120%	---	---	
1,2-Dibromoethane (EDB)	1.04	---	0.0500	mg/kg wet	50	1.00	---	104	80 - 120%	---	---	
Dibromomethane	1.01	---	0.0500	mg/kg wet	50	1.00	---	101	80 - 120%	---	---	
1,2-Dichlorobenzene	1.07	---	0.0250	mg/kg wet	50	1.00	---	107	80 - 120%	---	---	

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EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A							**Soil**					
LCS (0020794-BS1)		Prepared: 02/26/20 09:00		Analyzed: 02/26/20 14:20								
1,3-Dichlorobenzene	1.10	---	0.0250	mg/kg wet	50	1.00	---	110	80 - 120%	---	---	
1,4-Dichlorobenzene	1.02	---	0.0250	mg/kg wet	50	1.00	---	102	80 - 120%	---	---	
Dichlorodifluoromethane	0.776	---	0.100	mg/kg wet	50	1.00	---	**78**	**80 - 120%**	---	---	Q-55
1,1-Dichloroethane	0.912	---	0.0250	mg/kg wet	50	1.00	---	91	80 - 120%	---	---	
1,2-Dichloroethane (EDC)	1.01	---	0.0250	mg/kg wet	50	1.00	---	101	80 - 120%	---	---	
1,1-Dichloroethene	1.02	---	0.0250	mg/kg wet	50	1.00	---	102	80 - 120%	---	---	
cis-1,2-Dichloroethene	0.960	---	0.0250	mg/kg wet	50	1.00	---	96	80 - 120%	---	---	
trans-1,2-Dichloroethene	0.913	---	0.0250	mg/kg wet	50	1.00	---	91	80 - 120%	---	---	
1,2-Dichloropropane	0.954	---	0.100	mg/kg wet	50	1.00	---	95	80 - 120%	---	---	
1,3-Dichloropropane	0.984	---	0.0500	mg/kg wet	50	1.00	---	98	80 - 120%	---	---	
2,2-Dichloropropane	1.10	---	0.0500	mg/kg wet	50	1.00	---	110	80 - 120%	---	---	
1,1-Dichloropropene	1.02	---	0.0500	mg/kg wet	50	1.00	---	102	80 - 120%	---	---	
cis-1,3-Dichloropropene	0.958	---	0.0500	mg/kg wet	50	1.00	---	96	80 - 120%	---	---	
trans-1,3-Dichloropropene	1.10	---	0.0500	mg/kg wet	50	1.00	---	110	80 - 120%	---	---	
Hexachlorobutadiene	1.20	---	0.100	mg/kg wet	50	1.00	---	120	80 - 120%	---	---	
Methylene chloride	0.885	---	0.500	mg/kg wet	50	1.00	---	88	80 - 120%	---	---	
1,1,1,2-Tetrachloroethane	1.11	---	0.0250	mg/kg wet	50	1.00	---	111	80 - 120%	---	---	
1,1,2,2-Tetrachloroethane	0.972	---	0.0500	mg/kg wet	50	1.00	---	97	80 - 120%	---	---	
Tetrachloroethene (PCE)	1.17	---	0.0250	mg/kg wet	50	1.00	---	117	80 - 120%	---	---	
1,2,3-Trichlorobenzene	1.10	---	0.250	mg/kg wet	50	1.00	---	110	80 - 120%	---	---	
1,2,4-Trichlorobenzene	1.06	---	0.250	mg/kg wet	50	1.00	---	106	80 - 120%	---	---	
1,1,1-Trichloroethane	1.08	---	0.0250	mg/kg wet	50	1.00	---	108	80 - 120%	---	---	
1,1,2-Trichloroethane	0.999	---	0.0250	mg/kg wet	50	1.00	---	100	80 - 120%	---	---	
Trichloroethene (TCE)	1.12	---	0.0250	mg/kg wet	50	1.00	---	112	80 - 120%	---	---	
Trichlorofluoromethane	1.23	---	0.100	mg/kg wet	50	1.00	---	**123**	**80 - 120%**	---	---	Q-56
1,2,3-Trichloropropane	1.01	---	0.0500	mg/kg wet	50	1.00	---	101	80 - 120%	---	---	
Vinyl chloride	0.787	---	0.0250	mg/kg wet	50	1.00	---	**79**	**80 - 120%**	---	---	Q-55
Surr: 1,4-Difluorobenzene (Surr)		*Recovery: 99 %*		*Limits: 80-120 %*				*Dilution: 1x*				
Toluene-d8 (Surr)		*95 %*		*80-120 %*				*"*				
4-Bromofluorobenzene (Surr)		*107 %*		*80-120 %*				*"*				
Duplicate (0020794-DUP2)		Prepared: 02/16/20 11:15		Analyzed: 02/26/20 18:23								

QC Source Sample: HA-1-2.0 (A0B0598-01)
5035A/8260C

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22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A							**Soil**					
Duplicate (0020794-DUP2)		Prepared: 02/16/20 11:15	Analyzed: 02/26/20 18:23									
QC Source Sample: HA-1-2.0 (A0B0598-01)												
Bromobenzene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
Bromochloromethane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Bromodichloromethane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Bromoform	ND	---	0.135	mg/kg dry	50	---	ND	---	---	---	30%	
Bromomethane	ND	---	0.675	mg/kg dry	50	---	ND	---	---	---	30%	
Carbon tetrachloride	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Chlorobenzene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
Chloroethane	ND	---	0.675	mg/kg dry	50	---	ND	---	---	---	30%	
Chloroform	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Chloromethane	ND	---	0.338	mg/kg dry	50	---	ND	---	---	---	30%	
2-Chlorotoluene	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
4-Chlorotoluene	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Dibromochloromethane	ND	---	0.135	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dibromo-3-chloropropane	ND	---	0.338	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dibromoethane (EDB)	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Dibromomethane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichlorobenzene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,3-Dichlorobenzene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,4-Dichlorobenzene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
Dichlorodifluoromethane	ND	---	0.135	mg/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloroethane	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichloroethane (EDC)	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloroethene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
cis-1,2-Dichloroethene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
trans-1,2-Dichloroethene	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,2-Dichloropropane	ND	---	0.135	mg/kg dry	50	---	ND	---	---	---	30%	
1,3-Dichloropropane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
2,2-Dichloropropane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
1,1-Dichloropropene	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
cis-1,3-Dichloropropene	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
trans-1,3-Dichloropropene	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Hexachlorobutadiene	ND	---	0.135	mg/kg dry	50	---	ND	---	---	---	30%	
Methylene chloride	ND	---	0.675	mg/kg dry	50	---	ND	---	---	---	30%	

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22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A							**Soil**					
Duplicate (0020794-DUP2)		Prepared: 02/16/20 11:15	Analyzed: 02/26/20 18:23									
QC Source Sample: HA-1-2.0 (A0B0598-01)												
1,1,1,2-Tetrachloroethane	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,2,2-Tetrachloroethane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Tetrachloroethene (PCE)	**0.0542**	---	0.0338	mg/kg dry	50	---	0.206	---	---	**117**	**30%**	Q-05
1,2,3-Trichlorobenzene	ND	---	0.338	mg/kg dry	50	---	ND	---	---	---	30%	
1,2,4-Trichlorobenzene	ND	---	0.338	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,1-Trichloroethane	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
1,1,2-Trichloroethane	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
Trichloroethene (TCE)	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
Trichlorofluoromethane	ND	---	0.135	mg/kg dry	50	---	ND	---	---	---	30%	
1,2,3-Trichloropropane	ND	---	0.0675	mg/kg dry	50	---	ND	---	---	---	30%	
Vinyl chloride	ND	---	0.0338	mg/kg dry	50	---	ND	---	---	---	30%	
Surr: 1,4-Difluorobenzene (Surr)		*Recovery: 105 %*		*Limits: 80-120 %*			*Dilution: 1x*					
Toluene-d8 (Surr)			*95 %*		*80-120 %*		*"*					
4-Bromofluorobenzene (Surr)			*107 %*		*80-120 %*		*"*					
Matrix Spike (0020794-MS1)		Prepared: 02/16/20 13:00	Analyzed: 02/26/20 19:17									
QC Source Sample: HA-2-2.0 (A0B0598-02)												
5035A/8260C												
Bromobenzene	1.32	---	0.0335	mg/kg dry	50	1.34	ND	99	78 - 121%	---	---	
Bromochloromethane	1.06	---	0.0670	mg/kg dry	50	1.34	ND	79	78 - 125%	---	---	
Bromodichloromethane	1.29	---	0.0670	mg/kg dry	50	1.34	ND	96	75 - 127%	---	---	
Bromoform	1.48	---	0.134	mg/kg dry	50	1.34	ND	110	67 - 132%	---	---	
Bromomethane	1.19	---	0.670	mg/kg dry	50	1.34	ND	88	53 - 143%	---	---	
Carbon tetrachloride	1.32	---	0.0670	mg/kg dry	50	1.34	ND	99	70 - 135%	---	---	
Chlorobenzene	1.27	---	0.0335	mg/kg dry	50	1.34	ND	95	79 - 120%	---	---	
Chloroethane	1.28	---	0.670	mg/kg dry	50	1.34	ND	95	59 - 139%	---	---	
Chloroform	1.20	---	0.0670	mg/kg dry	50	1.34	ND	90	78 - 123%	---	---	
Chloromethane	0.820	---	0.335	mg/kg dry	50	1.34	ND	61	50 - 136%	---	---	Q-54c
2-Chlorotoluene	1.27	---	0.0670	mg/kg dry	50	1.34	ND	95	75 - 122%	---	---	
4-Chlorotoluene	1.20	---	0.0670	mg/kg dry	50	1.34	ND	90	72 - 124%	---	---	
Dibromochloromethane	1.32	---	0.134	mg/kg dry	50	1.34	ND	99	74 - 126%	---	---	
1,2-Dibromo-3-chloropropane	1.18	---	0.335	mg/kg dry	50	1.34	ND	88	61 - 132%	---	---	
1,2-Dibromoethane (EDB)	1.27	---	0.0670	mg/kg dry	50	1.34	ND	95	78 - 122%	---	---	

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Lisa Domenighini, Client Services Manager

Apex Laboratories, LLC
6700 S.W. Sandburg Street
Tigard, OR 97223
503-718-2323
EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Halogenated Volatile Organic Compounds by EPA 8260C

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020794 - EPA 5035A							**Soil**					
Matrix Spike (0020794-MS1)		Prepared: 02/16/20 13:00		Analyzed: 02/26/20 19:17								
QC Source Sample: HA-2-2.0 (A0B0598-02)												
Dibromomethane	1.29	---	0.0670	mg/kg dry	50	1.34	ND	96	78 - 125%	---	---	
1,2-Dichlorobenzene	1.29	---	0.0335	mg/kg dry	50	1.34	ND	96	78 - 121%	---	---	
1,3-Dichlorobenzene	1.31	---	0.0335	mg/kg dry	50	1.34	ND	98	77 - 121%	---	---	
1,4-Dichlorobenzene	1.21	---	0.0335	mg/kg dry	50	1.34	ND	91	75 - 120%	---	---	
Dichlorodifluoromethane	0.980	---	0.134	mg/kg dry	50	1.34	ND	73	29 - 149%	---	---	Q-54b
1,1-Dichloroethane	1.12	---	0.0335	mg/kg dry	50	1.34	ND	84	76 - 125%	---	---	
1,2-Dichloroethane (EDC)	1.22	---	0.0335	mg/kg dry	50	1.34	ND	91	73 - 128%	---	---	
1,1-Dichloroethene	1.19	---	0.0335	mg/kg dry	50	1.34	ND	89	70 - 131%	---	---	
cis-1,2-Dichloroethene	1.11	---	0.0335	mg/kg dry	50	1.34	ND	83	77 - 123%	---	---	
trans-1,2-Dichloroethene	1.07	---	0.0335	mg/kg dry	50	1.34	ND	80	74 - 125%	---	---	
1,2-Dichloropropane	1.12	---	0.134	mg/kg dry	50	1.34	ND	84	76 - 123%	---	---	
1,3-Dichloropropane	1.18	---	0.0670	mg/kg dry	50	1.34	ND	88	77 - 121%	---	---	
2,2-Dichloropropane	1.17	---	0.0670	mg/kg dry	50	1.34	ND	87	67 - 133%	---	---	
1,1-Dichloropropene	1.18	---	0.0670	mg/kg dry	50	1.34	ND	88	76 - 125%	---	---	
cis-1,3-Dichloropropene	1.08	---	0.0670	mg/kg dry	50	1.34	ND	81	74 - 126%	---	---	
trans-1,3-Dichloropropene	1.28	---	0.0670	mg/kg dry	50	1.34	ND	96	71 - 130%	---	---	
Hexachlorobutadiene	1.41	---	0.134	mg/kg dry	50	1.34	ND	105	61 - 135%	---	---	
Methylene chloride	1.13	---	0.670	mg/kg dry	50	1.34	ND	84	70 - 128%	---	---	
1,1,1,2-Tetrachloroethane	1.37	---	0.0335	mg/kg dry	50	1.34	ND	102	78 - 125%	---	---	
1,1,2,2-Tetrachloroethane	1.12	---	0.0670	mg/kg dry	50	1.34	ND	84	70 - 124%	---	---	
Tetrachloroethene (PCE)	1.65	---	0.0335	mg/kg dry	50	1.34	0.186	109	73 - 128%	---	---	
1,2,3-Trichlorobenzene	1.30	---	0.335	mg/kg dry	50	1.34	ND	97	66 - 130%	---	---	
1,2,4-Trichlorobenzene	1.23	---	0.335	mg/kg dry	50	1.34	ND	92	67 - 129%	---	---	
1,1,1-Trichloroethane	1.29	---	0.0335	mg/kg dry	50	1.34	ND	97	73 - 130%	---	---	
1,1,2-Trichloroethane	1.23	---	0.0335	mg/kg dry	50	1.34	ND	92	78 - 121%	---	---	
Trichloroethene (TCE)	1.38	---	0.0335	mg/kg dry	50	1.34	ND	103	77 - 123%	---	---	
Trichlorofluoromethane	1.44	---	0.134	mg/kg dry	50	1.34	ND	108	62 - 140%	---	---	Q-54
1,2,3-Trichloropropane	1.21	---	0.0670	mg/kg dry	50	1.34	ND	90	73 - 125%	---	---	
Vinyl chloride	0.954	---	0.0335	mg/kg dry	50	1.34	ND	71	56 - 135%	---	---	Q-54a

Surr: 1,4-Difluorobenzene (Surr)	*Recovery: 101 %*	*Limits: 80-120 %*	*Dilution: 1x*	
Toluene-d8 (Surr)	*93 %*	*80-120 %*	*"*	
4-Bromofluorobenzene (Surr)	*104 %*	*80-120 %*	*"*	

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Lisa Domenighini, Client Services Manager

Apex Laboratories, LLC

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EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALITY CONTROL (QC) SAMPLE RESULTS

Percent Dry Weight

Analyte	Result	Detection Limit	Reporting Limit	Units	Dilution	Spike Amount	Source Result	% REC	% REC Limits	RPD	RPD Limit	Notes
Batch 0020764 - Total Solids (Dry Weight)												**Soil**

No Client related Batch QC samples analyzed for this batch. See notes page for more information.

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SAMPLE PREPARATION INFORMATION

Gasoline Range Hydrocarbons (Benzene through Naphthalene) by NWTPH-Gx

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020794							
A0B0598-01	Soil	NWTPH-Gx (MS)	02/16/20 11:15	02/16/20 11:15	5.43g/5mL	5g/5mL	0.92
A0B0598-02	Soil	NWTPH-Gx (MS)	02/16/20 13:00	02/16/20 13:00	5.83g/5mL	5g/5mL	0.86

Halogenated Volatile Organic Compounds by EPA 8260C

Prep: EPA 5035A

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020794							
A0B0598-01	Soil	5035A/8260C	02/16/20 11:15	02/16/20 11:15	5.43g/5mL	5g/5mL	0.92
A0B0598-02	Soil	5035A/8260C	02/16/20 13:00	02/16/20 13:00	5.83g/5mL	5g/5mL	0.86

Percent Dry Weight

Prep: Total Solids (Dry Weight)

Lab Number	Matrix	Method	Sampled	Prepared	Sample Initial/Final	Default Initial/Final	RL Prep Factor
Batch: 0020764							
A0B0598-01	Soil	EPA 8000C	02/16/20 11:15	02/25/20 16:07			NA
A0B0598-02	Soil	EPA 8000C	02/16/20 13:00	02/25/20 16:07			NA

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Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

QUALIFIER DEFINITIONS

Client Sample and Quality Control (QC) Sample Qualifier Definitions:

Apex Laboratories

Q-05	Analyses are not controlled on RPD values from sample and duplicate concentrations that are below 5 times the reporting level.
Q-54	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by +3%. The results are reported as Estimated Values.
Q-54a	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -1%. The results are reported as Estimated Values.
Q-54b	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -2%. The results are reported as Estimated Values.
Q-54c	Daily Continuing Calibration Verification recovery for this analyte failed the +/-20% criteria listed in EPA method 8260C/8270D by -9%. The results are reported as Estimated Values.
Q-55	Daily CCV/LCS recovery for this analyte was below the +/-20% criteria listed in EPA 8260C, however there is adequate sensitivity to ensure detection at the reporting level.
Q-56	Daily CCV/LCS recovery for this analyte was above the +/-20% criteria listed in EPA 8260C

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REPORTING NOTES AND CONVENTIONS:

Abbreviations:

DET Analyte DETECTED at or above the detection or reporting limit.

ND Analyte NOT DETECTED at or above the detection or reporting limit.

NR Result Not Reported.

RPD Relative Percent Difference. RPDs for Matrix Spikes and Matrix Spike Duplicates are based on concentration, not recovery.

Detection Limits: Limit of Detection (LOD)

Limits of Detection (LODs) are normally set at a level of one half the validated Limit of Quantitation (LOQ).
If no value is listed ('-----'), then the data has not been evaluated below the Reporting Limit.

Reporting Limits: Limit of Quantitation (LOQ)

Validated Limits of Quantitation (LOQs) are reported as the Reporting Limits for all analyses where the LOQ, MRL, PQL or CRL are requested. The LOQ represents a level at or above the low point of the calibration curve, that has been validated according to Apex Laboratories' comprehensive LOQ policies and procedures.

Reporting Conventions:

Basis: Results for soil samples are generally reported on a 100% dry weight basis.
The Result Basis is listed following the units as " dry", " wet", or " " (blank) designation.

" dry" Sample results and Reporting Limits are reported on a dry weight basis. (i.e. "ug/kg dry")
See Percent Solids section for details of dry weight analysis.

" wet" Sample results and Reporting Limits for this analysis are normally dry weight corrected, but have not been modified in this case.

" " Results without 'wet' or 'dry' designation are not normally dry weight corrected. These results are considered 'As Received'.

QC Source:

In cases where there is insufficient sample provided for Sample Duplicates and/or Matrix Spikes, a Lab Control Sample Duplicate (LCS Dup) may be analyzed to demonstrate accuracy and precision of the extraction batch.

Non-Client Batch QC Samples (Duplicates and Matrix Spike/Duplicates) are not included in this report. Please request a Full QC report if this data is required.

Miscellaneous Notes:

" --- " QC results are not applicable. For example, % Recoveries for Blanks and Duplicates, % RPD for Blanks, Blank Spikes and Matrix Spikes, etc.

