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PERJURY STATEMENT

Subject: Fuel Lake Case No. Ro0002981 and Geotracker Clobal ID T1000000416, Red Hanger Cleaners, 6335-6339 College Ave., Oakland, CA 94618

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

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30 YEARS

Project No. E13243.000
25 August 2015

Alameda County Environmental Health Services
Environmental Protection
11231 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

Attention: Mr. Keith Nowell, PG, CHG, Hazardous Materials Specialist

Subject: **RED HANGER KLEANERS, 6335-6339 COLLEGE AVENUE, OAKLAND, CA**
Alameda County Environmental Health Case No. RO0002981
Phase II Environmental Site Assessment Soil Gas Investigation
Report

References: (at end of report)

Dear Mr. Nowell:

On behalf of EFI Global, Inc. and Mr. Ronald Elvidge, site owner, Youngdahl Consulting Group, Inc. (Youngdahl) is presenting to Alameda County Environmental Health Services (ACEH) this revised Soil Gas Investigation Report (Report) for the Red Hanger Kleaners site (Site), located at 6335-6339 College Avenue in Oakland, California (Figures 1 and 2). Youngdahl has been retained to complete a characterization of soil gas impacts potentially resulting from a tetrachloroethylene (PCE) release identified during previous Phase II investigations, and in accordance with the 24 June 2011 letter from ACEH. This report has been revised from the 27 July Report to address an error made by the analytical laboratory regarding volatile organic compound concentrations previously reported in select indoor air samples collected at the building that once contained Red Hanger Kleaners. This Report presents the following:

- Site Background;
- Narrative of the Site Investigations;
- Laboratory Analytical Results;
- Vapor Intrusion and Indoor Air Health Risk Assessments;
- Findings.

1.0 INTRODUCTION

The Red Hanger Kleaners site is located at 6335-6339 College Avenue in a mixed commercial and residential area of Oakland, and consists of a three-story building, a parking area, and associated landscaping (Figure 2). The building is currently occupied by various tenants, with the ground floor most recently occupied by a dry cleaning facility; with the space now vacant. According to Reference No. 6, the Red Hanger Kleaners business has been located at 6239 College Avenue since about 1987. The site is assigned Alameda County Environmental Health Case No. RO00002981 and California State Water Resources Control Board Geotracker Global ID T10000000416.

A Phase I Environmental Site Assessment performed in 2005 identified a past underground storage tank (UST) and use as a dry cleaning business. A Phase II Environmental Site

Assessment in 2005 identified a release of PCE and chloroform. The suspected UST was searched for as part of this assessment, only to find a filled-in excavation that once likely held a UST. Subsequent assessments identified that the groundwater was not as contaminated as originally indicated and all of the PCE concentrations in soil and groundwater were below human health screening levels.

1.1 Site Location and Map

A topographic map based upon the USGS 7.5 minute quadrangles is provided as Figure 1. The site includes a single slab-on-grade structure (no basement) and paved parking areas (Figure 2). Surface runoff is conveyed by the storm sewer system. Wastewater is collected by the sanitary sewer system.

1.2 Geology/Hydrogeology

The site is located in the City of Oakland, which is within the Coast Ranges Geomorphic province. According to the 1:50,000 scale Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, and San Francisco counties (Reference No. 1), the site is underlain by Holocene age fluvial and alluvial fan deposits described as brown or tan, medium dense to dense, gravely sand or sandy gravel that generally grades upward to sandy or silty clay. Boring logs for the site assessments show silty clays and clayey gravels to be prevalent to the maximum 35-foot exploration depth.

2.0 SITE BACKGROUND

There have been a series of investigations by various consultants dating back to 2005. The following is a summary of these investigations. The addresses used for the Site in the reports for these investigations and in some regulatory correspondence are not consistent. The name of “Red Hanger Kleaners” and “Red Hanger Cleaners” was also used interchangeably. The following summaries report the addresses and business name as used in each individual report.

2.1 Phase I Environmental Site Assessment – March 2005

AEI Consultants (AEI) was retained by Ellwood Commercial Real Estate to conduct a Phase I Environmental Site Assessment (Phase I ESA) at 6235 College Avenue. They described the property as being in a mixed commercial and residential area of Oakland on property totaling approximately 11,353 square feet with a three-story building occupied by commercial and office tenants, and with a dry cleaning operation located on the first floor. AEI indicated that the property was improved with a concrete surfaced parking area and associated landscaping. Surrounding property uses were described as being a restaurant to the north, a parking lot and bank to the south, College Avenue and a gas station to the east, and private residences to the west.

AEI reviewed nearby groundwater monitoring data that inferred a groundwater flow direction to the southwest. AEI identified the following recognizable environmental conditions:

- *AEI reviewed a building plan which indicated that that an underground storage tank (UST) used for storing gasoline may have been located on the northwest portion of the subject property as late as 1986. The location of the UST was noted as "undetermined", however, a fill pipe was noted on the plans in this location. Building permits dated 1941 listed the occupant of the property as Berkeley Fuel and Supply; however, it is unknown whether the former UST was associated with this business. The subject property was not listed on the regulatory database as a current or former UST site; however, based on the building plan, it is apparent that a UST was formerly located onsite. The location of the former UST is unknown. Based on the unknown management and/or removal practices utilized in connection with the UST, the potential exists that a release of*

petroleum hydrocarbons from the UST has impacted the subsurface of the subject property via groundwater.

- *AEI's assessment revealed that dry cleaning activities have been conducted on the subject property since at least 1987. Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE) during the dry cleaning process. These solvents, even when properly stored and disposed of, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility. Based on this information, the presence of a dry cleaning facility on the subject property represents evidence of a recognized environmental condition.*

AEI recommended that a subsurface investigation and a geophysical survey be conducted in connection with the former on-site UST and the long-term dry cleaning operations.

2.2 Phase II Subsurface Investigation – May 2005

AEI conducted a geophysical survey using electro-magnetic survey (E-M) Survey and ground penetrating radar (GPR) in the northwest corner of the site and in the area around the dry cleaning machines where the soil borings were planned. The E-M Survey identified an anomaly just inside the gate (northern end of property). GPR was able to identify the sanitary sewer along the back of the building and the storm drain along the west property line. GPR also identified what appeared to be a backfilled excavation (approximately 8 feet deep) that coincided with the E-M Survey anomaly along with a shallow (1.5 to 3.0 feet deep) narrow backfilled trench that ran through the center of the parking area, through the backfilled trench anomaly.

AEI advanced five soil borings to depths ranging from 12 to 25 feet below ground surface (bgs) with soil samples reportedly collected at regular intervals beginning at a depth of 3.0 to 4.0 bgs. The first boring was advanced to a total depth of 25 feet bgs to determine the depth of groundwater. The borings were advanced using a Geoprobe® model 5410 direct-push drilling rig. Soil samples were placed on ice. The depths of samples that were analyzed for borings SB-1 through SB-4 were not clearly specified in the report but appear to most likely be 3 to 4 feet bgs based on the chain of custody document. The depth of the sample analyzed for SB-5 was not clearly indicated but, based on the chain of custody, was likely 11.5 feet bgs. A groundwater sample was collected from boring SB-1 with first water reported at 17½ feet bgs and a water level at 16 feet bgs after 5 minutes.

Soil and groundwater samples were transported to McCampbell Analytical, Inc. with the soil samples from borings SB-1 through SB-4 analyzed for halogenated volatile organic compounds (HVOCs) by EPA Method 8260 (8010 basic list). The soil sample from SB-5 was analyzed for Total Petroleum Hydrocarbons quantified as gasoline (TPH-g), benzene, toluene, ethlybenzene, xylenes (BTEX), and methyl-tert-butyl ether (MTBE) by methods SW8015Cm/8021B. The groundwater sample from SB-1 was analyzed for HVOCs by EPA Method 8260B for the basic 8010 list.

No detectable concentrations of TPH-gasoline, TPH-diesel or TPH-motor oil were reported in the soil sample from SB-5. PCE was detected in soil borings SB-1 through SB-4 at concentrations ranging from 0.080 micrograms per kilogram (µg/kg) (SB-2) to 0.26 µg/kg (SB-4). No other HVOC analytes were detected in the soil samples. Tetrachloroethene (PCE) was detected at a concentration of 48 micrograms per liter (µg/L) in the groundwater sample from boring SB-1 and Chloroform was reported at a concentration of 0.83 µg/L. No other HVOC analytes were detected in the groundwater sample from SB-1.

AEI concluded that the presence of low levels of PCE in the soil and groundwater indicated that a small release of PCE had occurred in the area of the dry cleaning facility at the site. The presence of chloroform in the groundwater is probably the result of interaction between PCE and chlorine released by breakdown of the PCE with naturally occurring organic compounds in the soil or groundwater beneath the site. AEI recommended the following actions:

- No further investigation of the suspected UST in the NW corner of the property.
- Due to the fact that a release of hazardous material has been discovered, a copy of this report should be forwarded to ACEH.
- Request an immediate determination as to whether any further action will be required relative to the HVOCs detected.

2.3 Phase II Confirmation Sampling – June 2005

On 28 June 2005, EFI Global (EFI) advanced a direct push boring (SB-6) with continuous coring to a depth of 20 feet bgs. The coring was screened with a hand-held photo-ionization detector, with no VOC's detected in the field. The soils were reported to be composed as follows:

0 – 8 feet: brown silty clay;
8 – 12 feet: clay;
12 – 20 feet: clayey silt.

First groundwater was reported at a depth of 20 feet bgs with the static groundwater level at 16 feet bgs. Groundwater samples were collected from the borehole using a dedicated Teflon bailer. No odors were identified in the groundwater samples. The groundwater samples were transported to McCampbell Analytical, Inc. for analysis of VOCs by EPA Method 8260. PCE was reported at a concentration of 15 µg/L and chloroform was reported at a concentration of 0.83 µg/L.

EFI concluded that the shallow soils contain low concentrations of PCE, but PCE is not present in the deeper unsaturated soils. They considered it to be possible that the low concentration of PCE detected in the groundwater is not attributed to PCE in shallow soil at the site. EFI indicated that the sources of the PCE detected in the groundwater is unknown, but the concentrations appear to be low and not of significant concern at this time. EFI recommended against any further assessment of the PCE and requested that the City of Oakland Fire Department review the additional data in response to a previous request for "no further action".

2.4 Local Regulatory Agency File Review, Kays Cleaners, 6251 College Avenue – July 2008

Basics Environmental Inc. (Basics) reviewed the Phase I ESA and Phase II ESA (references No. 2 and 3) completed by AEI Environmental. Basics indicated that EFI prepared a report titled "Request for No Further Action – Red Hanger Cleaners (6235 College Avenue) dated 2 June 2005 and submitted to the Oakland Fire Department for review. EFI summarized the results in the AEI Phase I and Phase II ESA reports. EFI concluded that is possible that the low concentration of PCE detected in the groundwater is not attributed to PCE in shallow soil at the site. EFI indicated that there were once nearby historic dry cleaning businesses as follows: Rockridge Royal Cleaners located at 5445 College Avenue and down-gradient to cross-gradient; Garden Cleaners located at 5808 College Avenue and down-gradient to cross-gradient; and historically adjacent Kay's Cleaner located at 6251 College Avenue and directly up-gradient to the Red Hanger Cleaners. EFI recommended no further assessment of the PCE in the soil and groundwater be done at the site and requested a "no further action" letter from

the City of Oakland Fire Department. Basics Reviewed the report titled "Confirmation Sample Results – Red Hanger Cleaners (6235 College Avenue)" (Reference No. 6).

