September 8, 2014

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PROJECT NO: 211346




SUPPLEMENTAL SOIL GAS AND INDOOR AIR SAMPLING WORKPLAN

FORMER BELL CLEANERS
1534 Park Street
Alameda, California

Prepared by: BONKOWSKI & ASSOCIATES, INC.

BONKOWSKI & ASSOCIATES, INC.

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BONKOWSKI & ASSOCIATES, INC.

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1534 Park Street,
Alameda, California

1.0 INTRODUCTION

This Work Plan addresses the technical directive issued by the Alameda County Department of Environmental Health (County) dated 5 August 2014 which prescribes supplemental environmental investigations of the former Bell Cleaners, Luque's Upholstery Shop and Genghis Kahn Kitchen, at 1532 to 1540 Park Street, in Alameda, California (Figure 1). Collectively referred to as the Site, a plan map is provided as Figure 2. Previous investigations of the Site (AEI, 23 August 2011; BAI, 7 January 2014) have identified low concentrations of PCE and TCE in indoor air, and PCE in subsurface soil, sub-slab vapor and groundwater samples. The directive requires the von Wittenau Family Trust to further evaluate the nature of sub-slab and indoor air quality beneath the Site, and subsequently conduct investigations of soil vapor, soil and groundwater (as necessary) to help identify sources. Finally, the County has requested that the report incorporate recently developed DTSC (HHRA Note 3, July 2014) IUR's and the US EPA Regional Screening Level (RSL) RfCs into indoor air risk assessment calculations, while conducting a sensitivity analysis. These analyses have been performed on all indoor air chemical test data collected from the Site to date. They are summarized in Table 1 and provided in Tables A1 thru Table A10 (Appendix A).

The County directive prescribes the collection of additional sub slab vapor samples beneath the Site, while simultaneously collecting indoor air samples for the purposes of evaluating an attenuation factor for the floor. Subsequent soil, soil vapor and groundwater samples will be collected and tested to assess the impacts to groundwater beneath the Site, after the sub-slab vapor and indoor air sampling work has been performed. The technical rationale specified in the Revisions to the Site Investigation Work Plan, 1534 Park Street, Alameda, California (BAI, 20 August 2012) and amended in the Draft Site Investigation Work Plan (BAI, January 2014), will form the basis for this work. An addendum modifying the Draft Site Investigation Work Plan, if needed, will be provided to the County within 30 days of completion of the sub-slab and indoor air investigations described below.

1.1 Site History

On 4 August 2011, AEI on behalf of the Bank of East Asia, advanced a total of four (4) GeoProbe borings (SB-1 through SB-4) in the former Bell Cleaners suite located at 1534 Park Street for the purpose of collecting soil and groundwater samples for chemical testing (Figure 2). The borings were advanced to a total depth of 16 feet and were continuously cored using a GeoProbe MacroCore® sampler. Soils encountered beneath the Site consisted of fine to medium grained poorly graded sand and sandy silts. Groundwater was encountered at depths ranging from 11.79 to 13.15 feet. Soil and grab groundwater samples collected from the borings were tested for VOCs using EPA Method 8260 by McCampbell Analytical in Pittsburg, California. Tetrachloroethene (PCE) was reported in samples collected from SB-1 through SB-4 at concentrations of 0.10 mg/kg, 5.5 mg/kg, 0.23 mg/kg and 0.50 mg/kg, respectively. 1,2,4-Tri-methylbenzene was reported at a concentration of 0.023 mg/kg in SB-3, but was ND in all remaining samples. No other VOCs were reported.

Grab groundwater samples from these borings contained from 8.2 µg/l to 16 µg/l PCE. Tert-Butyl Alcohol (TBA) was also identified in groundwater samples collected from beneath this suite. The concentration ranged from 2.2 µg/l to 10 µg/l. No other VOCs were reported. The area is zoned community

commercial, and shallow groundwater beneath the Site is not a current or anticipated future domestic supply source (ARCADIS, 2011).

In November 2013, following a County directive dated 23 August 2013, BAI conducted a sub-slab vapor survey of the former Bell Cleaners suite. A total of six sub slab samples were collected, in close proximity to locations approved by the County. All of the sub-slab vapor samples contained PCE, at concentrations ranging from 18,000 to 320,000 $\mu g/m^3$. No other VOCs were reported.

In January 2014, BAI collected indoor air samples for chemical testing following the County email directive dated 9 January 2014. Air samples were collected from within the three suites at the Site, but also included samples collected from the emergency egress hallway between 1534 and 1540 Park Street, and at two locations on the roof of the building (Figure 2). The sample containers were regulated to collect a 6-liter sample over an 8-hour period between the times of 1100 and 1900 hours. These are normal working hours for businesses located on the Site. All of the air samples contained both PCE and TCE, including samples collected on the roof. The concentration of PCE ranged from 0.15 to 19 $\mu g/m^3$. The concentration of TCE ranged from 0.20 to 640 $\mu g/m^3$ (Table 2). The lowest concentrations were measured from samples collected from the roof, the highest concentrations were measured from samples collected within Luque's Upholstery Shop (1532 Park Street).

Confirmation indoor air samples were collected from the Luque's Upholstery Shop on 25 and 26 April 2014. One 8-hour sample was collected on April 25th, a normal business day, between the hours of 0800 and 1600. A subsequent 24-hour sample was collected after business hours, beginning at 1523 hours on April 25th. The business was closed during this 24-hour sample collection period. The 8-hour air sample contained 17 $\mu g/m^3$ of PCE and 41 $\mu g/m^3$ of TCE. The 24-hour sample contained 11 $\mu g/m^3$ of PCE and 19 $\mu g/m^3$ of TCE. These results suggest that the upholstery business practice itself maybe a source of TCE in indoor air. No subsurface samples collected from beneath the former dry cleaners to this date, contain TCE.

1.2 Purpose of the Work Plan

On 5 August 2014 the County directed the von Wittenau Trust to further investigate the source and occurrence of TCE and PCE beneath the Site (Appendix B). The basis of the directive is that low concentrations of PCE and TCE within indoor air exceed DTSC (2011) risk and HQ thresholds. Citing recent changes discussed in DTSC HHRA Note Number 3 (14 July 2014) and EPA Region 9 Action Levels for TCE (9 July 2014) for Superfund and NPL Sites, which use IUR values and the 2012 USEPA RSL tables, the indoor air and sub-slab tasks of this directive prescribe that the von Wittenau Trust: 1) install permanent sub-slab probes in three tenant spaces; and 2) collect indoor air samples and sub-slab samples simultaneously in order to evaluate an attenuation factor over the slab and assess whether indoor air pollutant are skewing results in the upholstery shop.

This work plan is based upon the results of analyses previously submitted, including the Phase II Subsurface Investigation Report (AEI, August 2011); Preferential Pathway Survey (BAI, July 2012); Conceptual Site Model (BAI, February 2013); Sub-slab Vapor Sampling Report (BAI, January 2014); Indoor Air Sampling Report (BAI, April 2014) and Supplemental Indoor Air Sampling Letter Report (BAI, May 2014). The technical approach described herein has been developed in consideration of this information in telephone communications with the County and DTSC.

1.3 Organization of the Work Plan

This work plan prescribes an investigation to further evaluate the nature of indoor air and sub- slab vapor concentrations beneath the Site. Included is a description of the field methods that will be used to sample sub-slab vapor and indoor air from within each suite at the Site (Section 2.0), Data Analysis and Reporting (Section 3), Health & Safety Plan and Access Agreements, (Section 4), Schedule (Section 5), Certifications (Section 6), and References (Section 7). The work plan does not address the implementation of Corrective Measures, nor does it elaborate or expand upon soil, soil vapor and groundwater sample collection methods described in the Draft Site Investigation Work Plan (BAI, January 2014).

2.0 FIELD METHODS

The planned work includes sub-slab vapor and Indoor air sampling in each of the suites to allow the County to evaluate the attenuation factor of the floor, assess the extent of VOCs in sub-slab materials; and further evaluate the risk of exposure to VOCs in indoor air. The work elements required to complete these tasks are described below.

Task 1. Sub-slab Vapor Sampling

Sub-slab soil vapor samples (SV-7 thru SV-10) will be collected from the locations shown in Figure 3. The samples will be collected near the end of the business day on a Friday, or a Saturday morning when the businesses are closed; within fill lithologies through stainless steel Vapor Pin™ probes advanced to a depth of about 2 inches beneath the existing concrete slab at each location. The sample locations were selected on the basis of their proximity to either known or suspected sources of PCE releases, or adjacent to previously collected air samples which contained high concentrations of TCE. Specific sample technical rationale are summarized as follows:

Sample	Technical Rationale
SV-7	To identify sub-slab vapor quality adjacent to indoor air sample A-4 in Genghis Kahn Kitchen. A-4 showed low concentrations of PCE and TCE.
SV-8	To identify sub-slab vapor quality adjacent to indoor air sample A-2 and former Bell Cleaners dry cleaning Machine, and previous sub-slab samples SV-5A and SV-5B. These samples contained up to 320,000 $\mu g/m^3$ of PCE. A-2 contained 34 $\mu g/m^3$ of TCE and 4.6 $\mu g/m^3$ PCE.
SV-9	To identify sub-slab vapor quality near the A-3 wall in Luque's Upholstery Shop. Sample contained 640 $\mu g/m^3$ of TCE and 19 $\mu g/m^3$ PCE
SV-10	To identify sub-slab vapor quality adjacent to indoor air samples A-7 and A-8 in Luque's Upholstery Shop. 8-hour sample A-8 contained 41 $\mu g/m^3$ TCE and 17 $\mu g/m^3$ PCE.

Prior to collecting samples, an electric hammer drill will be used to advance a 1.5-inch diameter hole 2-inches into the concrete floor slab. A 5/8-inch diameter hole will be cut through the center of the 1.5-inch hole. The Vapor Pin™ with an extension and sieve will be hammered into the 5/8-inch diameter hole below the level of the floor with the screen 2 inches into the slab backfill, and sealed with a silicon sleeve. The assembly will be completed with a threaded flush mount stainless steel secured cover. Cox-Colvin's Standard Operating Procedure Installation and Extraction of the Vapor Pin (December 3, 2103); Standard Procedure for Leak Testing Vapor Pin via Mechanical Means (December 3, 2013), and Standard Operating

Procedure Use of the Vapor Pin Drilling Guide and Secure Cover (December 3, 2013) are provided in Appendix C.

Leak and shut-in testing and sampling will be conducted in accordance with the DTSC *2012 Advisory – Active Soil Gas Investigations* (March 2013). The Vapor Pin™ assembly will be allowed to equilibrate 2 hours prior to leak testing and sampling. A 15-inch Hg vacuum will then be applied to the sample train to ensure that it can hold a vacuum for 1 to 5 minutes with no more than 0.5 in Hg loss of vacuum. The sample will be collected through the Vapor Pin™, after it has been attached to the assembly and purged three pin volumes at a rate of about 0.2 l/min. The samples will be collected directly into 1-liter SUMMA canisters. One duplicate sample will be collected from SV-8 per DTSC guidance. The samples will be collected from least to most contaminated, in the order of SV-7, SV-9, SV-10 and SV-8.

Sub-slab Vapor samples will be delivered under chain-of-custody to McCampbell Analytical in Pittsburg, California for chemical testing. The samples will be analyzed for PCE, TCE, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride using EPA method TO-15. Copies of the chemical test results will be provided to the County within 10 days of their receipt from the lab.

Task 2. Indoor Air Sampling

BAI will collect a total of three individual air samples from locations A-9, A-10, and A-11 shown in Figure 3. The sample locations and intervals were discussed with the DTSC on 18 August 2014. The samples will be collected in individually certified 6-liter Summa® canisters obtained from McCampbell Analytical laboratory, pre-set for 8-hour sample (p. 29, DTSC, *Final Guidance For The Evaluation And Mitigation Of Subsurface Vapor Intrusion To Indoor Air (Vapor Intrusion Guidance)*, October 2011) collection. The samples will commence collection at the end of the business day on a Friday or Saturday morning, immediately after the corresponding sub-slab sample has been collected. For example, sample A-9 will be collected immediately after SV-7, A-10 after SV-8, and A-11 after SV-10. The sample containers will be sealed at the end of the sampling period, and transported under chain-of-custody to McCampbell Analytical in Pittsburg, California for chemical testing. The samples will be analyzed for PCE, TCE, 1,1-dichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride using EPA method TO-15.

3.0 DATA ANALYSIS AND REPORTING

A report will be prepared by BAI describing the findings and conclusions of the field investigation. The report will include a risk assessment for PCE and TCE vapor inhalation exposure for a range of exposure durations. The data will also be used to amend the technical approach described in the Site Investigation Work Plan and Draft Revised Work Plan for the Former Bell Cleaners, or recommend immediate Corrective Actions per DTSC guidance documents. Immediate Corrective actions, in the form of operating air purifying equipment, venting, or placement of a vapor barrier will be recommended if the indoor air concentrations exceed Urgent Response Actions Levels (USEPA, 9 July 2014). The subsurface investigations described in those work plans will be amended within 30 days of receipt of laboratory data from this investigation.

4.0 H&S PLAN AND SITE ACCESS AGREEMENTS

BAI has an excellent health and safety training and monitoring program. BAI will prepare a Site Health and Safety Plan prior to conducting any fieldwork. The Health and Safety Plan will address 29 Code of Federal Regulations (CFR) 1910.120 requirements regarding basic 40-hour health and safety training, supervisor training and annual refresher training. The work will be performed in Level D protection,

unless field conditions otherwise warrant. Site access agreements will be requested from the building owners of the three suites where this work will be conducted.

5.0 SCHEDULE

All work described herein, including preparation of a report describing the results of the sub-slab and indoor air sampling work are schedule for completion within 60 days of the approval of this work by the County. The schedule assumes that the work can proceed in the business suites after hours or on a weekend.