" *** " Used to indicate a possible discrepancy with the Sample and Sample Duplicate results when the %RPD is not available. In this case, either the Sample or the Sample Duplicate has a reportable result for this analyte, while the other is Non Detect (ND).

Blanks:

Standard practice is to evaluate the results from Blank QC Samples down to a level equal to ½ the Reporting Limit (RL).
-For Blank hits falling between ½ the RL and the RL (J flagged hits), the associated sample and QC data will receive a 'B-02' qualifier.
-For Blank hits above the RL, the associated sample and QC data will receive a 'B' qualifier, per Apex Laboratories' Blank Policy.
For further details, please request a copy of this document.

Apex Laboratories

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22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

REPORTING NOTES AND CONVENTIONS (Cont.):

Blanks (Cont.):

Sample results flagged with a 'B' or 'B-02' qualifier are potentially biased high if the sample results are less than ten times the level found in the blank for inorganic analyses, or less than five times the level found in the blank for organic analyses.

'B' and 'B-02' qualifications are only applied to sample results detected above the Reporting Level.

Preparation Notes:

Mixed Matrix Samples:

Water Samples:

Water samples containing significant amounts of sediment are decanted or separated prior to extraction, and only the water portion analyzed, unless otherwise directed by the client.

Soil and Sediment Samples:

Soil and Sediment samples containing significant amounts of water are decanted prior to extraction, and only the solid portion analyzed, unless otherwise directed by the client.

Sampling and Preservation Notes:

Certain regulatory programs, such as National Pollutant Discharge Elimination System (NPDES), require that activities such as sample filtration (for dissolved metals, orthophosphate, hexavalent chromium, etc.) and testing of short hold analytes (pH, Dissolved Oxygen, etc.) be performed in the field (on-site) within a short time window. In addition, sample matrix spikes are required for some analyses, and sufficient volume must be provided, and billable site specific QC requested, if this is required. All regulatory permits should be reviewed to ensure that these requirements are being met.

Data users should be aware of which regulations pertain to the samples they submit for testing. If related sample collection activities are not approved for a particular regulatory program, results should be considered estimates. Apex Laboratories will qualify these analytes according to the most stringent requirements, however results for samples that are for non-regulatory purposes may be acceptable.

Samples that have been filtered and preserved at Apex Laboratories per client request are listed in the preparation section of the report with the date and time of filtration listed.

Apex Laboratories maintains detailed records on sample receipt, including client label verification, cooler temperature, sample preservation, hold time compliance and field filtration. Data is qualified as necessary, and the lack of qualification indicates compliance with required parameters.

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Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

LABORATORY ACCREDITATION INFORMATION

TNI Certification ID: OR100062 (Primary Accreditation) - EPA ID: OR01039

All methods and analytes reported from work performed at Apex Laboratories are included on Apex Laboratories' ORELAP Scope of Certification, with the exception of any analyte(s) listed below:

Apex Laboratories

Matrix	Analysis	TNI_ID	Analyte	TNI_ID	Accreditation

All reported analytes are included in Apex Laboratories' current ORELAP scope.

Secondary Accreditations

Apex Laboratories also maintains reciprocal accreditation with non-TNI states (Washington DOE), as well as other state specific accreditations not listed here.

Subcontract Laboratory Accreditations

Subcontracted data falls outside of Apex Laboratories' Scope of Accreditation.
Please see the Subcontract Laboratory report for full details, or contact your Project Manager for more information.

Field Testing Parameters

Results for Field Tested data are provded by the client or sampler, and fall outside of Apex Laboratories' Scope of Accreditation.

Apex Laboratories

Lisa Domenighini, Client Services Manager

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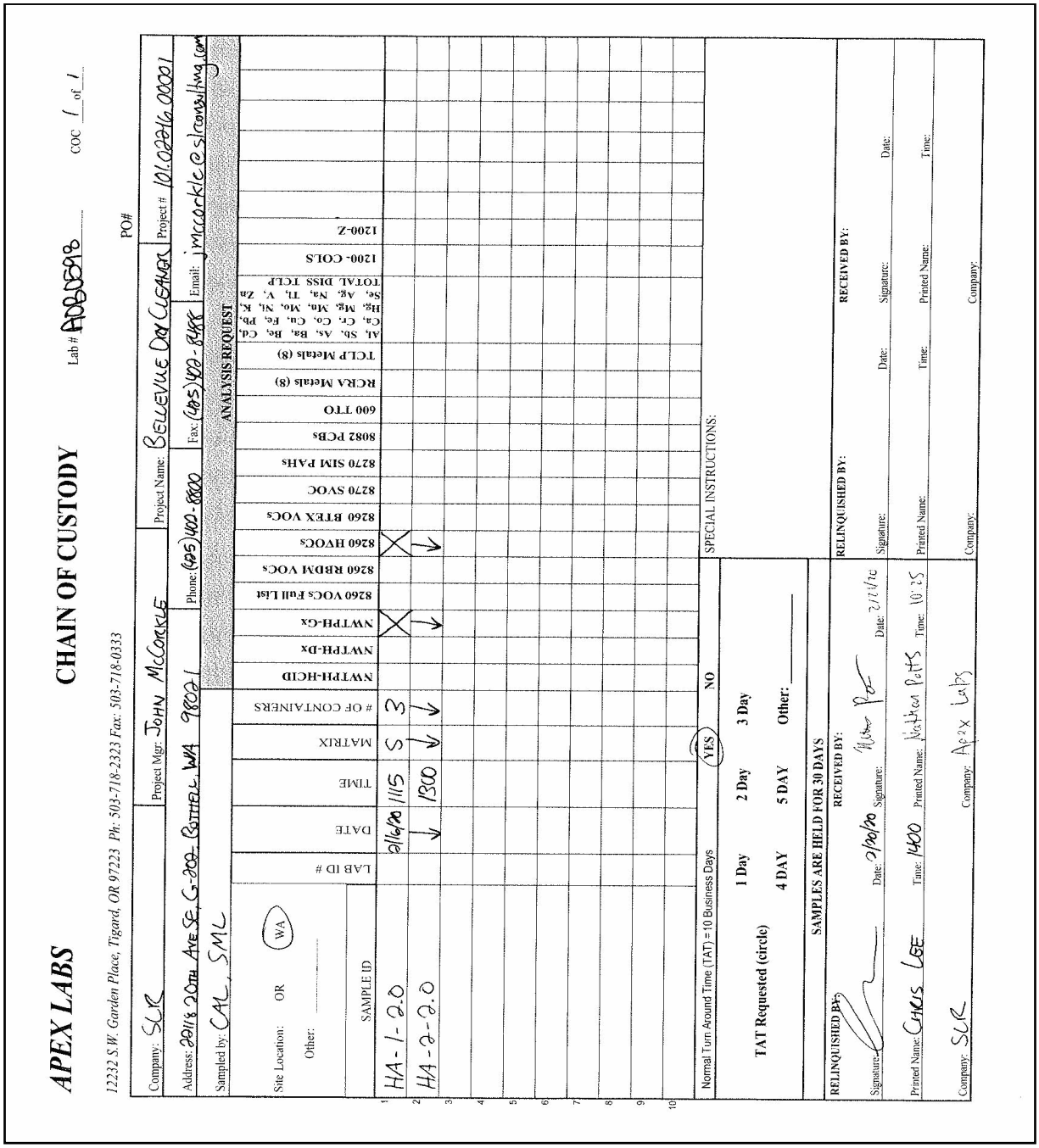

APEX LABS

12232 S.W. Garden Place, Tigard, OR 97223 Ph: 503-718-2323 Fax: 503-718-0333

CHAIN OF CUSTODY

Lab # A0B0598 COC 1 of 1

PO#

Company: SLR | Project Mgr: John McCorkle | Project Name: Bellevue Dry Cleaner | Project #: 101.02216.00001

Address: 22118 20th Ave SE, G-200, Bothell, WA 98021 | Phone: (425) 400-6800 | Fax: (425) 420-6865 | Email: jmccorkle@slrconsulting.com

Sampled by: CAL, SML

Site Location: OR WA

Other:

SAMPLE ID	LAB ID #	DATE	TIME	MATRIX	# OF CONTAINERS	NWTPH-HCID	NWTPH-Dx	NWTPH-Gx	8260 VOCs Full List	8260 RBDM VOCs	8260 HVOCs	8260 BTEX VOCs	8270 SVOC	8270 SIM PAHs	8082 PCBs	600 TTO	RCRA Metals (8)	TCLP Metals (8)	Al, Sb, As, Ba, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Hg, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Tl, V, Zn TOTAL DISS TCLP	1200- COLS	1200-Z
1 HA-1-2.0		2/16/20	1115	S	3			X			X										
2 HA-2-2.0		↓	1300	↓	↓			↓			↓										
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

Normal Turn Around Time (TAT) = 10 Business Days (YES) NO

SPECIAL INSTRUCTIONS:

TAT Requested (circle): 1 Day 2 Day 3 Day 4 DAY 5 DAY Other: _____

SAMPLES ARE HELD FOR 30 DAYS

RELINQUISHED BY: Signature: _____ Printed Name: _____ Company: SLR

RECEIVED BY: Date: 2/20/20 Signature: _____ Printed Name: _____ Time: 1400 Company: Apex Labs

RELINQUISHED BY: Signature: _____ Printed Name: Chris Lee Company: _____

RECEIVED BY: Date: 2/21/20 Signature: _____ Printed Name: Kristina Potts Time: 10:25 Company: _____

RELINQUISHED BY: Signature: _____ Printed Name: _____ Company: _____

RECEIVED BY: Date: _____ Signature: _____ Printed Name: _____ Time: _____ Company: _____

Apex Laboratories

Lisa A Domenighini

Lisa Domenighini, Client Services Manager

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EPA ID: OR01039

SLR Corporation-Bothell	Project: **Bellevue Dry Cleaner**	
22118 20th Ave SE	Project Number: **101.02216.00001**	**Report ID:**
Bothell, WA 98021	Project Manager: **John McCorkle**	**A0B0598 - 02 28 20 0950**

APEX LABS COOLER RECEIPT FORM

Client: SLR Element WO#: A0B0598

Project/Project #: Bellevue Dry Cleaner

Delivery Info:

Date/time received: 2/21/20 @ 10:25 By: NMP

Delivered by: Apex____Client____ESS____FedEx X UPS____Swift___Senvoy ___SDS___Other_____

Cooler Inspection Date/time inspected: 2/21/20 @ 10:25 By: NMP

Chain of Custody included? Yes X No ___ Custody seals? Yes X No_____

Signed/dated by client? Yes X No ___

Signed/dated by Apex? Yes X No ___

	Cooler #1	Cooler #2	Cooler #3	Cooler #4	Cooler #5	Cooler #6	Cooler #7
Temperature (°C)	5.3						
Received on ice? (Y/N)	Y						
Temp. blanks? (Y/N)	N						
Ice type: (Gel/Real/Other)	Real						
Condition:	Good						

Cooler out of temp? (Y/N) Possible reason why:_____

If some coolers are in temp and some out, were green dots applied to out of temperature samples? Yes/No/NA

Out of temperature samples form initiated? Yes/No/NA

Samples Inspection: Date/time inspected: 2/21/20 @ 12:29 By: TAC

All samples intact? Yes X No ___ Comments:_____

Bottle labels/COCs agree? Yes X No ___ Comments: _____

COC/container discrepancies form initiated? Yes ___ No ___ NA X

Containers/volumes received appropriate for analysis? Yes X No ___ Comments: _____

Do VOA vials have visible headspace? Yes ___ No ___ NA X

Comments_____

Water samples: pH checked: Yes___No___NA X pH appropriate? Yes___No___NA X

Comments: _____

Additional information: TRK# 3905 3877 5755

Labeled by: TAC Witness: Cooler Inspected by: TAC See Project Contact Form: Y

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SLR International
John McCorkle
22118 20th Ave SE. G 202
Bothell, WA 98021

RE: Bellevue Dry Cleaners
Work Order Number: 2002350

February 27, 2020

Attention John McCorkle:

Fremont Analytical, Inc. received 2 sample(s) on 2/20/2020 for the analyses presented in the following report.

Volatile Organic Compounds by EPA Method TO-15

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *02/27/2020*

CLIENT: SLR International
Project: Bellevue Dry Cleaners
Work Order: 2002350

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2002350-001	SVP-1	02/16/2020 10:36 AM	02/20/2020 8:31 AM
2002350-002	SVP-2	02/16/2020 11:37 AM	02/20/2020 8:31 AM

Note: If no "Time Collected" is supplied, a default of 12:00AM is assigned

Case Narrative

WO#: **2002350**
Date: **2/27/2020**

CLIENT: SLR International
Project: Bellevue Dry Cleaners

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Air samples are reported in ppbv and ug/m3.

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Standard temperature and pressure assumes 24.45 = (25C and 1 atm).

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: SLR International
WorkOrder: 2002350
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-1
Lab ID: 2002350-001A
Sample Type: Summa Canister

Date Sampled: 2/16/2020
Date Received: 2/20/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	<0.100	<0.546	0.100	0.546		EPA-TO-15	02/21/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/21/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/21/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	02/21/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/21/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	02/21/2020	AD
1,2,4-Trichlorobenzene	<0.0750	<0.557	0.0750	0.557		EPA-TO-15	02/21/2020	AD
1,2,4-Trimethylbenzene	0.205	1.01	0.0750	0.369		EPA-TO-15	02/21/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	02/21/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/21/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/21/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	02/21/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/21/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	02/21/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/21/2020	AD
1,4-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/21/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	02/21/2020	AD
(MEK) 2-Butanone	1.16	3.41	0.250	0.737		EPA-TO-15	02/21/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/21/2020	AD
Isopropyl Alcohol	2.43	5.97	0.250	0.614		EPA-TO-15	02/21/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/21/2020	AD
Acetone	10.9	25.9	0.250	0.594	E	EPA-TO-15	02/21/2020	AD
Acrolein	0.527	1.21	0.125	0.287		EPA-TO-15	02/21/2020	AD
Benzene	1.18	3.78	0.0224	0.0715		EPA-TO-15	02/21/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/21/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	02/21/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/21/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	02/21/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	02/21/2020	AD
Carbon tetrachloride	0.0788	0.496	0.0164	0.103		EPA-TO-15	02/21/2020	AD

Client: SLR International
WorkOrder: 2002350
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-1
Lab ID: 2002350-001A
Sample Type: Summa Canister

Date Sampled: 2/16/2020
Date Received: 2/20/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/21/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	02/21/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	02/21/2020	AD
Chloroform	0.390	1.90	0.0500	0.244		EPA-TO-15	02/21/2020	AD
Chloromethane	0.630	1.30	0.125	0.258		EPA-TO-15	02/21/2020	AD
cis-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/21/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	02/21/2020	AD
Cyclohexane	0.112	0.384	0.100	0.344		EPA-TO-15	02/21/2020	AD
Dichlorodifluoromethane (CFC-12)	0.483	2.39	0.100	0.495		EPA-TO-15	02/21/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	02/21/2020	AD
Ethyl acetate	0.735	2.65	0.250	0.901		EPA-TO-15	02/21/2020	AD
Ethylbenzene	0.126	0.545	0.100	0.434		EPA-TO-15	02/21/2020	AD
Heptane	0.150	0.603	0.100	0.402		EPA-TO-15	02/21/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/21/2020	AD
m,p-Xylene	0.448	1.94	0.200	0.868		EPA-TO-15	02/21/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	02/21/2020	AD
Methylene chloride	1.10	3.82	0.500	1.74		EPA-TO-15	02/21/2020	AD
Naphthalene	0.468	2.45	0.0250	0.131		EPA-TO-15	02/21/2020	AD
n-Hexane	1.93	6.82	0.100	0.352		EPA-TO-15	02/21/2020	AD
o-Xylene	0.171	0.741	0.100	0.434		EPA-TO-15	02/21/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	02/21/2020	AD
Propylene	1.59	2.74	0.100	0.172	BQ*	EPA-TO-15	02/21/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/21/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	02/21/2020	AD
Tetrachloroethene (PCE)	84.2	571	0.0500	0.339	E	EPA-TO-15	02/21/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	02/21/2020	AD
Toluene	1.92	7.22	0.100	0.377		EPA-TO-15	02/21/2020	AD
trans-1,2-Dichloroethene	<0.0500	<0.198	0.0500	0.198		EPA-TO-15	02/21/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	02/21/2020	AD
Trichloroethene (TCE)	3.77	20.2	0.0162	0.0872		EPA-TO-15	02/21/2020	AD

Client: SLR International
WorkOrder: 2002350
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-1
Lab ID: 2002350-001A
Sample Type: Summa Canister

Date Sampled: 2/16/2020
Date Received: 2/20/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.218	1.22	0.100	0.562		EPA-TO-15	02/21/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	02/21/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	02/21/2020	AD
Surr: 4-Bromofluorobenzene	109 %Rec	--	70-130	--		EPA-TO-15	02/21/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.
Q - Indicates an analyte with an initial calibration curve that does not meet established acceptance criteria

Client: SLR International
WorkOrder: 2002350
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-2
Lab ID: 2002350-002A
Sample Type: Summa Canister

Date Sampled: 2/16/2020
Date Received: 2/20/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	0.150	0.817	0.100	0.546		EPA-TO-15	02/21/2020	AD
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	02/21/2020	AD
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	02/21/2020	AD
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	02/21/2020	AD
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/21/2020	AD
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	02/21/2020	AD
1,2,4-Trichlorobenzene	0.0872	0.647	0.0750	0.557		EPA-TO-15	02/21/2020	AD
1,2,4-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/21/2020	AD
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	02/21/2020	AD
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	02/21/2020	AD
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	02/21/2020	AD
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	02/21/2020	AD
1,3,5-Trimethylbenzene	<0.0750	<0.369	0.0750	0.369		EPA-TO-15	02/21/2020	AD
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	02/21/2020	AD
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/21/2020	AD
1,4-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	02/21/2020	AD
1,4-Dioxane	<0.100	<0.360	0.100	0.360		EPA-TO-15	02/21/2020	AD
(MEK) 2-Butanone	0.882	2.60	0.250	0.737		EPA-TO-15	02/21/2020	AD
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/21/2020	AD
Isopropyl Alcohol	0.270	0.663	0.250	0.614		EPA-TO-15	02/21/2020	AD
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	02/21/2020	AD
Acetone	13.5	32.1	0.250	0.594	E	EPA-TO-15	02/21/2020	AD
Acrolein	<0.125	<0.287	0.125	0.287		EPA-TO-15	02/21/2020	AD
Benzene	2.94	9.39	0.0224	0.0715		EPA-TO-15	02/21/2020	AD
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	02/21/2020	AD
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	02/21/2020	AD
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	02/21/2020	AD
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	02/21/2020	AD
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	02/21/2020	AD
Carbon tetrachloride	0.234	1.47	0.0164	0.103		EPA-TO-15	02/21/2020	AD

Client: SLR International
WorkOrder: 2002350
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-2
Lab ID: 2002350-002A
Sample Type: Summa Canister