Basics reported that, on 15 July 2005, the Oakland Fire Department issued a letter stating that "no further action" was required by the Oakland Fire Department. Basics reported that the Oakland Fire Department authority does not extend to sites where groundwater has been impacted. Basics indicated that the extent of PCE in groundwater had not yet been defined horizontally or vertically and the health risk posed by the contaminants had not yet been evaluated.

Basics described their scope as to provide additional file review and further research to evaluate hazardous materials handling practices conducted at 6251 College Avenue. They discovered that Red Hangers Cleaners occupied 6251 College Avenue starting in approximately the year 1970. By 1987, they had moved to 6239 College Avenue.

Basics reviewed hazardous materials plans for 6239 College Avenue from April 1991 through March 2007. They reported that in April 1991, 100 gallons of waste PCE was generated per year and 55 gallons of new PCE was stored on site. Drums possibly containing PCE were stored outside for approximately two years. A May 1993 inspection noted that waste PCE filters were stored in two 15-gallon drums. A February 1997 Hazardous Materials Business Plan indicated that 140 gallons of PCE was stored onsite. A January 2007 inspection indicated that old waste should be properly disposed. A January 2007 and a March 2007 inspection indicated that no secondary containment was provided for a drum of PCE.

Basics reviewed the City of Oakland Building Department files for information pertaining to the former Kay's Cleaners and Red Hanger Cleaners. They reported that, for 6235-6239 College Avenue, in 1986 a building permit was issued for the demolition of a single story structure (6237-6247 College Avenue) and to erect a metal warehouse building. A building permit was issued for the construction of a new three story building in 1986 and a Temporary Certificate of Occupancy was issued to Red Hanger Cleaners.

For 6251-6255 College Avenue, a permit was issued in 1925 for the construction of a three-story building at the corner of 63rd Street and College Avenue. In 1964 a Certificate of Completion was issued to Kay's Cleaners (6253 College Avenue). In 1965 a mechanical permit was issued for Red Hanger Cleaners at 6251-6255 College Avenue. Additional tenant improvements were issued in 1988, 2001, 2005, and 2006.

Basics reviewed city directories finding Kay Cleaners listed at 6253-6255 College Avenue in 1953, and at 6253 College Avenue in 1955, 1960, and 1965. In 1970, Kay Cleaners, Inc. was listed at 6251College Avenue. For 1973 and 1977, 6251 College Avenue was listed as Kay's Cleaners. In 1987, 6251 College Avenue was listed as Red Hanger Cleaners. In 1992, 6251 College Avenue was listed as Hazara Oriental Rug and 6235 College Avenue was listed as Office and Red Hanger. In 2002, 6251 College Avenue was listed as Impressions, Inc. and 6235 College Avenue was listed as Office and Red Hanger. In 2007 6251 College Avenue was listed as Impressions, Inc. and 6235 College Avenue was listed as being Office and Red Hanger.

Basics concluded that the building addressed as 6251-6255 College Avenue was occupied by Kay's Cleaners from at least 1953 to 1977. From 1982 to 1987, 6251-6255 College Avenue was listed as Red Hanger Cleaners. In 1987 Red Hanger Cleaners moved to 6235-6239 College Avenue.

Basics indicated that the 6251-6255 College Avenue site is not currently listed as a contaminated facility. However, given the potential for appreciable amounts of hazardous materials used over an extended period of time, they concluded that it is conceivable that soil and/or groundwater may have been impacted.

2.5 2009 Site Characterization Summary Report – 20 January 2010

In a letter dated 15 January 2009, staff of Alameda County Environmental Health (ACEH) indicated that they had reviewed the case file for Fuel Leak Case No. RO0002981 and Geotracker Global ID T10000000416, Red Hanger Cleaners, 6335-6339 College Ave., Oakland, CA 94618. ACEH requested the submission of a work plan to address determining the horizontal and vertical extent of the dissolved groundwater plume, a characterization of the vertical extent of soil contamination, an assessment of groundwater contamination at the former UST location, and a preferential pathway study including underground utilities and nearby wells. ACEH requested copies of all previous reports by 16 March 2009 and the work plan, including a well survey, by 15 April 2009.

Site Characterization Workplan

Environmental Resources Management (ERM) submitted a Site Characterization Workplan dated 13 April 2009 to ACEH. ERM summarized the AEI Consultants investigations (References No.2 and No.3), the EFI Global, Inc. investigation (Reference No. 4), and the Basics Environmental local agency file review (Reference No. 6). They also reviewed additional soil sampling conducted by P&D Environmental in May of 2008, describing it as follows:

> *An additional round of soil and ground water sampling was conducted at the Site in May 2008 by P&D Environmental, Inc. at two locations northeast (presumed upgradient) of the existing dry cleaning machines. The scope and results of that investigation have not been presented in a formal report, but boring logs, data summary tables, and an analytical report associated with those two locations (B7 and B8; Figure 3) were provided to ACEH under separate cover. PCE was detected in one of the soil samples, and in both ground water samples. In addition, chloroform was detected in both ground water samples. Both PCE detections in ground water were higher than the RWQCB screening level (7 µg/L and 12 µg/L). The source of these upgradient detections is unknown. However, one possibility is a former dry cleaning facility previously located adjacent to and northeast of the current Red Hanger Kleaners location at 6251 College Avenue. Basics Environmental (Basics) conducted a local regulatory agency file review for the two dry cleaning facilities, and presented their findings in a 23 July 2008 letter report (submitted to ACEH under separate cover). According to the Basics report, the 6251 address originally housed a dry cleaning operation called Kay's Cleaners, and that facility was apparently later adopted for use by Red Hanger Kleaners, which apparently moved their operations in 1987 to the current location. Currently, the 6251 College Avenue address is occupied by a nail salon.*

Preferential Pathway Study

ERM conducted a site walk to identify obvious evidence of subsurface utilities in the immediate site vicinity (i.e., utility boxes, manholes, etc.). On 8 April 2009, a geophysical survey was completed to identify anomalies suggestive of subsurface pipelines. The maximum utility depth was 5 feet bgs. ERM concluded that groundwater depths are substantially deeper than the utilities, so groundwater would not drain into or follow the utility corridors. However, they indicated that historical dry cleaner operations that released PCE-impacted wastewater to the sanitary sewer or storm sewer lines could also have had releases to the subsurface through cracks and breaks in the lines.

ERM reviewed a well survey obtained from Environmental Data Resources for all wells within ¼-mile of site and listed in local and regional databases. No federal or state water supply wells were identified within ¼-mile of the site. One federal public water supply well was located ¾-mile north of the site and one state well located approximately one mile west-northwest of the site. ERM identified 12 groundwater monitoring wells within ¼-mile of the site listed on the State Water Resources Control Board Geotracker Database. ERM found no evidence of wells in the immediate site vicinity that were located at hydrogeologic positions likely to serve as preferential pathways for chemical migration onto the site or away from the southwest corner of the site (where PCE was identified in groundwater).

Scope of Work

ERM defined the scope of work including:

1) The securing of permits;
2) Marking proposed boring locations and activating an Underground Services Alert;
3) The preparation of site specific health and safety plan;
4) The collection of soil and grab groundwater samples at nine locations in a two phase field investigation with Phase A being as follows:
    a) The advancement of borings in the vicinity of the dry cleaning machines to collect soil and groundwater samples.
    b) The advancement of a boring outside of the building, adjacent to Boring SB-1, downgradient from the dry cleaning machines to first water of 35 feet, whichever comes first;
    c) A boring in the alley north of the dry cleaning facility and west of the neighboring restaurant, upgradient of the dry cleaning machines.
    d) A boring in the alley and north of the dry cleaning business and west of the restaurant, upgradient of the dry cleaning machines, and north of the previous boring; and
    e) A boring within the former UST pit to collect a grab groundwater sample.
5) ERM defined Phase B as advancing three borings downgradient of those in which PCE was originally detected with one within the subject property boundaries at the southwest corner and two located off-site within the adjacent Bank of America parking lot.

Work Plan Summary

ERM summarized the subsurface stratigraphy of the site and their approach as follows:

> According to the prior Phase II investigation, the subsurface stratigraphy at the Site is predominantly silty clays and clayey silts, which would tend to inhibit the vertical migration of chemicals. In addition, the relatively low PCE concentrations observed at the Site do not suggest the presence of a separate fluid phase (i.e., dense nonaqueous phase liquid, of DNAPL, which, in the case of PCE, would tend to sink to the base of a water bearing zone). Therefore, the proposed scope assumes that the PCE concentrations observed in the two depth intervals sampled during Phase A will be comparable. If this is the case, or if the shallow samples contain appreciably higher concentrations than the deeper samples, the borings advanced during Phase B will terminate at a depth just beneath the ground water interface, at approximately 16 to 20 feet bgs.
>
> However, if the deep ground water samples collected during Phase A contain significantly higher concentrations, it will indicate that the vertical extent of PCE occurrence has not been defined adequately, and to more completely address the ACEH concerns, it may be necessary to collect additional ground water samples at intervals deeper than those investigated during Phase A prior to collecting downgradient samples.

ERM planned to collect soil samples during Phase A at 10 feet bgs and from directly above the groundwater contact (assumed to be 15 feet). They planned to collect groundwater samples using a hydropunch or similar groundwater sampling technique.

With the exception of the boring through the former UST pit, all soil and water samples were planned to be analyzed for VOCs by EPA Method 8260B. The soil and water samples from the boring through the UST pit were planned to be analyzed for Total Petroleum Hydrocarbons Extractable Range by EPA Method 8015 modified; along with Total Petroleum Hydrocarbons quantified as gasoline with benzene, toluene, ethylbenzene, xylenes, and fuel oxygenates by EPA Method 8260B.

ACEH Review of Workplan

The ACEH reviewed the work plan, conditionally approving it in a letter dated 14 August 2009 (Reference No. 8). Their technical comments were that they required a perjury letter, and that soil sampling also be performed at the capillary fringe, saturated zone, at lithologic changes, and from areas with high Photo-Ionization Detector (PID) readings. For the groundwater samples from below the former UST excavation, they requested additional analyses for ethylene dibromide (EDB) and ethylene dichloride by EPA Method 8260. ACEH requested that the technical report be submitted by January 15, 2010.

2009 Site Characterization Summary Report

ERM-West, Inc. (ERM) submitted a 2009 Site Characterization Report to ACEH dated 20 January 2010 (Reference No. 9).

Two soil borings were advanced outside of the building and downgradient near the dry cleaning machines, and one boring was advanced through the former UST excavation on 11 October 2009. Site access limitations prevented the drilling of borings in the alleyway north of the building. One soil boring was advanced inside the building on 5 December 2009 to characterize the vertical extent of soil PCE contamination. All soil borings were advanced manually with a stainless steel hand auger to 5 feet and then via direct push drilling to the terminus of each boring.

The soils were continuously cored in 4-foot lengths with the exception of the Location A-1 step-out boring, which was pushed directly to the terminous. The soil samples were visually examined to characterize the subsurface geology according to the Unified Soil Classification System, evaluated for visible evidence of contamination, and field screened with a PID for the presence of organic vapors. Visual observations and PID readings were used to determine the appropriate sampling intervals within each boring. Soil samples were collected in acetate liners, covered with Teflon tape, and capped with plastic end caps. All soil samples were sealed in plastic bags and stored in an iced cooler.