6.0 CERTIFICATIONS

This Work Plan has been prepared by the staff of Bonkowski & Associates, Inc., and has been reviewed and approved by the professional seal and signature appears heron. The findings, recommendations, specifications, or professional opinions are presented, within the limits prescribed by the County, after being prepared in accordance with generally accepted professional environmental geology practice in Northern California at the time this Work Plan was prepared. No other warranty is either expressed or implied.

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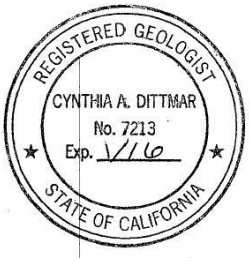

7.0 REFERENCES

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Dilan Roe, Alameda County Environmental Health, e-mail directive, 5 August 2014

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United States Environmental Protection Agency, Region 9, *Regional Screening Levels*, November 2013

BONKOWSKI & ASSOCIATES, INC.

TABLES

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A1	Site Visitor	1 Visit	Luque's	8	Off	1/30/2014	A3	1	1	70	30	0.25	PCE	19	4.57E-11	1.12E-09	5.16E-07	3.05E-04
													TCE	640	1.07E-09		3.04E-04	
				8	Off	4/25/2014	A8	1	1	70	30	0.25	PCE	17	4.09E-11	1.09E-10	4.62E-07	2.00E-05
													TCE	41	6.85E-11		1.95E-05	
				24	Off	4/25/2014	A7	1	1	70	30	0.25	PCE	11	2.65E-11	5.82E-11	2.99E-07	9.34E-06
													TCE	19	3.18E-11		9.04E-06	
			Bell Cleaners	8	Off	1/30/2014	A2	1	1	70	30	0.25	PCE	4.6	1.11E-11	6.79E-11	1.25E-07	1.63E-05
													TCE	34	5.68E-11		1.62E-05	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	1	1	70	30	0.25	PCE	7.6	1.83E-11	3.17E-11	2.07E-07	4.01E-06
													TCE	8.0	1.34E-11		3.81E-06	
A1	Site Visitor	1 Visit	Luque's	8	Off	1/30/2014	A3	1	1	70	30	1	PCE	19	1.83E-10	4.46E-09	2.07E-06	1.22E-03
													TCE	640	4.28E-09		1.22E-03	
				8	Off	4/25/2014	A8	1	1	70	30	1	PCE	17	1.64E-10	4.38E-10	1.85E-06	7.99E-05
													TCE	41	2.74E-10		7.80E-05	
				24	Off	4/25/2014	A7	1	1	70	30	1	PCE	11	1.06E-10	2.33E-10	1.20E-06	3.73E-05
													TCE	19	1.27E-10		3.61E-05	
			Bell Cleaners	8	Off	1/30/2014	A2	1	1	70	30	1	PCE	4.6	4.43E-11	2.71E-10	5.00E-07	6.52E-05
													TCE	34	2.27E-10		6.47E-05	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	1	1	70	30	1	PCE	7.6	7.31E-11	1.27E-10	8.26E-07	1.60E-05
													TCE	8.0	5.35E-11		1.52E-05	

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Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A2	Site Visitor	1 Visit Per Year for 5 Years	Luque's	8	Off	1/30/2014	A3	1	5	70	30	0.25	PCE	19	2.29E-10	5.58E-09	2.58E-06	1.52E-03
													TCE	640	5.35E-09		1.52E-03	
				8	Off	4/25/2014	A8	1	5	70	30	0.25	PCE	17	2.04E-10	5.47E-10	2.31E-06	9.98E-05
													TCE	41	3.43E-10		9.75E-05	
				24	Off	4/25/2014	A7	1	5	70	30	0.25	PCE	11	1.32E-10	2.91E-10	1.49E-06	4.67E-05
													TCE	19	1.59E-10		4.52E-05	
			Bell Cleaners	8	Off	1/30/2014	A2	1	5	70	30	0.25	PCE	4.6	5.53E-11	3.39E-10	6.25E-07	8.15E-05
													TCE	34	2.84E-10		8.09E-05	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	1	5	70	30	0.25	PCE	7.6	9.14E-11	1.58E-10	1.03E-06	2.01E-05
													TCE	8.0	6.69E-11		1.90E-05	
A2	Site Visitor	1 Visit Per Year for 5 Years	Luque's	8	Off	1/30/2014	A3	1	5	70	30	1	PCE	19	9.14E-10	2.23E-08	1.03E-05	6.10E-03
													TCE	640	2.14E-08		6.09E-03	
				8	Off	4/25/2014	A8	1	5	70	30	1	PCE	17	8.18E-10	2.19E-09	9.24E-06	3.99E-04
													TCE	41	1.37E-09		3.90E-04	
				24	Off	4/25/2014	A7	1	5	70	30	1	PCE	11	5.29E-10	1.16E-09	5.98E-06	1.87E-04
													TCE	19	6.35E-10		1.81E-04	
			Bell Cleaners	8	Off	1/30/2014	A2	1	5	70	30	1	PCE	4.6	2.21E-10	1.36E-09	2.50E-06	3.26E-04
													TCE	34	1.14E-09		3.23E-04	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	1	5	70	30	1	PCE	7.6	3.66E-10	6.33E-10	4.13E-06	8.02E-05
													TCE	8.0	2.67E-10		7.61E-05	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
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Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A3	Site Visitor	1 Visit Per Year for 10 Years	Luque's	8	Off	1/30/2014	A3	1	10	70	30	0.25	PCE	19	4.57E-10	1.12E-08	5.16E-06	3.05E-03
													TCE	640	1.07E-08		3.04E-03	
				8	Off	4/25/2014	A8	1	10	70	30	0.25	PCE	17	4.06E-10	1.09E-09	4.62E-06	2.00E-04
													TCE	41	6.85E-10		1.95E-04	
				24	Off	4/25/2014	A7	1	10	70	30	0.25	PCE	11	2.65E-10	5.82E-10	2.99E-06	9.34E-05
													TCE	19	3.18E-10		9.04E-05	
			Bell Cleaners	8	Off	1/30/2014	A2	1	10	70	30	0.25	PCE	4.6	1.11E-10	6.79E-10	1.25E-06	1.63E-04
													TCE	34	5.68E-10		1.62E-04	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	1	10	70	30	0.25	PCE	7.6	1.83E-10	3.17E-10	2.07E-06	4.01E-05
													TCE	8.0	1.34E-10		3.81E-05	
A3	Site Visitor	1 Visit Per Year for 10 Years	Luque's	8	Off	1/30/2014	A3	1	10	70	30	1	PCE	19	1.83E-09	4.46E-08	2.07E-05	1.22E-02
													TCE	640	4.28E-08		1.22E-02	
				8	Off	4/25/2014	A8	1	10	70	30	1	PCE	17	1.64E-09	4.38E-09	1.85E-05	7.99E-04
													TCE	41	2.74E-09		7.80E-04	
				24	Off	4/25/2014	A7	1	10	70	30	1	PCE	11	1.06E-09	2.33E-09	1.20E-05	3.73E-04
													TCE	19	1.27E-09		3.61E-04	
			Bell Cleaners	8	Off	1/30/2014	A2	1	10	70	30	1	PCE	4.6	4.43E-10	2.72E-09	5.00E-06	6.52E-04
													TCE	34	2.27E-09		6.47E-04	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	1	10	70	30	1	PCE	7.6	7.31E-10	1.27E-09	8.26E-06	1.60E-04
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Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A4	Site Visitor	1 Visit Per Week for 1 Years	Luque's	8	Off	1/30/2014	A3	52	1	70	30	0.25	PCE	19	2.38E-09	5.80E-08	2.69E-05	1.59E-02
													TCE	640	5.56E-08		1.58E-02	
				8	Off	4/25/2014	A8	52	1	70	30	0.25	PCE	17	2.13E-09	5.69E-09	2.40E-05	1.04E-03
													TCE	41	3.56E-09		1.01E-03	
				24	Off	4/25/2014	A7	52	1	70	30	0.25	PCE	11	1.38E-09	3.03E-09	1.55E-05	4.85E-04
													TCE	19	1.65E-09		4.70E-04	
			Bell Cleaners	8	Off	1/30/2014	A2	52	1	70	30	0.25	PCE	4.6	5.75E-10	3.53E-09	6.50E-06	8.48E-04
													TCE	34	2.96E-09		8.41E-04	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	52	1	70	30	0.25	PCE	7.6	9.51E-10	1.65E-09	1.07E-05	2.09E-04
													TCE	8.0	6.95E-10		1.98E-04	
A4	Site Visitor	1 Visit Per Year for 1 Years	Luque's	8	Off	1/30/2014	A3	52	1	70	30	1	PCE	19	9.51E-09	2.32E-07	1.07E-04	6.34E-02
													TCE	640	2.23E-07		6.33E-02	
				8	Off	4/25/2014	A8	52	1	70	30	1	PCE	17	8.51E-09	2.28E-08	9.61E-05	4.15E-03
													TCE	41	1.43E-08		4.06E-03	
				24	Off	4/25/2014	A7	52	1	70	30	1	PCE	11	5.50E-09	1.21E-08	6.22E-05	1.94E-03
													TCE	19	6.61E-09		1.88E-03	
			Bell Cleaners	8	Off	1/30/2014	A2	52	1	70	30	1	PCE	4.6	2.30E-09	1.41E-08	2.60E-05	3.39E-03
													TCE	34	1.18E-08		3.36E-03	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	52	1	70	30	1	PCE	7.6	3.80E-09	6.58E-09	4.30E-05	8.34E-04
													TCE	8.0	2.78E-09		7.91E-04	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A5	Site Visitor	1 Visit Per Week for 5 Years	Luque's	8	Off	1/30/2014	A3	52	5	70	30	0.25	PCE	19	1.19E-08	2.90E-07	1.34E-04	7.93E-02
													TCE	640	2.78E-07		7.91E-02	
				8	Off	4/25/2014	A8	52	5	70	30	0.25	PCE	17	1.06E-08	2.85E-08	1.20E-04	5.19E-03
													TCE	41	1.78E-08		5.07E-03	
				24	Off	4/25/2014	A7	52	5	70	30	0.25	PCE	11	6.88E-09	1.51E-08	7.77E-05	2.43E-03
													TCE	19	8.26E-09		2.35E-03	
			Bell Cleaners	8	Off	1/30/2014	A2	52	5	70	30	0.25	PCE	4.6	2.88E-09	1.77E-08	3.25E-05	4.24E-03
													TCE	34	1.48E-08		4.20E-03	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	52	5	70	30	0.25	PCE	7.6	4.75E-09	8.23E-09	5.37E-05	1.04E-03
													TCE	8.0	3.48E-09		9.89E-04	
A5	Site Visitor	1 Visit Per Year for 5 Years	Luque's	8	Off	1/30/2014	A3	52	5	70	30	1	PCE	19	4.75E-08	**1.16E-06**	5.37E-04	3.17E-01
													TCE	640	**1.11E-06**		3.17E-01	
				8	Off	4/25/2014	A8	52	5	70	30	1	PCE	17	4.25E-08	1.14E-07	4.81E-04	2.08E-02
													TCE	41	7.13E-08		2.03E-02	
				24	Off	4/25/2014	A7	52	5	70	30	1	PCE	11	2.75E-08	6.05E-08	3.11E-04	9.71E-03
													TCE	19	3.30E-08		9.40E-03	
			Bell Cleaners	8	Off	1/30/2014	A2	52	5	70	30	1	PCE	4.6	1.15E-08	7.06E-08	1.30E-04	1.69E-02
													TCE	34	5.91E-08		1.68E-02	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	52	5	70	30	1	PCE	7.6	1.90E-08	3.29E-08	2.15E-04	4.17E-03
													TCE	8.0	1.39E-08		3.96E-03	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A6	Site Visitor	1 Visit Per Week for 10 Years	Luque's	8	Off	1/30/2014	A3	52	10	70	30	0.25	PCE	19	2.38E-08	5.80E-07	2.69E-04	1.59E-01
													TCE	640	5.56E-07		1.58E-01	
				8	Off	4/25/2014	A8	52	10	70	30	0.25	PCE	17	2.13E-08	5.69E-08	2.40E-04	1.04E-02
													TCE	41	3.56E-08		1.01E-02	
				24	Off	4/25/2014	A7	52	10	70	30	0.25	PCE	11	1.38E-08	3.03E-08	1.55E-04	4.85E-03
													TCE	19	1.65E-08		4.70E-03	
			Bell Cleaners	8	Off	1/30/2014	A2	52	10	70	30	0.25	PCE	4.6	5.75E-09	3.54E-08	6.50E-05	8.47E-03
													TCE	34	2.96E-08		8.41E-03	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	52	10	70	30	0.25	PCE	7.6	9.51E-09	1.65E-08	1.07E-04	2.09E-03
													TCE	8.0	6.95E-09		1.98E-03	
A6	Site Visitor	1 Visit Per Year for 10 Years	Luque's	8	Off	1/30/2014	A3	52	10	70	30	1	PCE	19	9.51E-08	**2.32E-06**	1.07E-03	6.34E-01
													TCE	640	**2.23E-06**		6.33E-01	
				8	Off	4/25/2014	A8	52	10	70	30	1	PCE	17	8.51E-08	2.28E-07	9.61E-04	4.16E-02
													TCE	41	1.43E-07		4.06E-02	
				24	Off	4/25/2014	A7	52	10	70	30	1	PCE	11	5.50E-08	1.21E-07	6.22E-04	1.94E-02
													TCE	19	6.61E-08		1.88E-02	
			Bell Cleaners	8	Off	1/30/2014	A2	52	10	70	30	1	PCE	4.6	2.30E-08	1.41E-07	2.60E-04	3.39E-02
													TCE	34	1.18E-07		3.36E-02	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	52	10	70	30	1	PCE	7.6	3.80E-08	6.58E-08	4.30E-04	8.34E-03
													TCE	8.0	2.78E-08		7.91E-03	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A7	Site Worker	1 Year	Luque's	8	Off	1/30/2014	A3	260	1	70	30	8	PCE	19	3.80E-07	**9.28E-06**	4.30E-03	**2.54E+00**
													TCE	640	**8.90E-06**		**2.53E+00**	
				8	Off	4/25/2014	A8	260	1	70	30	8	PCE	17	3.40E-07	9.10E-07	3.84E-03	1.66E-01
													TCE	41	5.70E-07		1.62E-01	
				24	Off	4/25/2014	A7	260	1	70	30	8	PCE	11	2.20E-07	4.84E-07	1.24E-02	3.88E-01
													TCE	19	2.64E-07		3.76E-01	
			Bell Cleaners	8	Off	1/30/2014	A2	260	1	70	30	8	PCE	4.6	9.21E-08	5.65E-07	1.04E-03	1.36E-01
													TCE	34	4.73E-07		1.35E-01	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	1	70	30	8	PCE	7.6	1.52E-07	2.63E-07	1.72E-03	3.34E-02
													TCE	8.0	1.11E-07		3.17E-02	
A7	Site Worker	1 Year	Luque's	8	Off	1/30/2014	A3	260	1	70	30	10	PCE	19	4.75E-07	**1.16E-05**	5.37E-03	**3.17E+00**
													TCE	640	**1.11E-05**		**3.17E+00**	
				8	Off	4/25/2014	A8	260	1	70	30	10	PCE	17	4.25E-07	**1.14E-06**	4.81E-03	2.08E-01
													TCE	41	7.13E-07		2.03E-01	
				24	Off	4/25/2014	A7	260	1	70	30	10	PCE	11	2.75E-07	6.05E-07	1.55E-02	4.85E-01
													TCE	19	3.30E-07		4.70E-01	
			Bell Cleaners	8	Off	1/30/2014	A2	260	1	70	30	10	PCE	4.6	1.15E-07	7.06E-07	1.30E-03	1.69E-01
													TCE	34	5.91E-07		1.68E-01	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	1	70	30	10	PCE	7.6	1.90E-07	3.29E-07	2.15E-03	4.17E-02
													TCE	8.0	1.39E-07		3.96E-02	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A8	Site Worker	5 Years	Luque's	8	Off	1/30/2014	A3	260	5	70	30	8	PCE	19	**1.90E-06**	**4.64E-05**	2.15E-02	**1.27E+01**
													TCE	640	**4.45E-05**		**1.27E+01**	
				8	Off	4/25/2014	A8	260	5	70	30	8	PCE	17	**1.70E-06**	**4.55E-06**	1.92E-02	8.30E-01
													TCE	41	**2.85E-06**		8.11E-01	
				24	Off	4/25/2014	A7	260	5	70	30	8	PCE	11	**1.10E-06**	**2.42E-06**	1.24E-02	3.88E-01
													TCE	19	**1.32E-06**		3.76E-01	
			Bell Cleaners	8	Off	1/30/2014	A2	260	5	70	30	8	PCE	4.6	4.60E-07	**2.82E-06**	5.20E-03	6.78E-01
													TCE	34	**2.36E-06**		6.73E-01	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	5	70	30	8	PCE	7.6	7.60E-07	**1.32E-06**	8.59E-03	1.67E-01
													TCE	8.0	5.56E-07		1.58E-01	
A8	Site Worker	5 Years	Luque's	8	Off	1/30/2014	A3	260	5	70	30	10	PCE	19	**2.38E-06**	**5.80E-05**	2.69E-02	**1.59E+01**
													TCE	640	**5.56E-05**		**1.58E+01**	
				8	Off	4/25/2014	A8	260	5	70	30	10	PCE	17	**2.13E-06**	**5.69E-06**	2.40E-02	**1.04E+00**
													TCE	41	**3.56E-06**		**1.01E+00**	
				24	Off	4/25/2014	A7	260	5	70	30	10	PCE	11	**1.38E-06**	**3.03E-06**	1.55E-02	4.85E-01
													TCE	19	**1.65E-06**		4.70E-01	
			Bell Cleaners	8	Off	1/30/2014	A2	260	5	70	30	10	PCE	4.6	5.75E-07	**3.53E-06**	6.50E-03	8.47E-01
													TCE	34	**2.96E-06**		8.41E-01	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	5	70	30	10	PCE	7.6	9.51E-07	**1.65E-06**	1.07E-02	2.09E-01
													TCE	8.0	6.95E-07		1.98E-01	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A9	Site Worker	10 Years	Luque's	8	Off	1/30/2014	A3	260	10	70	30	8	PCE	19	**3.80E-06**	**9.28E-05**	4.30E-02	**2.54E+01**
													TCE	640	**8.90E-05**		**2.53E+01**	
				8	Off	4/25/2014	A8	260	10	70	30	8	PCE	17	**3.40E-06**	**9.10E-06**	3.84E-02	**1.66E+00**
													TCE	41	**5.70E-06**		**1.62E+00**	
				24	Off	4/25/2014	A7	260	10	70	30	8	PCE	11	**2.20E-06**	**4.84E-06**	2.49E-02	7.77E-01
													TCE	19	**2.64E-06**		7.52E-01	
			Bell Cleaners	8	Off	1/30/2014	A2	260	10	70	30	8	PCE	4.6	9.21E-07	**5.65E-06**	1.04E-02	**1.36E+00**
													TCE	34	**4.73E-06**		**1.35E+00**	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	10	70	30	8	PCE	7.6	**1.52E-06**	**2.63E-06**	1.72E-02	3.34E-01
													TCE	8.0	**1.11E-06**		3.17E-01	
A9	Site Worker	10 Years	Luque's	8	Off	1/30/2014	A3	260	10	70	30	10	PCE	19	**4.75E-06**	**1.16E-04**	5.37E-02	**3.17E+01**
													TCE	640	**1.11E-04**		**3.17E+01**	
				8	Off	4/25/2014	A8	260	10	70	30	10	PCE	17	**4.25E-06**	**1.14E-05**	4.81E-02	**2.08E+00**
													TCE	41	**7.13E-06**		**2.03E+00**	
				24	Off	4/25/2014	A7	260	10	70	30	10	PCE	11	**2.75E-06**	**6.05E-06**	3.11E-02	9.71E-01
													TCE	19	**3.30E-06**		9.40E-01	
			Bell Cleaners	8	Off	1/30/2014	A2	260	10	70	30	10	PCE	4.6	**1.15E-06**	**7.06E-06**	1.30E-02	**1.69E+00**
													TCE	34	**5.91E-06**		**1.68E+00**	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	10	70	30	10	PCE	7.6	**1.90E-06**	**3.29E-06**	2.15E-02	4.17E-01
													TCE	8.0	**1.39E-06**		3.96E-01	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
A10	Site Worker	20 Years	Luque's	8	Off	1/30/2014	A3	260	20	70	30	8	PCE	19	**7.60E-06**	**1.86E-04**	8.59E-02	**5.07E+01**
													TCE	640	**1.78E-04**		**5.07E+01**	
				8	Off	4/25/2014	A8	260	20	70	30	8	PCE	17	**6.80E-06**	**1.82E-05**	7.69E-02	**3.32E+00**
													TCE	41	**1.14E-05**		**3.25E+00**	
				24	Off	4/25/2014	A7	260	20	70	30	8	PCE	11	**4.40E-06**	**9.69E-06**	4.97E-02	**1.55E+00**
													TCE	19	**5.28E-06**		**1.50E+00**	
			Bell Cleaners	8	Off	1/30/2014	A2	260	20	70	30	8	PCE	4.6	**1.84E-06**	**1.13E-05**	2.08E-02	**2.71E+00**
													TCE	34	**9.46E-06**		**2.69E+00**	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	20	70	30	8	PCE	7.6	**3.04E-06**	**5.27E-06**	3.44E-02	6.68E-01
													TCE	8.0	**2.23E-06**		6.33E-01	
A10	Site Worker	20 Years	Luque's	8	Off	1/30/2014	A3	260	20	70	30	10	PCE	19	**9.51E-06**	**2.32E-04**	1.07E-01	**6.34E+01**
													TCE	640	**2.23E-04**		**6.33E+01**	
				8	Off	4/25/2014	A8	260	20	70	30	10	PCE	17	**8.51E-06**	**2.28E-05**	9.61E-02	**4.15E+00**
													TCE	41	**1.43E-05**		**4.06E+00**	
				24	Off	4/25/2014	A7	260	20	70	30	10	PCE	11	**5.50E-06**	**1.21E-05**	6.22E-02	**1.94E+00**
													TCE	19	**6.61E-06**		**1.88E+00**	
			Bell Cleaners	8	Off	1/30/2014	A2	260	20	70	30	10	PCE	4.6	**2.30E-06**	**1.41E-05**	2.60E-02	**3.39E+00**
													TCE	34	**1.18E-05**		**3.36E+00**	
			Genghis Kahn Kitchen	8	On	1/30/2014	A4	260	20	70	30	10	PCE	7.6	**3.80E-06**	**6.58E-06**	4.30E-02	8.34E-01
													TCE	8.0	**2.78E-06**		7.91E-01	