Date Sampled: 2/16/2020
Date Received: 2/20/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	02/21/2020	AD
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	02/21/2020	AD
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	02/21/2020	AD
Chloroform	6.59	32.2	0.0500	0.244		EPA-TO-15	02/21/2020	AD
Chloromethane	0.183	0.378	0.125	0.258		EPA-TO-15	02/21/2020	AD
cis-1,2-Dichloroethene	3.51	13.9	0.0500	0.198		EPA-TO-15	02/21/2020	AD
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	02/21/2020	AD
Cyclohexane	<0.100	<0.344	0.100	0.344		EPA-TO-15	02/21/2020	AD
Dichlorodifluoromethane (CFC-12)	0.492	2.44	0.100	0.495		EPA-TO-15	02/21/2020	AD
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	02/21/2020	AD
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	02/21/2020	AD
Ethylbenzene	<0.100	<0.434	0.100	0.434		EPA-TO-15	02/21/2020	AD
Heptane	<0.100	<0.402	0.100	0.402		EPA-TO-15	02/21/2020	AD
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	02/21/2020	AD
m,p-Xylene	<0.200	<0.868	0.200	0.868		EPA-TO-15	02/21/2020	AD
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	02/21/2020	AD
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	02/21/2020	AD
Naphthalene	<0.0250	<0.131	0.0250	0.131		EPA-TO-15	02/21/2020	AD
n-Hexane	0.135	0.477	0.100	0.352		EPA-TO-15	02/21/2020	AD
o-Xylene	<0.100	<0.434	0.100	0.434		EPA-TO-15	02/21/2020	AD
4-Ethyltoluene	<0.100	<0.492	0.100	0.492		EPA-TO-15	02/21/2020	AD
Propylene	0.983	1.69	0.100	0.172	BQ*	EPA-TO-15	02/21/2020	AD
Styrene	<0.100	<0.426	0.100	0.426		EPA-TO-15	02/21/2020	AD
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	02/21/2020	AD
Tetrachloroethene (PCE)	125	848	0.0500	0.339	E	EPA-TO-15	02/21/2020	AD
Tetrahydrofuran	<0.100	<0.295	0.100	0.295		EPA-TO-15	02/21/2020	AD
Toluene	1.25	4.71	0.100	0.377		EPA-TO-15	02/21/2020	AD
trans-1,2-Dichloroethene	0.353	1.40	0.0500	0.198		EPA-TO-15	02/21/2020	AD
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	02/21/2020	AD
Trichloroethene (TCE)	88.2	474	0.0162	0.0872	E	EPA-TO-15	02/21/2020	AD

Client: SLR International
WorkOrder: 2002350
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-2
Lab ID: 2002350-002A
Sample Type: Summa Canister

Date Sampled: 2/16/2020
Date Received: 2/20/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.215	1.21	0.100	0.562		EPA-TO-15	02/21/2020	AD
Vinyl acetate	<0.250	<0.880	0.250	0.880		EPA-TO-15	02/21/2020	AD
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	02/21/2020	AD
Surr: 4-Bromofluorobenzene	108 %Rec	--	70-130	--		EPA-TO-15	02/21/2020	AD

NOTES:
* - Flagged value is not within established control limits.
E - Estimated value. The amount exceeds the linear working range of the instrument.
Q - Indicates an analyte with an initial calibration curve that does not meet established acceptance criteria

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R57580** SampType: **LCS** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **LCSW** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149098**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	4.20	0.400	2.000	0	210	70	130				BSQ
Dichlorodifluoromethane (CFC-12)	2.03	0.400	2.000	0	102	70	130				
Chloromethane	2.11	0.500	2.000	0	106	70	130				
Dichlorotetrafluoroethane (CFC-114)	2.09	0.400	2.000	0	104	70	130				
Vinyl chloride	2.09	0.107	2.000	0	104	70	130				
1,3-Butadiene	1.90	0.500	2.000	0	95.1	70	130				
Bromomethane	2.05	0.500	2.000	0	103	70	130				
Trichlorofluoromethane (CFC-11)	2.03	0.400	2.000	0	102	70	130				
Chloroethane	2.02	0.400	2.000	0	101	70	130				
Acrolein	2.02	0.500	2.000	0	101	70	130				
1,1-Dichloroethene (DCE)	2.08	0.400	2.000	0	104	70	130				
Acetone	2.12	1.00	2.000	0	106	70	130				
Isopropyl Alcohol	2.22	1.00	2.000	0	111	70	130				
Methylene chloride	2.30	2.00	2.000	0	115	70	130				
Carbon disulfide	2.09	1.50	2.000	0	105	70	130				
trans-1,2-Dichloroethene	2.07	0.200	2.000	0	103	70	130				
Methyl tert-butyl ether (MTBE)	2.09	0.400	2.000	0	105	70	130				
n-Hexane	2.23	0.400	2.000	0	111	70	130				
1,1-Dichloroethane	2.15	0.200	2.000	0	107	70	130				
Vinyl acetate	2.01	1.00	2.000	0	100	70	130				
cis-1,2-Dichloroethene	2.11	0.200	2.000	0	105	70	130				
(MEK) 2-Butanone	2.08	1.00	2.000	0	104	70	130				
Ethyl acetate	2.04	1.00	2.000	0	102	70	130				
Chloroform	2.12	0.200	2.000	0	106	70	130				
Tetrahydrofuran	2.06	0.400	2.000	0	103	70	130				
1,1,1-Trichloroethane	2.10	0.400	2.000	0	105	70	130				
Carbon tetrachloride	2.09	0.0657	2.000	0	104	70	130				
1,2-Dichloroethane	2.14	0.200	2.000	0	107	70	130				
Benzene	2.13	0.0895	2.000	0	107	70	130				
Cyclohexane	2.09	0.400	2.000	0	105	70	130				
Trichloroethene (TCE)	2.09	0.0649	2.000	0	104	70	130				

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R57580** SampType: **LCS** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **LCSW** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149098**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	2.11	0.500	2.000	0	106	70	130				
Methyl methacrylate	1.92	0.400	2.000	0	95.8	70	130				
Dichlorobromomethane	2.14	0.300	2.000	0	107	70	130				
1,4-Dioxane	1.95	0.400	2.000	0	97.6	70	130				
cis-1,3-dichloropropene	2.12	0.400	2.000	0	106	70	130				
Toluene	2.10	0.400	2.000	0	105	70	130				
trans-1,3-dichloropropene	2.07	0.500	2.000	0	104	70	130				
1,1,2-Trichloroethane (TCA)	2.09	0.500	2.000	0	104	70	130				
Tetrachloroethene (PCE)	2.03	0.200	2.000	0	102	70	130				
Dibromochloromethane	2.11	0.500	2.000	0	105	70	130				
1,2-Dibromoethane (EDB)	2.08	0.200	2.000	0	104	70	130				
Chlorobenzene	2.09	0.200	2.000	0	105	70	130				
Ethylbenzene	2.04	0.400	2.000	0	102	70	130				
m,p-Xylene	4.02	0.800	4.000	0	101	70	130				
o-Xylene	2.00	0.400	2.000	0	99.9	70	130				
Styrene	1.91	0.400	2.000	0	95.5	70	130				
Bromoform	1.95	0.200	2.000	0	97.3	70	130				
1,1,2,2-Tetrachloroethane	1.92	0.300	2.000	0	95.9	70	130				
1,3,5-Trimethylbenzene	1.96	0.300	2.000	0	98.2	70	130				
1,2,4-Trimethylbenzene	1.88	0.300	2.000	0	94.2	70	130				
Benzyl chloride	1.66	0.500	2.000	0	82.9	70	130				
4-Ethyltoluene	1.89	0.400	2.000	0	94.3	70	130				
1,3-Dichlorobenzene	1.82	0.300	2.000	0	91.2	70	130				
1,4-Dichlorobenzene	1.81	0.300	2.000	0	90.4	70	130				
1,2-Dichlorobenzene	1.96	0.400	2.000	0	97.9	70	130				
1,2,4-Trichlorobenzene	1.58	0.300	2.000	0	79.2	70	130				
Hexachlorobutadiene	2.08	1.00	2.000	0	104	70	130				
Naphthalene	2.16	0.100	2.000	0	108	70	130				
2-Hexanone	1.55	1.00	2.000	0	77.4	70	130				
4-Methyl-2-pentanone (MIBK)	1.84	1.00	2.000	0	92.1	70	130				
CFC-113	2.12	0.400	2.000	0	106	70	130				

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R57580**	SampType: **LCS**	Units: **ppbv**	Prep Date: **2/21/2020**	RunNo: **57580**
Client ID: **LCSW**	Batch ID: **R57580**		Analysis Date: **2/21/2020**	SeqNo: **1149098**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Heptane	2.10	0.400	2.000	0	105	70	130				
Surr: 4-Bromofluorobenzene	4.05		4.000		101	70	130				

NOTES:
S - Outlying spike recovery observed (high bias). Detections will be qualified with a *.
Q - Indicates an analyte with an initial calibration curve that does not meet established acceptance criteria

Sample ID: **MB-R57580**	SampType: **MBLK**	Units: **ppbv**	Prep Date: **2/21/2020**	RunNo: **57580**
Client ID: **MBLKW**	Batch ID: **R57580**		Analysis Date: **2/21/2020**	SeqNo: **1149099**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	0.758	0.100									Q*
Dichlorodifluoromethane (CFC-12)	ND	0.100									
Chloromethane	ND	0.125									
Dichlorotetrafluoroethane (CFC-114)	ND	0.100									
Vinyl chloride	ND	0.0268									
1,3-Butadiene	ND	0.125									
Bromomethane	ND	0.125									
Trichlorofluoromethane (CFC-11)	ND	0.100									
Chloroethane	ND	0.100									
Acrolein	ND	0.125									
1,1-Dichloroethene (DCE)	ND	0.100									
Acetone	ND	0.250									
Isopropyl Alcohol	ND	0.250									
Methylene chloride	ND	0.500									
Carbon disulfide	ND	0.375									
trans-1,2-Dichloroethene	ND	0.0500									
Methyl tert-butyl ether (MTBE)	ND	0.100									
n-Hexane	ND	0.100									
1,1-Dichloroethane	ND	0.0500									
Vinyl acetate	ND	0.250									
cis-1,2-Dichloroethene	ND	0.0500									

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R57580** SampType: **MBLK** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **MBLKW** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149099**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
(MEK) 2-Butanone	ND	0.250									
Ethyl acetate	ND	0.250									
Chloroform	ND	0.0500									
Tetrahydrofuran	ND	0.100									
1,1,1-Trichloroethane	ND	0.100									
Carbon tetrachloride	ND	0.0164									
1,2-Dichloroethane	ND	0.0500									
Benzene	ND	0.0224									
Cyclohexane	ND	0.100									
Trichloroethene (TCE)	ND	0.0162									
1,2-Dichloropropane	ND	0.125									
Methyl methacrylate	ND	0.100									
Dichlorobromomethane	ND	0.0750									
1,4-Dioxane	ND	0.100									
cis-1,3-dichloropropene	ND	0.100									
Toluene	ND	0.100									
trans-1,3-dichloropropene	ND	0.125									
1,1,2-Trichloroethane (TCA)	ND	0.125									
Tetrachloroethene (PCE)	ND	0.0500									
Dibromochloromethane	ND	0.125									
1,2-Dibromoethane (EDB)	ND	0.0500									
Chlorobenzene	ND	0.0500									
Ethylbenzene	ND	0.100									
m,p-Xylene	ND	0.200									
o-Xylene	ND	0.100									
Styrene	ND	0.100									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0750									
1,3,5-Trimethylbenzene	ND	0.0750									
1,2,4-Trimethylbenzene	ND	0.0750									
Benzyl chloride	ND	0.125									

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB-R57580** SampType: **MBLK** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **MBLKW** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149099**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
4-Ethyltoluene	ND	0.100									
1,3-Dichlorobenzene	ND	0.0750									
1,4-Dichlorobenzene	ND	0.0750									
1,2-Dichlorobenzene	ND	0.100									
1,2,4-Trichlorobenzene	ND	0.0750									
Hexachlorobutadiene	ND	0.250									
Naphthalene	ND	0.0250									
2-Hexanone	ND	0.250									
4-Methyl-2-pentanone (MIBK)	ND	0.250									
CFC-113	ND	0.100									
Heptane	ND	0.100									
Surr: 4-Bromofluorobenzene	0.929		1.000		92.9	70	130				

NOTES:
Q - Indicates an analyte with an initial calibration curve that does not meet established acceptance criteria
* - Flagged value is not within established control limits.

Sample ID: **2002277-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **BATCH** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149104**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Propylene	ND	0.400						0		30	QI*
Dichlorodifluoromethane (CFC-12)	ND	0.400						0		30	I
Chloromethane	ND	0.500						0		30	I
Dichlorotetrafluoroethane (CFC-114)	ND	0.400						0		30	I
Vinyl chloride	ND	0.107						0		30	I
1,3-Butadiene	ND	0.500						0		30	I
Bromomethane	ND	0.500						0		30	I
Trichlorofluoromethane (CFC-11)	ND	0.400						0		30	I
Chloroethane	ND	0.400						0		30	I
Acrolein	ND	0.500						0		30	I
1,1-Dichloroethene (DCE)	ND	0.400						0		30	I

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002277-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **BATCH** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149104**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acetone	ND	1.00						0		30	I
Isopropyl Alcohol	ND	1.00						0		30	I
Methylene chloride	ND	2.00						0		30	I
Carbon disulfide	ND	1.50						0		30	I
trans-1,2-Dichloroethene	ND	0.200						0		30	I
Methyl tert-butyl ether (MTBE)	ND	0.400						0		30	I
n-Hexane	ND	0.400						0		30	I
1,1-Dichloroethane	ND	0.200						0		30	I
Vinyl acetate	ND	1.00						0		30	I
cis-1,2-Dichloroethene	ND	0.200						0		30	I
(MEK) 2-Butanone	ND	1.00						0		30	I
Ethyl acetate	ND	1.00						0		30	I
Chloroform	ND	0.200						0		30	I
Tetrahydrofuran	ND	0.400						0		30	I
1,1,1-Trichloroethane	ND	0.400						0		30	I
Carbon tetrachloride	ND	0.0657						0		30	I
1,2-Dichloroethane	ND	0.200						0		30	I
Benzene	ND	0.0895						0		30	I
Cyclohexane	ND	0.400						0		30	
Trichloroethene (TCE)	ND	0.0649						0		30	
1,2-Dichloropropane	ND	0.500						0		30	
Methyl methacrylate	ND	0.400						0		30	
Dichlorobromomethane	62.2	0.300						63.73	2.39	30	E
1,4-Dioxane	ND	0.400						0		30	
cis-1,3-dichloropropene	ND	0.400						0		30	
Toluene	219	0.400						225.5	2.77	30	E
trans-1,3-dichloropropene	ND	0.500						0		30	
1,1,2-Trichloroethane (TCA)	ND	0.500						0		30	
Tetrachloroethene (PCE)	3.28	0.200						9.099	94.1	30	R
Dibromochloromethane	ND	0.500						0		30	
1,2-Dibromoethane (EDB)	ND	0.200						0		30	

Work Order: 2002350
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **2002277-001AREP** SampType: **REP** Units: **ppbv** Prep Date: **2/21/2020** RunNo: **57580**
Client ID: **BATCH** Batch ID: **R57580** Analysis Date: **2/21/2020** SeqNo: **1149104**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	ND	0.200						0		30	
Ethylbenzene	5.05	0.400						4.992	1.16	30	
m,p-Xylene	22.0	0.800						21.87	0.698	30	E
o-Xylene	3.56	0.400						3.463	2.65	30	
Styrene	ND	0.400						0		30	
Bromoform	ND	0.200						0		30	
1,1,2,2-Tetrachloroethane	ND	0.300						0		30	
1,3,5-Trimethylbenzene	0.822	0.300						0.7006	16.0	30	
1,2,4-Trimethylbenzene	2.04	0.300						1.699	18.1	30	
Benzyl chloride	ND	0.500						0		30	
4-Ethyltoluene	0.577	0.400						0.5259	9.36	30	
1,3-Dichlorobenzene	ND	0.300						0		30	
1,4-Dichlorobenzene	ND	0.300						0		30	
1,2-Dichlorobenzene	ND	0.400						0		30	
1,2,4-Trichlorobenzene	ND	0.300						0		30	
Hexachlorobutadiene	ND	1.00						0		30	
Naphthalene	1.28	0.100						1.234	3.52	30	
2-Hexanone	ND	1.00						0		30	
4-Methyl-2-pentanone (MIBK)	ND	1.00						0		30	
CFC-113	ND	0.400						0		30	
Heptane	ND	0.400						0		30	
Surr: 4-Bromofluorobenzene	4.64		4.000		116	70	130		0		

NOTES:
R - High RPD observed.
I - Internal standards were outside of established acceptance criteria. Re-analysis and/or matrix spike samples yielded the same result indicating a possible matrix effect.
Q - Indicates an analyte with an initial calibration curve that does not meet established acceptance criteria
E - Estimated value. The amount exceeds the linear working range of the instrument.
* - Flagged value is not within established control limits.

Sample Log-In Check List

Client Name:	**SLR**	Work Order Number:	**2002350**
Logged by:	**Clare Griggs**	Date Received:	**2/20/2020 8:31:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☐	No ☑	NA ☐
		Air Samples		
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
7.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☐	No ☐	NA ☑

Person Notified: _____ Date: _____

By Whom: _____ Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: _____

Client Instructions: _____

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 2/16/2020 Page: 1 of: 1

Project Name: BELLEVUE DRY CLEANER

Project No: 101.02216.00001

Location: BELLEVUE, WA

Collected by: CAL, SML

Reports to (PM): JOHN MCCORKLE

Email (PM): jmccorkle@slrconsulting.com

Laboratory Project No (Internal): 2002350

Special Remarks:

Air samples are disposed of one week after report is submitted to client unless otherwise requested. [X] OK to Dispose [ ] Hold (fees may apply)

Client: SLR

Address: 22118 20TH AVE SE, G-202

City, State, Zip: BOTHELL, WA 98021

Telephone: (425) 402-8800

Fax: (425) 402-8488

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1	SVP-1	12665 Canister / Flow Reg	2/16/20 Date / 1036 Time	S	6L	Grab	10mtorr Pressure / 2/10/2020 Date	-30 Pressure / 2/16/20 Date	-5 Pressure / 2/16/20 Date		X										0
2	SVP-2	15893 Canister / Flow Reg	2/16/20 Date / 1137 Time	S	6L	Grab	10mtorr Pressure / 2/10/2020 Date	-30 Pressure / 2/16/20 Date	-4 Pressure / 2/16/20 Date		X										-4
3		Canister / Flow Reg	Date / Time				Pressure / Date	Pressure / Date	Pressure / Date												
4		Canister / Flow Reg	Date / Time				Pressure / Date	Pressure / Date	Pressure / Date												
5		Canister / Flow Reg	Date / Time				Pressure / Date	Pressure / Date	Pressure / Date												

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished	Date/Time	Received	Date/Time
x Rachel Kline	2-20-20 8:31 AM	x	2/20/20 @ 0831
Relinquished	Date/Time	Received	Date/Time
x		x	

Turn-Around Time:

- [X] Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] Next Day
- Same Day _____ (specify)

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

SLR International
John McCorkle
22118 20th Ave SE. G 202
Bothell, WA 98021

RE: Bellevue Dry Cleaners
Work Order Number: 2004369

May 04, 2020

Attention John McCorkle:

Fremont Analytical, Inc. received 1 sample(s) on 4/27/2020 for the analyses presented in the following report.

Volatile Organic Compounds by EPA Method TO-15

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Brianna Barnes
Project Manager

Date: *05/04/2020*

CLIENT: SLR International
Project: Bellevue Dry Cleaners
Work Order: 2004369

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
2004369-001	SVP-2-042620	04/26/2020 1:00 PM	04/27/2020 2:40 PM

Case Narrative

WO#: **2004369**
Date: **5/4/2020**

CLIENT: SLR International
Project: Bellevue Dry Cleaners

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Air samples are reported in ppbv and ug/m3.