Groundwater was first encountered at depths of approximately 35 feet bgs, rising up to approximately 22 feet bgs. Upon reaching groundwater, temporary wells were installed using a HydroPunch sampler and ¾-inch polyvinyl chloride (PVC) pipe with 5 feet of screen at the bottom. Groundwater samples were collected using polyethylene tubing and a check valve into appropriate laboratory-provided sample containers and stored in an iced cooler.

The soil and groundwater samples from the area of the dry cleaning machines were analyzed for VOCs by EPA Method 8260B. The groundwater sample from below the former UST excavation was analyzed for TPH-gasoline/benzene, toluene, ethylbenzene, and xylenes (BTEX)/fuel oxygenates, and for water only, ethylene dibromide (EDB; syn: 1,2-dibromoethane)

and ethylene dichloride (EDC; syn:1,2-dichloroethane) by USEPA Method 8260B; and TPH-extractables by USEPA Method 8015-modified.

All borings were backfilled with neat cement. The soil cuttings were stored in one 55-gallon drum and stored on the property in preparation for disposal.

ERM reported the soils to be light brown to dark brown silts, sandy silts, and silty sands, and yellow-brown to orange-brown sandy/gravelly silts to clayey silts and gravelly clays to clays. Groundwater was encountered in three of the borings. One boring that was advanced to 35 feet bgs did not encounter groundwater. No evidence of impacts, such as odor or staining was observed in any of the borings.

The analytical results of this and past investigations are summarized on Figure 3 in the Youngdahl Workplan (Reference No. 16). In general PCE was detected in the soil beneath the dry cleaning machines at concentrations ranging from not-detected at depths of 25 feet bgs and deeper, to 10.6 micrograms per kilogram (µg/kg) at 6.5 feet bgs. Outside of the building, PCE was detected in only one sample at a concentration of 4.3 µg/kg at 20 feet bgs. Toluene and Acetone were detected in low concentrations. TPH-extractables, TPH-gasoline, BTEX compounds, and fuel oxygenates were not detected in soil samples collected from beneath the former UST excavation. The concentrations of all soil analytes were below applicable screening levels.

PCE was detected in concentrations of 0.91 µg/L and 1.9 µg/L in the two groundwater samples collected next to the area of the dry cleaning machines. Chloroform was detected in concentrations of 1.7 µg/L and 1.9 µg/L. TPH-extractables, TPH-gasoline, BTEX compounds, and fuel oxygenates were not detected in the water sample collected from beneath the former UST excavation.

ERM summarized their report with the following:

- *The lack of TPH and fuel-related compounds in soil and ground water samples collected in the vicinity of the suspected former UST indicates that the former UST is not a source of TPH impacts to the subsurface.*

- *The lack of visual or other evidence of VOC impacts and the low reported concentrations of VOCs in unsaturated soils, below applicable screening levels, indicates that there is not a significant VOC source in shallow soils at the Site.*

- *The low reported concentrations of VOCs in Site ground water, below applicable screening levels, indicate that current VOC concentrations in Site ground water are lower than reported in 2008 and are not representative of significant VOC impacts.*

2.6 Well Survey Report – June 2010

ERM submitted a Well Survey Report for the Red Hanger Kleaners site to ACEH on 7 June 2010. ERM contacted the Alameda County Public Works Agency, Water Resources Section and the California Department of Water Resource, Division of Planning and Local Assistance for well information. ERM identified 26 wells within ¼-mile of the subject property. All of the identified wells were associated with environmental investigations being conducted at nearby sites.

ERM concluded that given the locations of these 26 wells relative to the subject property and the southwesterly groundwater flow direction in the vicinity, it is unlikely that the 26 wells would

be potential receptors of groundwater flowing beneath the subject property or conduits to influence groundwater migration from the subject property.

3.0 CONCEPTUAL SITE MODEL

On June 24, 2011, Alameda County Environmental Health (ACEH) directed the site owner to submit a work plan to evaluate vapor intrusion at the site including beneath the Red Hanger Kleaners building and along the sewer line in the alleyway between the Red Hanger Kleaners and the Great Wall Restaurant. Youngdahl prepared a Workplan (Reference No. 16) which was conditionally approved by ACEH on 27 January 2015 (Reference No. 17).

A detailed Conceptual Site Model was provided in the Youngdahl Workplan for this soil gas investigation (Reference No. 16). The area of investigation is underlain by bedded light brown to dark brown silts, sandy silts, and silty sands, and yellow-brown to orange-brown sandy/gravelly silts to clayey silts and gravelly clays to clays to a depth of at least 35 feet with groundwater ranging from 15 to 22 feet bgs. A case closure letter for an underground storage tanks site at 6201 Claremont Avenue in Oakland (less than 200 feet east of the subject property) (Reference No. 12) showed the groundwater flow direction to be southwesterly with groundwater depths ranging from 11.69 to 23.02 feet bgs.

The identified chemicals of concern are PCE and chloroform. Based on the most recent site assessment (Reference No. 9), the concentrations in the groundwater and soil appear to be below human health risk screening thresholds. The soil ingestion/absorption and groundwater exposure pathways are therefore incomplete. However, the soil gas extent and concentrations were previously unknown, hence this report.

The buildings in the area known to be potentially impacted are the dry cleaning business, offices, a neighboring restaurant, residential properties, and a bank. Most of the area around the buildings is surrounded by both asphaltic concrete and portland cement paving. The site is crossed by various underground utilities which are potential preferential pathways for contaminant migration.

The PCE release is most likely related to dry cleaning businesses in the area (not necessarily only Red Hanger Kleaners). Dry cleaning operations typically use chlorinated solvents, particularly tetrachloroethylene (PCE) during the dry cleaning process. These solvents, even when properly stored and disposed of, can be released from these facilities in small, frequent releases through floor drains, cracked concrete, and sewer systems. Chlorinated solvents are highly mobile chemicals that can easily accumulate in soil and migrate to groundwater beneath a facility.

The potential exposure pathways for PCE and Chloroform are vapor intrusion into buildings and into the air outside of buildings. The potential receptors would be past employees in the former dry cleaning business, a nearby restaurant, a nearby bank and offices, customers of these businesses, and occupants of nearby residences (Figure 2).

4.0 OBJECTIVES AND SCOPE OF FIELD INVESTIGATION

The scope of work presented in the work plan was developed to address Alameda County Environmental Health (ACEH) requirements. The objectives of the sampling and analysis plan was to further evaluate the extent of PCE, chloroform, and any other dry cleaning solvent/solvent degradation product contamination in the soil gas. ACEH conditionally approved the work plan requesting that we retain all 11 soil gas sampling locations for analyses using the mobile laboratory and that we switch to using Summa Canisters and an offsite laboratory for the subslab samples (Reference No. 17). They also requested the addition of one subslab sample in the bolier room. ACEH requested that we use TO-15 to look for low levels of

trichloroethene in the subslab samples. In addition to using the photoionization detector (PID) to measure leak detection compounds in the shroud, ACEH requested that we collect a minimum of three shroud gas samples for testing for leak detection compounds via the mobile laboratory gas chromatography. All additional ACEH requests were complied with.

4.1 Fieldwork Preparation

Prior to initiating field work, Youngdahl employed the services of an underground utility locating service to locate all underground and subslab utilities within the area of planned investigation. Youngdahl marked the site for an Underground Services alert, prepared a Health and Safety Plan, and obtained Summa Canisters along with 200 mL/min flow regulators.

4.2 Soil Gas sampling

On 11 March 2015, representatives of TEG and Youngdahl met on site at to conduct the soil gas sampling. The former dry cleaning space had been mostly gutted of all equipment with only debris piled in the northwest corner. A new hot water heater had been installed in the boiler room over a previously selected sampling location.

Soil gas samples were collected at eleven locations (Figure 3) from depths of approximately 5 feet bgs following California Department of Toxic Substances Control and San Francisco Regional Water Quality Control Board guidelines (Reference No. 14). 1½-inch holes were drilled through the concrete slab. A one inch probe rod with a drop-off point was driven to a maximum depth of 5 feet. A plastic air diffuser was inserted on nylaflow tubing to the bottom of the hole and then retracted 0.5 feet. Monterey sand was then added as the probe rod was withdrawn leaving the diffuser centered in a one-foot section of hole with a sand pack. Hydrated bentonite was then added to the hole to within one-inch of the surface. Each point was allowed to equilibrate for at least two hours before sampling.

Prior to sampling, isopropyl alcohol soaked cotton balls were placed around the outside of the hole with care taken to not allow alcohol to touch the tubing. A shroud was then placed over the sampling point with the tubing exiting the shroud sealed using a paper towel. Each shroud setup was allowed at least a 5-minute period for alcohol fumes to accumulate. Prior to sampling, the presence of alcohol was verified with a PID. Shroud gas samples were collected from three of the sampling points for measurement of alcohol using the mobile laboratory. Prior to sampling, each sampling point was purged of three volumes of gas. The syringe was then used to collect a soil gas sample which was then brought immediately to the onsite mobile laboratory for analysis for volatile organic compounds (VOCs) via EPA Method 8260B.

Upon the completion of sampling all soil gas sampling diffuser tips and tubing were removed from the holes and the holes were backfilled with neat cement grout. The soils gas sampling probed set times, sample collection times and results of the shroud sampling are provided in Table 1.

4.3 Subslab Sampling

Subslab sampling is similar to soil gas sampling. Holes 1½-inch in diameter were drilled through the 6-inch concrete slab and advanced two inches into the engineered soils/sand beneath the slab (total depths of 8 inches). A stainless steel air diffuser mounted on ¼-inch stainless steel tubing was inserted into each hole with approximately 3-inches of Monterey sand. A one inch section of hydrated bentonite was added and neat cement grout was placed to within about 1-inch of the surface. The top of the stainless steel inserts were equipped with a ¼-inch compression fitting with cap. For sampling, ¼-inch nylaflow tubing was connected to each insert. Each subslab sample was allowed to equilibrate for at least two hours and was sampled by first purging each subslab implant of 3 volumes and then drawing a gas sample into a one-liter Summa canister equipped with a 200 ml/minute flow regulator. Upon the completion

of sample collection a protective copper cap was placed over each implant flush with the surface to allow the points to be re-sampled at a future date. Summa canisters were transported under chain-of-custody protocols to Eurofins Air Toxics, Inc. in Folsom, California for analysis of VOCs by EPA Method TO-15.

5.0 ANALYTICAL RESULTS

PCE was detected in every sample with soil gas sample concentrations ranging from as low as 250 ug/m^3 at SV-10 to as high as 24,000 ug/m^3 at SV-9. The subslab samples PCE concentrations ranged from 610 ug/m^3 to 52,00 ug/m^3. The analytical results are provided in Tables 2 and 3. No compounds other than PCE were detected in the soil gas samples. Low levels of several other compounds were detected in the subslab samples. No trichloroethene was detected in the soil gas samples above the reporting limit of 100 ug/m^3 or in the subslab samples above reporting limits ranging from 6.0 ug/m^3 to 24 ug/m^3.

QA/QC was performed using method blanks, a probe blank, and one duplicate sample. Laboratory blanks were all non-detect and all surrogates were within acceptable parameters.