Table 1. Summary of Indoor Air Cancer Risk and Hazard Calculations (Tables A1 through A10)
1532 - 1540 Park Street, Alameda, California

Table No.	Receptor	Frequency of Exposure	Tenant Space	Sample Collection Duration (hours)	HVAC Status	Sample Date	Sample Number	EF	ED	ATc	ATnc	ET	Chemical	Concentration ($\mu g/m^3$)	ICR	CCR	HQ	HI
Acceptable Risk = 1.00E-6																		
Acceptable Hazard Index = 1									IUR	PCE	5.9E-6 $\mu g/m^3$		DTSC Human Health Risk Assessment Note, 14 July 2014					
C	Indoor Air Concentration									TCE	4.1E-6 $\mu g/m^3$		USEPA Regional Screening Levels, May 2013					
ET	Exposure time (hours per day)																	
EF	Exposure Frequency (days per year)								RfC	PCE	35 $\mu g/m^3$		DTSC Human Health Risk Assessment Note, 14 July 2014					
ED	Exposure duration									TCE	2.0 $\mu g/m^3$		USEPA Regional Screening Levels, November 2012					
AT_c	Period of time over which exposure is averaged - carcinogens (years)																	
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)																	

Table 2. Indoor Air Positive Chlorinated Hydrocarbon Concentrations 1534 Park Street, Alameda, California

Sample No.	Sample Container No.	PCE ($\mu g/m^3$)	TCE ($\mu g/m^3$)	Date
A-1	34000176	1.0	0.45	1/30/2014
A-2	34001592	**4.6**	**34**	1/30/2014
A-3	34000281	**19**	**640**	1/30/2014
A-4	34001242	**7.6**	**8.0**	1/30/2014
A-5	34002023	0.30	0.20	1/30/2014
A-6	34001307	0.15	0.43	1/30/2014
A-7	7790-937	**11**	**19**	4/25/2014
A-8	7787-934	**17**	**41**	4/25/2014

Industrial/Commercial		**8-hour**	**10-hr**
RSL[1]		8	7
RSL[2]		24	21
RSL[3]	2.08		

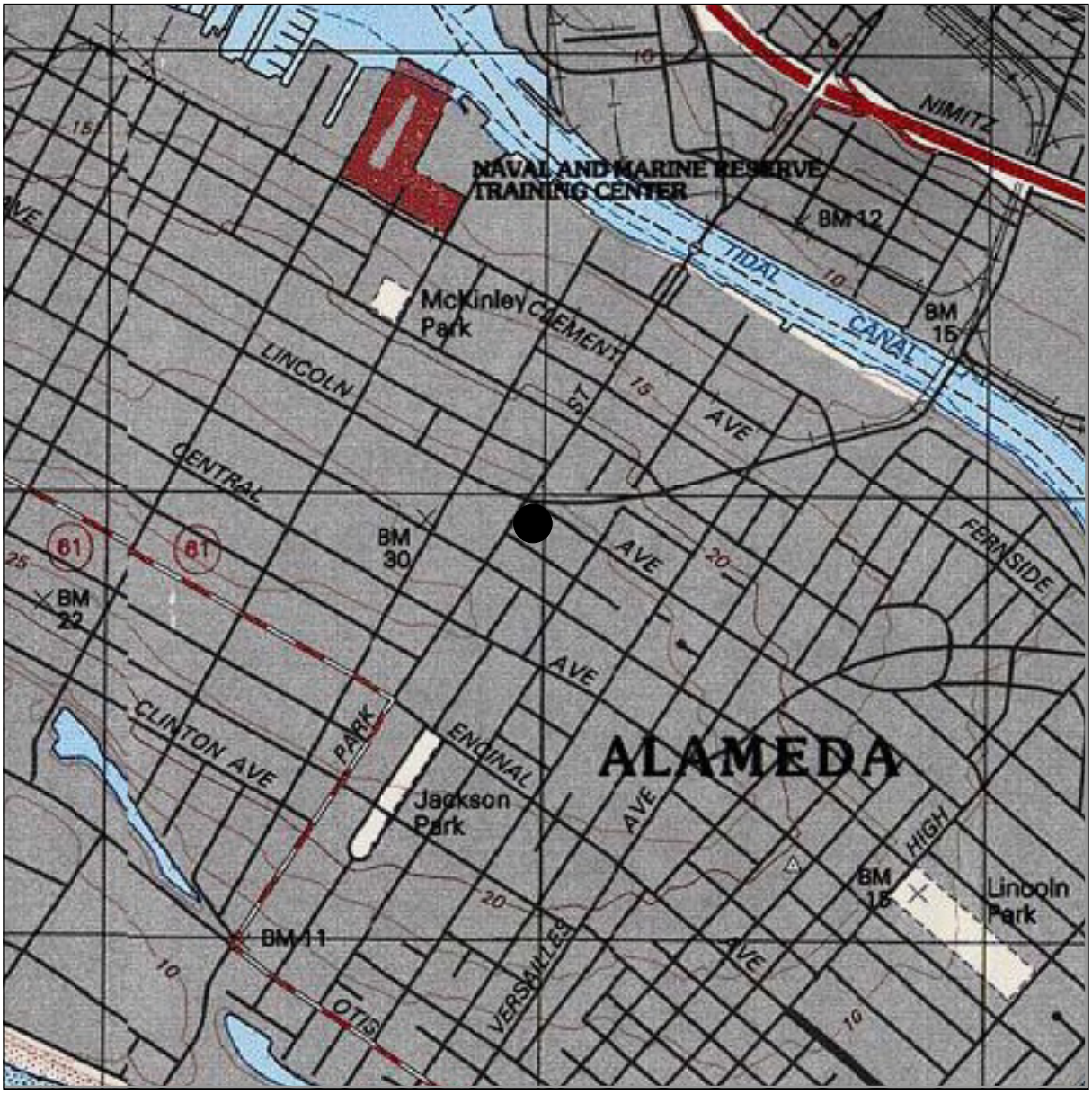
1 -- EPA Region 9 Interim TCE Indoor Air Response Action Level, Accelerated Respones Action Level, 7/11/14

2 -- EPA Region 9 Interim TCE Indoor Air Response Action Level, Urgent Response Action Level, 7/11/14

3 -- DTSC HHRA Note 3, 7/14/2014

BONKOWSKI & ASSOCIATES, INC.