The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Standard temperature and pressure assumes 24.45 = (25C and 1 atm).

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Client: SLR International
WorkOrder: 2004369
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-2-042620
Lab ID: 2004369-001A
Sample Type: Summa Canister

Date Sampled: 4/26/2020
Date Received: 4/27/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
1,1,1-Trichloroethane	0.175	0.956	0.100	0.546		EPA-TO-15	04/30/2020	WC
1,1,2,2-Tetrachloroethane	<0.0750	<0.515	0.0750	0.515		EPA-TO-15	04/30/2020	WC
CFC-113	<0.100	<0.766	0.100	0.766		EPA-TO-15	04/30/2020	WC
1,1,2-Trichloroethane (TCA)	<0.125	<0.682	0.125	0.682		EPA-TO-15	04/30/2020	WC
1,1-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	04/30/2020	WC
1,1-Dichloroethene (DCE)	<0.100	<0.397	0.100	0.397		EPA-TO-15	04/30/2020	WC
1,2,4-Trichlorobenzene	0.456	3.38	0.0750	0.557		EPA-TO-15	04/30/2020	WC
1,2,4-Trimethylbenzene	2.04	10.0	0.0750	0.369		EPA-TO-15	04/30/2020	WC
1,2-Dibromoethane (EDB)	<0.0500	<0.384	0.0500	0.384		EPA-TO-15	04/30/2020	WC
1,2-Dichlorobenzene	<0.100	<0.601	0.100	0.601		EPA-TO-15	04/30/2020	WC
1,2-Dichloroethane	<0.0500	<0.202	0.0500	0.202		EPA-TO-15	04/30/2020	WC
1,2-Dichloropropane	<0.125	<0.578	0.125	0.578		EPA-TO-15	04/30/2020	WC
1,3,5-Trimethylbenzene	0.471	2.31	0.0750	0.369		EPA-TO-15	04/30/2020	WC
1,3-Butadiene	<0.125	<0.277	0.125	0.277		EPA-TO-15	04/30/2020	WC
1,3-Dichlorobenzene	<0.0750	<0.451	0.0750	0.451		EPA-TO-15	04/30/2020	WC
1,4-Dichlorobenzene	0.191	1.15	0.0750	0.451		EPA-TO-15	04/30/2020	WC
1,4-Dioxane	0.149	0.539	0.100	0.360		EPA-TO-15	04/30/2020	WC
(MEK) 2-Butanone	1.25	3.67	0.250	0.737		EPA-TO-15	04/30/2020	WC
2-Hexanone	<0.250	<1.02	0.250	1.02		EPA-TO-15	04/30/2020	WC
Isopropyl Alcohol	0.993	2.44	0.250	0.614		EPA-TO-15	04/30/2020	WC
4-Methyl-2-pentanone (MIBK)	<0.250	<1.02	0.250	1.02		EPA-TO-15	04/30/2020	WC
Acetone	3.50	8.32	0.250	0.594		EPA-TO-15	04/30/2020	WC
Acrolein	<0.0312	<0.0717	0.0312	0.0717		EPA-TO-15	04/30/2020	WC
Benzene	0.704	2.25	0.0224	0.0715		EPA-TO-15	04/30/2020	WC
Benzyl chloride	<0.125	<0.647	0.125	0.647		EPA-TO-15	04/30/2020	WC
Dichlorobromomethane	<0.0750	<0.502	0.0750	0.502		EPA-TO-15	04/30/2020	WC
Bromoform	<0.0500	<0.517	0.0500	0.517		EPA-TO-15	04/30/2020	WC
Bromomethane	<0.125	<0.485	0.125	0.485		EPA-TO-15	04/30/2020	WC
Carbon disulfide	<0.375	<1.17	0.375	1.17		EPA-TO-15	04/30/2020	WC
Carbon tetrachloride	0.224	1.41	0.0164	0.103		EPA-TO-15	04/30/2020	WC

Client: SLR International
WorkOrder: 2004369
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-2-042620
Lab ID: 2004369-001A
Sample Type: Summa Canister

Date Sampled: 4/26/2020
Date Received: 4/27/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Chlorobenzene	<0.0500	<0.230	0.0500	0.230		EPA-TO-15	04/30/2020	WC
Dibromochloromethane	<0.125	<1.06	0.125	1.06		EPA-TO-15	04/30/2020	WC
Chloroethane	<0.100	<0.264	0.100	0.264		EPA-TO-15	04/30/2020	WC
Chloroform	2.82	13.8	0.0500	0.244		EPA-TO-15	04/30/2020	WC
Chloromethane	0.156	0.322	0.125	0.258		EPA-TO-15	04/30/2020	WC
cis-1,2-Dichloroethene	1.17	4.65	0.0500	0.198		EPA-TO-15	04/30/2020	WC
cis-1,3-dichloropropene	<0.100	<0.454	0.100	0.454		EPA-TO-15	04/30/2020	WC
Cyclohexane	0.350	1.20	0.100	0.344		EPA-TO-15	04/30/2020	WC
Dichlorodifluoromethane (CFC-12)	0.612	3.03	0.100	0.495		EPA-TO-15	04/30/2020	WC
Dichlorotetrafluoroethane (CFC-114)	<0.100	<0.699	0.100	0.699		EPA-TO-15	04/30/2020	WC
Ethyl acetate	<0.250	<0.901	0.250	0.901		EPA-TO-15	04/30/2020	WC
Ethylbenzene	1.05	4.57	0.100	0.434		EPA-TO-15	04/30/2020	WC
Heptane	0.306	1.23	0.100	0.402		EPA-TO-15	04/30/2020	WC
Hexachlorobutadiene	<0.250	<2.67	0.250	2.67		EPA-TO-15	04/30/2020	WC
m,p-Xylene	3.99	17.3	0.200	0.868		EPA-TO-15	04/30/2020	WC
Methyl methacrylate	<0.100	<0.409	0.100	0.409		EPA-TO-15	04/30/2020	WC
Methylene chloride	<0.500	<1.74	0.500	1.74		EPA-TO-15	04/30/2020	WC
Naphthalene	1.99	10.4	0.0250	0.131		EPA-TO-15	04/30/2020	WC
n-Hexane	0.420	1.48	0.100	0.352		EPA-TO-15	04/30/2020	WC
o-Xylene	1.57	6.83	0.100	0.434		EPA-TO-15	04/30/2020	WC
4-Ethyltoluene	0.573	2.82	0.100	0.492		EPA-TO-15	04/30/2020	WC
Propylene	0.351	0.604	0.100	0.172		EPA-TO-15	04/30/2020	WC
Styrene	0.148	0.630	0.100	0.426		EPA-TO-15	04/30/2020	WC
Methyl tert-butyl ether (MTBE)	<0.100	<0.361	0.100	0.361		EPA-TO-15	04/30/2020	WC
Tetrachloroethene (PCE)	2,630	17,900	2.00	13.6	E	EPA-TO-15	05/01/2020	WC
Tetrahydrofuran	1.57	4.64	0.100	0.295		EPA-TO-15	04/30/2020	WC
Toluene	4.27	16.1	0.100	0.377		EPA-TO-15	04/30/2020	WC
trans-1,2-Dichloroethene	0.298	1.18	0.0500	0.198		EPA-TO-15	04/30/2020	WC
trans-1,3-dichloropropene	<0.125	<0.567	0.125	0.567		EPA-TO-15	04/30/2020	WC
Trichloroethene (TCE)	99.8	537	0.649	3.49		EPA-TO-15	05/01/2020	WC

Client: **SLR International**
WorkOrder: 2004369
Project: Bellevue Dry Cleaners

Client Sample ID: SVP-2-042620
Lab ID: 2004369-001A
Sample Type: Summa Canister

Date Sampled: 4/26/2020
Date Received: 4/27/2020

Volatile Organic Compounds by EPA Method TO-15

Analyte	Concentration (ppbv)	Concentration (ug/m³)	Reporting Limit (ppbv)	Reporting Limit (ug/m³)	Qual	Method	Date/Analyst	
Trichlorofluoromethane (CFC-11)	0.278	1.56	0.100	0.562		EPA-TO-15	04/30/2020	WC
Vinyl acetate	0.645	2.27	0.250	0.880		EPA-TO-15	04/30/2020	WC
Vinyl chloride	<0.0268	<0.0685	0.0268	0.0685		EPA-TO-15	04/30/2020	WC
Surr: 4-Bromofluorobenzene	108 %Rec	--	70-130	--		EPA-TO-15	04/30/2020	WC

NOTES:
E - Estimated value. The amount exceeds the linear working range of the instrument.

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58939**	SampType: **LCS**	Units: **ppbv**	Prep Date: **5/1/2020**	RunNo: **58939**
Client ID: **LCSW**	Batch ID: **R58939**		Analysis Date: **5/1/2020**	SeqNo: **1177485**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	2.54	0.0649	2.000	0	127	70	130				
Tetrachloroethene (PCE)	2.27	0.200	2.000	0	114	70	130				
Surr: 4-Bromofluorobenzene	4.13		4.000		103	70	130				

Sample ID: **LCSD-58939**	SampType: **LCSD**	Units: **ppbv**	Prep Date: **5/1/2020**	RunNo: **58939**
Client ID: **LCSW02**	Batch ID: **R58939**		Analysis Date: **5/1/2020**	SeqNo: **1177486**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	2.50	0.0649	2.000	0	125	70	130	2.544	1.83	30	
Tetrachloroethene (PCE)	2.20	0.200	2.000	0	110	70	130	2.275	3.54	30	
Surr: 4-Bromofluorobenzene	4.05		4.000		101	70	130		0		

Sample ID: **MB-R58939**	SampType: **MBLK**	Units: **ppbv**	Prep Date: **5/1/2020**	RunNo: **58939**
Client ID: **MBLKW**	Batch ID: **R58939**		Analysis Date: **5/1/2020**	SeqNo: **1177488**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	ND	0.0162									
Tetrachloroethene (PCE)	ND	0.0500									
Surr: 4-Bromofluorobenzene	0.702		1.000		70.2	70	130				

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58919** SampType: **LCS** Units: **ppbv** Prep Date: **4/29/2020** RunNo: **58919**
Client ID: **LCSW** Batch ID: **R58919** Analysis Date: **4/29/2020** SeqNo: **1176712**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	74.4	1.00	72.00	0	103	70	130				
Propylene	1.77	0.400	2.000	0	88.4	70	130				
Dichlorodifluoromethane (CFC-12)	2.22	0.400	2.000	0	111	70	130				
Chloromethane	2.10	0.500	2.000	0	105	70	130				
Dichlorotetrafluoroethane (CFC-114)	2.01	0.400	2.000	0	101	70	130				
Vinyl chloride	1.93	0.107	2.000	0	96.5	70	130				
1,3-Butadiene	1.82	0.500	2.000	0	91.1	70	130				
Bromomethane	2.20	0.500	2.000	0	110	70	130				
Trichlorofluoromethane (CFC-11)	1.97	0.400	2.000	0	98.6	70	130				
Chloroethane	1.90	0.400	2.000	0	94.8	70	130				
Acrolein	1.99	0.125	2.000	0	99.4	70	130				
1,1-Dichloroethene (DCE)	2.14	0.400	2.000	0	107	70	130				
Acetone	1.74	1.00	2.000	0	87.0	70	130				
Isopropyl Alcohol	1.84	1.00	2.000	0	92.2	70	130				
Methylene chloride	2.30	2.00	2.000	0	115	70	130				
Carbon disulfide	2.00	1.50	2.000	0	100	70	130				
trans-1,2-Dichloroethene	2.15	0.200	2.000	0	108	70	130				
Methyl tert-butyl ether (MTBE)	2.03	0.400	2.000	0	101	70	130				
n-Hexane	2.05	0.400	2.000	0	102	70	130				
1,1-Dichloroethane	2.26	0.200	2.000	0	113	70	130				
Vinyl acetate	2.02	1.00	2.000	0	101	70	130				
cis-1,2-Dichloroethene	2.19	0.200	2.000	0	110	70	130				
(MEK) 2-Butanone	1.73	1.00	2.000	0	86.6	70	130				
Ethyl acetate	2.00	1.00	2.000	0	100	70	130				
Chloroform	2.33	0.200	2.000	0	116	70	130				
Tetrahydrofuran	1.93	0.400	2.000	0	96.4	70	130				
1,1,1-Trichloroethane	2.32	0.400	2.000	0	116	70	130				
Carbon tetrachloride	2.24	0.0657	2.000	0	112	70	130				
1,2-Dichloroethane	1.85	0.200	2.000	0	92.7	70	130				
Benzene	2.23	0.0895	2.000	0	111	70	130				
Cyclohexane	1.99	0.400	2.000	0	99.5	70	130				

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58919** SampType: **LCS** Units: **ppbv** Prep Date: **4/29/2020** RunNo: **58919**
Client ID: **LCSW** Batch ID: **R58919** Analysis Date: **4/29/2020** SeqNo: **1176712**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2-Dichloropropane	1.96	0.500	2.000	0	98.1	70	130				
Methyl methacrylate	1.98	0.400	2.000	0	98.8	70	130				
Dichlorobromomethane	2.16	0.300	2.000	0	108	70	130				
1,4-Dioxane	1.85	0.400	2.000	0	92.3	70	130				
cis-1,3-dichloropropene	2.07	0.400	2.000	0	103	70	130				
Toluene	1.96	0.400	2.000	0	98.1	70	130				
trans-1,3-dichloropropene	2.08	0.500	2.000	0	104	70	130				
1,1,2-Trichloroethane (TCA)	2.00	0.500	2.000	0	100	70	130				
Dibromochloromethane	1.89	0.500	2.000	0	94.4	70	130				
1,2-Dibromoethane (EDB)	2.07	0.200	2.000	0	103	70	130				
Chlorobenzene	2.01	0.200	2.000	0	101	70	130				
Ethylbenzene	1.94	0.400	2.000	0	97.2	70	130				
m,p-Xylene	4.00	0.800	4.000	0	100	70	130				
o-Xylene	1.99	0.400	2.000	0	99.7	70	130				
Styrene	2.03	0.400	2.000	0	102	70	130				
Bromoform	2.17	0.200	2.000	0	109	70	130				
1,1,2,2-Tetrachloroethane	2.02	0.300	2.000	0	101	70	130				
1,3,5-Trimethylbenzene	2.02	0.300	2.000	0	101	70	130				
1,2,4-Trimethylbenzene	1.91	0.300	2.000	0	95.7	70	130				
Benzyl chloride	1.87	0.500	2.000	0	93.5	70	130				
4-Ethyltoluene	1.91	0.400	2.000	0	95.5	70	130				
1,3-Dichlorobenzene	1.96	0.300	2.000	0	98.0	70	130				
1,4-Dichlorobenzene	1.93	0.300	2.000	0	96.5	70	130				
1,2-Dichlorobenzene	2.00	0.400	2.000	0	100	70	130				
1,2,4-Trichlorobenzene	1.91	0.300	2.000	0	95.6	70	130				
Hexachlorobutadiene	1.86	1.00	2.000	0	93.0	70	130				
Naphthalene	1.90	0.100	2.000	0	94.8	70	130				
2-Hexanone	1.64	1.00	2.000	0	82.1	70	130				
4-Methyl-2-pentanone (MIBK)	1.89	1.00	2.000	0	94.6	70	130				
CFC-113	2.24	0.400	2.000	0	112	70	130				
Heptane	1.87	0.400	2.000	0	93.6	70	130				

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCS-R58919** SampType: **LCS** Units: **ppbv** Prep Date: **4/29/2020** RunNo: **58919**
Client ID: **LCSW** Batch ID: **R58919** Analysis Date: **4/29/2020** SeqNo: **1176712**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Surr: 4-Bromofluorobenzene	4.14		4.000		104	70	130				

Sample ID: **LCSD-R58919** SampType: **LCSD** Units: **ppbv** Prep Date: **4/29/2020** RunNo: **58919**
Client ID: **LCSW02** Batch ID: **R58919** Analysis Date: **4/29/2020** SeqNo: **1176713**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	80.4	1.00	72.00	0	112	70	130	74.42	7.75	30	
Propylene	2.11	0.400	2.000	0	105	70	130	1.767	17.6	30	
Dichlorodifluoromethane (CFC-12)	2.40	0.400	2.000	0	120	70	130	2.223	7.46	30	
Chloromethane	2.30	0.500	2.000	0	115	70	130	2.101	8.84	30	
Dichlorotetrafluoroethane (CFC-114)	2.25	0.400	2.000	0	113	70	130	2.010	11.3	30	
Vinyl chloride	1.86	0.107	2.000	0	93.0	70	130	1.930	3.73	30	
1,3-Butadiene	1.87	0.500	2.000	0	93.4	70	130	1.822	2.46	30	
Bromomethane	2.33	0.500	2.000	0	117	70	130	2.204	5.67	30	
Trichlorofluoromethane (CFC-11)	2.13	0.400	2.000	0	106	70	130	1.972	7.62	30	
Chloroethane	2.15	0.400	2.000	0	108	70	130	1.896	12.6	30	
Acrolein	2.03	0.125	2.000	0	101	70	130	1.987	2.07	30	
1,1-Dichloroethene (DCE)	2.29	0.400	2.000	0	115	70	130	2.142	6.77	30	
Acetone	1.84	1.00	2.000	0	91.9	70	130	1.740	5.50	30	
Isopropyl Alcohol	2.09	1.00	2.000	0	105	70	130	1.844	12.7	30	
Methylene chloride	2.31	2.00	2.000	0	115	70	130	2.301	0.193	30	
Carbon disulfide	2.15	1.50	2.000	0	107	70	130	2.004	6.92	30	
trans-1,2-Dichloroethene	2.24	0.200	2.000	0	112	70	130	2.154	4.05	30	
Methyl tert-butyl ether (MTBE)	2.11	0.400	2.000	0	106	70	130	2.027	4.22	30	
n-Hexane	1.99	0.400	2.000	0	99.6	70	130	2.047	2.76	30	
1,1-Dichloroethane	2.30	0.200	2.000	0	115	70	130	2.256	1.92	30	
Vinyl acetate	2.09	1.00	2.000	0	105	70	130	2.020	3.51	30	
cis-1,2-Dichloroethene	2.31	0.200	2.000	0	115	70	130	2.193	5.11	30	
(MEK) 2-Butanone	1.95	1.00	2.000	0	97.6	70	130	1.732	12.0	30	
Ethyl acetate	2.07	1.00	2.000	0	103	70	130	2.003	3.18	30	