6.0 VAPOR INTRUSION HEALTH RISK ASSESSMENT

As requested by the ACEH, potential vapor intrusion health risks were evaluated at the Red Hanger site using two methods: First, soil gas concentrations were compared to SFBR-RWQCB Environmental Screening Levels (ESLs) (SFBR-RWQCB, 2013). Note that ESLs are not available for subslab gas samples. Second, the California Department of Toxic Substances Control (DTSC) Johnson-Ettinger (JE) vapor intrusion model was used to conduct a more refined analysis based on key site-specific information such as soil type, depth to sample collection, etc. The JE model is an environmental transport model that predicts an indoor air concentration based on diffusion and advection of soil gas through overlying soil and the building slab, taking into account site-specific soil and building parameters. The JE modeling was conducted based on both the soil gas samples and the subslab samples. All vapor intrusion risk assessments assumed commercial use of the property. In addition to the vapor intrusion risk assessments, the sampling results were evaluated with respect to the recent USEPA response action levels for trichloroethene (TCE) (USEPA, 2014).

Assessment of Vapor Intrusion Risks Based on Soil Gas

As discussed previously, only PCE was detected in soil gas samples (Table 2). Table 4 shows the sample locations which exceed the commercial use ESL for PCE of 2100 µg/m^3. Seven of the eleven soil gas samples exceed the ESL.

JE modeling was also conducted for each soil gas sample location. JE modeling takes into account the site-specific soil type, the presence of a slab, commercial use exposure parameters, depth at which the sample was collected, etc. It is therefore a more refined method for evaluating vapor intrusion risks. The soil type assumed on site was Silty Loam, as classified by a Certified Hydrogeologist/Engineering Geologist. Standard DTSC exposure parameters were assumed consistent with commercial use. The results of the JE modeling are shown in Table 4. Table 4 shows that although seven soil gas sampling locations exceeded the ESL, the JE modeling shows that only two locations have a potential to exceed the negligible cancer risk level of 1E-06 (one in a million), and none of the locations show a Hazard Quotient (HQ) greater than 1. An HQ greater than 1 indicates some potential for adverse non-cancer health effects.

The above JE analysis can be refined further. For existing buildings, DTSC allows vapor intrusion risks to be evaluated based on the 95 percent upper confidence limit of the mean (95UCLM) of soil gas concentrations, as long as at least eight samples have been collected (see bottom of page 56, DTSC, 2011). This is true for the subject property as 11 soil gas samples have been collected. The USEPA statistical computing software, *ProUCL*, was used to

calculate a 95UCLM for PCE in the soil gas samples of 10,686 µg/m^3 (USEPA, 2013). The *ProUCL* output is shown in **Appendix C**. Additional JE modeling was conducted based on the 95UCLM value, resulting in a final cancer risk of 1E-06 and an HQ of 1.7E-02. These final PCE risk estimates, based on site-specific information and calculated consistent with DTSC vapor intrusion risk guidance, demonstrate negligible health risks associated with PCE in soil gas. The JE model output based on the 95UCLM concentration of 10,686 µg/m^3 is provided in **Appendix D**.

Assessment of Vapor Intrusion Risks Based on Subslab Gas

As noted previously, there are no ESLs for subslab gas, only soil gas. Therefore, vapor intrusion risks based on the three subslab samples were determined using the DTSC JE model as described above for the soil gas samples. Unlike the soil gas, several additional chemicals were detected in subslab gas. These chemicals, along with their maximum detected concentrations, are shown in Table 5. Results of the JE modeling, including cancer risk and the HQ for each chemical are also shown in Table 5. Table 5 shows that of the chemicals detected, only PCE results in significant cancer risk and an exceedance of the HQ. Cumulative cancer risk is 1E-04, which significantly exceeds the negligible risk level of 1E-06. Cumulative non-cancer health risks are indicated by summing the HQs for each individual chemical to obtain the Hazard Index (HI). An HI greater than 1 indicates a potential for adverse non-cancer health effects. Table 5 shows a HI of 1.8, virtually all of which is due to PCE.

Evaluation of Soil Gas and Subslab Gas Results With Respect to the USEPA Response Action Levels for Trichloroethene

No TCE was detected in soil gas or subslab gas samples, thus the USEPA response action levels for TCE, which were designed to address TCE exposures via vapor intrusion, do not apply.

Indoor Air Sampling and Risk Screen

Because the vapor intrusion risk assessment based on subslab gas conducted above indicated potentially significant health risks related to PCE (the only chemical detected in soil gas), indoor air sampling was conducted to confirm the model-predicted health risk estimates. The indoor air sampling was conducted by SCS Engineers (Pleasanton, CA). A complete copy of their report with complete details regarding the sampling and analytical results is provided in Appendix E.

To summarize, the indoor air study consisted of two indoor air samples collected on the first floor of the subject building (IA-1 and IA-2), two samples on the second floor (IA-3 and IA-4), one sample on the third floor (IA-5) and two concurrent ambient (outdoor) background samples (BG-1 and BG-2). Samples were collected in Summa canisters over an 8-hr sampling period and analyzed using EPA Method TO-15 in the very sensitive Selective Ion Monitoring (SIM) mode. The analytical results were compared to the USEPA Regional Screening Levels (RSLs) for air (commercial/industrial use) in Table 6 (USEPA, 2015). If available, the DTSC-modified version of the USEPA RSL was used for some chemicals (see Table 6 footnotes).

Five chemicals were found to exceed their USEPA RSL (benzene, carbon tetrachloride, chloroform, PCE and TCE). However, of these, only PCE was found in the soil or subslab gas, indicating that the other chemicals are not due to vapor intrusion but some other source. Benzene and carbon tetrachloride were detected in indoor air at concentrations very similar to, or even less than, concentrations in background air, thus outdoor air is the expected source for these two chemicals in indoor air. Chloroform and TCE were not detected in soil or subslab gas so an indoor source is expected for these chemical, perhaps cleaning or office products in the case of TCE, used on the second or third floor. Indoor concentrations of chloroform are likely due to bathroom use (emission from the use of chlorinated water). Table 6 also shows that PCE concentrations on all three floors were above the corresponding DTSC-modified RSL for PCE of

2.1 µg/m^3. Since PCE was found in the subslab gas and not found in background air the PCE is attributed to vapor intrusion.

TCE also slightly exceeded the USEPA ARAL of 8 µg/m^3 on the second floor of the building (Table 6). However, the TCE ARAL was developed to specifically address TCE in indoor air due to vapor intrusion and the available evidence (e.g. TCE not detected in subslab gas) indicates an indoor source for TCE rather than vapor intrusion.

7.0 FINDINGS

PCE was released to the environment at Red Hanger Kleaners. While soil gas concentrations of PCE underlying the foundation exceed the San Francisco Bay Regional Water Quality Control Board environmental screening level (ESL) of 2,100 µg/m^3, the concentrations exceeding the soil gas ESL are not pervasive in extent in the soils beneath the building. With the exception of the sewer line, soil gas concentrations appear to attenuate with distance away from the area of the former dry cleaning machines. Cracks were observed in the concrete at the location of SV-6 near the former dry cleaning machines which may have provided preferential pathways for PCE to enter into the soils beneath the foundation. The highest concentration of PCE in soil gas was found at the sewer cleanout. The highest concentration PCE in the subslab samples was found near the former location of the dry cleaning machines next to a crack in the slab.

The vapor intrusion health risk assessment concluded that, based on JE modeling of soil gas data for the subject site, no significant potential for adverse health effects due to vapor intrusion is indicated. However, based on subslab sample results, predicted cancer risks are significantly in excess of the negligible cancer risk threshold of 1E-06 (1E-04). All excess cancer risk is due to PCE. In addition, a potential for adverse non-cancer health effects is indicated by a HQ exceeding 1, also due to PCE. To confirm the JE model-based risk estimates based on subslab gas, indoor air sampling was conducted and the results compared to USEPA RSLs for indoor air (USEPA, 2015). This comparison showed that PCE levels in the building were above the DTSC-modified RSL for PCE. Based on all the data described above it is concluded that elevated PCE levels in the building are due to vapor intrusion.

No TCE was detected in soil gas or subslab gas samples, thus the USEPA ARAL for TCE (USEPA, 2014), which was designed specifically to address TCE exposures via vapor intrusion, may not apply. TCE was detected in indoor air from the second and third stories of the building. However, these TCE concentrations appear to be attributable to some other source located on the second or third floor since TCE was not detected in the soil gas, subslab gas, or indoor air samples from the first floor. The TCE may be due to a cleaning product used by janitorial or building maintenance services or an office product. Toner Aide is an office product (see Appendix F) used for making copies that contains 15-20% TCE and it is possible a product such as this is used in the 2nd or 3rd floor offices.

8.0 RECOMMENDATIONS

Health risks related to vapor intrusion, and PCE in particular, were determined to be negligible for commercial use based on soil gas. However, indoor air risks due to PCE were determined to be significant based on subslab gas and indoor air data. TCE levels in indoor air exceed the USEPA ARAL for vapor intrusion (upper floors only). However, TCE in the subject building cannot be attributed to vapor intrusion and instead appears to be due to the possible use of office or cleaning products on the 2nd or 3rd floor of the building. Since the TCE ARAL was developed specifically to address TCE due to vapor intrusion it is not clear that the ARAL applies in this case.

9.0 LIMITATIONS

1. This report has been prepared for the exclusive use of EFI Global Inc. and their clients for specific application to the Former Red Hanger Kleaners located at 6335-6339 College Avenue in Oakland, California. Youngdahl Consulting Group, Inc. has endeavored to comply with generally accepted environmental geology practice common to the local area. Youngdahl Consulting Group, Inc. makes no other warranty, express or implied.
2. As of the present date, the findings of this report are valid for the property studied. With the passage of time changes in the conditions of a property may occur, whether they are due to natural processes or to the works of man on this or adjacent properties. Legislation or the broadening of knowledge may result in changes in applicable standards. Changes outside of our control may cause this report to be invalid, wholly or partially. Therefore, this report should not be relied upon after a period of three years without our review nor should it be used or is it applicable for any properties other than those studied.
3. The analyses and recommendations contained in this report are based on limited windows into the subsurface conditions and data obtained from subsurface sampling. The methods used indicate subsurface conditions only at the specific locations where samples were obtained, only at the time they were obtained, and only to the depths penetrated. Samples cannot be relied on to accurately reflect the strata variations that usually exist between sampling locations.

If you have questions regarding this report, please do not hesitate to contact us at (916) 933-0633.

Very truly yours,
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Attachments: Tables
Figure 1 – Vicinity Map
Figure 2 – Site Location
Figure 3 – Site Plan

Appendix A – TEG Laboratory Report

Appendix B – Eurofins Laboratory Report
Appendix C – ProUCL Statistical Output
Appendix D - Johnson-Ettinger Model Output Based on 95UCLM PCE Concentration
Appendix E – SCS Engineer's Indoor Air Sampling Report
Appendix F – Product Information for Toner Aide

Distribution: One electronic copy to EFI Global, Inc., Attention Mr. Gary Bates
One electronic copy to Alameda County Environmental Health, Attention Mr. Keith Nowell, PG, CHG, Hazardous Materials Specialist

6.0 References (chronological order)

1. Geologic Map and Map Database of the Oakland Metropolitan Area, Alameda, Contra Costa, And San Francisco Counties, California, by R.W. Graymer, United States Geological Survey, 2000.