FIGURES



Site Location

N

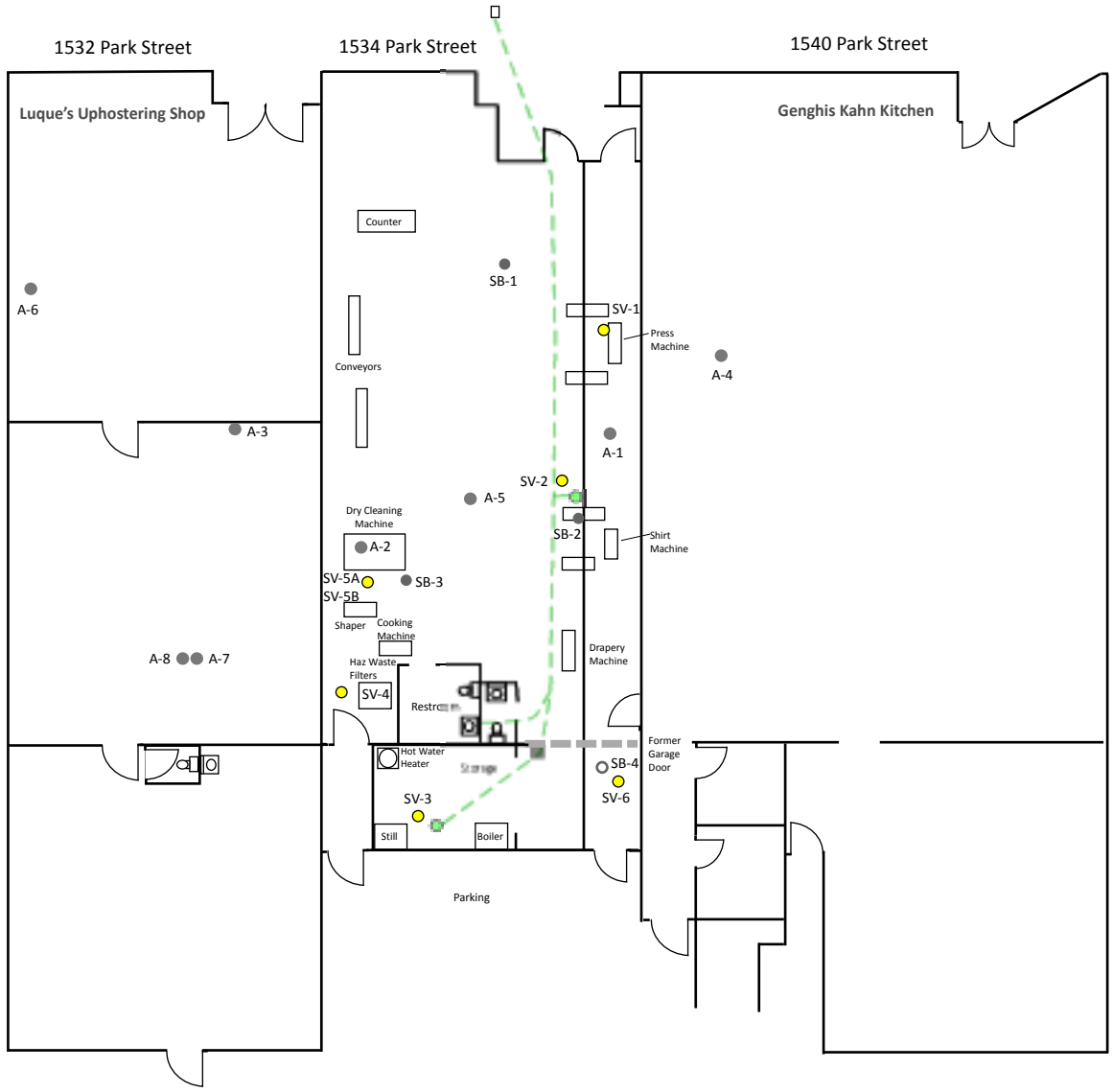
Approximate Scale (feet):

500 0 500 1000

Source: TOPO

Project No. E211346	1534 Park Street Alameda, California	SITE LOCATION	Figure 1
Bonkowski & Associates, Inc.			

PARK STREET



LEGEND

- A-1 Air Sample
- SV-3 Sub-Slab Vapor Sample
- SB-1 Soil/Groundwater Sample
- Floor Drain
- Sewer Cleanout
- Sewer Line
- Sewer Box

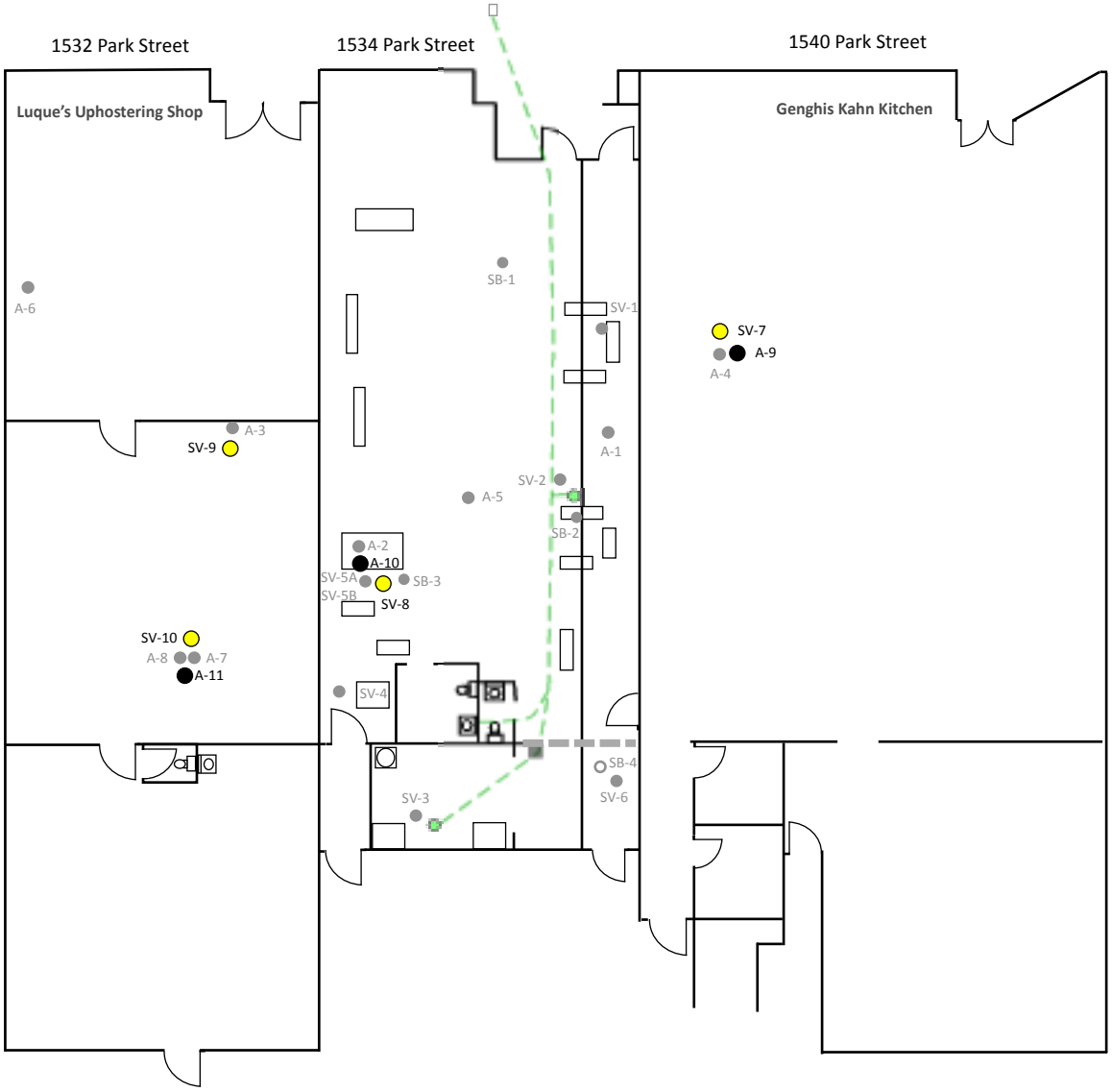
N

Approximate Scale (feet):

0 10 20

Project No. E211346	1534 Park Street Alameda, California	PLAN MAP	Figure 2
Bonkowski & Associates, Inc.			

PARK STREET



LEGEND

SV-7 ○ Planned Sub-Slab Sample

A-9 ● Planned Air Sample

Approximate Scale (feet):

0 10 20

Project No. E211346	1534 Park Street Alameda, California	PLANNED SAMPLE LOCATIONS	Figure 3
Bonkowski & Associates, Inc.			

BONKOWSKI & ASSOCIATES, INC.

APPENDIX A

CANCER RISK AND HAZARD ASSESSMENT

Table A1. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	1	1	70	8760	5.90E-06	0.25	7.75E-06	4.57E-11	1	3.10E-05	1.83E-10
TCE	640	1	1	70	8760	4.10E-06	0.25	2.61E-04	1.07E-09	1	1.04E-03	4.28E-09
							Cumulative Cancer Risk		1.12E-09			4.46E-09
1534 Park - Former Bell Cleaners												
PCE	4.6	1	1	70	8760	5.90E-06	0.25	1.88E-06	1.11E-11	1	7.50E-06	4.43E-11
TCE	34	1	1	70	8760	4.10E-06	0.25	1.39E-05	5.68E-11	1	5.54E-05	2.27E-10
							Cumulative Cancer Risk		6.79E-11			2.72E-10
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	1	1	70	8760	5.90E-06	0.25	3.10E-06	1.83E-11	1	1.24E-05	7.31E-11
TCE	8	1	1	70	8760	4.10E-06	0.25	3.26E-06	1.34E-11	1	1.30E-05	5.35E-11
							Cumulative Cancer Risk		3.17E-11			1.27E-10

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m^3: DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m^3: USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A1. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

$EC_{nc} = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_{nc} \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_{nc}	Conversion Factor	RfC	15 Minutes ET	15 Minutes EC_{nc}	15 Minutes Hazard Quotient	1 Hour ET	1 Hour EC_{nc}	1 Hour Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	1	1	30	8760	35	0.25	1.81E-05	5.16E-07	1	7.23E-05	2.07E-06
TCE	640	1	1	30	8760	2	0.25	6.09E-04	3.04E-04	1	2.44E-03	1.22E-03
								Hazard Index	3.05E-04			1.22E-03
1534 Park - Former Bell Cleaners												
PCE	4.6	1	1	30	8760	35	0.25	4.38E-06	1.25E-07	1	1.75E-05	5.00E-07
TCE	34	1	1	30	8760	2	0.25	3.23E-05	1.62E-05	1	1.29E-04	6.47E-05
								Hazard Index	1.63E-05			6.52E-05
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	1	1	30	8760	35	0.25	7.23E-06	2.07E-07	1	2.89E-05	8.26E-07
TCE	8	1	1	30	8760	2	0.25	7.61E-06	3.81E-06	1	3.04E-05	1.52E-05
								Hazard Index	4.01E-06			1.60E-05

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A1. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	1	1	70	8760	5.90E-06	0.25	6.93E-06	4.09E-11	1	2.77E-05	1.64E-10
TCE	41	1	1	70	8760	4.10E-06	0.25	1.67E-05	6.85E-11	1	6.69E-05	2.74E-10
							Cumulative Cancer Risk		1.09E-10			4.38E-10
24-hour Sample												
PCE	11	1	1	70	8760	5.90E-06	0.25	4.48E-06	2.65E-11	1	1.79E-05	1.06E-10
TCE	19	1	1	70	8760	4.10E-06	0.25	7.75E-06	3.18E-11	1	3.10E-05	1.27E-10
							Cumulative Cancer Risk		5.82E-11			2.33E-10

Table A1. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m^3	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m^3	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_c	Period of time over which exposure is averaged - carcinogens (years)				

1532 Park - Luque's Upholstry

8-hour Sampl	**C**	**EF**	**ED**	**AT_{nc}**	**Conversion Factor**	**RfC**	**ET**	**EC_{nc}**	**Quotient**	**ET**	**EC_{nc}**	**Quotient**
PCE	17	1	1	30	8760	35	0.25	1.62E-05	4.62E-07	1	6.47E-05	1.85E-06
TCE	41	1	1	30	8760	2	0.25	3.90E-05	1.95E-05	1	1.56E-04	7.80E-05
								Hazard Index	2.00E-05			7.99E-05
24-hour Sample												
PCE	11	1	1	30	8760	35	0.25	1.05E-05	2.99E-07	1	4.19E-05	1.20E-06
TCE	19	1	1	30	8760	2	0.25	1.81E-05	9.04E-06	1	7.23E-05	3.61E-05
								Hazard Index	9.34E-06			3.73E-05