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCSD-R58919** SampType: **LCSD** Units: **ppbv** Prep Date: **4/29/2020** RunNo: **58919**
Client ID: **LCSW02** Batch ID: **R58919** Analysis Date: **4/29/2020** SeqNo: **1176713**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chloroform	2.29	0.200	2.000	0	115	70	130	2.326	1.46	30	
Tetrahydrofuran	2.03	0.400	2.000	0	101	70	130	1.929	4.90	30	
1,1,1-Trichloroethane	2.30	0.400	2.000	0	115	70	130	2.317	0.787	30	
Carbon tetrachloride	2.23	0.0657	2.000	0	112	70	130	2.243	0.576	30	
1,2-Dichloroethane	1.94	0.200	2.000	0	97.1	70	130	1.853	4.72	30	
Benzene	2.22	0.0895	2.000	0	111	70	130	2.226	0.0827	30	
Cyclohexane	2.03	0.400	2.000	0	101	70	130	1.990	1.77	30	
1,2-Dichloropropane	2.08	0.500	2.000	0	104	70	130	1.963	5.58	30	
Methyl methacrylate	2.19	0.400	2.000	0	110	70	130	1.976	10.4	30	
Dichlorobromomethane	2.24	0.300	2.000	0	112	70	130	2.160	3.64	30	
1,4-Dioxane	1.98	0.400	2.000	0	99.1	70	130	1.845	7.18	30	
cis-1,3-dichloropropene	2.15	0.400	2.000	0	107	70	130	2.067	3.82	30	
Toluene	2.03	0.400	2.000	0	101	70	130	1.962	3.27	30	
trans-1,3-dichloropropene	2.20	0.500	2.000	0	110	70	130	2.075	5.61	30	
1,1,2-Trichloroethane (TCA)	2.13	0.500	2.000	0	106	70	130	2.002	6.01	30	
Dibromochloromethane	1.99	0.500	2.000	0	99.5	70	130	1.887	5.32	30	
1,2-Dibromoethane (EDB)	2.21	0.200	2.000	0	110	70	130	2.069	6.48	30	
Chlorobenzene	2.07	0.200	2.000	0	104	70	130	2.013	3.02	30	
Ethylbenzene	1.98	0.400	2.000	0	99.0	70	130	1.945	1.79	30	
m,p-Xylene	4.23	0.800	4.000	0	106	70	130	4.002	5.62	30	
o-Xylene	2.13	0.400	2.000	0	107	70	130	1.994	6.71	30	
Styrene	2.10	0.400	2.000	0	105	70	130	2.034	3.01	30	
Bromoform	2.30	0.200	2.000	0	115	70	130	2.171	5.85	30	
1,1,2,2-Tetrachloroethane	2.13	0.300	2.000	0	106	70	130	2.015	5.32	30	
1,3,5-Trimethylbenzene	2.13	0.300	2.000	0	107	70	130	2.017	5.68	30	
1,2,4-Trimethylbenzene	2.03	0.300	2.000	0	102	70	130	1.915	6.03	30	
Benzyl chloride	1.97	0.500	2.000	0	98.5	70	130	1.871	5.20	30	
4-Ethyltoluene	2.04	0.400	2.000	0	102	70	130	1.910	6.82	30	
1,3-Dichlorobenzene	2.10	0.300	2.000	0	105	70	130	1.959	6.99	30	
1,4-Dichlorobenzene	2.04	0.300	2.000	0	102	70	130	1.931	5.35	30	
1,2-Dichlorobenzene	2.14	0.400	2.000	0	107	70	130	2.002	6.55	30	

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **LCSD-R58919** SampType: **LCSD** Units: **ppbv** Prep Date: **4/29/2020** RunNo: **58919**
Client ID: **LCSW02** Batch ID: **R58919** Analysis Date: **4/29/2020** SeqNo: **1176713**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,2,4-Trichlorobenzene	2.14	0.300	2.000	0	107	70	130	1.911	11.4	30	
Hexachlorobutadiene	2.04	1.00	2.000	0	102	70	130	1.859	9.32	30	
Naphthalene	1.78	0.100	2.000	0	89.1	70	130	1.895	6.15	30	
2-Hexanone	1.77	1.00	2.000	0	88.3	70	130	1.642	7.28	30	
4-Methyl-2-pentanone (MIBK)	2.04	1.00	2.000	0	102	70	130	1.893	7.61	30	
CFC-113	2.44	0.400	2.000	0	122	70	130	2.242	8.32	30	
Heptane	1.90	0.400	2.000	0	95.1	70	130	1.871	1.60	30	
Surr: 4-Bromofluorobenzene	4.08		4.000		102	70	130		0		

Sample ID: **MB1-R58919** SampType: **MBLK** Units: **ppbv** Prep Date: **4/30/2020** RunNo: **58919**
Client ID: **MBLKW** Batch ID: **R58919** Analysis Date: **4/30/2020** SeqNo: **1176714**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	ND	1.00									
Propylene	ND	0.400									
Dichlorodifluoromethane (CFC-12)	ND	0.400									
Chloromethane	ND	0.500									
Dichlorotetrafluoroethane (CFC-114)	ND	0.400									
Vinyl chloride	ND	0.107									
1,3-Butadiene	ND	0.500									
Bromomethane	ND	0.500									
Trichlorofluoromethane (CFC-11)	ND	0.400									
Chloroethane	ND	0.400									
Acrolein	ND	0.125									
1,1-Dichloroethene (DCE)	ND	0.400									
Acetone	ND	1.00									
Isopropyl Alcohol	ND	1.00									
Methylene chloride	ND	2.00									
Carbon disulfide	ND	1.50									
trans-1,2-Dichloroethene	ND	0.200									

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB1-R58919** SampType: **MBLK** Units: **ppbv** Prep Date: **4/30/2020** RunNo: **58919**
Client ID: **MBLKW** Batch ID: **R58919** Analysis Date: **4/30/2020** SeqNo: **1176714**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Methyl tert-butyl ether (MTBE)	ND	0.400									
n-Hexane	ND	0.400									
1,1-Dichloroethane	ND	0.200									
Vinyl acetate	ND	1.00									
cis-1,2-Dichloroethene	ND	0.200									
(MEK) 2-Butanone	ND	1.00									
Ethyl acetate	ND	1.00									
Chloroform	ND	0.200									
Tetrahydrofuran	ND	0.400									
1,1,1-Trichloroethane	ND	0.400									
Carbon tetrachloride	ND	0.0657									
1,2-Dichloroethane	ND	0.200									
Benzene	ND	0.0895									
Cyclohexane	ND	0.400									
1,2-Dichloropropane	ND	0.500									
Methyl methacrylate	ND	0.400									
Dichlorobromomethane	ND	0.300									
1,4-Dioxane	ND	0.400									
cis-1,3-dichloropropene	ND	0.400									
Toluene	ND	0.400									
trans-1,3-dichloropropene	ND	0.500									
1,1,2-Trichloroethane (TCA)	ND	0.500									
Dibromochloromethane	ND	0.500									
1,2-Dibromoethane (EDB)	ND	0.200									
Chlorobenzene	ND	0.200									
Ethylbenzene	ND	0.400									
m,p-Xylene	ND	0.800									
o-Xylene	ND	0.400									
Styrene	ND	0.400									
Bromoform	ND	0.200									
1,1,2,2-Tetrachloroethane	ND	0.300									

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB1-R58919** SampType: **MBLK** Units: **ppbv** Prep Date: **4/30/2020** RunNo: **58919**
Client ID: **MBLKW** Batch ID: **R58919** Analysis Date: **4/30/2020** SeqNo: **1176714**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
1,3,5-Trimethylbenzene	ND	0.300									
1,2,4-Trimethylbenzene	ND	0.300									
Benzyl chloride	ND	0.500									
4-Ethyltoluene	ND	0.400									
1,3-Dichlorobenzene	ND	0.300									
1,4-Dichlorobenzene	ND	0.300									
1,2-Dichlorobenzene	ND	0.400									
1,2,4-Trichlorobenzene	ND	0.300									
Hexachlorobutadiene	ND	1.00									
Naphthalene	ND	0.100									
2-Hexanone	ND	1.00									
4-Methyl-2-pentanone (MIBK)	ND	1.00									
CFC-113	ND	0.400									
Heptane	ND	0.400									
Surr: 4-Bromofluorobenzene	2.80		4.000		70.1	70	130				

Sample ID: **MB2-R58919** SampType: **MBLK** Units: **ppbv** Prep Date: **4/30/2020** RunNo: **58919**
Client ID: **MBLKW** Batch ID: **R58919** Analysis Date: **4/30/2020** SeqNo: **1176818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Gasoline Range Organics	ND	0.250									
Propylene	ND	0.100									
Dichlorodifluoromethane (CFC-12)	ND	0.100									
Chloromethane	ND	0.125									
Dichlorotetrafluoroethane (CFC-114)	ND	0.100									
Vinyl chloride	ND	0.0268									
1,3-Butadiene	ND	0.125									
Bromomethane	ND	0.125									
Trichlorofluoromethane (CFC-11)	ND	0.100									
Chloroethane	ND	0.100									

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB2-R58919** SampType: **MBLK** Units: **ppbv** Prep Date: **4/30/2020** RunNo: **58919**
Client ID: **MBLKW** Batch ID: **R58919** Analysis Date: **4/30/2020** SeqNo: **1176818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Acrolein	ND	0.0312									
1,1-Dichloroethene (DCE)	ND	0.100									
Acetone	ND	0.250									
Isopropyl Alcohol	ND	0.250									
Methylene chloride	ND	0.500									
Carbon disulfide	ND	0.375									
trans-1,2-Dichloroethene	ND	0.0500									
Methyl tert-butyl ether (MTBE)	ND	0.100									
n-Hexane	ND	0.100									
1,1-Dichloroethane	ND	0.0500									
Vinyl acetate	ND	0.250									
cis-1,2-Dichloroethene	ND	0.0500									
(MEK) 2-Butanone	ND	0.250									
Ethyl acetate	ND	0.250									
Chloroform	ND	0.0500									
Tetrahydrofuran	ND	0.100									
1,1,1-Trichloroethane	ND	0.100									
Carbon tetrachloride	ND	0.0164									
1,2-Dichloroethane	ND	0.0500									
Benzene	ND	0.0224									
Cyclohexane	ND	0.100									
1,2-Dichloropropane	ND	0.125									
Methyl methacrylate	ND	0.100									
Dichlorobromomethane	ND	0.0750									
1,4-Dioxane	ND	0.100									
cis-1,3-dichloropropene	ND	0.100									
Toluene	ND	0.100									
trans-1,3-dichloropropene	ND	0.125									
1,1,2-Trichloroethane (TCA)	ND	0.125									
Dibromochloromethane	ND	0.125									
1,2-Dibromoethane (EDB)	ND	0.0500									

Work Order: 2004369
CLIENT: SLR International
Project: Bellevue Dry Cleaners

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method TO-15

Sample ID: **MB2-R58919** SampType: **MBLK** Units: **ppbv** Prep Date: **4/30/2020** RunNo: **58919**
Client ID: **MBLKW** Batch ID: **R58919** Analysis Date: **4/30/2020** SeqNo: **1176818**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Chlorobenzene	ND	0.0500									
Ethylbenzene	ND	0.100									
m,p-Xylene	ND	0.200									
o-Xylene	ND	0.100									
Styrene	ND	0.100									
Bromoform	ND	0.0500									
1,1,2,2-Tetrachloroethane	ND	0.0750									
1,3,5-Trimethylbenzene	ND	0.0750									
1,2,4-Trimethylbenzene	ND	0.0750									
Benzyl chloride	ND	0.125									
4-Ethyltoluene	ND	0.100									
1,3-Dichlorobenzene	ND	0.0750									
1,4-Dichlorobenzene	ND	0.0750									
1,2-Dichlorobenzene	ND	0.100									
1,2,4-Trichlorobenzene	ND	0.0750									
Hexachlorobutadiene	ND	0.250									
Naphthalene	ND	0.0250									
2-Hexanone	ND	0.250									
4-Methyl-2-pentanone (MIBK)	ND	0.250									
CFC-113	ND	0.100									
Heptane	ND	0.100									
Surr: 4-Bromofluorobenzene	0.700		1.000		70.0	70	130				

Sample Log-In Check List

Client Name:	**SLR**	Work Order Number:	**2004369**
Logged by:	**Carissa True**	Date Received:	**4/27/2020 2:40:00 PM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Client		

Log In

3.	Coolers are present?	Yes ☐	No ☑	NA ☐
		Air samples		
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☑
6.	Was an attempt made to cool the samples?	Yes ☐	No ☐	NA ☑
7.	Were all items received at a temperature of >2°C to 6°C *	Yes ☐	No ☐	NA ☑
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☑
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18.	Was client notified of all discrepancies with this order?	Yes ☑	No ☐	NA ☐

Person Notified:	John McCorkle	Date:	4/27/2020
By Whom:	Carissa True	Via:	☑ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:	Sample name		
Client Instructions:	SVP-2-042620		

19. Additional remarks:

Item Information

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Air Chain of Custody Record & Laboratory Services Agreement

Date: 4/26/2020 Page: 1 of: 1

Laboratory Project No (Internal): 20043369

Project Name: BELLEVUE DRY CLEANER

Project No: 101.02216.00001

Special Remarks:

Client: SLR

Address: 22118 20TH AVE SE, G-202

City, State, Zip: BOTHELL, WA 98021

Telephone: (425) 402-8800

Fax: (425) 402-8488

Location: BELLEVUE, WA

Collected by: CHRIS LEE

Reports to (PM): JOHN MCCORKLE

Email (PM): jmccorkle@strongsuthmg.com

Air samples are disposed of one week after report is submitted to client unless otherwise requested. [X] OK to Dispose [ ] Hold (fees may apply)

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Internal: Initial Evacuation Pressure (mtorr)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN LL	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Ext. TO15	APH TO15	Helium	Major Gases 3C		Comments	Internal: Final Pressure ("Hg)
1		12668 Canister FR8-11 Flow Reg	4/26/20 Date 1300 Time	S	6L	4 Hour	10mtorr Pressure 3/20/2020 Date	-30 Pressure 4/26/20 Date	-10 Pressure 4/26/20 Date		X										-10
2		Canister Flow Reg	Date Time				Pressure Date	Pressure Date	Pressure Date												
3		Canister Flow Reg	Date Time				Pressure Date	Pressure Date	Pressure Date												
4		Canister	Date Time				Pressure Date	Pressure Date	Pressure Date												
5		Canister Flow Reg	Date Time				Pressure Date	Pressure Date	Pressure Date												

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished x _____ Date/Time 4/27/20 1253

Relinquished x _____ Date/Time

Received x _____ Date/Time 4/27/20 @ 1440

Received x _____ Date/Time

Turn-Around Time:

- [X] Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] Next Day
- Same Day _____ (specify)

Air Chain of Custody Record & Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 4/26/2020 Page: 1 of: 1

Laboratory Project No (Internal): 2004369

Project Name: BELLEVUE DRY CLEANER

Special Remarks:

Project No: 101.02216.00001

Location: BELLEVUE, WA

Collected by: CHRIS LEE

Reports to (PM): JOHN MCCORKLE

Email (PM): jmccorkle@shrgroup.com

Edits by CPT 4/28 per C-L

Air samples are disposed of one week after report is submitted to client unless otherwise requested. [X] OK to Dispose [ ] Hold (fees may apply)

Client: SLR

Address: 22118 20TH AVE SE, G-202

City, State, Zip: BOTHELL, WA 98021

Telephone: (425) 402-8800

Fax: (425) 402-8488

	Sample Name	Canister / Flow Reg Serial #	Sample Date & Time	Sample Type (Matrix) *	Container Type **	Fill Time / Flow Rate	Initial Evacuation Pressure (inHg)	Field Initial Sample Pressure (" Hg)	Field Final Sample Pressure (" Hg)	Analysis: VOCs TO15 SCAN	VOCs TO15 SCAN 1L	VOCs TO15 SIM	Siloxanes TO15	Sulfur TO15	Sulfur Det. TO15	APH TO15	Helium	Major Gases 3C		Comments	Final Pressure (" Hg)
		Interval					Interval														Interval
1	SVP-2-042620	12668	4/26/20 1300	S	6L	4 Hour	30inHg	-30	-10		X										-10
		FRB-11					1/20/2020	4/26/20	4/26/20												
2																					
3																					
4																					
5																					

* Matrix Codes: AA = Ambient Air IA = Indoor Air L = Landfill S = Subslab / Soil Gas

** Container Codes: BV = 1 Liter Bottle Vac 6L = 6L Canister 1L = 1L Canister CYL = High Pressure Cylinder F = Filter S = Sorbent Tube TB = Tedlar Bag

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

Relinquished: Date/Time: 4/27/20 1253

Received: Date/Time: 4/27/20 @ 1440

Relinquished: Date/Time:

Received: Date/Time:

Relinquished: Date/Time:

Received: Date/Time:

Turn-Around Time:

- [X] Standard
- [ ] 3 Day
- [ ] 2 Day
- [ ] Next Day
- Same Day ____ (specify)

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

September 22, 2020

John McCorkle
SLR International Corp
22118 20th Avenue SE, Suite G202
Bothell, WA 98021

Re: Analytical Data for Project 101.02216.00001
Laboratory Reference No. 2009-168

Dear John:

Enclosed are the analytical results and associated quality control data for samples submitted on September 17, 2020.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

Case Narrative

Samples were collected on September 15, 2020 and received by the laboratory on September 17, 2020. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

VOLATILE ORGANICS EPA 8260D
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TRENCH-4.0'**					
Laboratory ID:	09-168-01					
Dichlorodifluoromethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Chloromethane	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
Vinyl Chloride	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Bromomethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Chloroethane	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
Trichlorofluoromethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,1-Dichloroethene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Iodomethane	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
Methylene Chloride	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
(trans) 1,2-Dichloroethene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,1-Dichloroethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
2,2-Dichloropropane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
(cis) 1,2-Dichloroethene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Bromochloromethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Chloroform	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,1,1-Trichloroethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Carbon Tetrachloride	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,1-Dichloropropene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,2-Dichloroethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Trichloroethene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,2-Dichloropropane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Dibromomethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Bromodichloromethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
2-Chloroethyl Vinyl Ether	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
(cis) 1,3-Dichloropropene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
(trans) 1,3-Dichloropropene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

VOLATILE ORGANICS EPA 8260D
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**TRENCH-4.0'**					
Laboratory ID:	09-168-01					
1,1,2-Trichloroethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Tetrachloroethene	0.011	0.0011	EPA 8260D	9-18-20	9-18-20	
1,3-Dichloropropane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Dibromochloromethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,2-Dibromoethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Chlorobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,1,1,2-Tetrachloroethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Bromoform	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
Bromobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,1,2,2-Tetrachloroethane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,2,3-Trichloropropane	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
2-Chlorotoluene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
4-Chlorotoluene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,3-Dichlorobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,4-Dichlorobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,2-Dichlorobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
1,2-Dibromo-3-chloropropane	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
1,2,4-Trichlorobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Hexachlorobutadiene	ND	0.0057	EPA 8260D	9-18-20	9-18-20	
1,2,3-Trichlorobenzene	ND	0.0011	EPA 8260D	9-18-20	9-18-20	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*110*	*74-131*				
Toluene-d8	*97*	*78-128*				
4-Bromofluorobenzene	*107*	*71-130*				

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL
page 1 of 2

Matrix: Soil
Units: mg/kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0918S2					
Dichlorodifluoromethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Chloromethane	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
Vinyl Chloride	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Bromomethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Chloroethane	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
Trichlorofluoromethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,1-Dichloroethene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Iodomethane	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
Methylene Chloride	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
(trans) 1,2-Dichloroethene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,1-Dichloroethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
2,2-Dichloropropane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
(cis) 1,2-Dichloroethene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Bromochloromethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Chloroform	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,1,1-Trichloroethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Carbon Tetrachloride	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,1-Dichloropropene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,2-Dichloroethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Trichloroethene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,2-Dichloropropane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Dibromomethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Bromodichloromethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
2-Chloroethyl Vinyl Ether	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
(cis) 1,3-Dichloropropene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
(trans) 1,3-Dichloropropene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL
page 2 of 2

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0918S2					
1,1,2-Trichloroethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Tetrachloroethene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,3-Dichloropropane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Dibromochloromethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,2-Dibromoethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Chlorobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,1,1,2-Tetrachloroethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Bromoform	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
Bromobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,1,2,2-Tetrachloroethane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,2,3-Trichloropropane	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
2-Chlorotoluene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
4-Chlorotoluene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,3-Dichlorobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,4-Dichlorobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,2-Dichlorobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
1,2-Dibromo-3-chloropropane	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
1,2,4-Trichlorobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Hexachlorobutadiene	ND	0.0050	EPA 8260D	9-18-20	9-18-20	
1,2,3-Trichlorobenzene	ND	0.0010	EPA 8260D	9-18-20	9-18-20	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*113*	*74-131*				
Toluene-d8	*97*	*78-128*				
4-Bromofluorobenzene	*111*	*71-130*				

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

VOLATILE ORGANICS EPA 8260D
QUALITY CONTROL

Matrix: Soil
Units: mg/kg

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0918S2									
	SB	SBD	SB	SBD	SB	SBD				
1,1-Dichloroethene	**0.0579**	**0.0541**	0.0500	0.0500	116	108	55-126	7	17	
Benzene	**0.0571**	**0.0545**	0.0500	0.0500	114	109	65-121	5	16	
Trichloroethene	**0.0542**	**0.0529**	0.0500	0.0500	108	106	74-126	2	16	
Toluene	**0.0519**	**0.0510**	0.0500	0.0500	104	102	71-121	2	16	
Chlorobenzene	**0.0495**	**0.0490**	0.0500	0.0500	99	98	72-123	1	16	
Surrogate:										
Dibromofluoromethane					*107*	*105*	*74-131*			
Toluene-d8					*101*	*99*	*78-128*			
4-Bromofluorobenzene					*109*	*110*	*71-130*			

Date of Report: September 22, 2020
Samples Submitted: September 17, 2020
Laboratory Reference: 2009-168
Project: 101.02216.00001

% MOISTURE

Client ID	Lab ID	% Moisture	Date Analyzed
TRENCH-4.0'	09-168-01	**19**	9-18-20

OnSite Environmental Inc.