2. Phase 1 Environmental Site Assessment, 6235 College Avenue, Oakland, California, prepared by AEI Consultants (Project No. 10693), dated 18 March 2005.

3. Phase II Subsurface Investigation Report, 6293 College Avenue, Oakland, California, prepared by AEI Consultants (Project No. 11065), dated 17 May 2005.

4. Confirmation Sample Results, Red Hanger Cleaners, 6235 College Avenue, Oakland, California, prepared by EFI Global, Inc. (Project No. 98360-00-051), dated 28 June 2005.

5. Vapor Intrusion Pathway: A Practical Guidance, prepared by the Interstate Technology & Regulatory Council, January 2007.

6. Local Agency File Review, 6251 College Avenue (Historic Kay's Cleaners), Oakland, California, prepared by Basics Environmental (Project No. 08-ENV1251), dated 23 July 2008.

7. Site Characterization Workplan, Red Hanger Kleaners Site, prepared by Environmental Resources Management, dated 13 April 2009.

8. Fuel Leak Case No. RO0002981 and Geotracker Global ID T10000000416, Red Hanger Cleaners, 6335-6339 College Ave., Oakland, CA 94618, letter from Alameda County Health Services Environmental Protection, dated 14 August 2009.

9. Red Hanger Kleaners, 6239 College Avenue, Oakland, California, 2009 Site Characterization Summary Report, prepared by ERM-West. Inc., dated 20 January 2010.

10. Advisory – Active Soil Gas Investigation, California Environmental Protection Agency, March 2010.

11. Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance), Department of Toxic Substances Control, California Environmental Protection Agency, October 2011.

12. Fuel Leak Case No. RO00000243, Unocal #0018, 6201 Claremont Avenue, Oakland, Case Closure Letter, prepared by Alameda Department of Environmental Health, dated 28 February 2012.

13. Vapor Intrusion, Public Participation Advisory, Department of Toxic Substances Control, California Environmental Protection Agency, March 2012.

14. Advisory – Active Soil Gas Investigation, California Environmental Protection Agency, Department of Toxic Substances Control, Los Angeles Regional Water Quality Control Board, San Francisco Regional Water Quality Control Board, April 2012.

15. May 2013 update to Environmental Screening Levels, prepared by the San Francisco Bay Regional Water Quality Control Board, dated 23 Mary 2013. Accessed via the Internet April 2015 at: http://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/ESL/Lookup_Tables_Dec_2013_Summary.pdf

16. USEPA. 2014. Memorandum. EPA Region 9 Response Action Levels and Recommendations to Address Near-Term Inhalation Exposures to TCE in Air from Subsurface Vapor Intrusion. July 9, 2014. San Francisco.

17. Red Hanger Kleaners, 6335-6339 College Avenue, Oakland, CA, Alameda County Environmental Health Case No. RO0002981, Phase II Environmental Site Assessment Soil Gas Investigation, Work Plan, prepared by Youngdahl Consulting Group, Inc., dated 21 October 2014.

18. SCP Case RO2981 – Red Hanger Kleaners, 6335-6339 College Ave, Oakland; email from Keith Nowell of Alameda County Environmental Health to Mr. Ron Elvidge conditionally approving the Work Plan dated October 21, 2014.

19. USEPA. 2015. Regional Screening Levels. Accessed June 2015 via the Internet at: http://www.epa.gov/Region9/superfund/prg/

20. USEPA. 2013. ProUCL Version 5.0.00. User Guide. Office of Research and Development. EPA/600/R-07/041.

21. DTSC. 2015. HERO HHRA Note Number: 3, DTSC-Modified Screening Levels (DTSC-SLs). May 2015.

Tables

Table 1 – Probe Placement and Shroud Sampling Results

Sample	Time Placed	Time Sampled	Shroud PID IPA[1] (ppm)	Shroud IPA[1] Laboratory (ug/m^3) EPA 8260B	Starting Gauge Pressure (inches HG)	Ending Gauge Pressure (inches HG)
SV-1	08:12	10:26	14.6	2,100,000	-	-
SV-2	08:35	10:55	8.1	NA	-	-
SV-3	08:55	11:18	6.5	NA	-	-
SV-4	09:25	11:47	29.3	2,000,000	-	-
SV-5	09:42	12:37	6.6	NA	-	-
SV-6	09:58	12:59	10.5	NA	-	-
SV-7	10:18	13:22	9.9	NA	-	-
SV-8	10:42	14:02	14.5	NA	-	-
SV-9	11:22	15:14	47.9	8,400,000	-	-
SV-10	11:13	14:50	57.6	NA	-	-
SV-11	10:50	14:25	12.1	NA	-	-
SS-1	12:35	14:37	37.1	NA	-30	-5.0
SS-2	12:50	14:54	7.3	NA	-30	-4.0
SS-3	13:00	15:05	15.1	NA	-29	-4.7
Reporting Limits				10,000		

[1] – Isopropyl alcohol leak check
PID – Photo Ionization Detector
NA – Not Analyzed
SV – Soil Vapor Sample
SS – Sub Slab Sample

Table 2 – Analytical Results for Tetrachloroethene

Sample	Depth (feet)	Location	Tetrachloroethene (ug/m^3) EPA 8260B	Tetrachloroethene (ug/m^3) EPA TO-15
SV-1	5	Boiler Room	2,300	NA
SV-2	5	Press Area	610	NA
SV-3	5	Press Area	1,400	NA
SV-4	4	Spotting Board	9,100	NA
SV-5	5	Dry Cleaning Machine Area	5,500	NA
SV-6	5	Dry Cleaning Machine Area	17,000	NA
SV-7	5	Dry Cleaning Machine Area	6,600	NA
SV-8	5	Hazardous Waste Storage Area	3,800	NA
SV-9	5	Sewer Cleanout	24,000	NA
SV-10	5	East side of building	250	NA
SV-11	5	Dry Cleaning Machine Area	1,400	NA
SS-1	Base of slab	Press Area	NA	610
SS-2	Base of slab	Dry Cleaning Machine Area	NA	5,200
SS-3	Base of slab	Boiler Room	NA	1,100
Reporting Limit			100	7.5
ESL			2,100	None

NA – Not Analyzed
ESL – San Francisco Bay Regional Water Quality Control Board Environmental Screening Level
SV – Soil Vapor Sample
SS – Sub Slab Sample

Table 3 – Sub-slab Sample Analytical results, EPA TO-15 (ug/m^3)

Analysis	SS-1	SS-2	SS-3
Acetone	ND (26)	ND (110)	290
2-Propanol[1]	44	3,500	1,000
Cyclohexane	5.0	ND (16)	ND (5.2)
2,2,4-Trimethylpentane	5.2	ND (21)	ND (7.0)
Toluene	48	ND (17)	ND (5.7)
Tetrachloroethene	610	5,200	1,100
Ethyl Benzene	16	ND (20)	ND (6.5)
Total Xylenes	88	21	10
4-Ethyltoluene	20	ND (22)	ND (7.4)
1,3,5-Trimethylbenzene	7.5	ND (22)	ND (7.4)
1,2,4-Trimethylbenzene	18	ND (22)	ND (7.4)

ND – Not detected above reporting limit, reporting limit in parentheses
[1] Leak Check Compound

Table 4 – Vapor Intrusion-Related Health Risks Due to PCE in Soil Gas at Red Hanger Kleaners Assuming Commercial Use[1]

Sample ID	Sampling Depth (feet)	Location	PCE Concentration (µg/m^3)	Cancer Risk	Hazard Quotient
SV-1	5	Boiler Room	2,300	2.8E-07	3.7E-03
SV-2	5	Press Area	610	7.3E-08	9.9E-04
SV-3	5	Press Area	1,400	1.7E-07	2.3E-03
SV-4	4	Spotting Board	9,100	1.3E-06	1.8E-02
SV-5	5	Dry Cleaning Machine Area	5,500	6.6E-07	8.9E-03
SV-6	5	Dry Cleaning Machine Area	17,000	2.0E-06	2.8E-02
SV-7	5	Dry Cleaning Machine Area	6,600	7.9E-07	1.1E-02
SV-8	5	Hazardous Waste Storage Area	3,800	4.6E-07	6.2E-03
SV-9	5	Sewer Cleanout	24,000	2.9E-06	3.9E-02
SV-10	5	East Side of Building	250	3.0E-08	4.1E-04
SV-11	5	Dry Cleaning Machine Area	1,400	1.7E-07	2.3E-03
ESL			2,100		

[1]PCE was the only VOC detected in soil gas.
ESL = San Francisco Bay Regional Water Quality Control Board Environmental Screening Level for Tetrachloroethene (PCE).
Yellow highlight indicates an exceedance of the ESL for PCE.
Green Highlight indicates an exceedance of the negligible cancer risk threshold of 1E-06 or a Hazard Quotient (HQ) of 1.

Table 5 – Vapor Intrusion-Related Health Risks Based on Maximum Detected Concentrations in Subslab Gas

Chemical	Maximum Detected Subslab Concentration ($\mu g/m^3$)	Subslab Sampling Location for Maximum Concentration	Cancer Risk	Hazard Quotient
Acetone	290	SS-3	NC	1.1E-04
Cyclohexane	5	SS-1	NC	8.2E-05
Ethylbenzene	16	SS-1	1.6E-07	1.8E-04
4-Ethyltoluene	20	SS-1	NC	7.6E-04
2-Propanol	3,500	SS-2	NC	3.8E-02
Tetrachloroethene	5,200	SS-2	1.3E-04	1.7E+00
Toluene	48	SS-1	NC	1.8E-03
1,2,4-Trimethylbenzene	18	SS-1	NC	2.9E-02
1,3,5-Trimethylbenzene	7.5	SS-1	NC	2.4E-03
2,2,4-Trimethylbenzene	5.2	SS-1	NC	5.9E-05
Xylenes (total)	88	SS-1	NC	1.0E-02
Hazard Index			NA	1.8E+00
Cumulative Cancer Risk			1.3-04	NA