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A2. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for Five Years

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	1	5	70	8760	5.90E-06	0.25	3.87E-05	2.29E-10	1	1.55E-04	9.14E-10
TCE	640	1	5	70	8760	4.10E-06	0.25	1.30E-03	5.35E-09	1	5.22E-03	2.14E-08
							Cumulative Cancer Risk		5.58E-09			2.23E-08
1534 Park - Former Bell Cleaners												
PCE	4.6	1	5	70	8760	5.90E-06	0.25	9.38E-06	5.53E-11	1	3.75E-05	2.21E-10
TCE	34	1	5	70	8760	4.10E-06	0.25	6.93E-05	2.84E-10	1	2.77E-04	1.14E-09
							Cumulative Cancer Risk		3.39E-10			1.36E-09
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	1	5	70	8760	5.90E-06	0.25	1.55E-05	9.14E-11	1	6.20E-05	3.66E-10
TCE	8	1	5	70	8760	4.10E-06	0.25	1.63E-05	6.69E-11	1	6.52E-05	2.67E-10
							Cumulative Cancer Risk		1.58E-10			6.33E-10

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 $\mu g/m^3$ DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 $\mu g/m^3$ USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A2. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for Five Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

	C	EF	ED	AT_{nc}	Conversion Factor	RfC	15 Minutes ET	15 Minutes EC_{nc}	15 Minutes Hazard Quotient	1 Hour ET	1 Hour EC_{nc}	1 Hour Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	1	5	30	8760	35	0.25	9.04E-05	2.58E-06	1	3.61E-04	1.03E-05
TCE	640	1	5	30	8760	2	0.25	3.04E-03	1.52E-03	1	1.22E-02	6.09E-03
								Hazard Index	1.52E-03			6.10E-03
1534 Park - Former Bell Cleaners												
PCE	4.6	1	5	30	8760	35	0.25	2.19E-05	6.25E-07	1	8.75E-05	2.50E-06
TCE	34	1	5	30	8760	2	0.25	1.62E-04	8.09E-05	1	6.47E-04	3.23E-04
								Hazard Index	8.15E-05			3.26E-04
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	1	5	30	8760	35	0.25	3.61E-05	1.03E-06	1	1.45E-04	4.13E-06
TCE	8	1	5	30	8760	2	0.25	3.81E-05	1.90E-05	1	1.52E-04	7.61E-05
								Hazard Index	2.01E-05			8.02E-05

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A2. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for Five Years

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	1	5	70	8760	5.90E-06	0.25	3.47E-05	2.04E-10	1	1.39E-04	8.18E-10
TCE	41	1	5	70	8760	4.10E-06	0.25	8.36E-05	3.43E-10	1	3.34E-04	1.37E-09
							Cumulative Cancer Risk		5.47E-10			2.19E-09
24-hour Sample												
PCE	11	1	5	70	8760	5.90E-06	0.25	2.24E-05	1.32E-10	1	8.97E-05	5.29E-10
TCE	19	1	5	70	8760	4.10E-06	0.25	3.87E-05	1.59E-10	1	1.55E-04	6.35E-10
							Cumulative Cancer Risk		2.91E-10			1.16E-09

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m³ DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m³ USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A2. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for Five Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	1	5	30	8760	35	0.25	8.09E-05	2.31E-06	1	3.23E-04	9.24E-06
TCE	41	1	5	30	8760	2	0.25	1.95E-04	9.75E-05	1	7.80E-04	3.90E-04
								Hazard Index	9.98E-05			3.99E-04
24-hour Sample												
PCE	11	1	5	30	8760	35	0.25	5.23E-05	1.49E-06	1	2.09E-04	5.98E-06
TCE	19	1	5	30	8760	2	0.25	9.04E-05	4.52E-05	1	3.61E-04	1.81E-04
								Hazard Index	4.67E-05			1.87E-04

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A3. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for 10 Years

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	1	10	70	8760	5.90E-06	0.25	7.75E-05	4.57E-10	1	3.10E-04	1.83E-09
TCE	640	1	10	70	8760	4.10E-06	0.25	2.61E-03	1.07E-08	1	1.04E-02	4.28E-08
							Cumulative Cancer Risk		1.12E-08			4.46E-08
1534 Park - Former Bell Cleaners												
PCE	4.6	1	10	70	8760	5.90E-06	0.25	1.88E-05	1.11E-10	1	7.50E-05	4.43E-10
TCE	34	1	10	70	8760	4.10E-06	0.25	1.39E-04	5.68E-10	1	5.54E-04	2.27E-09
							Cumulative Cancer Risk		6.79E-10			2.72E-09
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	1	10	70	8760	5.90E-06	0.25	3.10E-05	1.83E-10	1	1.24E-04	7.31E-10
TCE	8	1	10	70	8760	4.10E-06	0.25	3.26E-05	1.34E-10	1	1.30E-04	5.35E-10
							Cumulative Cancer Risk		3.17E-10			1.27E-09

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m^3: DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m^3: USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A3. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for 10 Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	1	10	30	8760	35	0.25	1.81E-04	5.16E-06	1	7.23E-04	2.07E-05
TCE	640	1	10	30	8760	2	0.25	6.09E-03	3.04E-03	1	2.44E-02	1.22E-02
								Hazard Index	3.05E-03			1.22E-02
1534 Park - Former Bell Cleaners												
PCE	4.6	1	10	30	8760	35	0.25	4.38E-05	1.25E-06	1	1.75E-04	5.00E-06
TCE	34	1	10	30	8760	2	0.25	3.23E-04	1.62E-04	1	1.29E-03	6.47E-04
								Hazard Index	1.63E-04			6.52E-04
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	1	10	30	8760	35	0.25	7.23E-05	2.07E-06	1	2.89E-04	8.26E-06
TCE	8	1	10	30	8760	2	0.25	7.61E-05	3.81E-05	1	3.04E-04	1.52E-04
								Hazard Index	4.01E-05			1.60E-04

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A3. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for 10 Years

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	1	10	70	8760	5.90E-06	0.25	6.93E-05	4.09E-10	1	2.77E-04	1.64E-09
TCE	41	1	10	70	8760	4.10E-06	0.25	1.67E-04	6.85E-10	1	6.69E-04	2.74E-09
							Cumulative Cancer Risk		1.09E-09			4.38E-09
24-hour Sample												
PCE	11	1	10	70	8760	5.90E-06	0.25	4.48E-05	2.65E-10	1	1.79E-04	1.06E-09
TCE	19	1	10	70	8760	4.10E-06	0.25	7.75E-05	3.18E-10	1	3.10E-04	1.27E-09
							Cumulative Cancer Risk		5.82E-10			2.33E-09

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m³ DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m³ USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A3. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit each Year for 10 Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	1	10	30	8760	35	0.25	1.62E-04	4.62E-06	1	6.47E-04	1.85E-05
TCE	41	1	10	30	8760	2	0.25	3.90E-04	1.95E-04	1	1.56E-03	7.80E-04
								Hazard Index	2.00E-04			7.99E-04
24-hour Sample												
PCE	11	1	10	30	8760	35	0.25	1.05E-04	2.99E-06	1	4.19E-04	1.20E-05
TCE	19	1	10	30	8760	2	0.25	1.81E-04	9.04E-05	1	7.23E-04	3.61E-04
								Hazard Index	9.34E-05			3.73E-04

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A4. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for One Year

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	52	1	70	8760	5.90E-06	0.25	4.03E-04	2.38E-09	1	1.61E-03	9.51E-09
TCE	640	52	1	70	8760	4.10E-06	0.25	1.36E-02	5.56E-08	1	5.43E-02	2.23E-07
								Total	5.80E-08			2.32E-07
1534 Park - Former Bell Cleaners												
PCE	4.6	52	1	70	8760	5.90E-06	0.25	9.75E-05	5.75E-10	1	3.90E-04	2.30E-09
TCE	34	52	1	70	8760	4.10E-06	0.25	7.21E-04	2.96E-09	1	2.88E-03	1.18E-08
								Total	3.53E-09			1.41E-08
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	52	1	70	8760	5.90E-06	0.25	1.61E-04	9.51E-10	1	6.44E-04	3.80E-09
TCE	8	52	1	70	8760	4.10E-06	0.25	1.70E-04	6.95E-10	1	6.78E-04	2.78E-09
								Total	1.65E-09			6.58E-09

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 µg/m³ DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 µg/m³ USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A4. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for One Year

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

$EC_{nc} = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_{nc} \times 365\ days/year \times 24\ hours/day)$

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	52	1	30	8760	35	0.25	9.40E-04	2.69E-05	1	3.76E-03	1.07E-04
TCE	640	52	1	30	8760	2	0.25	3.17E-02	1.58E-02	1	1.27E-01	6.33E-02
								Total	1.59E-02			6.34E-02
1534 Park - Former Bell Cleaners												
PCE	4.6	52	1	30	8760	35	0.25	2.28E-04	6.50E-06	1	9.10E-04	2.60E-05
TCE	34	52	1	30	8760	2	0.25	1.68E-03	8.41E-04	1	6.73E-03	3.36E-03
								Total	8.47E-04			3.39E-03
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	52	1	30	8760	35	0.25	3.76E-04	1.07E-05	1	1.50E-03	4.30E-05
TCE	8	52	1	30	8760	2	0.25	3.96E-04	1.98E-04	1	1.58E-03	7.91E-04
								Total	2.09E-04			8.34E-04

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A4. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for One Year

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
8-hour Sample												
PCE	17	52	1	70	8760	5.90E-06	0.25	3.60E-04	2.13E-09	1	1.44E-03	8.51E-09
TCE	41	52	1	70	8760	4.10E-06	0.25	8.69E-04	3.56E-09	1	3.48E-03	1.43E-08
							Cumulative Cancer Risk		5.69E-09			2.28E-08
24-hour Sample												
PCE	11	52	1	70	8760	5.90E-06	0.25	2.33E-04	1.38E-09	1	9.33E-04	5.50E-09
TCE	19	52	1	70	8760	4.10E-06	0.25	4.03E-04	1.65E-09	1	1.61E-03	6.61E-09
							Cumulative Cancer Risk		3.03E-09			1.21E-08

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m³	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m³	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_c	Period of time over which exposure is averaged - carcinogens (years)				

Table A4. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for One Year

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

$EC_{nc} = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_{nc} \times 365\ days/year \times 24\ hours/day)$

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
Luque's Upholstry												
8-hour Sample												
PCE	17	52	1	30	8760	35	0.25	8.41E-04	2.40E-05	1	3.36E-03	9.61E-05
TCE	41	52	1	30	8760	2	0.25	2.03E-03	1.01E-03	1	8.11E-03	4.06E-03
								Hazard Index	1.04E-03			4.15E-03
24-hour Sample												
PCE	11	52	1	30	8760	35	0.25	5.44E-04	1.55E-05	1	2.18E-03	6.22E-05
TCE	19	52	1	30	8760	2	0.25	9.40E-04	4.70E-04	1	3.76E-03	1.88E-03
								Hazard Index	4.85E-04			1.94E-03

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A5. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Five Years

January 30-31, 2014

Risk = EC_c * IUR

EC_c = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_c x 365 days/year x 24 hours/day)

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	52	5	70	8760	5.90E-06	0.25	2.01E-03	1.19E-08	1	8.06E-03	4.75E-08
TCE	640	52	5	70	8760	4.10E-06	0.25	6.78E-02	2.78E-07	1	2.71E-01	**1.11E-06**
								Cumulative Cancer Risk	2.90E-07			**1.16E-06**
1534 Park - Former Bell Cleaners												
PCE	4.6	52	5	70	8760	5.90E-06	0.25	4.88E-04	2.88E-09	1	1.95E-03	1.15E-08
TCE	34	52	5	70	8760	4.10E-06	0.25	3.60E-03	1.48E-08	1	1.44E-02	5.91E-08
								Cumulative Cancer Risk	1.77E-08			7.06E-08
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	52	5	70	8760	5.90E-06	0.25	8.06E-04	4.75E-09	1	3.22E-03	1.90E-08
TCE	8	52	5	70	8760	4.10E-06	0.25	8.48E-04	3.48E-09	1	3.39E-03	1.39E-08
								Cumulative Cancer Risk	8.23E-09			3.29E-08

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 µg/m^3	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 µg/m^3	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_c	Period of time over which exposure is averaged - carcinogens (years)				

Table A5. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Five Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

$EC_{nc} = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_{nc} \times 365\ days/year \times 24\ hours/day)$

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	52	5	30	8760	35	0.25	4.70E-03	1.34E-04	1	1.88E-02	5.37E-04
TCE	640	52	5	30	8760	2	0.25	1.58E-01	7.91E-02	1	6.33E-01	3.17E-01
								Hazard Index	7.93E-02			3.17E-01
1534 Park - Former Bell Cleaners												
PCE	4.6	52	5	30	8760	35	0.25	1.14E-03	3.25E-05	1	4.55E-03	1.30E-04
TCE	34	52	5	30	8760	2	0.25	8.41E-03	4.20E-03	1	3.36E-02	1.68E-02
								Hazard Index	4.24E-03			1.69E-02
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	52	5	30	8760	35	0.25	1.88E-03	5.37E-05	1	7.52E-03	2.15E-04
TCE	8	52	5	30	8760	2	0.25	1.98E-03	9.89E-04	1	7.91E-03	3.96E-03
								Hazard Index	1.04E-03			4.17E-03

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A5. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Five Years

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	52	5	70	8760	5.90E-06	0.25	1.80E-03	1.06E-08	1	7.21E-03	4.25E-08
TCE	41	52	5	70	8760	4.10E-06	0.25	4.35E-03	1.78E-08	1	1.74E-02	7.13E-08
							Cumulative Cancer Risk		2.85E-08			1.14E-07
24-hour Sample												
PCE	11	52	5	70	8760	5.90E-06	0.25	1.17E-03	6.88E-09	1	4.66E-03	2.75E-08
TCE	19	52	5	70	8760	4.10E-06	0.25	2.01E-03	8.26E-09	1	8.06E-03	3.30E-08
							Cumulative Cancer Risk		1.51E-08			6.05E-08