Data Qualifiers and Abbreviations

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

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

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

Chain of Custody

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OnSite Environmental Inc.
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: SLR
Project Number: 101.02216.00001
Project Name: Bellevue Dry Cleaner
Project Manager: John McCorkle
Sampled by: Chris Lee

Turnaround Request (in working days)
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days) (TPH analysis 5 Days)
☐ _____ (other)

Laboratory Number: 09-168

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx	Volatiles 8260C	Halogenated Volatiles 8260C	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A						% Moisture
1	Trench - 4.0'	9/15/20	1445	S	3						X																X

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		SLR	9/17/20	1345	
Received	Heather Utzel	OSE	9/17/20	1345	
Relinquished					
Received					
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Chromatograms with final report ☐

Data Package: Standard ☒ Level III ☐ Level IV ☐ Electronic Data Deliverables (EDDs) ☐ _____

Electronic Copy

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Northwest Regional Office • 3190 160th Ave SE • Bellevue, WA 98008-5452 • 425-649-7000
711 for Washington Relay Service • Persons with a speech disability can call 877-833-6341

October 7, 2020

Jennifer S. Cha
Town & Country Cleaners
310 105th Ave NE
Bellevue WA 98004
(jcharealty@gmail.com)

Re: Request for Evaluation of Trichloroethene Risks at the following Site:

- **Site Name:** Town & Country Cleaners Bellevue
- **Site Address:** 310 105th Ave NE, Bellevue WA 98004
- **Facility/Site No.:** 2319
- **CSID No.**: 1880

Dear Jennifer Cha:

Our records indicate that this Site is contaminated with trichloroethene (TCE), or with tetrachloroethylene (PCE) that can break down into TCE. TCE is a toxic organic chemical that can volatilize from contaminated soil or groundwater and potentially enter nearby buildings as a vapor. The presence of TCE in indoor air can result in health impacts to building occupants, the most urgent of which are to pregnant women. U.S. EPA has concluded that brief exposures to TCE in air may affect women in the first trimester of pregnancy by increasing the risk of heart malformations to a developing fetus.[1]

Ecology's Implementation Memo No. 22 titled "*Vapor Intrusion (VI) Investigations and Short-term Trichloroethene (TCE) Toxicity*" (attached) provides important information including indoor air action levels[2] (Section 4 – Table 1), as well as recommendations (Section 5) for determining whether environmental contamination is causing elevated levels of TCE in indoor air.

[1] See U.S. EPA, August 2014, Office of Solid Waste and Emergency Response Memorandum: Compilation of Information Relating to Early/Interim Actions at Superfund Sites and the TCE IRIS Assessment.

[2] The short-term indoor air action levels are higher than Ecology's long-term indoor air cleanup levels.

Based on concentrations of TCE in soil vapor at this Site reported to Ecology in August 2020, there is a possibility that concentrations of TCE in indoor air may exceed action levels. To protect human health, Ecology requests that:

1. Within 30 days from the date of this letter, you provide Ecology with any existing information regarding contamination at the Site that you have not already submitted.

2. Within 60 days from the date of this letter, you perform a vapor intrusion investigation and submit the results to Ecology, to determine whether environmental contamination at the site has resulted in TCE concentrations from vapor intrusion above the short-term indoor air action levels. Include recommendations on what actions, if any, are necessary to reduce TCE concentrations to below the appropriate short-term indoor air action level.

    - Your investigation is likely to include a combination of indoor air, outdoor air, and soil vapor sampling. In addition to the enclosed Implementation Memo, additional Ecology guidance on conducting vapor intrusion investigations is available online at https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Vapor-intrusion-overview .

    - Your soil vapor investigation should evaluate all buildings within 100 lateral feet of your property (parcel 0679000055), including:

        - 308 105th Ave NE (parcel 0679000060)
        - 345 106th Ave NE (parcel 0679000140)
        - 239 106th Ave NE (parcel 06790000125)
        - 225 106th Ave NE (parcel 06790000120)

    - If additional data has been collected that indicates a larger extent of subsurface contamination originating from your property, additional buildings may need to be added to this list.

Ecology's Next Steps

Depending on the site specific circumstances, Ecology may:

1. Continue to provide technical assistance as necessary for evaluating and/or remediating short-term TCE risks.

2. Notify appropriate local, state, or Federal health agencies to discuss possible health risks and any necessary public notifications.

3. Identify potentially liable parties and require additional remedial action pursuant to RCW 70.105D, such as: a) issuing an enforcement order or agreed order, b) pursuing an Ecology conducted cleanup with cost recovery, or c) seeking judicial review.

4. Pursue other options necessary to adequately clean up contamination at the site.

Contact Information

Ecology is committed to working with you to accomplish the prompt and effective actions necessary at the Site. If you have any questions about this request, please contact at me at 425-649-7257 (office), 425-324-1892 (mobile), or michael.warfel@ecy.wa.gov .

Sincerely,

Michael R. Warfel
Cleanup Project Manager
Toxics Cleanup Program, NWRO

Enclosure: Implementation Memo No. 22

cc: Kim Wooten, Ecology, (kim.wooten@ecy.wa.gov)

DEPARTMENT OF ECOLOGY
State of Washington

Vapor Intrusion (VI) Investigations and Short-term Trichloroethene (TCE) Toxicity

Implementation Memorandum No. 22

Date: October 1, 2019

To: Interested Persons

From: Jeff Johnston, Section Manager
Information & Policy Section
Toxics Cleanup Program

Contact: Policy & Technical Support Unit, Headquarters, Lacey, WA

Attachments: A - Response to comments on the November 21, 2018, review draft of this memo.

Accommodation Requests: To request ADA accommodation including materials in a format for the visually impaired, call Ecology at 800-826-7716. Persons with impaired hearing may call Washington Relay Service at 711. Persons with speech disability may call TTY at 877-833-6341.

Table of Contents

Acronyms and Abbreviations

Acronym or Abbreviation	Definitions
APU	air purification units
ATSDR	Agency for Toxic Substances and Disease Registry
CLARC	Ecology's Cleanup Levels and Risk Calculation data tables
COPC	contaminant of potential concern
CPF	carcinogenic potency factor
CSM	(vapor intrusion) Conceptual Site Model
DoD	United States Department of Defense
DTSC	California Department of Toxic Substances Control
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
HI	non-carcinogenic Hazard Index
HQ	non-carcinogenic Hazard Quotient
HVAC	heating, ventilation, and air conditioning
IRIS	EPA's Integrated Risk Information System
µg/l	micrograms per liter
µg/m³	micrograms per cubic meter
MTCA	Model Toxics Control Act
NAPL	non-aqueous phase liquids
QA	quality assurance
RCW	Revised Code of Washington
RfD	reference dose
RI	Remedial Investigation
RME	reasonable maximum exposure (RME) means the highest exposure that can be reasonably expected to occur for a human or other living organisms at a site under current and potential future site use
SAP	Sampling and Analysis Plan
SL	screening level
TCE	trichloroethene or trichloroethylene
TCP	Toxics Cleanup Program
Tier I	term used in Ecology's 2009 draft VI guidance to describe VI assessments employing subsurface (groundwater and soil gas) VOC measurements
Tier II	term used in Ecology's 2009 draft VI guidance to describe VI assessments employing indoor air VOC measurements
µg/l	micrograms per liter
µg/m^3	micrograms per cubic meter
VI	vapor intrusion
VOC	volatile organic compound
WAC	Washington Administrative Code

1.0 Purpose and Applicability

The purpose of this memorandum is to supplement the 2009 Draft Vapor Intrusion Guidance[1] produced by the Washington State Department of Ecology (Ecology) and provide recommendations pertaining to cleanup sites contaminated with trichloroethene (TCE).

Specifically, this memorandum:

1. Provides indoor air Action Levels that are protective of short-term exposures to TCE.

2. Provides the default (non-site-specific) subsurface vapor intrusion (VI) screening levels that are protective of the short-term indoor air TCE action levels.

3. Identifies options for effectively and rapidly responding to those situations where TCE concentrations caused by VI in indoor air are above action levels.

4. Establishes the goal to keep indoor air TCE concentrations (caused by VI) below short-term action levels at Model Toxics Cleanup Act (MTCA) cleanup sites in Washington state.

5. Provides guidance and recommendations for those scenarios where a) VI-caused TCE indoor air concentrations exceed, or may exceed, the short-term action levels, and b) the building being investigated is regularly occupied by female residents or workers of child-bearing age.

Unless otherwise specified, this document applies to any cleanup site where TCE is a subsurface contaminant of concern and a VI pathway is being, or should be, evaluated. This includes sites under direct Ecology oversight; sites where Ecology is responsible for the investigation and cleanup; and sites in the independent cleanup process. Although the memorandum refers in a number of instances to investigation and outreach activities that assume direct Ecology involvement at the site, when this is not the case (as noted in Section 5.2) the parties performing the site investigation and cleanup should independently complete the recommended steps outlined in the memorandum.[2]

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[1] *Draft Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action* (Ecology 2009): https://fortress.wa.gov/ecy/publications/SummaryPages/0909047.html.

[2] In later portions of the memorandum, we use the term "responsible party" to refer to the party who is conducting remedial actions at the site. In many cases the responsible party will be a person meeting the statutory definition of a "potentially liable person" (see RCW 70.105D.040).

WAC 173-340-200 of the MTCA rule defines the terms "cleanup," cleanup action," "interim action," and "remedial action." Remedial action (or "remedy") means "any action or expenditure consistent with the purposes of [MTCA statute] Chapter 7.0.105D RCW to identify, eliminate, or minimize any threat posed

NOTE: In some buildings, indoor workers are routinely exposed to elevated indoor air concentrations of volatile organic compounds (VOC) as part of a manufacturing or other business-related process. When the same VOCs are also present in subsurface contamination, these scenarios commonly pose difficulties to investigators who are attempting to quantify VI-only contributions to indoor air contamination. Another challenge: as long as manufacturing or other business-related processes result in indoor VOC levels much higher than those potentially caused by VI, the affected receptors will only minimally benefit from actions taken to curtail just the VI contributions.

Implementation Memorandum No. 22 does not provide guidance or recommendations for scenarios where business-related processes persistently contaminate the building's indoor air with TCE, and the resulting TCE concentrations significantly exceed any VI contributions. If this scenario is (or appears to be) present at the site, Ecology should be consulted before proceeding further with the VI evaluation.[3]

by hazardous substances to human health or the environment including any investigative and monitoring activities with respect to any release or threatened release of a hazardous substance and any health assessments or health effects studies conducted in order to determine the risk or potential risk to human health."

[3] See also Ecology's Implementation Memorandum No. 21: *Frequently Asked Questions (FAQs) Regarding Vapor Intrusion (VI) and Ecology's 2009 Draft VI Guidance* (Ecology 2018b), available at: https://fortress.wa.gov/ecy/publications/SummaryPages/1809046.html

2.0 How this Memo is Organized

When TCE is present in soils, groundwater, or soil gas, VI assessments should determine if indoor air concentrations exceed cleanup levels based on chronic exposure. Assessments should also, however, be designed to determine if indoor air concentrations are higher than action levels protective of toxic, non-cancer effects caused by short-term exposures to the chemical. This memorandum provides guidance and recommendations for such short-term exposure scenarios.

Section 3.0 provides background on the 2009 draft vapor intrusion guidance, and the major updates to the document since.

Section 4.0 identifies Ecology's short-term indoor air action levels. It also includes short-term TCE soil gas and groundwater screening levels, which are calculated to be protective of the indoor air action levels.

Section 5.0 discusses VI investigations at TCE sites, and outlines Ecology's expectations regarding assessments of possible short-term, indoor air TCE, action level exceedances.

Section 6.0 outlines Ecology's expectations regarding appropriate responses and response timeframes, when VI-caused indoor air TCE concentrations exceed action levels.

Section 7.0 describes notifications and other outreach-related tasks that responsible parties should perform at TCE sites where VI may be resulting in indoor air concentrations that exceed action levels.

3.0 Background

In 2009, Ecology prepared the draft VI guidance titled *Guidance for Evaluating Soil Vapor Intrusion in Washington State: Investigation and Remedial Action.* A public comment period in the fall of 2009 provided an opportunity for the public to review and give us feedback on the draft document. Although a number of public comments were received, Ecology did not formally respond to the comments or revise and finalize the draft guidance. Nevertheless, the draft VI guidance has been relied on by Ecology staff, environmental consultants, and others who are responsible for assessing VI and ensuring that indoor receptors are protected from VI-related air contamination.

Since 2009, parts of the draft guidance have been updated or otherwise superseded by TCP Implementation Memoranda. Specifically:

1. **Updated and revised VI cleanup and screening levels.** Tables in Appendix B of the 2009 draft guidance contained VI indoor air cleanup levels and soil gas and groundwater screening levels. In 2009, the indoor air cleanup levels in Appendix B corresponded to standard, WAC 173-340-750 Method B and C air cleanup levels, calculated with reference doses (RfDs) and/or cancer potency factors (CPFs) obtained at that time from IRIS and other Environmental Protection Agency (EPA) toxicity databases. Soil gas and groundwater screening levels were calculated to be protective of these indoor air cleanup levels.

   As of 2016, the Appendix B tables in the 2009 draft guidance are outdated and should not be relied upon. The VI indoor air cleanup and groundwater and soil gas screening levels in Ecology's Cleanup Levels and Risk Calculation (CLARC) data tables[4] replace the 2009 tables and should be used instead. The CLARC table values are based on the most current Method B and C air cleanup levels and, for sub-slab soil gas screening levels, an attenuation factor different (that is, lower) than the value used to generate the Appendix B tables.

2. **Updated and revised Ecology guidance related to petroleum VI (PVI) screening.** TCP Implementation Memorandum No. 14 (Ecology 2016) embodies new EPA recommendations for assessing sites where the only volatile subsurface contaminants of concern are those petroleum hydrocarbons that are associated with a fuel release. Implementation Memo No. 18 (Ecology 2018) also primarily applies to releases of petroleum-containing fuels. It establishes generic TPH air cleanup levels and

[4] Available at: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Contamination-clean-up-tools/CLARC (Ecology 2018a)

corresponding soil gas screening levels. It provides additional guidance for developing PVI sampling plans for Tier I and Tier II, and discusses potential PVI threats to buildings that will be constructed in the future. These memoranda were specifically developed for sites where PVI is a potential concern.

3. **Developed frequently asked questions (FAQs) on whether specific portions of the 2009 draft VI guidance are still applicable.** TCP Implementation Memo No. 21 (Ecology 2018) answers a number of questions regarding technical and policy changes that have occurred since the draft guidance was issued.

Since Ecology's 2009 draft VI guidance was prepared, EPA has concluded that brief exposures to TCE may cause serious health problems.[5] Short-term inhalation exposures to TCE in indoor air have the potential to cause serious heart defects in a developing fetus. The damage can occur early in a pregnancy, possibly before the pregnancy is recognized.

While much of the draft 2009 guidance document is applicable to sites where TCE vapor intrusion is a possibility, there are several issues that are not considered in the draft guidance but should be evaluated, due to the potential for harm from short-term exposure. These issues are:

1. Response speed. Actions to protect a fetus from unacceptable TCE exposures should occur as rapidly as possible after discovering the contamination—that is, within days or weeks, depending on the likelihood and degree of potential exposure.

2. Focus on women of childbearing age (which includes pregnant women). The developing fetus is sensitive to the effects of short-term TCE exposure, and preventing harm to the fetus relies on reducing the mother's exposure.

3. Public outreach. Promptly contacting people who live and work near TCE contamination is crucial for three reasons: 1) to identify women of childbearing age; 2) to explain the potential health hazards to building occupants and, 3) if warranted by site-specific conditions, to obtain permission to access buildings for property-specific investigation and exposure-reduction activities. Whenever possible, outreach activities should be conducted in collaboration with public health departments.

This degree of urgency, and the need for more intensive outreach to specific individuals, is not typically required at most MTCA sites. These issues are further discussed in Sections 5 through 7, following the discussion of Ecology's recommended short-term TCE action and screening levels.

[5] *Memorandum: Compilation of Information Relating to Early/Interim Actions at Superfund Sites and the TCE IRIS Assessment* (USEPA 2014).

4.0 VI Screening and Action Levels for TCE

4.1. Indoor air action levels for TCE

Indoor air cleanup levels—which are used during Tier I and Tier II vapor intrusion assessments to determine whether further sampling, interim actions, or cleanup actions are indicated—are provided in the CLARC data tables.[6] These concentrations are the same concentrations as the standard cancer and non-cancer Method B and C air cleanup levels in CLARC's *Air* data tables.

Air cleanup levels for TCE are lower than indoor air action levels for short-term indoor exposures. Cleanup levels apply to long-term (at least one year) average air concentrations for the entire population comprised of all genders and ages. Short-term indoor air action levels, on the other hand, only apply to three-week average concentrations for women of childbearing age. The average indoor air TCE concentration due to VI over **any** three-week interval should not exceed the applicable action level.

VI indoor air cleanup levels for long-term TCE exposures, and action levels for short-term exposures to women of childbearing age, are provided in Table 1 below. The table's Indoor Air Cleanup and Action Levels are compared to average indoor air TCE concentrations that result solely from site-contaminated soil gas (that is, vapor) intrusion. In some cases, this will mean that contributions to indoor air measurements from non-VI sources, such as outdoor or indoor sources, will need to be distinguished from those due solely to subsurface sources.