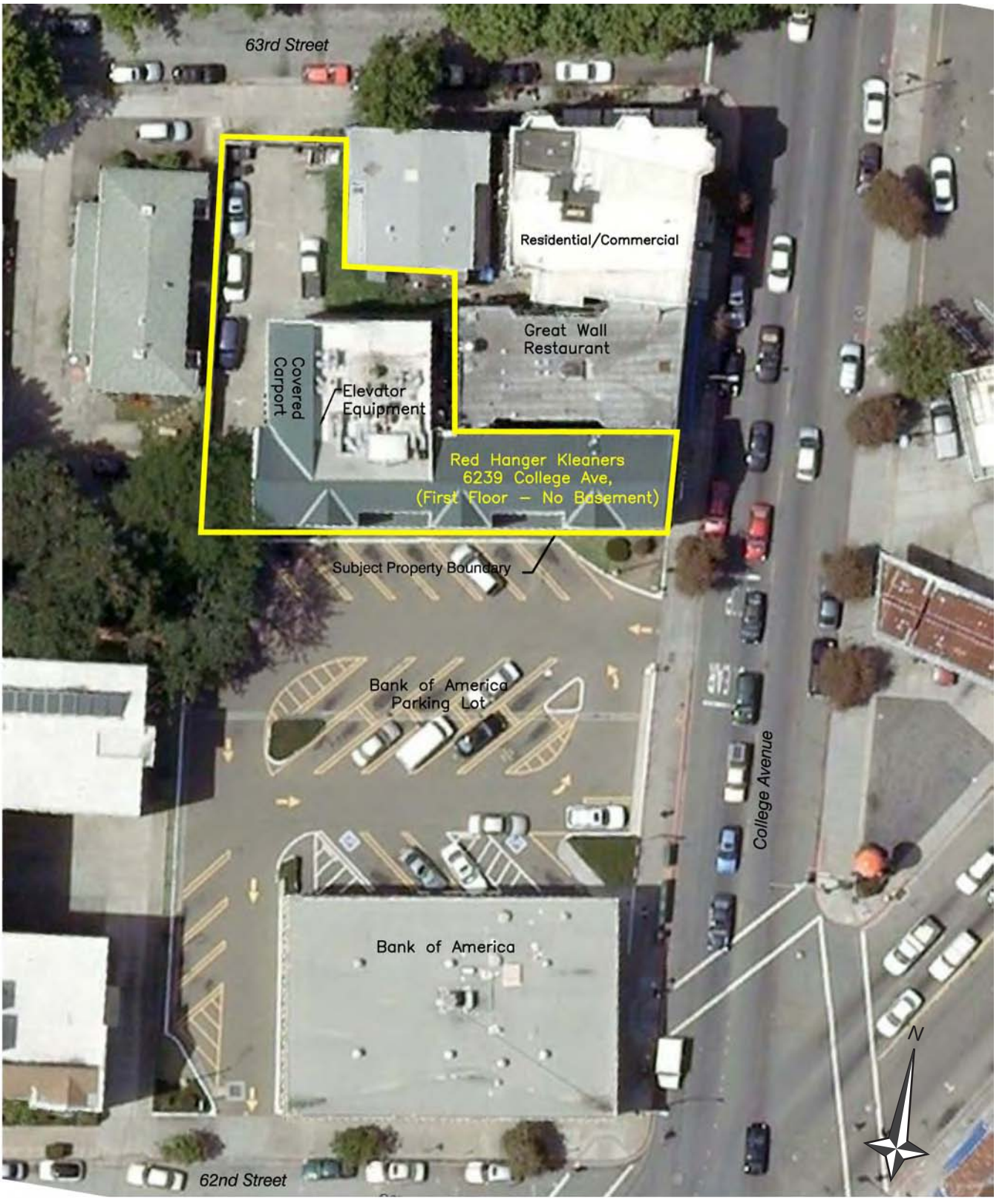
NC = not a carcinogen
NA = not applicable
Hazard Index (HI) is the sum of Hazard Quotients. An HI of 1 or less indicates negligible risks of non-cancer health effects.
Cumulative cancer risk is the sum of cancer risks for each individual chemical. A cumulative cancer risk of 1E-06 is considered negligible.
These chemicals are not listed in the Johnson-Ettinger vapor intrusion model so the following toxicological surrogate chemicals were used: methylcyclohexane, toluene, isobutanol and pentane for cyclohexane, 4-ethyltoluene, 2-propanol, and 2,2,4-trimethylpentane, respectively.
Yellow highlight indicates an exceedance of the neglible cancer risk threshold of 1E-06 or a Hazard Quotient or HI of 1.

Figures

Scale: 1:24,000

BASE MAP REFERENCE: *U.S.G.S. 7.5 Minute Topographic Series, Oakland West Quadrangle, Dated 2015*
U.S.G.S. 7.5 Minute Topographic Series, Oakland East Quadrangle, Dated 2015

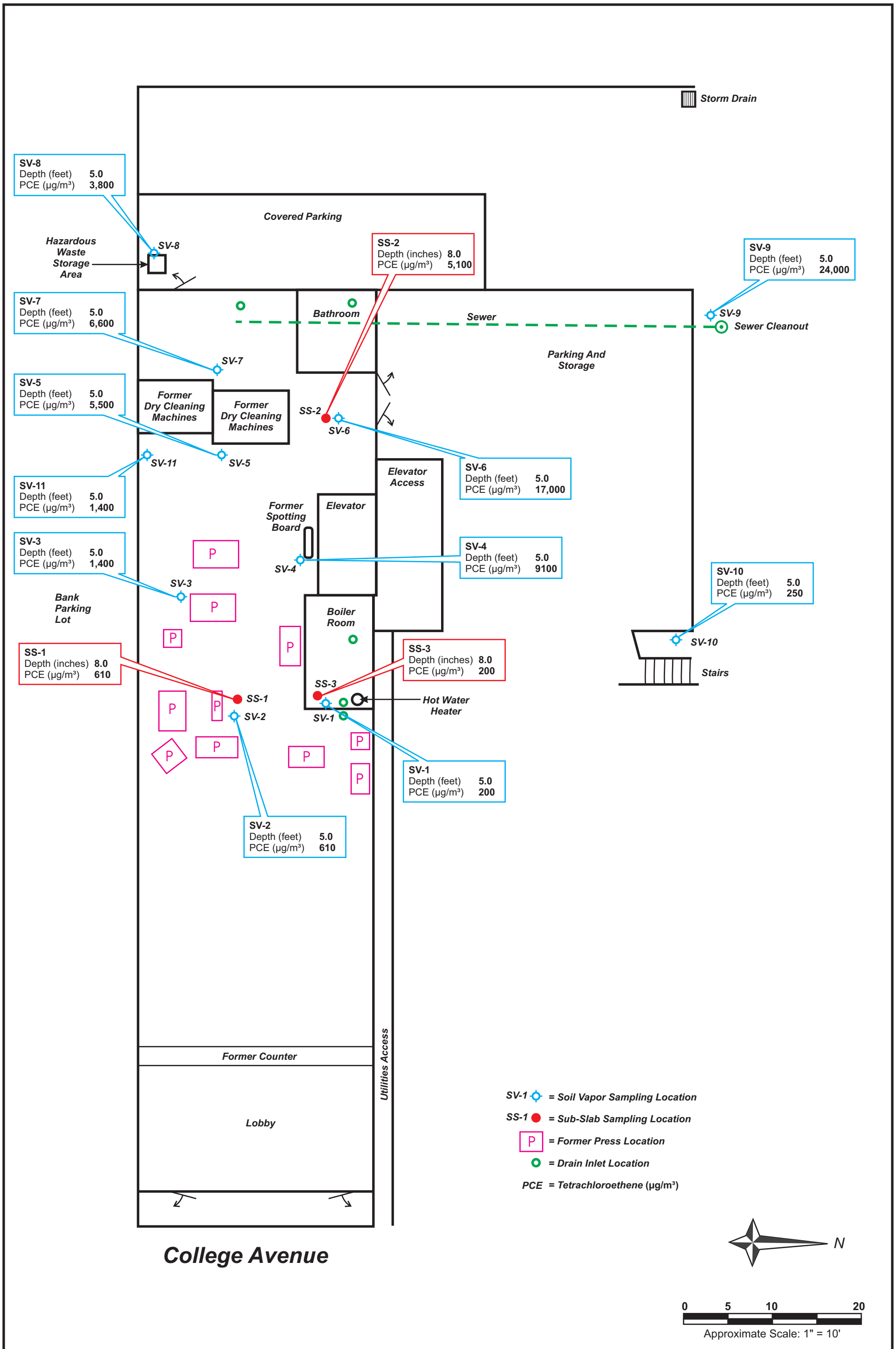
YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E13243.000 **July 2015**	**VICINITY MAP** **Red Hanger Kleaners** **Soil Gas Investigation** Oakland, California	**FIGURE** **1**



Approximate Scale: 1" = 40'

BASE MAP REFERENCE: Aerial Photograph of Site, Red Hanger Kleaners, Figure 2, ERM, Dated 04/09

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E13243.000 **March 2015**	**SITE LOCATION** **Red Hanger Kleaners** **Soil Gas Investigation** Oakland, California	**FIGURE** **2**



YOUNGDAHL CONSULTING GROUP, INC.
GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING

Project No.: E13243.000

March 2015

SAMPLE LOCATIONS

Red Hanger Kleaners
Soil Gas Investigation
Oakland, California

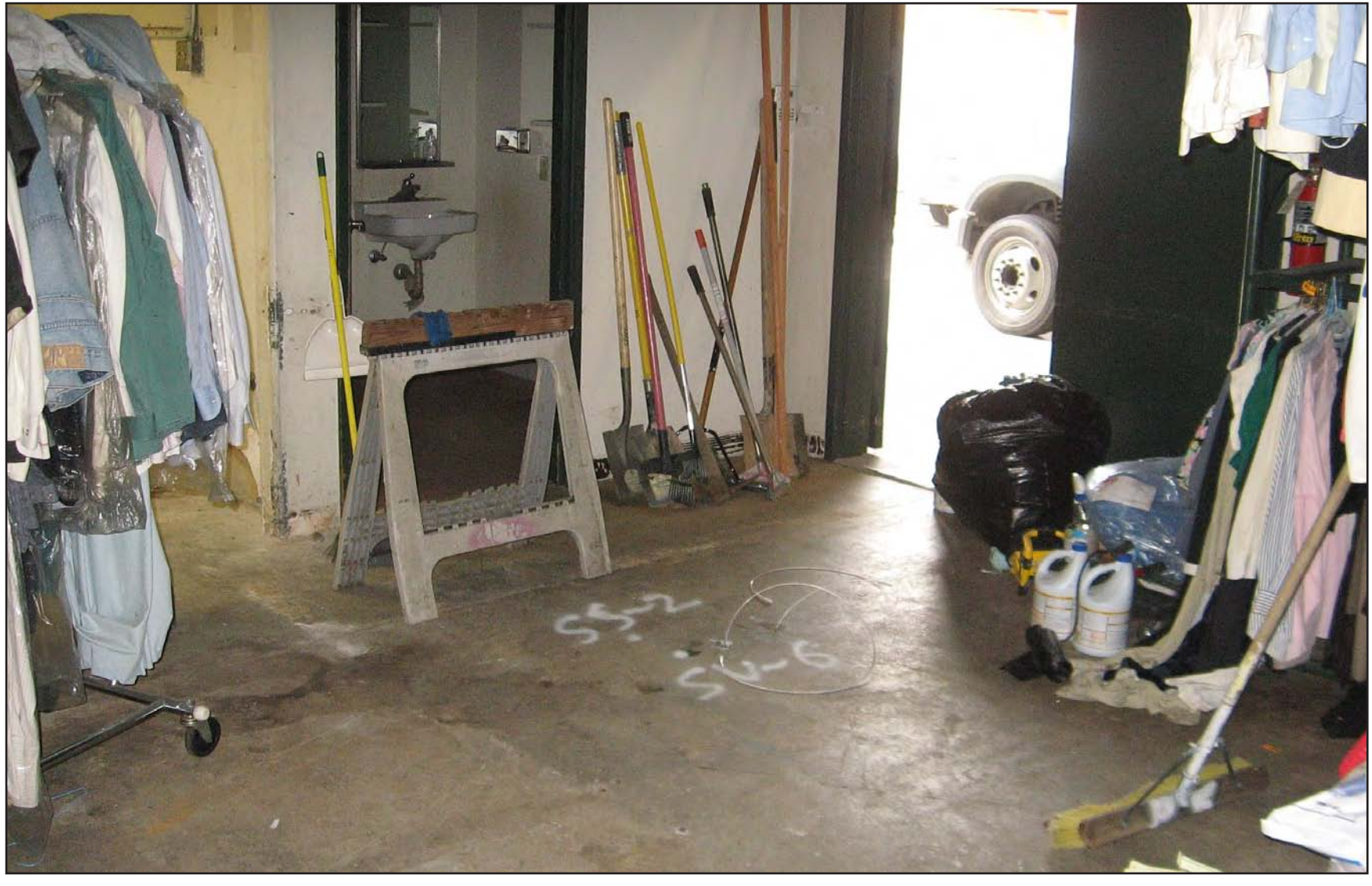
FIGURE 3

Boiler Room

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E13243.000 **March 2015**	**SITE PHOTOGRAPHS** **Red Hanger Kleaners** **Soil Gas Investigation** Oakland, California	**FIGURE** **4**