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_c	Period of time over which exposure is averaged - carcinogens (years)				

Table A5. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Five Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

$EC_{nc} = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_{nc} \times 365\ days/year \times 24\ hours/day)$

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	52	5	30	8760	35	0.25	4.20E-03	1.20E-04	1	1.68E-02	4.81E-04
TCE	41	52	5	30	8760	2	0.25	1.01E-02	5.07E-03	1	4.06E-02	2.03E-02
								Hazard Index	5.19E-03			2.08E-02
24-hour Sample												
PCE	11	52	5	30	8760	35	0.25	2.72E-03	7.77E-05	1	1.09E-02	3.11E-04
TCE	19	52	5	30	8760	2	0.25	4.70E-03	2.35E-03	1	1.88E-02	9.40E-03
								Hazard Index	2.43E-03			9.71E-03

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A6. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Ten Years

January 30-31, 2014

Risk = EC_c * IUR

EC_c = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_c x 365 days/year x 24 hours/day)

	C	EF	ED	AT_c	Conversion Factor	IUR	15 Minutes ET	15 Minutes EC_c	15 Minutes Incremental Cancer Risk	1 Hour ET	1 Hour EC_c	1 Hour Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	52	10	70	8760	5.90E-06	0.25	4.03E-03	2.38E-08	1	1.61E-02	9.51E-08
TCE	640	52	10	70	8760	4.10E-06	0.25	1.36E-01	5.56E-07	1	5.43E-01	**2.23E-06**
							Cumulative Cancer Risk		5.80E-07			**2.32E-06**
1534 Park - Former Bell Cleaners												
PCE	4.6	52	10	70	8760	5.90E-06	0.25	9.75E-04	5.75E-09	1	3.90E-03	2.30E-08
TCE	34	52	10	70	8760	4.10E-06	0.25	7.21E-03	2.96E-08	1	2.88E-02	1.18E-07
							Cumulative Cancer Risk		3.53E-08			1.41E-07
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	52	10	70	8760	5.90E-06	0.25	1.61E-03	9.51E-09	1	6.44E-03	3.80E-08
TCE	8	52	10	70	8760	4.10E-06	0.25	1.70E-03	6.95E-09	1	6.78E-03	2.78E-08
							Cumulative Cancer Risk		1.65E-08			6.58E-08

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A6. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Ten Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	52	10	30	8760	35	0.25	9.40E-03	2.69E-04	1	3.76E-02	1.07E-03
TCE	640	52	10	30	8760	2	0.25	3.17E-01	1.58E-01	1	1.27E+00	6.33E-01
								Hazard Index	1.59E-01			6.34E-01
1534 Park - Former Bell Cleaners												
PCE	4.6	52	10	30	8760	35	0.25	2.28E-03	6.50E-05	1	9.10E-03	2.60E-04
TCE	34	52	10	30	8760	2	0.25	1.68E-02	8.41E-03	1	6.73E-02	3.36E-02
								Hazard Index	8.47E-03			3.39E-02
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	52	10	30	8760	35	0.25	3.76E-03	1.07E-04	1	1.50E-02	4.30E-04
TCE	8	52	10	30	8760	2	0.25	3.96E-03	1.98E-03	1	1.58E-02	7.91E-03
								Hazard Index	2.09E-03			8.34E-03

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

April 25, 2014

Table A6. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Ten Years

Risk = EC_c * IUR							**15 Minutes**			**1 Hour**		
EC_c = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_c x 365 days/year x 24 hours/day)									**Incremental Cancer**			**Incremental Cancer**
	C	**EF**	**ED**	**AT_c**	**Conversion Factor**	**IUR**	**ET**	**EC_c**	**Risk**	**ET**	**EC_c**	**Risk**
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	52	10	70	8760	5.90E-06	0.25	3.60E-03	2.13E-08	1	1.44E-02	8.51E-08
TCE	41	52	10	70	8760	4.10E-06	0.25	8.69E-03	3.56E-08	1	3.48E-02	1.43E-07
							Cumulative Cancer Risk		5.69E-08			2.28E-07
24-hour Sample												
PCE	11	52	10	70	8760	5.90E-06	0.25	2.33E-03	1.38E-08	1	9.33E-03	5.50E-08
TCE	19	52	10	70	8760	4.10E-06	0.25	4.03E-03	1.65E-08	1	1.61E-02	6.61E-08
							Cumulative Cancer Risk		3.03E-08			1.21E-07

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg/m^3	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg/m^3	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_c	Period of time over which exposure is averaged - carcinogens (years)				

Table A6. Site Visitor Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Site Visit per Week for Ten Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

$EC_{nc} = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_{nc} \times 365\ days/year \times 24\ hours/day)$

							15 Minutes			1 Hour		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	52	10	30	8760	35	0.25	8.41E-03	2.40E-04	1	3.36E-02	9.61E-04
TCE	41	52	10	30	8760	2	0.25	2.03E-02	1.01E-02	1	8.11E-02	4.06E-02
								Hazard Index	1.04E-02			4.15E-02
24-hour Sample												
PCE	11	52	10	30	8760	35	0.25	5.44E-03	1.55E-04	1	2.18E-02	6.22E-04
TCE	19	52	10	30	8760	2	0.25	9.40E-03	4.70E-03	1	3.76E-02	1.88E-02
								Hazard Index	4.85E-03			1.94E-02

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$	DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$	USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)				
ED	Exposure duration				
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)				

Table A7. Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Year

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	8-Hour Day ET	8-Hour Day EC_c	8-Hour Day Incremental Cancer Risk	10-Hour Day ET	10-Hour Day EC_c	10-Hour Day Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	260	1	70	8760	5.90E-06	8	0.06	3.80E-07	10	0.08	4.75E-07
TCE	640	260	1	70	8760	4.10E-06	8	2.17	**8.90E-06**	10	2.71	**1.11E-05**
							Cumulative Cancer Risk		**9.28E-06**			**1.16E-05**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	1	70	8760	5.90E-06	8	0.02	9.21E-08	10	0.02	1.15E-07
TCE	34	260	1	70	8760	4.10E-06	8	0.12	4.73E-07	10	0.14	5.91E-07
							Cumulative Cancer Risk		5.65E-07			7.06E-07
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	1	70	8760	5.90E-06	8	0.03	1.52E-07	10	0.03	1.90E-07
TCE	8	260	1	70	8760	4.10E-06	8	0.03	1.11E-07	10	0.03	1.39E-07
							Cumulative Cancer Risk		2.63E-07			3.29E-07

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A7. Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Year

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	260	1	30	8760	35	8	0.15	4.30E-03	10	0.19	5.37E-03
TCE	640	260	1	30	8760	2	8	5.07	2.53E+00	10	6.33	3.17E+00
							Hazard Index		**2.54E+00**			**3.17E+00**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	1	30	8760	35	8	0.04	1.04E-03	10	0.05	1.30E-03
TCE	34	260	1	30	8760	2	8	0.27	1.35E-01	10	0.34	1.68E-01
							Hazard Index		1.36E-01			1.69E-01
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	1	30	8760	35	8	0.06	1.72E-03	10	0.08	2.15E-03
TCE	8	260	1	30	8760	2	8	0.06	3.17E-02	10	0.08	3.96E-02
							Hazard Index		3.34E-02			4.17E-02

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A7. Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Year

April 25, 2014

Risk = EC_c * IUR

EC_c = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_c x 365 days/year x 24 hours/day)

	C	EF	ED	AT_c	Conversion Factor	IUR	8-hour Day ET	8-hour Day EC_c	8-hour Day Incremental Cancer Risk	10-hour Day ET	10-hour Day EC_c	10-hour Day Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	260	1	70	8760	5.90E-06	8	0.06	3.40E-07	10	0.07	4.25E-07
TCE	41	260	1	70	8760	4.10E-06	8	0.14	5.70E-07	10	0.17	7.13E-07
							Cumulative Cancer Risk		9.10E-07			**1.14E-06**
24-hour Sample												
PCE	11	260	1	70	8760	5.90E-06	8	0.04	2.20E-07	10	0.05	2.75E-07
TCE	19	260	1	70	8760	4.10E-06	8	0.06	2.64E-07	10	0.08	3.30E-07
							Cumulative Cancer Risk		4.84E-07			6.05E-07

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A7. Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific
1532 thru 1540 Park Street, Alameda, California

One Year

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	260	1	30	8760	35	8	0.13	3.84E-03	10	0.17	4.81E-03
TCE	41	260	1	30	8760	2	8	0.32	1.62E-01	10	0.41	2.03E-01
							Hazard Index		1.66E-01			2.08E-01
24-hour Sample												
PCE	11	260	5	30	8760	35	8	0.44	1.24E-02	10	0.54	1.55E-02
TCE	19	260	5	30	8760	2	8	0.75	3.76E-01	10	0.94	4.70E-01
							Hazard Index		3.88E-01			4.85E-01

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A8 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Five Years

January 30-31, 2014

Risk = EC_c * IUR

EC_c = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_c x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
	C	EF	ED	AT_c	Conversion Factor	IUR	ET	EC_c	Incremental Cancer Risk	ET	EC_c	Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	260	5	70	8760	5.90E-06	8	0.32	**1.90E-06**	10	0.40	**2.38E-06**
TCE	640	260	5	70	8760	4.10E-06	8	10.85	**4.45E-05**	10	13.57	**5.56E-05**
							Cumulative Cancer Risk		**4.64E-05**			**5.80E-05**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	5	70	8760	5.90E-06	8	0.08	4.60E-07	10	0.10	5.75E-07
TCE	34	260	5	70	8760	4.10E-06	8	0.58	**2.36E-06**	10	0.72	**2.96E-06**
							Cumulative Cancer Risk		**2.82E-06**			**3.53E-06**
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	5	70	8760	5.90E-06	8	0.13	7.60E-07	10	0.16	9.51E-07
TCE	8	260	5	70	8760	4.10E-06	8	0.14	5.56E-07	10	0.17	6.95E-07
							Cumulative Cancer Risk		**1.32E-06**			**1.65E-06**

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A8 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Five Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	260	5	30	8760	35	8	0.75	2.15E-02	10	0.94	2.69E-02
TCE	640	260	5	30	8760	2	8	25.33	1.27E+01	10	31.66	1.58E+01
							Hazard Index		**1.27E+01**			**1.59E+01**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	5	30	8760	35	8	0.18	5.20E-03	10	0.23	6.50E-03
TCE	34	260	5	30	8760	2	8	1.35	6.73E-01	10	1.68	8.41E-01
							Hazard Index		6.78E-01			8.47E-01
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	5	30	8760	35	8	0.30	8.59E-03	10	0.38	1.07E-02
TCE	8	260	5	30	8760	2	8	0.32	1.58E-01	10	0.40	1.98E-01
							Hazard Index		1.67E-01			2.09E-01

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A8 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Five Years

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	8-hour Day ET	8-hour Day EC_c	8-hour Day Incremental Cancer Risk	10-hour Day ET	10-hour Day EC_c	10-hour Day Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	260	5	70	8760	5.90E-06	8	0.29	**1.70E-06**	10	0.36	**2.13E-06**
TCE	41	260	5	70	8760	4.10E-06	8	0.70	**2.85E-06**	10	0.87	**3.56E-06**
						Cumulative Cancer Risk			**4.55E-06**			**5.69E-06**
24-hour Sample												
PCE	11	260	5	70	8760	5.90E-06	8	0.19	**1.10E-06**	10	0.23	**1.38E-06**
TCE	19	260	5	70	8760	4.10E-06	8	0.32	**1.32E-06**	10	0.40	**1.65E-06**
						Cumulative Cancer Risk			**2.42E-06**			**3.03E-06**

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A8 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Five Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	260	5	30	8760	35	8	0.67	1.92E-02	10	0.84	2.40E-02
TCE	41	260	5	30	8760	2	8	1.62	8.11E-01	10	2.03	**1.01E+00**
							Hazard Index		8.30E-01			**1.04E+00**
24-hour Sample												
PCE	11	260	5	30	8760	35	8	0.44	1.24E-02	10	0.54	1.55E-02
TCE	19	260	5	30	8760	2	8	0.75	3.76E-01	10	0.94	4.70E-01
							Hazard Index		3.88E-01			4.85E-01

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A9 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Ten Years

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	8-Hour Day ET	8-Hour Day EC_c	8-Hour Day Incremental Cancer Risk	10-Hour Day ET	10-Hour Day EC_c	10-Hour Day Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	260	10	70	8760	5.90E-06	8	0.64	**3.80E-06**	10	0.81	**4.75E-06**
TCE	640	260	10	70	8760	4.10E-06	8	21.71	**8.90E-05**	10	27.14	**1.11E-04**
							Cumulative Cancer Risk		**9.28E-05**			**1.16E-04**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	10	70	8760	5.90E-06	8	0.16	9.21E-07	10	0.20	**1.15E-06**
TCE	34	260	10	70	8760	4.10E-06	8	1.15	**4.73E-06**	10	1.44	**5.91E-06**
							Cumulative Cancer Risk		**5.65E-06**			**7.06E-06**
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	10	70	8760	5.90E-06	8	0.26	**1.52E-06**	10	0.32	**1.90E-06**
TCE	8	260	10	70	8760	4.10E-06	8	0.27	**1.11E-06**	10	0.34	**1.39E-06**
							Cumulative Cancer Risk		**2.63E-06**			**3.29E-06**

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A9 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Ten Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