The short-term Action Levels for TCE in Table 1 are based on values recommended by EPA Region 10 (December 13, 2012, memorandum) and EPA Region 9 (July 9, 2014 memorandum).[7] Region 10's 2012 memorandum states that, pursuant to an IRIS toxicological review, exposure to TCE can cause fetal cardiac malformations during a 21-day gestation window. To protect against the possibility of this occurring, the average concentration of TCE in residential indoor air should not exceed 2.0 µg/m^3 during any 21-day period of time in a given year. For commercial / industrial settings, where the receptors of concern are workers, indoor air TCE should not exceed 8 µg/m^3. The Region 9 memorandum identifies "accelerated" and "urgent response action levels" for residents and workers. The "accelerated" levels range from 2 to 8 µg/m^3; the "urgent" levels vary from 6 to 24 µg/m^3. The range of levels for both categories accounts for the varied lengths of time that receptors are expected to be exposed.

[6] Cleanup Levels and Risk Calculation (CLARC). https://fortress.wa.gov/ecy/clarc/CLARCHome.aspx

[7] For the Region 9 and 10 memoranda, see: https://ecology.wa.gov/Regulations-Permits/Guidance-technical-assistance/Vapor-intrusion-overview

Table 1. Vapor intrusion indoor air cleanup and action levels for TCE

Level of Concern	Concentration ($\mu g/m^3$)	Risk Basis
TCE Indoor Air Cleanup Levels Chronic (mean long-term air concentration for RME receptor)*		
Method B (unrestricted land use)	**0.37**	Cancer risk 1E-6
	0.91	Hazard quotient 1
Method C (industrial land use)	**6.3**	Cancer risk 1E-5
	2.0	Hazard quotient 1
TCE Indoor Air Action Levels Short-term (maximum 3-week mean concentration for women of childbearing age)		
Unrestricted (residential) land use	**2.0**	Noncarcinogenic effect based on 24 hours/day, 7 days/week
Workplace scenario (commercial or industrial)	**7.5**	Noncarcinogenic effect based on 45-hour work week

* These values are available in CLARC (Ecology 2018a).

A number of other EPA Regions and states, including Massachusetts, New Jersey, New Hampshire, Minnesota, Ohio, Alaska, and Connecticut, have also adopted short-term TCE levels and recommended responses. These levels and response timeframes vary.

Consistent with EPA Region 10, TCE Action Levels in Table 1 are intended for comparison to the highest VI-caused indoor air levels averaged over any 21-day period. Ecology recognizes, however, that the fetal health effects that potentially arise from a short-term exposure to TCE could possibly result from an exposure to action level concentrations over a period less than three weeks. As of the date of this memo, we do not know how short this period could be, or whether shorter periods would only be harmful if TCE concentrations were significantly higher than Action Levels. Therefore, while this memorandum advocates comparing our Action Levels to measurements (or estimates) of average 21-day concentrations, Ecology also recommends that, if any 24-hour or 8-hour measurements of average indoor air TCE concentrations exceed Table 1's Action Levels (for residents or workers, respectively), prompt action should be taken to either reduce those concentrations, or reduce the degree to which women of childbearing age are exposed. Ecology will revisit this recommendation as more information becomes available about health effects attributable to short-term TCE exposures.

Table 1 is limited to providing a residential short-term TCE indoor air Action Level and a short-term Action Level for commercial/industrial workers. The residential concentration is intended to protect women of childbearing age who reside in the building and are continuously exposed to indoor air contaminated by VI. The commercial/industrial Action Level is protective of women

of childbearing age who work full-time shifts up to 45 hours per week.[8] However, other women of childbearing age who occupy a building where VI is occurring may also be receptors of concern. For example, visitors to a building, part-time workers in a building, or students within a school building could potentially be exposed to contaminated indoor air over extended periods of time.

Table 1's short-term Action Levels should be used to determine whether prompt and protective actions like interim actions should be implemented (see WAC 173-340-430). **These Action Levels are not MTCA Method B or C air Cleanup Levels**. Furthermore, the MTCA regulations require that cleanup levels be established for one of two specific land uses: *unrestricted* or *industrial* site use.

4.2. VI short-term screening levels for TCE in groundwater and soil gas

CLARC's data tables also provide groundwater and soil gas screening levels that can be used to assess the potential VI threat posed by a subsurface source. As for the VI indoor air cleanup levels, these concentrations are based on chronic exposures. CLARC's groundwater screening levels are intended to be protective of corresponding indoor air cleanup levels, and assume there will be 1,000-times attenuation between groundwater VOC concentrations (in equilibrium with vapor concentrations) and indoor air levels. CLARC's sub-slab soil gas screening levels are also expected to be protective of indoor air cleanup levels. They assume there will be 33-times attenuation between soil gas VOC concentrations just below a building's slab and indoor air levels. (For further discussion on this, see the note box following Table 2 in this section.)

VI groundwater and sub-slab soil gas screening levels protective of short-term TCE indoor air action levels are presented in Table 2 below. These screening levels embody the same attenuation assumptions used to calculate the chronic subsurface screening levels provided in CLARC (as discussed above). In summary:

- The short-term VI screening levels for groundwater and soil gas are higher than CLARC's VI TCE screening levels, which are calculated for chronic indoor exposures.

- For residential buildings, the short-term screening level for groundwater is about twice as high as CLARC's chronic-based non-carcinogenic screening level (8 µg/l versus 3.8 µg/l, respectively), and approximately five times higher than CLARC's carcinogenic screening level (8 µg/l versus 1.6 µg/l).

[8] The protection this paragraph refers to is the protection of the developing fetus. Exposures to TCE can also, of course, potentially affect the health of women themselves. Indoor "protection" for the women themselves should be assessed using the indoor air cleanup levels in the CLARC data tables, not the short-term action levels.

- Similarly, the short-term screening level for TCE in soil gas is about twice as high as CLARC's chronic-based non-carcinogenic sub-slab screening level (67 µg/m³ versus 31 µg/m³), and a little more than five times higher than CLARC's carcinogenic sub-slab screening level (67 µg/m³ versus 12 µg/m³).

Table 2. Vapor intrusion subsurface screening levels for short-term exposures to TCE

Short-term TCE Subsurface Screening Levels	Concentration	Basis
groundwater (in µg/l)		
residential short-term VI Screening Level for groundwater	**8**	• TCE as a non-carcinogen • receptor of concern: women of childbearing age • residential indoor scenarios
non-residential short-term VI Screening Level for groundwater	**31** **1.**	• TCE as a non-carcinogen • receptor of concern: women of childbearing age • commercial/industrial workplace scenarios
soil gas (in µg/m³)		
residential short-term VI Screening Level for sub-slab soil gas	**67**	• TCE as a non-carcinogen • receptor of concern: women of childbearing age • residential indoor scenarios
non-residential short-term VI Screening Level for sub-slab soil gas	**250**	• TCE as a non-carcinogen • receptor of concern: women of childbearing age • commercial/industrial workplace scenarios

NOTE: The 2009 draft guidance differentiates between the amount of soil gas-to-indoor air attenuation that should be assumed for soil gas VOC concentrations that are located immediately below the building (like sub-slab), versus those concentrations that are at significantly greater distances below ground surface (called "deep"). CLARC's VI data tables also make this distinction. "Deep" soil gas screening levels in CLARC assume 100-times attenuation between soil gas VOC concentrations and indoor air levels.

However, EPA's *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (USEPA June 2015) does not recommend that soil gas levels be assumed to attenuate more than 33 times, regardless of depth. As a result, Ecology is re-evaluating the appropriateness of a deep soil gas VI screening level that assumes more than

33-times attenuation. At the time this memo was published, we are not withdrawing the recommended deep soil gas VI screening levels in CLARC, but:

1. These levels should not be used to assess the potential for an indoor air exceedance of the short-term TCE action level, and

2. For other assessment purposes (such as assessing the potential for an exceedance of a chronic-based indoor air cleanup level) the requisite 15-foot or greater separation distance should be applied to the depth of the vadose zone between the building foundation (not the ground surface) and the deep soil gas measurement. The short-term TCE Screening Levels identified in Table 2—referred to as "sub-slab" and calculated with an attenuation factor of 0.03—may also be compared to deeper soil gas sample measurements.

5.0 VI Investigation

Ecology's 2009 draft VI Guidance should generally be followed when investigating and addressing TCE vapor intrusion. But as noted in Section 3.0 above, the draft guidance does not discuss short-term inhalation exposures to TCE. The following investigation recommendations refer specifically to sites where TCE is a potential VI concern.

5.1. Identify any site buildings where VI may potentially result in indoor TCE concentrations above the short-term action level.

NOTE: The discussion in Section 5.1 assumes that indoor air sampling for TCE has not been conducted. If indoor air has already been sampled, and indoor TCE concentrations due to VI exceed the applicable short-term action level, appropriate responses are described and discussed in Section 6. If indoor air was sampled and TCE concentration measurements were below the short-term action level, the VI assessment team should determine whether those measurements represent the highest 3-week average indoor TCE concentration. Please see Section 5.4.

Determining which buildings are a potential concern is commonly accomplished by mapping site areas where TCE is, or may be, present in soils or shallow groundwater. Buildings above or close to these areas can then be identified. In parts of the site where soils are contaminated with TCE, soil gas samples are typically collected and analyzed.[9] Ecology's 2009 VI Guidance, CLARC's VI soil gas Screening Levels, and Table 2's short-term soil gas Screening Levels above, can then be used to determine if VI could potentially result in indoor air cleanup level or action level exceedances (respectively) at nearby buildings.

Regardless of whether the potential subsurface VI source is contaminated soils or shallow groundwater, soil gas samples can be collected below or near a building, and the measured TCE levels can be used to determine the potential for an indoor exceedance of indoor air cleanup levels and/or action levels. However, if TCE concentrations in shallow groundwater are above CLARC's VI Screening Levels, or if significant soil contamination or residual non-aqueous phase liquid (NAPL) is close to a building and likely to contain elevated TCE concentrations, investigators should not delay indoor air sampling (see section 5.3). When these conditions are

[9] *De minimis* levels of TCE in vadose zone soils (i.e., above the seasonal low water table) are unlikely to pose a VI threat. WAC 173-340-740(3)(b)(iii)(C)(III) defines such levels as concentrations no higher than concentrations "derived for protection of groundwater for drinking water beneficial use under WAC 173-340-747(4)." Concluding that TCE levels in soils are this low requires adequate characterization of vadose zone contamination.

present, the first indoor sampling event(s) should be a site priority and performed immediately, without waiting for a preliminary soil gas investigation.[10]

In areas where soils are not contaminated and shallow groundwater is the only potential VI source, the 2009 draft VI guidance, groundwater VI Screening Levels in CLARC, and short-term groundwater Screening Levels in Table 2 can be used to distinguish between buildings where VI could potentially result in exceedances of indoor air cleanup (chronic) or action (short-term) levels, and those where exceedances are highly unlikely.

In addition to the exceedance of subsurface VI screening levels, there may be other building- or site-specific reasons for suspecting that indoor air TCE concentrations could exceed the short-term action level. For instance, at some building locations, contaminated shallow groundwater may be the only potential VI source and TCE concentrations in this groundwater may be below the short-term screening level. However, the short-term groundwater screening levels assume a certain amount of attenuation and dilution of vapor-phase TCE between the groundwater surface and the indoor environment. While these are conservative assumptions for most buildings, they may not be if:

- There are preferential subsurface pathways that may result in higher soil gas VOC levels below the building than the short-term groundwater screening levels assume, or if

- There may be a higher soil gas flowrate into the building than the short-term groundwater (and soil gas) screening levels assume.[11]

[10] Ecology does not recommend that soil gas sampling be initiated at this point to determine if TCE concentrations exceed short-term soil gas screening levels. This is because it takes time to prepare (and approve) soil gas SAPs; obtain access; schedule and mobilize the related work; and, review the sampling results. Indoor air sampling should not be delayed while these activities are being performed. During or immediately following the first indoor air sampling event, however, it is prudent to obtain soil gas data.

[11] The short-term groundwater Screening Levels assume that vapor-phase TCE concentrations will attenuate by a factor of 1000 between soil gas levels immediately above (and in equilibrium with) contaminated groundwater and indoor air. This is generally a conservative assumption, but may over-predict the degree of subsurface attenuation in certain cases. Ecology's 2009 draft VI guidance describes the conditions where this may occur (e.g., sites with a very thin vadose zone (shallow water table); the presence of subsurface conduits capable of transporting elevated soil gas levels to areas directly below the building with minimal attenuation; etc.)

The short-term soil gas Screening Levels assume that vapor-phase TCE concentrations will attenuate by a factor of at least 33 times between soil gas levels immediately below the building and indoor air. Again, this is usually a conservative assumption. However, less attenuation is possible if the building or its foundation allows soil gas to enter interior spaces relatively unimpeded (which may occur, for example, when slab or basement wall penetrations or large cracks provide preferential conduits for entry).

5.2. Notify and involve Ecology

This memorandum presumes that Ecology will be involved throughout the VI evaluation process, including owner/tenant notifications, the initial building visit, indoor air sampling, data analysis, and post-sampling decision-making described in the rest of this section and in Sections 6 and 7. We have therefore identified certain recommended actions and decisions below as being responsibilities of both the party conducting the remedial actions (the responsible party) and Ecology.[12] However, in those cases where the responsible parties are acting independently and choose not to involve Ecology during some or all of these actions and decisions, they should complete the applicable and recommended steps in this memorandum themselves.

Regardless of whether Ecology oversees the site throughout the cleanup process, or whether another party independently conducts the remedial actions:

1. Ecology should be contacted as soon as the responsible party determines that women of childbearing age are current building occupants and indoor air sampling is needed to assess the potential for a short-term TCE action level exceedance (see Section 5.3 below).

2. If an Ecology staff person has already been assigned to the site, this is the individual who should be notified. Otherwise, the responsible party should contact their local Ecology regional office. They should not wait for Ecology's response before moving to the next steps of the investigation / response process. Find Ecology's contact information at https://ecology.wa.gov/About-us/Get-involved/Report-an-environmental-issue

5.3. Prepare for indoor air sampling

As soon as one or more site buildings have been identified as a location where VI may potentially result in indoor air TCE concentrations above the short-term action level, investigators should quickly plan for the next assessment steps—unless they already know that women of child-bearing age do not regularly occupy the buildings. At this point in the investigation, it is only *potentially possible* that indoor TCE concentrations actually exceed the Action Level, but several actions should occur without delay: notify building owners/tenants, determine if exceedances are occurring, and – if needed – take actions to protect the potential receptors.

1. **Contact building owner and/or tenant.** The owner/tenant of the building should be contacted to determine if women of childbearing age are current occupants, and to schedule a building and property visit. This initial contact should occur soon after the

[12] Please see footnote in Section 1.0 regarding use of the term "responsible party" in this memorandum.

building has been identified as potentially at risk. The owner and tenant(s) of these buildings should be notified that there is the *possibility* that VI-caused indoor air TCE concentrations exceed the acceptable chronic and/or short-term screening/action levels.

2. **Schedule a building visit.** If women of childbearing age are current building occupants, a building visit should be scheduled as soon as possible. During this visit Ecology and the responsible party will need to be prepared to discuss the potential TCE risk, explain how we would like to proceed, and answer exposure-related and other questions.[13] If the responsible party does not own the building, they should also be prepared at this time to request building access for the purpose of collecting indoor air samples. Interactions with building owners and tenants during the period preceding indoor air sampling are further discussed in Section 7.0 below.

3. **Prepare and finalize a SAP.** Following the visit to the building and property, an indoor air Sampling and Analysis Plan (SAP) should be expeditiously prepared, reviewed, and finalized.[14] The SAP should include a site/building-specific VI conceptual site model (CSM) that serves as the basis for the selection of data quality objectives and sampling design. The VI CSM, as discussed in our draft 2009 VI guidance document and in Section 5.4 of EPA's 2015 *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air* (USEPA June 2015), is a combination of information, assumptions, and hypotheses that investigators use to support evaluations of the adequacy of available site-specific information, and guide the identification of critical data gaps.

4. **Schedule indoor air sampling.** After SAP finalization the first indoor air sampling event should be immediately scheduled. It should not be delayed to coincide with more desirable seasonal or meteorological conditions.[15]

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[13] Please see Section 7.1's discussion of VI-related risk communications.

[14] This assumes that: a) an exceedance of the short-term TCE indoor air action level has not yet been measured, and b) the responsible party has decided not to pursue a "preemptive" response action. If an exceedance of the action level has already been measured, no additional pre-mitigation sampling may be needed. See Section 6.0 for a description of appropriate response actions.

Preemptive mitigation is a term often used to describe VI mitigation efforts implemented without (or prior to) confirmation that VI-caused indoor air contamination exceeds acceptable levels. When preemptive mitigation has been chosen as the next step in Section 5.3, indoor air sampling is not typically conducted until after mitigation has been implemented. See Section 7.8 of EPA's OSWER VI guidance document (USEPA June 2015) for additional information about preemptive mitigation.

[15] The SAP should acknowledge the time-related considerations associated with determining if a short-term action level is being exceeded, and propose the respective timeframes and due dates for obtaining and reviewing data.

5.4. Determine if 3-week average indoor air TCE concentrations exceed the short-term action level.

For those buildings occupied by women of child-bearing age, the VI investigation should provide sufficient information to determine whether 3-week average indoor air TCE concentrations ever exceed the short-term action level. This is unlikely to be evident from a single indoor air sampling event unless that event coincides with a period when maximum VI impacts are occurring. Because VI impacts can vary significantly over time, and because this variability cannot be easily predicted, it is essentially impossible to schedule an indoor sampling event that can be confidently assumed to coincide with, or otherwise represent, the highest 3-week average VI impact on air quality, unless the sampling program is designed to intentionally create near-maximum VI conditions.[16] Unless TCE concentrations measured during the first sampling event exceed the short-term indoor air action level, often the investigation will require multiple sampling events.

This memorandum does not provide indoor sampling guidance. For recommendations related to sampling methodologies, please refer to:

- Ecology's Implementation Memorandum No. 21 (Ecology 2018)
- Relevant portions of the Tier II discussion in Ecology's 2009 draft VI guidance
- Section 6.4 of EPA's VI guidance (USEPA 2015)
- Recent state guidance documents, such as New Jersey's *VI Technical Guidance* (NJDEP 2018).

When the receptor of concern is a current occupant of the building, and air samples are being analyzed at an off-site laboratory, expedited turn-around times should be requested. For at least

[16] Generally, this is accomplished by inducing significant building depressurization just prior to the sampling event. Various degrees of depressurization, as well as positive pressurization, are typically induced to track indoor air concentration responses. (DOD 2017, McHugh 2017, and Johnson 2016.) The building depressurization methodologies that have utilized a blower-door approach, and have been subsequently described in the literature, can successfully meet project objectives. However, the methodology: a) is likely to be more successful at smaller and simpler buildings (architecturally, and in terms of interior design), and b) should not be assumed to result in higher, VI-caused, indoor air concentrations once significant depressurization has been achieved.

Even when conditions conducive to relatively extreme VI impacts are not intentionally created, they may fortuitously occur during a sampling event. That is, significant building depressurization may be "naturally" occurring during any given sampling event and this degree of depressurization may correspond to *worst case*-type VI-caused indoor air concentrations. At many sites and site buildings this often coincides with periods when indoor air temperatures are much higher than outdoor temperature. Continuously measuring pressure differentials of cross-slab or cross-first floor (for buildings with crawlspaces) throughout the indoor air sampling event can provide measurements that demonstrate the degree of building pressurization relative to the subsurface during the event. These measurements can be recorded regardless of the air sampling methodology used (such as canisters, passive diffusive samplers, or more real-time measuring devices).

the first sampling event, the goal should be to receive the laboratory's sampling data within three business days.