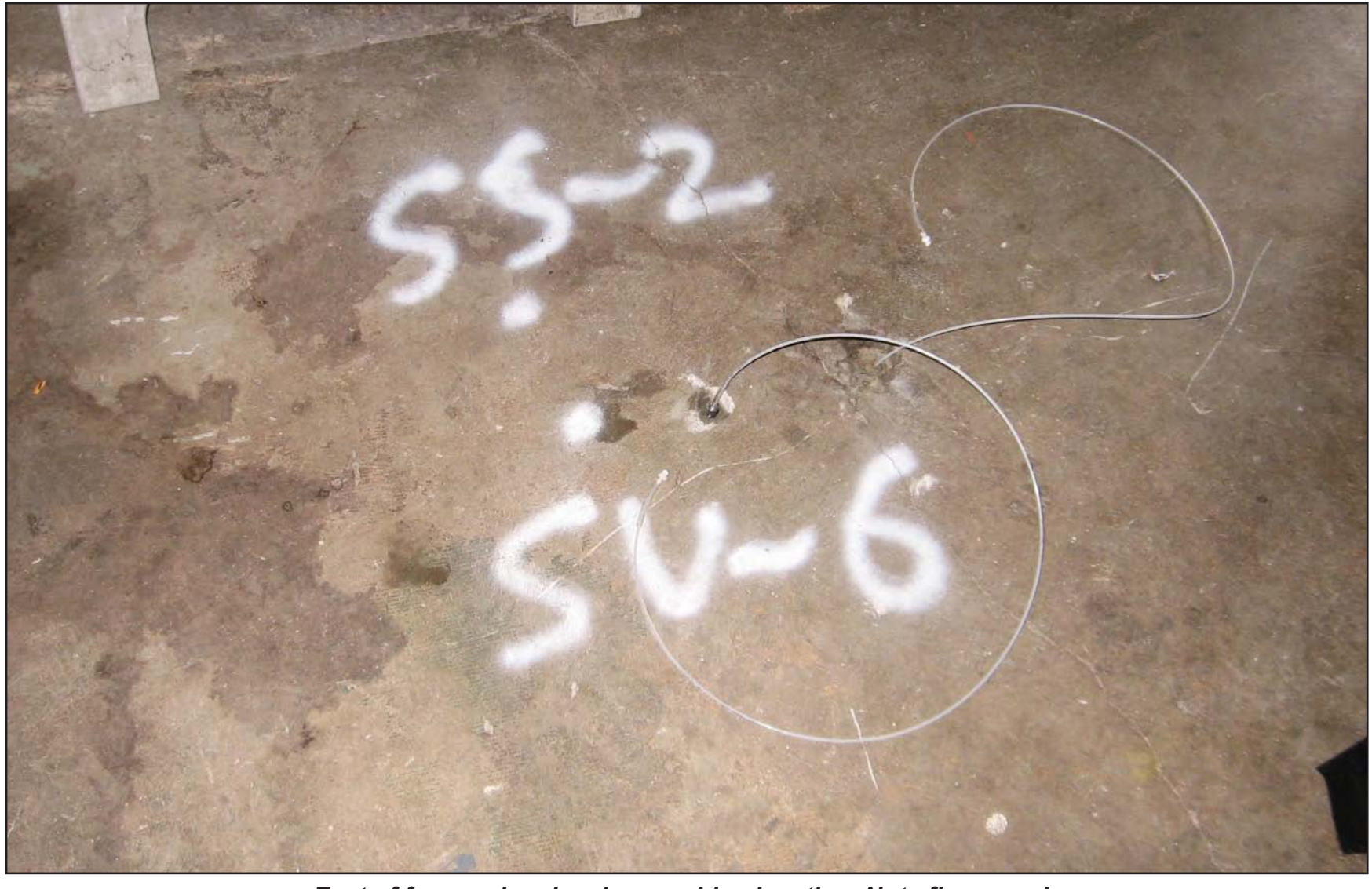
Main Press Area

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E13243.000 **March 2015**	**SITE PHOTOGRAPHS** **Red Hanger Kleaners** **Soil Gas Investigation** Oakland, California	**FIGURE** **5**



Back of building, east of former dry cleaning machine location.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E13243.000 **March 2015**	**SITE PHOTOGRAPHS** **Red Hanger Kleaners** **Soil Gas Investigation** Oakland, California	**FIGURE** **6**



East of former dry cleaning machine location. Note floor crack.

YOUNGDAHL CONSULTING GROUP, INC. GEOTECHNICAL ▪ ENVIRONMENTAL ▪ MATERIALS TESTING	Project No.: E13243.000 **March 2015**	**SITE PHOTOGRAPHS** **Red Hanger Kleaners** **Soil Gas Investigation** Oakland, California	**FIGURE** **7**

Appendix A
TEG Laboratory Report

24 March 2015

Mr. David Sederquist
Youngdahl Consulting Group, Inc.
1234 Glenhaven Court
El Dorado Hills, CA 95762

SUBJECT: DATA REPORT - Youngdahl Consulting Group, Inc. Project # E13243.000
Red Hanger Kleaners
6335-6339 College Avenue, Oakland, California

TEG Project # 50311F

Mr. Sederquist:

Please find enclosed a data report for the samples analyzed from the above referenced project for Youngdahl Consulting Group, Inc. The samples were analyzed on site in TEG's mobile laboratory. TEG conducted a total of 15 analyses on 3 shroud samples and 12 soil vapor samples.

-- 12 analyses on soil vapors for volatile organic hydrocarbons by EPA method 8260B.

-- 3 analyses on shroud samples for Isopropyl Alcohol by EPA method 8260B.

The results of the analyses are summarized in the enclosed tables. Applicable detection limits and calibration data are included in the tables.

TEG appreciates the opportunity to have provided analytical services to Youngdahl Consulting Group, Inc. on this project. If you have any further questions relating to these data or report, please do not hesitate to contact us.

Sincerely,

Mark Jerpbak
Director, TEG-Northern California

teg

Youngdahl Consulting Group, Inc. Project # E13243.000
Red Hanger Kleaners
6335-6339 College Avenue
Oakland, California

TEG Project #50311F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		Probe Blank	Shroud Sample 1	Shroud Sample 2	Shroud Sample 3
SAMPLE DEPTH (feet):					
PURGE VOLUME:					
COLLECTION DATE:		3/11/15	3/11/15	3/11/15	3/11/15
COLLECTION TIME:		9:25	10:02	11:48	15:15
DILUTION FACTOR:		1	100	100	100
	RL				
Dichlorodifluoromethane	100	nd	--	--	--
Vinyl Chloride	13	nd	--	--	--
Chloroethane	100	nd	--	--	--
Trichlorofluoromethane	100	nd	--	--	--
1,1-Dichloroethene	100	nd	--	--	--
1,1,2-Trichloro-trifluoroethane	100	nd	--	--	--
Methylene Chloride	100	nd	--	--	--
trans-1,2-Dichloroethene	100	nd	--	--	--
1,1-Dichloroethane	100	nd	--	--	--
cis-1,2-Dichloroethene	100	nd	--	--	--
Chloroform	100	nd	--	--	--
1,1,1-Trichloroethane	100	nd	--	--	--
Carbon Tetrachloride	25	nd	--	--	--
1,2-Dichloroethane	45	nd	--	--	--
Benzene	35	nd	--	--	--
Trichloroethene	100	nd	--	--	--
Toluene	200	nd	--	--	--
1,1,2-Trichloroethane	100	nd	--	--	--
Tetrachloroethene	100	nd	--	--	--
Ethylbenzene	100	nd	--	--	--
1,1,1,2-Tetrachloroethane	100	nd	--	--	--
m,p-Xylene	200	nd	--	--	--
o-Xylene	100	nd	--	--	--
1,1,2,2-Tetrachloroethane	100	nd	--	--	--
Isopropyl Alcohol (IPA) (leak check)	10000	nd	2.1E+6	2.0E+6	8.4E+6
Surrogate Recovery (DBFM)		88%	88%	88%	89%
Surrogate Recovery (1,2-DCA-d4)		98%	95%	106%	113%
Surrogate Recovery (Toluene-d8)		93%	89%	90%	94%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
Analyses performed by: Mr. Leif Jonsson

11350 Monier Park Place, Rancho Cordova, CA 95742 • Phone (916) 853-8010 • Fax (916) 853-8020

teg

Youngdahl Consulting Group, Inc. Project # E13243.000
Red Hanger Kleaners
6335-6339 College Avenue
Oakland, California

TEG Project #50311F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		SV-1	SV-2	SV-3	SV-4	SV-5	SV-6
SAMPLE DEPTH (feet):		5.0	5.0	5.0	4.0	5.0	5.0
PURGE VOLUME:		3	3	3	3	3	3
COLLECTION DATE:		3/11/15	3/11/15	3/11/15	3/11/15	3/11/15	3/11/15
COLLECTION TIME:		10:26	10:55	11:18	11:47	12:37	12:59
DILUTION FACTOR:		1	1	1	1	1	1
	RL						
Dichlorodifluoromethane	100	nd	nd	nd	nd	nd	nd
Vinyl Chloride	13	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
Chloroform	100	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	25	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	45	nd	nd	nd	nd	nd	nd
Benzene	35	nd	nd	nd	nd	nd	nd
Trichloroethene	100	nd	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Tetrachloroethene	100	2300	610	1400	9100	5500	17000
Ethylbenzene	100	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
Isopropyl Alcohol (IPA) (leak check)	10000	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		86%	88%	89%	83%	92%	89%
Surrogate Recovery (1,2-DCA-d4)		95%	100%	104%	98%	105%	105%
Surrogate Recovery (Toluene-d8)		93%	92%	93%	88%	95%	91%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
Analyses performed by: Mr. Leif Jonsson

11350 Monier Park Place, Rancho Cordova, CA 95742 • Phone (916) 853-8010 • Fax (916) 853-8020

teg

Youngdahl Consulting Group, Inc. Project # E13243.000
Red Hanger Kleaners
6335-6339 College Avenue
Oakland, California

TEG Project #50311F

EPA Method 8260B VOC Analyses of SOIL VAPOR in micrograms per cubic meter of Vapor