	C	EF	ED	AT_{nc}	Conversion Factor	RfC	8-Hour Day ET	8-Hour Day EC_{nc}	8-Hour Day Hazard Quotient	10-Hour Day ET	10-Hour Day EC_{nc}	10-Hour Day Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	260	10	30	8760	35	8	1.50	4.30E-02	10	1.88	5.37E-02
TCE	640	260	10	30	8760	2	8	50.65	**2.53E+01**	10	63.32	**3.17E+01**
							Hazard Index		**2.54E+01**			**3.17E+01**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	10	30	8760	35	8	0.36	1.04E-02	10	0.46	1.30E-02
TCE	34	260	10	30	8760	2	8	2.69	**1.35E+00**	10	3.36	**1.68E+00**
							Hazard Index		**1.36E+00**			**1.69E+00**
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	10	30	8760	35	8	0.60	1.72E-02	10	0.75	2.15E-02
TCE	8	260	10	30	8760	2	8	0.63	3.17E-01	10	0.79	3.96E-01
							Hazard Index		3.34E-01			4.17E-01

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A9 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Ten Years

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	8-hour Day ET	8-hour Day EC_c	8-hour Day Incremental Cancer Risk	10-hour Day ET	10-hour Day EC_c	10-hour Day Incremental Cancer Risk
8-hour Sample												
PCE	17	260	10	70	8760	5.90E-06	8	0.58	**3.40E-06**	10	0.72	**4.25E-06**
TCE	41	260	10	70	8760	4.10E-06	8	1.39	**5.70E-06**	10	1.74	**7.13E-06**
						Cumulative Cancer Risk			**9.10E-06**			**1.14E-05**
24-hour Sample												
PCE	11	260	10	70	8760	5.90E-06	8	0.37	**2.20E-06**	10	0.47	**2.75E-06**
TCE	19	260	10	70	8760	4.10E-06	8	0.64	**2.64E-06**	10	0.81	**3.30E-06**
						Cumulative Cancer Risk			**4.84E-06**			**6.05E-06**

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A9 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Ten Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
Luque's Upholstry									**Hazard**			**Hazard**
8-hour Sampl	**C**	**EF**	**ED**	**AT_{nc}**	**Conversion Factor**	**RfC**	**ET**	**EC_{nc}**	**Quotient**	**ET**	**EC_{nc}**	**Quotient**
PCE	17	260	10	30	8760	35	8	1.35	3.84E-02	10	1.68	4.81E-02
TCE	41	260	10	30	8760	2	8	3.25	**1.62E+00**	10	4.06	**2.03E+00**
							Hazard Index		**1.66E+00**			**2.08E+00**
24-hour Sample												
PCE	11	260	10	30	8760	35	8	0.87	2.49E-02	10	1.09	3.11E-02
TCE	19	260	10	30	8760	2	8	1.50	7.52E-01	10	1.88	9.40E-01
							Hazard Index		7.77E-01			9.71E-01

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A10 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Twenty Years

January 30-31, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	8-Hour Day ET	8-Hour Day EC_c	8-Hour Day Incremental Cancer Risk	10-Hour Day ET	10-Hour Day EC_c	10-Hour Day Incremental Cancer Risk
1532 Park - Luque's Upholstry												
PCE	19	260	20	70	8760	5.90E-06	8	1.29	**7.60E-06**	10	1.61	**9.51E-06**
TCE	640	260	20	70	8760	4.10E-06	8	43.42	**1.78E-04**	10	54.27	**2.23E-04**
							Cumulative Cancer Risk		**1.86E-04**			**2.32E-04**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	20	70	8760	5.90E-06	8	0.31	**1.84E-06**	10	0.39	**2.30E-06**
TCE	34	260	20	70	8760	4.10E-06	8	2.31	**9.46E-06**	10	2.88	**1.18E-05**
							Cumulative Cancer Risk		**1.13E-05**			**1.41E-05**
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	20	70	8760	5.90E-06	8	0.52	**3.04E-06**	10	0.64	**3.80E-06**
TCE	8	260	20	70	8760	4.10E-06	8	0.54	**2.23E-06**	10	0.68	**2.78E-06**
							Cumulative Cancer Risk		**5.27E-06**			**6.58E-06**

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A10 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Twenty Years

January 30-31, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

	C	EF	ED	AT_{nc}	Conversion Factor	RfC	8-Hour Day ET	8-Hour Day EC_{nc}	8-Hour Day Hazard Quotient	10-Hour Day ET	10-Hour Day EC_{nc}	10-Hour Day Hazard Quotient
1532 Park - Luque's Upholstry												
PCE	19	260	20	30	8760	35	8	3.01	8.59E-02	10	3.76	1.07E-01
TCE	640	260	20	30	8760	2	8	101.31	**5.07E+01**	10	126.64	**6.33E+01**
							Hazard Index		**5.07E+01**			**6.34E+01**
1534 Park - Former Bell Cleaners												
PCE	4.6	260	20	30	8760	35	8	0.73	2.08E-02	10	0.91	2.60E-02
TCE	34	260	20	30	8760	2	8	5.38	**2.69E+00**	10	6.73	**3.36E+00**
							Hazard Index		**2.71E+00**			**3.39E+00**
1540 Park - Genghis Kahn Kitchen												
PCE	7.6	260	20	30	8760	35	8	1.20	3.44E-02	10	1.50	4.30E-02
TCE	8	260	20	30	8760	2	8	1.27	6.33E-01	10	1.58	7.91E-01
							Hazard Index		6.68E-01			8.34E-01

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 $\mu g/m^3$ DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 $\mu g/m^3$ USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

Table A10 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Twenty Years

April 25, 2014

Risk = EC_c * IUR

$EC_c = (C_{indoor\ air} \times ET \times EF \times ED) / (AT_c \times 365\ days/year \times 24\ hours/day)$

	C	EF	ED	AT_c	Conversion Factor	IUR	8-hour Day ET	8-hour Day EC_c	8-hour Day Incremental Cancer Risk	10-hour Day ET	10-hour Day EC_c	10-hour Day Incremental Cancer Risk
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	260	20	70	8760	5.90E-06	8	1.15	**6.80E-06**	10	1.44	**8.51E-06**
TCE	41	260	20	70	8760	4.10E-06	8	2.78	**1.14E-05**	10	3.48	**1.43E-05**
							Cumulative Cancer Risk		**1.82E-05**			**2.28E-05**
24-hour Sample												
PCE	11	260	20	70	8760	5.90E-06	8	0.75	**4.40E-06**	10	0.93	**5.50E-06**
TCE	19	260	20	70	8760	4.10E-06	8	1.29	**5.28E-06**	10	1.61	**6.61E-06**
							Cumulative Cancer Risk		**9.69E-06**			**1.21E-05**

Acceptable Risk = 1.00E-6

C	Indoor Air Concentration	IUR	PCE	5.9E-6 μg DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	4.1E-5 μg USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_c	Period of time over which exposure is averaged - carcinogens (years)			

Table A10 **Site Worker Exposure Cancer Risk and Hazard Index Assessment Site Specific**
1532 thru 1540 Park Street, Alameda, California

Twenty Years

April 25, 2014

Hazard Quotient = EC_{nr} / RfC

EC_{nc} = ($C_{indoor\ air}$ x ET x EF x ED) / (AT_{nc} x 365 days/year x 24 hours/day)

							8-Hour Day			10-Hour Day		
	C	EF	ED	AT_{nc}	Conversion Factor	RfC	ET	EC_{nc}	Hazard Quotient	ET	EC_{nc}	Hazard Quotient
1532 Park - Luque's Upholstry												
8-hour Sample												
PCE	17	260	20	30	8760	35	8	2.69	7.69E-02	10	3.36	9.61E-02
TCE	41	260	20	30	8760	2	8	6.49	**3.25E+00**	10	8.11	**4.06E+00**
							Hazard Index		**3.32E+00**			**4.15E+00**
24-hour Sample												
PCE	11	260	20	30	8760	35	8	1.74	4.97E-02	10	2.18	6.22E-02
TCE	19	260	20	30	8760	2	8	3.01	**1.50E+00**	10	3.76	**1.88E+00**
							Hazard Index		**1.55E+00**			**1.94E+00**

Acceptable Hazard Index = 1

C	Indoor Air Concentration	RfC	PCE	35 μg/m^3 DTSC Human Health Risk Assessment Note, 14 July 2014
ET	Exposure time (hours per day)		TCE	2.0 μg/m^3 USEPA Regional Screening Levels, November 2012
EF	Exposure Frequency (days per year)			
ED	Exposure duration			
AT_{nc}	Period of time over which exposure is averaged - non-carcinogens (years)			

BONKOWSKI & ASSOCIATES, INC.

APPENDIX B

5 AUGUST 2014
E-MAIL DIRECTIVE
FROM DILAN ROE

Subject:	RE: Conference call tomorrow re Former Bell Cleaners
From:	Roe, Dilan, Env. Health (Dilan.Roe@acgov.org)
To:	cindy@bonkowski.com; mbreese123@gmail.com; vonwittenau@gmail.com; mike@bonkowski.com;
Date:	Tuesday, August 5, 2014 10:46 AM

Hi Everyone:

Here is a summary of the action items discussed during our teleconference call today:

1) Revise the preliminary analysis of the incremental cancer risk and hazard quotient of exposure to PCE and TCE to indoor air presented in the Indoor Air Sampling Report, Former Bell Cleaners, 1532 to 1540 Park Street dated April 11, 2014 and the Supplemental Indoor Air Sampling Letter Report, Luque's Upholstery Shop dated May 12, 201. Revisions should include:

- Incorporation of air screening levels and inhalation unit risk (IUR) values from the DTSC's Human Health Risk Assessment (HHRA) Note 3 (May 21, 2013) and the 2012 USEPA Regional Screening Level (RSL) tables

- Performing a sensitivity analysis of input values for exposure time (ET), exposure frequency (EF), and exposure duration (ED)

- Incorporation of the EPA Region 9 Interim TCE Indoor Air Response Action Levels (attached for your reference)

I have attached a copy of the excel file I generated using the IUR values noted above for you use or reference

2) Draft Soil, Groundwater, Soil Gas and Indoor Air Work Plan - Please use your revised preliminary risk evaluation results to prepare a work plan to conduct the following

Install permanent subslab probes in the three tenant spaces
Collect indoor air samples and subslab samples in the three tenant spaces simultaneously in order to evaluate an attenuation factor over the slab and assess whether indoor air pollutant are skewing results in the upholstery shop
Source assessment – advancement of soil gas probes within the former drycleaner tenant space to assess vertical soil gas concentrations and collect data to help identify source areas.
Collection of soil samples where appropriate based on historic dry cleaning operation and results of soil gas sampling
Collection of groundwater samples to assess impacts of release to groundwater beneath the site

As discussed, please submit the draft work plan to me as a word file via email by August 25, 2014 to facilitate review comments. I will review and provide comments by August 26,2014.
Please work on expediting mobilization to the field and reporting of the analytical results to me via email so that we can get a handle on the risk to occupants in the tenant spaces and in offsite buildings.

Dilan Roe, P.E.

Program Manager - Land Use & Local Oversight Program

Alameda County Environmental Health

1131 Harbor Bay Parkway

Alameda, CA 94502

510.567.6767; Ext. 36767

QIC: 30440

dilan.roe@acgov.org

PDF copies of case files can be reviewed/downloaded at:

http://www.acgov.org/aceh/lop/ust.htm

From: Cindy Dittmar [mailto:cindy@bonkowski.com]
Sent: Monday, August 04, 2014 11:20 AM
To: Marcia Breese; Michael von Wittenau; Roe, Dilan, Env. Health; Michael Bonkowski
Subject: Conference call tomorrow re Former Bell Cleaners

The conference call has been arranged for tomorrow, August 5, at 8:30 a.m. Please call into (888) 830-6260. The participant code is 406055.

Cynthia A. Dittmar, PG 7213
Bonkowski & Associates, Inc.
6400 Hollis St., Ste. 4
Emeryville, CA 94608
(510) 450-0770 x 13

BONKOWSKI & ASSOCIATES, INC.

APPENDIX C

COX-COLVIN VAPOR PIN™
STANDARD OPERATION PROCEDURES

Standard Operating Procedure
Use of the Vapor Pin™ Drilling Guide and Secure Cover

December 3, 2013

Scope:

This standard operating procedure (SOP) describes the methodology to use the Vapor Pin™ Drilling Guide and Secure Cover to install and secure a Vapor Pin™ in a flush mount configuration.

Purpose:

The purpose of this SOP is to detail the methodology for installing a Vapor Pin™ and Secure Cover in a flush mount configuration. The flush mount configuration reduces the risk of damage to the Vapor Pin™ by foot and vehicular traffic, keeps dust and debris from falling into the flush mount hole, and reduces the opportunity for tampering. This SOP is an optional process performed in conjunction with the SOP entitled "Installation and Extraction of the Vapor Pin™". However, portions of this SOP should be performed prior to installing the Vapor Pin™.

Equipment Needed:

- Vapor Pin™ Secure Cover (Figure 1);
- Vapor Pin™ Drilling Guide (Figure 2);
- Hammer drill;
- 1½-inch diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent);
- 5/8-inch diameter hammer bit (Hilti™ TE-YX 5/8" x 22" #00226514 or equivalent);
- assembled Vapor Pin™;
- #14 spanner wrench;
- Wet/Dry vacuum with HEPA filter (optional); and
- personal protective equipment (PPE).

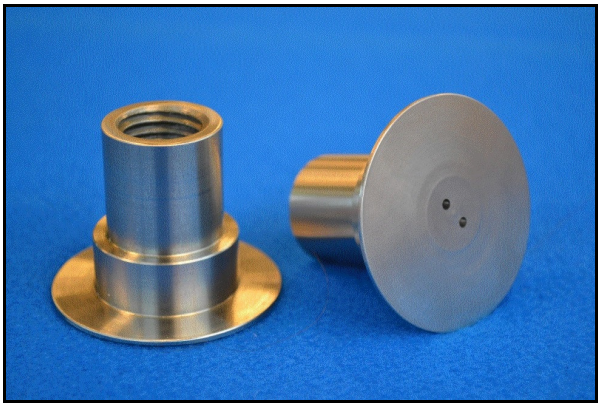


Figure 1. Vapor Pin™ Secure Cover.

Figure 2. Vapor Pin™ Drilling Guide.

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) While wearing PPE, drill a 1½-inch diameter hole into the concrete slab to a

depth of approximately 1 3/4 inches. Pre-marking the desired depth on the drill bit with tape will assist in this process.