Immediately after the data have been received, they should be initially reviewed by the receiver and shared with other members of the decision-making team (such as the Ecology site manager,[17] if the responsible party's consultant receives the laboratory data). For at least the first indoor air sampling event the goal should be to share these results with the decision-making team within seven days from the time of sample collection. The objective of the decision-making team's review is to then determine, as soon as possible, if: 1) the relevant TCE short-term indoor air Action Levels listed in Table 1 are being exceeded, and 2) VI is the likely cause.

The immediate review, and the decisions arising from that review, will not have the benefit of a sampling-data quality assessment or validation. These activities will typically occur later, when the results of the sampling event are being integrated into some form of VI evaluation report. It is possible, then, that a later assessment of data quality will lead to a conclusion that VI is *not* causing short-term indoor air action level exceedances, and that the earlier determination was incorrect. However, if the receptors of concern are current occupants of the building, the importance of providing timely information to those receptors should outweigh the potential that the information provided might later need to be revised.

It should also be emphasized that this section (Section 5.0) is specifically devoted to recommendations related to the potential for short-term inhalation exposures to TCE. As discussed in Section 4.0, CLARC's VI Indoor Air Cleanup Levels for TCE are lower concentrations than action levels established to be protective of short-term indoor exposures. This is because the Indoor Air Cleanup Levels in CLARC are based on chronic VI-caused exposures. Remedial actions such as VI mitigation may therefore be needed to protect long-term indoor exposures, regardless of whether the short-term indoor air TCE action level is exceeded.

[17] If an Ecology site manager has not been assigned to the project, the results should be sent to the designated Regional contact.

6.0 Responding to Exceedances of the Short-term TCE Indoor Air Action Level

If VI is causing an exceedance of the TCE short-term indoor air action level, prompt action is needed. Such actions should be taken in consultation with the building's owner (and tenant, if applicable). Protecting people inside affected buildings is a high priority and any needed action should not be delayed. If additional, follow-up indoor air or other sampling is scheduled before the selected action is fully implemented, this sampling must be conducted in a manner that does not interfere with efforts to quickly and effectively reduce indoor exposures to TCE.

Systems for mitigating vapor intrusion

VI *mitigation* generally refers to actions whose purpose is to reduce VI-caused indoor air contamination, and these actions often focus on reducing the amount of contaminated soil gas entering the building.[18] Mitigation systems creating **depressurization** of the sub-slab zone or crawlspace will often be the most effective approach for reducing VI impacts (until subsurface cleanup permanently remediates the source of elevated soil gas concentrations). However, these types of mitigation, which are intended to minimize entry of contaminated soil gas into the building, can take weeks to design, construct, and fully implement. Additional time is then needed to demonstrate that target VOC concentrations in indoor air have actually been achieved.

Active VI mitigation systems such as sub-slab and sub-membrane depressurization are often able to reduce VI-caused TCE indoor air contamination to concentrations below the short-term action levels. But before the mitigation system has been successfully implemented, TCE concentrations will, or may, be above these levels. If a woman of childbearing age lives or works in an area of the building where elevated TCE concentrations are present, and does not re-locate, she will continue to be exposed to them. Mitigation should therefore be designed and implemented as quickly as possible,[19] and other actions should be considered that would effectively reduce exposures during the interim.

[18] Subsurface remediation, on the other hand, includes cleanup actions designed to reduce soil gas VOC levels. Although these actions will also reduce VI-caused indoor air contamination, they are not typically referred to as VI "mitigation" unless they can be implemented (and are successful) within a relatively short timeframe.

[19] The mitigator who will likely perform the work should be identified early (e.g., during the investigation's planning phase). His/her availability for constructing the mitigation system, if needed, should also be verified at this early stage.

EPA-recommended actions and MTCA cleanups

Prompt actions to reduce TCE exposures include the recommended responses described in EPA Region 9's 2014 TCE Memorandum under two headings: "Implementation of early or interim measures to mitigate TCE inhalation exposure," and "Tiered response action" (USEPA 2014). Many of the recommendations in these sections of the Memorandum are appropriate to use as a guide for selecting proper response actions in Washington state. However, three of Region 9's recommendations should be clarified in terms of their applicability at MTCA cleanup sites:

1. The recommendation to increase building pressurization/ventilation.

Positively pressurizing the building (with respect to the subsurface) can create a pressure barrier to advective flow of soil gas into the structure and mitigate VI impacts. However, it will not always be possible or sufficiently effective. Likewise, increasing ventilation can dilute VI impacts if the outdoor-to-indoor air exchange rate is increased. But it may not be practicable to increase the ventilation rate enough to reduce indoor air TCE below screening/action levels. Moreover, if the methods to increase the outdoor-to-indoor air exchange rate result in greater building depressurization, VI impacts may actually be exacerbated.

NOTE: At some buildings the owner/tenant may be able to quickly adjust HVAC settings to create these pressure or ventilation rate conditions. However, unless follow-up monitoring of indoor air quality is performed, there is no way to tell if TCE concentrations have been reduced to an acceptable level.

2. The recommendation to seal potential conduits.

It is possible that a single foundation or building feature is primarily responsible for the degree of vapor intrusion, leading to short-term indoor air TCE action level exceedances. For instance, there could be an uncovered earthen floor in part of the building. There could be an uncovered/unsealed basement, or a first floor sump or (disconnected) floor drain. There could be unsealed utility line penetrations at ground level or sub-grade. If the building has a crawlspace, there could be relatively large and unsealed first floor openings around pipes or wiring that run between the two levels. The crawlspace could also be walled-in, preventing any significant sub-floor ventilation and dilution of soil gas emissions.

Often, however, it won't be obvious where the most significant soil gas entry points are located. For this reason, conduit sealing measures are commonly combined with more effective mitigation actions.

In terms of the prompt action needed to respond to TCE action level exceedances, Ecology recommends that sealing efforts be:

a) Focused on any easily observable and obvious major routes by which soil gas is likely entering the building;
b) Only undertaken as the initial response if the sealing activity can be completed quickly; and
c) Promptly followed up with indoor air sampling to verify the sealing's effectiveness.

3. The recommendation to respond differently, based on whether the "urgent" response action level has been exceeded.

The EPA Region 9 Memorandum states that the response to exceeding an "accelerated" action level should be "completed and confirmed within a few weeks." If the higher "urgent" action level is also exceeded, the response time should be reduced to "a few days."

Ecology agrees that, all else being equal, there should be a greater sense of urgency when TCE concentrations are much higher than the short-term action level established for the site and building. It is also true that the types of responses likely to be effective will often partly depend on how high the indoor air TCE concentrations are. But Ecology believes any exceedance of the short-term action level merits prompt action. This means that once an exceedance is apparent, the site team should quickly decide on the preferred response action, and then immediately propose this action to the building's owner/tenant.

If VI is causing an exceedance of the TCE short-term indoor air action level, the action to be taken should be quickly determined in consultation with the building's owner (and, if applicable, the tenant). The goal should be to reduce TCE exposures for women of childbearing age as soon as possible. This may require that a "stop-gap" response be taken right away, while plans for long-term mitigation proceed on a parallel track. Stop-gap responses include actions such as temporarily relocating the receptor, and installing effective indoor air treatment.

Carbon-based indoor air VOC treatment devices (sometimes referred to as air purification units [APUs] or "air cleaners") can be installed relatively quickly. These devices can be used for extended periods, but their typical, or niche, VI application is temporary use. Often they are operated only while a more permanent form of mitigation is being designed/constructed. As discussed in EPA's 2017 *Engineering Issue*, which describes these devices, indoor air treatment can be accomplished with portable air cleaning units or HVAC in-duct systems (USEPA 2017).

The former usually employs a built-in air circulation fan and sorbent bed, with carbon serving as the sorbent.

Indoor air treatment devices may or may not be able to quickly reduce TCE concentrations to acceptable levels within certain airspaces. Regardless of the treatment device selected, it cannot be assumed that the installed units will *sustainably* reduce indoor air TCE to concentrations below the short-term action level. As noted in EPA's 2017 *Engineering Issue*, this must be confirmed with air sampling.[20]

[20] In the EPA 2017 *Engineering Issue* discussion of treatment systems, Attachment A lists a large number of VOC air cleaners by brand name. In 2014, California's DTSC reported use of Air Rhino and AirMedic Vocarb stand-alone air purifiers. The New Hampshire Department of Environmental Services and Massachusetts Department of Environmental Protection reported use of portable Austin HealthMate units in 2015 and 2016, respectively. (See "TCE Vapor Intrusion Case Study" presented at the 2015 NEWMOA conference, http://www.newmoa.org/events/event.cfm?m=157 and the October 2016 Field Assessment and Support Team (FAST): "An Expedited Approach to the Investigation and Mitigation of the Vapor Intrusion Pathway.").

Ecology does not endorse these particular products. We are including these references only to indicate that the products have been used in at least three states to reduce VI-caused indoor air contamination.

7.0 Working with people who are affected by vapor intrusion

This section, as well as Sections 5.0 and 6.0, discusses interactions with the owners and occupants of buildings where vapor intrusion is, or may be, contaminating indoor air with TCE. In the simplest case, the building is a single-family residence owned by the occupants. The responsible party and Ecology are then interacting primarily with a head of household. But various other scenarios are common, such as:

a. The building may be a single-family residence that is owned by someone who resides elsewhere.
b. The building may be occupied by a single business, which also owns the property.
c. The building may be occupied by a single business, which does not own the property or building.
d. The building may be occupied by multiple businesses, none, or only one, of which owns the property or building.

In some cases, the property where the building is located will be owned by the responsible party; in other cases, not.

Throughout this memorandum, we've used the term "building owners/tenants" when referring to notifications, access requests, information sharing, and other interactions with the affected public. We use this term for economy and simplicity, but recognize that owners are not always building occupants and receptors, and building occupants are not always owners or tenants. Women of childbearing age who occupy a building could be owners, tenants, employees or other workers, students, or visitors.

For communication purposes, it is helpful for the responsible party and Ecology to have no more than two designated "building contacts." Communications about scheduling building visits, obtaining access, sharing sampling data and data evaluations, and consultations concerning any response actions, can then be limited to a small number of individuals (who may or may not be potential "receptors"). It will be incumbent upon these building contacts to not only disseminate the information they receive from the responsible party and Ecology to (other) building occupants who are potentially being exposed, but to relay those occupants' concerns and questions back to us.

7.1. Outreach before indoor air sampling

As discussed in Section 5.1, any site buildings where VI may potentially result in indoor TCE concentrations above the short-term action level should be identified based on subsurface sampling and other site data. When such a building is identified and women of childbearing age are occupants, the planning, notification, and pre-sampling activities described in Section 5.3 should be performed. This includes a visit to the building itself.

In addition to obtaining the building and receptor-behavior information usually needed to prepare a VI indoor air SAP, during building visits Ecology and the responsible party should:[21]

1. Verify whether women of childbearing age regularly occupy the building. If they do (especially for non-residential buildings) the areas where these women spend most of their time, and the hours they are typically present in the building, should be ascertained.

2. Determine if women of childbearing age may be occupants in the foreseeable future, even if they're not currently present.

3. Discuss site contamination and how vapor intrusion can potentially contaminate indoor air; discuss what we propose to do next and the need for sampling access; answer their questions.

During the building visit, Ecology and the responsible party will need to be prepared for questions the occupants may have regarding potential short-term (and long-term) TCE health effects and how to reduce their exposures. Decisions should be made during the planning period (described in Section 5.3) about how and when this information should be provided, and who should communicate it.

Ecology staff are expected to only answer the most basic health-related VI questions. In general, the public should routinely be referred to local health departments or family physicians for the answers to questions that require toxicological or medical expertise.

Washington's state and local health departments are generally more familiar with local communities and their concerns than Ecology site management staff. Health departments also have more expertise at conveying health-related information. If women of childbearing age are potentially exposed to site-related TCE contamination, it is recommended that site managers and

[21] As noted in Section 5.2, this memorandum assumes Ecology will be involved throughout the VI evaluation process. When this is not the case, parties performing the site investigation and cleanup should independently complete the recommended steps outlined in this memorandum.

the responsible party rapidly coordinate with state/local health departments. These agencies can better explain potential health hazards to building occupants and/or help gain access to buildings for investigation and remediation if needed. If Ecology has assigned a Community Outreach and Environmental Education Specialist (COEES) to the site, the site manager should additionally confer with this individual during the pre-sampling period.[22]

Before any indoor air sampling can occur, the party performing that sampling must obtain the owner's/tenant's consent.[23] Typically during VI investigations, this consent is documented in an "access agreement," which also usually specifies the conditions under which access is granted. Finalizing an access agreement can occasionally be a lengthy process for various reasons. Sometimes it is difficult to make timely contact with the building owner or tenant. Sometimes the owner will elect to get the advice of legal counsel before entering into an agreement. There can be protracted negotiations regarding considerations such as access-related payment, or other site-specific issues. While securing access is normally the duty of the responsible party, Ecology may become involved with disputes or delays when the health threat relates to a short-term exposure to site contamination. The parties must realize that Ecology will make best efforts, including—if needed—exercising its legal authorities, to ensure access agreements are finalized as soon as possible.

7.2. Outreach after indoor air sampling

Indoor air sampling results, together with other lines of evidence, should indicate whether VI is causing an exceedance of the TCE short-term indoor air action level. Once the indoor air sampling data have been received from the laboratory (assuming no "real time" sampling was performed), the responsible party and Ecology should 1) discuss the results, 2) make a preliminary decision as to whether VI is likely to be resulting in a TCE short-term action level exceedance, 3) agree on next steps, and then 4) contact the building owner/tenant.

As discussed in Section 5.4, when women of childbearing age are current occupants of the building, this decision-making and outreach process should begin as soon as the data are initially received, without waiting for data quality assessment. In these cases the goal should be to quickly determine the likelihood of a TCE short-term indoor air action level exceedance and then inform building owners/tenants of the sampling results. Unless owners, tenants, and other

[22] Ecology's COEESs are typically not assigned to independent cleanup sites, including those in the Voluntary Cleanup Program (VCP). However, if a COEES has been assigned to a site where VI is causing, or may potentially result in, indoor TCE concentrations above the short-term action level, their assistance can improve communications with the owners, tenants, and occupants of the affected buildings (as well as other members of the concerned public).

[23] With limited exceptions, such as emergency situations.

concerned building occupants would prefer to wait until the quality of sampling data has been rigorously assessed and validated, they should be notified of sampling results soon after the results arrive from the laboratory.[24]

The responsible party and/or Ecology should tell the building owner/tenant what the sampling results indicate and what (at that time) the next steps should be. During this discussion, it is important to:

1. Explain how we have reached our conclusions.

2. Honestly differentiate between what is known (e.g., the results from this single sampling event), what we have inferred from the information we have collected, and what is not known, and

3. Urge the owner/tenant to share and explain these results–as well as plans for follow-up actions–with concerned building occupants. This includes all women of child-bearing age who live or work in affected portions of the building.

Coordinating with the site's assigned COEES and state/local health departments is critical at this stage and can improve the effectiveness of these communications.

If sampling data indicate that VI is likely to be causing an exceedance of the TCE short-term indoor air action level, and if a woman of childbearing age is a building occupant, the proper response should be quickly determined in consultation with the building's owner (and tenant, if applicable). Section 6.0 of this memo refers to various response actions that may apply. The selected action will depend on a number of building-specific factors, such as how high the indoor air TCE concentrations appear to be, and the preferences of the building's owner/tenant and receptors of concern. Promptly reaching, and carrying out, a mutually acceptable decision may require the involvement of state/local health departments.

If measured levels of indoor air TCE are below the action level, however, the next proposed step may simply be to schedule a re-sampling event for the future.[25]

[24] When the data are shared this quickly, the building occupants should be informed of the possibility that the implications of the sampling results could change following evaluation of the data quality. Should this occur, the owner/tenant would then be immediately notified by the responsible party and/or Ecology.

[25] Typically, a sampling report is prepared after the data have been quality assured (QA'ed) and validated. A copy of the report, and a copy of any Ecology response letter(s), should usually be provided to the building owner/tenant.

8.0 References

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Attachment A

Response to comments on the November 18, 2018, review draft of Implementation Memo No. 22: *Vapor Intrusion (VI) Investigations and Short-term Trichloroethene (TCE) Toxicity*

A public comment period was held from November 21, 2018, through January 7, 2019, for the review draft of this document. The comments received during that period helped inform modifications made to the final version of the document (dated October 1, 2019) and are summarized below. A number of editorial changes were also made to the review draft that are not reflected in this response to comments document.

1. Comments regarding the Environmental Protection Agency's (USEPA's) 2014 Memorandum: *Compilation of Information Relating to Early/Interim Actions at Superfund Sites and the TCE IRIS Assessment*, and the discussion of short-term inhalation exposures to TCE in Section 3 of Ecology's Implementation Memorandum 22. In particular, a commenter suggested clarifying in the third-to-last paragraph of this Section that the reference to EPA's 2014 Memorandum has limited applicability to certain statements made in later portions of the paragraph.

Response – To better distinguish the citation to EPA's 2014 Memorandum and that document's content from later statements in the paragraph, Ecology has made changes to the language in this part of Section 3.0, and removed the last sentence contained in the draft version of the third-to-last paragraph.

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2. Comments regarding Section 4 of Implementation Memorandum No. 22, and in particular:

a. The use of different default exposure assumptions–and different screening values–than used by EPA Region 9; and
b. Distinguishing between receptors of concern (women of child-bearing age versus the developing fetus).

Response – Implementation Memorandum No. 22's indoor air TCE action levels, listed in Table 1 of the document, are based the assumptions that a woman carrying a developing fetus could be exposed to indoor air TCE concentrations:

a) In a home for 24-hours per day, every day of the week throughout the year; and,
b) In the workplace for 45-hours per week, 260 days per year.

EPA Region 10's December 13, 2012, Memorandum, which served in part for the action levels we selected, recommends levels of 2 µg/m3 for residential settings and 8.4 µg/m3 for commercial/industrial settings. Ecology chose the same residential value for Implementation Memorandum 22. For the commercial/industrial action level, however, we opted to assume an additional five hours of weekly exposure. For this reason our commercial/industrial action level (7.5 µg/m3) is 12.5% lower than Region 10's corresponding level.

The commenter is correct that when Implementation Memorandum No. 22 refers in Section 4.1 to the protection of women of childbearing age against unacceptable short-term TCE exposures, our concern is for the developing fetus. The short-term action level concentrations cannot be assumed to be sufficiently protective of the woman herself. Ecology has therefore made changes to the third-to-last and second-to-last paragraphs of Section 4.1 to better clarify the action levels' applicability.

Since the close of the public comment period, other changes were made to Implementation Memorandum No. 22 based on comments received from Seattle & King County Public Health and Ecology's Toxics Cleanup Program. Among the substantive changes:

(1) Language was added to Section 3.0 to clarify that the "focus on women of childbearing age" includes pregnant women; and

(2) Language was added to Section 1.0 – similar to the statements in Section 5.2 – noting that when Ecology is not directly involved in the management of a cleanup site where TCE is a contaminant of concern, the parties performing the site investigation and cleanup should independently perform the Memorandum's recommended steps; and

(3) Language was added to Section 7.0 noting that Ecology's Community Outreach and Environmental Education Specialists (COEESs) are typically not assigned to independent cleanup sites, including those in the Voluntary Cleanup Program (VCP).