4) Remove cuttings from the hole and place the Drilling Guide in the hole with the conical end down (Figure 3). The hole is sufficiently deep if the flange of the Drilling Guide lies flush with the surface of the slab. Deepen the hole as necessary, but avoid drilling more than 2 inches into the slab, as the threads on the Secure Cover may not engage properly with the threads on the Vapor Pin™.

Figure 3. Testing Depth with the Drilling Guide.

5) When the 1½-inch diameter hole is drilled to the proper depth, replace the drill bit with a $^{5}/_{8}$-inch diameter bit, insert the bit through the Drilling Guide (Figure 4), and drill through the slab. The Drilling Guide will help to center the hole for the Vapor Pin™, and keep the hole perpendicular to the slab.

6) Remove the bit and drilling guide, clean the hole, and install the Vapor Pin™ in accordance with the SOP "Installation and Extraction of the Vapor Pin™.

Figure 4. Using the Drilling Guide.

7) Screw the Secure Cover onto the Vapor Pin™ and tighten using a #14 spanner wrench by rotating it clockwise (Figure 5). Rotate the cover counter clockwise to remove it for subsequent access.

Figure 5. Tightening the Secured Cover.

Limitations:

On slabs less than 3 inches thick, it may be difficult to obtain a good seal in a flush mount configuration with the Vapor Pin™.

K:\CCA\TOOLS\SOPs\Vapor Pin\Secure Cover\Vapor Pin Cover & Drill Guide SOP 120313.wpd

Standard Operating Procedure Installation and Extraction of the Vapor Pin™

December 3, 2013

Scope:

This standard operating procedure describes the installation and extraction of the Vapor Pin™ for use in sub-slab soil-gas sampling.

Purpose:

The purpose of this procedure is to assure good quality control in field operations and uniformity between field personnel in the use of the Vapor Pin™ for the collection of sub-slab soil-gas samples.

Equipment Needed:

- Assembled Vapor Pin™ [Vapor Pin™ and silicone sleeve (Figure 1)];
- Hammer drill;
- 5/8-inch diameter hammer bit (Hilti™ TE-YX 5/8" x 22" #00206514 or equivalent);
- 1½-inch diameter hammer bit (Hilti™ TE-YX 1½" x 23" #00293032 or equivalent) for flush mount applications;
- ¾-inch diameter bottle brush;
- Wet/dry vacuum with HEPA filter (optional);
- Vapor Pin™ installation/extraction tool;
- Dead blow hammer;
- Vapor Pin™ flush mount cover, if desired;
- Vapor Pin™ protective cap; and
- VOC-free hole patching material (hydraulic cement) and putty knife or trowel.

Figure 1. Assembled Vapor Pin™.

Installation Procedure:

1) Check for buried obstacles (pipes, electrical lines, etc.) prior to proceeding.

2) Set up wet/dry vacuum to collect drill cuttings.

3) If a flush mount installation is required, drill a 1½-inch diameter hole at least 1¾-inches into the slab.

4) Drill a 5/8-inch diameter hole through the slab and approximately 1-inch into the underlying soil to form a void.

5) Remove the drill bit, brush the hole with the bottle brush, and remove the loose cuttings with the vacuum.

6) Place the lower end of Vapor Pin™ assembly into the drilled hole. Place the small hole located in the handle of the extraction/installation tool over the Vapor Pin™ to protect the barb fitting and cap, and tap the Vapor Pin™ into place using a dead blow hammer (Figure 2). Make sure

the extraction/installation tool is aligned parallel to the Vapor Pin™ to avoid damaging the barb fitting.

Figure 2. Installing the Vapor Pin™.

For flush mount installations, unscrew the threaded coupling from the installation/extraction handle and use the hole in the end of the tool to assist with the installation (Figure 3).

Figure 3. Flush-mount installation.

During installation, the silicone sleeve will form a slight bulge between the slab and the Vapor Pin™ shoulder. Place the protective cap on Vapor Pin™ to prevent vapor loss prior to sampling (Figure 4).

Figure 4. Installed Vapor Pin™.

7) For flush mount installations, cover the Vapor Pin™ with a flush mount cover, using either the plastic cover or the optional stainless-steel Secure Cover.

8) Allow 20 minutes or more (consult applicable guidance for your situation) for the sub-slab soil-gas conditions to equilibrate prior to sampling.

9) Remove protective cap and connect sample tubing to the barb fitting of the Vapor Pin™ (Figure 5).

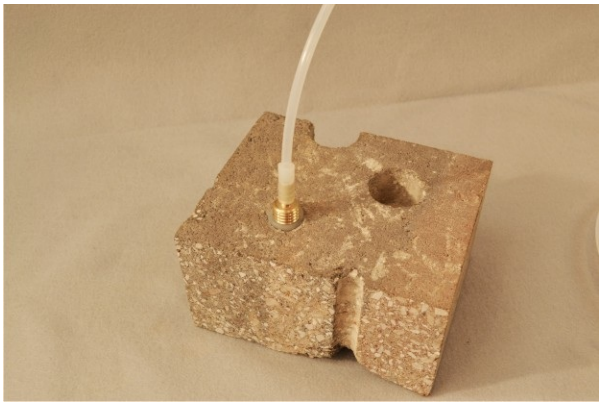


Figure 5. Vapor Pin™ sample connection.

10) Conduct leak tests in accordance with applicable guidance. If the method of leak testing is not specified, an attractive alternative can be the use of a water dam and vacuum pump, as described in SOP Leak Testing the Vapor Pin™ via Mechanical Means (Figure 6).

Figure 6. Water dam used for leak detection.

11) Collect sub-slab soil gas sample. When finished sampling, replace the protective cap and flush mount cover until the next sampling event. If the sampling is complete, extract the Vapor Pin™.

Extraction Procedure:

1) Remove the protective cap, and thread the installation/extraction tool onto the barrel of the Vapor Pin™ (Figure 7). Continue turning the tool to assist in extraction, then pull the Vapor Pin™ from the hole.

2) Fill the void with hydraulic cement and smooth with the trowel or putty knife. Urethane caulk is widely recommended for installing radon systems and can provide a tight seal, but it could also be a source of VOCs during subsequent sampling.

Figure 7. Removing the Vapor Pin™.

3) Prior to reuse, remove the silicone sleeve and discard. Decontaminate the Vapor Pin™ in a hot water and Alconox® wash, then heat in an oven to a temperature of 130° C.

The Vapor Pin™ to designed be used repeatedly; however, replacement parts and supplies will be required periodically. These parts are available on-line at www.CoxColvin.com.

Replacement Parts:

Vapor Pin™ Kit Case - VPC001
Vapor Pins™ - VPIN0522
Silicone Sleeves - VPTS077
Installation/Extraction Tool - VPIE023
Protective Caps - VPPC010
Flush Mount Covers - VPFM050
Water Dam - VPWD004
Brush - VPB026
Secure Cover - VPSCSS001
Spanner Wrench - VPSPAN001

Cox-Colvin & Associates, Inc. Environmental Services

Standard Operating Procedure Leak Testing Vapor Pin™ Via Mechanical Means

December 3, 2013

Scope:

The operating procedure describes the methodology to test a Vapor Pin™ or equivalent sub-slab sampling device and sample train for leakage of indoor air. Mechanical leak testing is generally simpler and less costly than testing with tracer gases such as helium, but relevant state, program, or other guidance documents should be consulted to determine if a specific type of leak test is needed.

Purpose:

The purpose of this procedure is to ensure that indoor air does not leak past the Vapor Pin™ or associated tubing and hardware and dilute the sub-slab soil gas sample with indoor air.

Equipment Needed:

Stick-up installation: 2-inch diameter plastic pipe couple, Play-Doh, Sculpey, or modeling clay (clay) free of volatile organic compounds (VOCs). Stick-up and flush-mount installations: distilled water; Vapor Pin™; vacuum pump (hand-operated or peristaltic); vacuum gauge; stopcock; and sample train, including sample tubing, tee fittings, vacuum gauge and other hardware, and sample container.

Procedures:

1. Drill a 5/8" diameter hole in the concrete slab and install the Vapor Pin™ as per the Standard Operating Procedure (SOP). For a flush-mount installation, drill the 1-1/2" diameter hole first, and follow Use of the Vapor Pin™ Drilling Guide and Secure Cover. Testing evacuated ("Summa") canisters and regulators in accordance with ASTM standard D7663-11 or Restek Corporation's *A Guide to Whole Air Canister Sampling* prior to starting field work eliminates most risk of leakage when sampling with the Vapor Pin™.

2. Install the Vapor Pin™ as described in the SOP Installation and Extraction of the Vapor Pin™.

3. Clean the slab within a 2-inch radius of the Vapor Pin™ to remove all dust. Avoid wetting the concrete or wait until the concrete is dry before proceeding, and avoid cleaning with VOC-containing substances. A whisk broom or shop vacuum is recommended. Remaining dust can be picked up with a scrap of clay.

4. For a flush-mount installation, water is poured directly into the 1-1/2" depression without the need for a water dam - proceed to the next step. For a stick-up installation, roll a 1-inch diameter ball of clay between your palms to form a "snake" approximately 7 inches long and press it against the end of the 2" pipe couple. Push the couple against the slab to form a seal between the pipe and the concrete. Notice that water soluble clays such as Play-Doh may absorb enough water to be unsuitable for tests lasting more than one hour.

5. Assemble the sample train (tubing, sample canister, tee fittings, stopcock, vacuum pump, etc.) separately from the Vapor Pin™ and impose a vacuum of 15" mercury equivalent (in Hg). Close the stopcock and verify that the sample train can hold a vacuum for one to five minutes with no more than 0.5 in Hg loss of vacuum. Depending on sample configuration, the stopcock might or might not remain in the sample train during sampling. An example is shown in Figure 1.

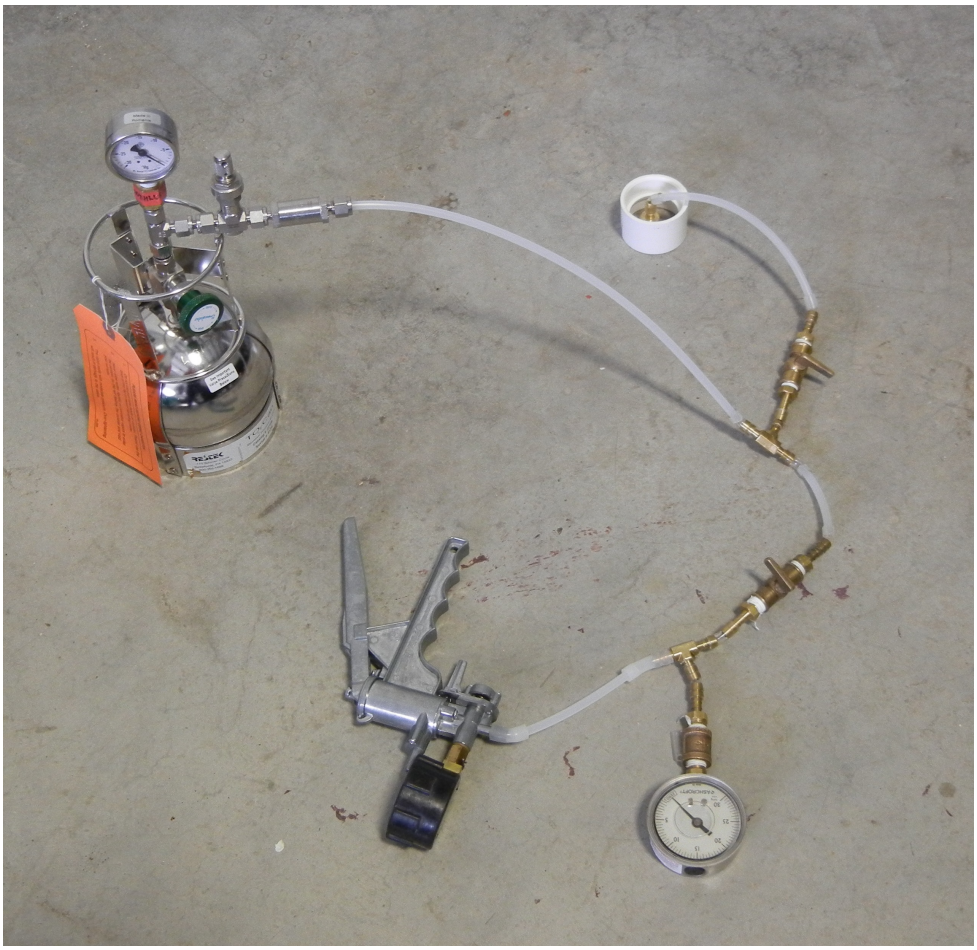


Figure 1. Example of Sub-Slab Sampling and Leak-Test Setup

6. Attach the sample tubing to the top of the Vapor Pin™ and pour enough distilled water into the pipe couple or flush-mount depression to immerse the tubing connection to the Vapor Pin™.

7. Purge and sample the sample point as required by the data quality objectives. Water level might drop slightly due to absorption into the concrete, but if there is a sudden drop in water level, the appearance of water in sample tubing, or other indication of water entering the sub-slab, remove the distilled water from the couple or depression, and reposition the Vapor Pin™ to stop the leakage before resuming the leak test and sampling. In Figure 1, the stopcocks are used to isolate the Vapor Pin™ during vacuum testing and subsequently to allow the vacuum gauge and hand pump to be removed prior to sampling.

September 9, 2014

Ms. Dilan Roe , P.E.
Alameda County Health Agency
Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94502-6577

Subject: **Supplemental Soil Gas and Indoor Air Sampling Work Plan, Former Bell Cleaners, 1532 to 1540 Park Street, Alameda, California, Case No. RO0003080**

Dear Ms. Roe,

I declare, under penalty of perjury, that the information and/or recommendations contained in the attached document is true and correct to the best of my knowledge.

Sincerely yours,

Marcia Breese

Marcia Breese

Enclosure