SAMPLE NUMBER:		SV-7	SV-7 dup	SV-8	SV-9	SV-10	SV-11
SAMPLE DEPTH (feet):		5.0	5.0	5.0	5.0	5.0	5.0
PURGE VOLUME:		3	3	3	3	3	3
COLLECTION DATE:		3/11/15	3/11/15	3/11/15	3/11/15	3/11/15	3/11/15
COLLECTION TIME:		13:22	13:22	14:02	15:14	14:50	14:25
DILUTION FACTOR:		1	1	1	1	1	1
	RL						
Dichlorodifluoromethane	100	nd	nd	nd	nd	nd	nd
Vinyl Chloride	13	nd	nd	nd	nd	nd	nd
Chloroethane	100	nd	nd	nd	nd	nd	nd
Trichlorofluoromethane	100	nd	nd	nd	nd	nd	nd
1,1-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1,2-Trichloro-trifluoroethane	100	nd	nd	nd	nd	nd	nd
Methylene Chloride	100	nd	nd	nd	nd	nd	nd
trans-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
1,1-Dichloroethane	100	nd	nd	nd	nd	nd	nd
cis-1,2-Dichloroethene	100	nd	nd	nd	nd	nd	nd
Chloroform	100	nd	nd	nd	nd	nd	nd
1,1,1-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Carbon Tetrachloride	25	nd	nd	nd	nd	nd	nd
1,2-Dichloroethane	45	nd	nd	nd	nd	nd	nd
Benzene	35	nd	nd	nd	nd	nd	nd
Trichloroethene	100	nd	nd	nd	nd	nd	nd
Toluene	200	nd	nd	nd	nd	nd	nd
1,1,2-Trichloroethane	100	nd	nd	nd	nd	nd	nd
Tetrachloroethene	100	6600	6900	3800	24000	250	1400
Ethylbenzene	100	nd	nd	nd	nd	nd	nd
1,1,1,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
m,p-Xylene	200	nd	nd	nd	nd	nd	nd
o-Xylene	100	nd	nd	nd	nd	nd	nd
1,1,2,2-Tetrachloroethane	100	nd	nd	nd	nd	nd	nd
Isopropyl Alcohol (IPA) (leak check)	10000	nd	nd	nd	nd	nd	nd
Surrogate Recovery (DBFM)		87%	83%	89%	88%	80%	89%
Surrogate Recovery (1,2-DCA-d4)		110%	102%	108%	108%	101%	109%
Surrogate Recovery (Toluene-d8)		96%	91%	94%	92%	87%	94%

'RL' Indicates reporting limit at a dilution factor of 1
'nd' Indicates not detected at listed reporting limits

Analyses performed in TEG-Northern California's lab
Analyses performed by: Mr. Leif Jonsson

11350 Monier Park Place, Rancho Cordova, CA 95742 • Phone (916) 853-8010 • Fax (916) 853-8020

TEG Project #50311F

CALIBRATION DATA - Calibration Check Compounds

	Vinyl Chloride	1,1 DCE	Chloroform	1,2 DCP	Toluene	Ethylbenzene
Midpoint	10.0	10.0	10.0	10.0	10.0	10.0
Continuing Calibration - Midpoint						
3/11/15	9.8	8.1	9.5	9.6	9.5	8.8
	98%	81%	95%	96%	95%	88%

Appendix B
Eurofins Air Toxics, Inc. Laboratory Report

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Sample Transportation Notice
Relinquishing signature on this document indicates that sample is being shipped in compliance with all applicable local, State, Federal, national, and international laws, regulations and ordinances of any kind. Air Toxics Limited assumes no liability with respect to the collection, handling or shipping of these samples. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Air Toxics Limited against any claim, demand, or action, of any kind, related to the collection, handling, or shipping of samples. D.O.T. Hotline (800) 467-4922

180 BLUE RAVINE ROAD, SUITE B
FOLSOM, CA 95630-4719
(916) 985-1000 FAX (916) 985-1020

Project Manager David C. Sederquist

Collected by: (Print and Sign) David C. Sederquist, David C. Sederquist

Company Youngdahl Consulting Group Email dcs@youngdahl.net

Address 1234 Glenhaven Ct. City El Dorado Hills State CA Zip 95762

Phone (916)933-0633 Fax (916)933-6482

Project Info:

P.O. #

Project # E13243.000

Project Name Red Hanger Kleaners

Turn Around Time:

☑ Normal

☐ Rush

specify

Lab Use Only
Pressurized by:
Date:
Pressurization Gas: N_2 He

Lab I.D.	Field Sample I.D. (Location)	Can #	Date of Collection	Time of Collection	Analyses Requested	Canister Pressure/Vacuum Initial	Final	Receipt	Final (psi)
01A	SS-1	15727	3/11/15	1437	TO-15, Isopropanol Leak detection	-30	-5		
02A	SS-3	36434	3/11/15	1454	TO-15, Isopropanol Leak detection	-30	-4		
03A	SS-2	34571	3/11/15	15:05	TO-15, Isopropanol Leak detection	-29	-7.7		

Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
David C. Sederquist 3/12/15 15:30	SAR 3-12-15 1530
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time
Relinquished by: (signature) Date/Time	Received by: (signature) Date/Time

Notes:
need Geotracker EDF on all results

Lab Use Only	Shipper Name	Air Bill #	Temp (°C)	Condition	Custody Seals Intact?	Work Order #
	Hand Delivered		NA	Good	Yes No **None**	1503214

Form 1293 rev.11

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3/25/2015

Mr. Dave Sederquist
Youngdahl Consulting Group Inc.
1234 Glenhaven Ct.

El Dorado Hills CA 95762

Project Name: Red Hanger Kleaners
Project #: E13243.000
Workorder #: 1503214

Dear Mr. Dave Sederquist

The following report includes the data for the above referenced project for sample(s) received on 3/12/2015 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

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WORK ORDER #: 1503214

Work Order Summary

CLIENT:	Mr. Dave Sederquist Youngdahl Consulting Group Inc. 1234 Glenhaven Ct. El Dorado Hills, CA 95762	**BILL TO:**	Mr. Dave Sederquist Youngdahl Consulting Group Inc. 1234 Glenhaven Ct. El Dorado Hills, CA 95762
PHONE:	916-933-0633	**P.O. #**	
FAX:	916-933-6482	**PROJECT #**	E13243.000 Red Hanger Kleaners
DATE RECEIVED:	03/12/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	03/25/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SS-1	TO-15	2.8 "Hg	14.9 psi
02A	SS-3	TO-15	3.3 "Hg	14.8 psi
03A	SS-2	TO-15	3.1 "Hg	15 psi
04A	Lab Blank	TO-15	NA	NA
05A	CCV	TO-15	NA	NA
06A	LCS	TO-15	NA	NA
06AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Mayo DATE: 03/25/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
EPA Method TO-15
Youngdahl Consulting Group Inc.
Workorder# 1503214

Three 1 Liter Summa Canister samples were received on March 12, 2015. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on samples SS-3 and SS-2 due to the presence of high level target species.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: SS-1

Lab ID#: 1503214-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	4.4	18	11	44
Cyclohexane	1.1	1.4	3.8	5.0
2,2,4-Trimethylpentane	1.1	1.1	5.2	5.2
Toluene	1.1	13	4.2	48
Tetrachloroethene	1.1	90	7.5	610
Ethyl Benzene	1.1	3.6	4.8	16
m,p-Xylene	1.1	15	4.8	65
o-Xylene	1.1	5.4	4.8	23
4-Ethyltoluene	1.1	4.0	5.4	20
1,3,5-Trimethylbenzene	1.1	1.5	5.4	7.5
1,2,4-Trimethylbenzene	1.1	3.6	5.4	18

Client Sample ID: SS-3

Lab ID#: 1503214-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Acetone	15	120	36	290
2-Propanol	6.0	410	15	1000
Toluene	1.5	2.2	5.7	8.1
Tetrachloroethene	1.5	170	10	1100
m,p-Xylene	1.5	2.4	6.5	10

Client Sample ID: SS-2

Lab ID#: 1503214-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
2-Propanol	18	1400	44	3500
Toluene	4.5	6.0	17	22
Tetrachloroethene	4.5	780	30	5200
m,p-Xylene	4.5	4.9	20	21

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Client Sample ID: SS-1

Lab ID#: 1503214-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031708**	**Date of Collection:**	**3/11/15 2:37:00 PM**
Dil. Factor:	**2.22**	**Date of Analysis:**	**3/17/15 12:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.1	Not Detected	5.5	Not Detected
Freon 114	1.1	Not Detected	7.8	Not Detected
Chloromethane	11	Not Detected	23	Not Detected
Vinyl Chloride	1.1	Not Detected	2.8	Not Detected
1,3-Butadiene	1.1	Not Detected	2.4	Not Detected
Bromomethane	11	Not Detected	43	Not Detected
Chloroethane	4.4	Not Detected	12	Not Detected
Freon 11	1.1	Not Detected	6.2	Not Detected
Ethanol	4.4	Not Detected	8.4	Not Detected
Freon 113	1.1	Not Detected	8.5	Not Detected
1,1-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Acetone	11	Not Detected	26	Not Detected
2-Propanol	4.4	18	11	44
Carbon Disulfide	4.4	Not Detected	14	Not Detected
3-Chloropropene	4.4	Not Detected	14	Not Detected
Methylene Chloride	11	Not Detected	38	Not Detected
Methyl tert-butyl ether	1.1	Not Detected	4.0	Not Detected
trans-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Hexane	1.1	Not Detected	3.9	Not Detected
1,1-Dichloroethane	1.1	Not Detected	4.5	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.4	Not Detected	13	Not Detected
cis-1,2-Dichloroethene	1.1	Not Detected	4.4	Not Detected
Tetrahydrofuran	1.1	Not Detected	3.3	Not Detected
Chloroform	1.1	Not Detected	5.4	Not Detected
1,1,1-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Cyclohexane	1.1	1.4	3.8	5.0
Carbon Tetrachloride	1.1	Not Detected	7.0	Not Detected
2,2,4-Trimethylpentane	1.1	1.1	5.2	5.2
Benzene	1.1	Not Detected	3.5	Not Detected
1,2-Dichloroethane	1.1	Not Detected	4.5	Not Detected
Heptane	1.1	Not Detected	4.5	Not Detected
Trichloroethene	1.1	Not Detected	6.0	Not Detected
1,2-Dichloropropane	1.1	Not Detected	5.1	Not Detected
1,4-Dioxane	4.4	Not Detected	16	Not Detected
Bromodichloromethane	1.1	Not Detected	7.4	Not Detected
cis-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
4-Methyl-2-pentanone	1.1	Not Detected	4.5	Not Detected
Toluene	1.1	13	4.2	48
trans-1,3-Dichloropropene	1.1	Not Detected	5.0	Not Detected
1,1,2-Trichloroethane	1.1	Not Detected	6.0	Not Detected
Tetrachloroethene	1.1	90	7.5	610
2-Hexanone	4.4	Not Detected	18	Not Detected

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Client Sample ID: SS-1

Lab ID#: 1503214-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031708**	**Date of Collection:**	**3/11/15 2:37:00 PM**
Dil. Factor:	**2.22**	**Date of Analysis:**	**3/17/15 12:18 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.1	Not Detected	9.4	Not Detected
1,2-Dibromoethane (EDB)	1.1	Not Detected	8.5	Not Detected
Chlorobenzene	1.1	Not Detected	5.1	Not Detected
Ethyl Benzene	1.1	3.6	4.8	16
m,p-Xylene	1.1	15	4.8	65
o-Xylene	1.1	5.4	4.8	23
Styrene	1.1	Not Detected	4.7	Not Detected
Bromoform	1.1	Not Detected	11	Not Detected
Cumene	1.1	Not Detected	5.4	Not Detected
1,1,2,2-Tetrachloroethane	1.1	Not Detected	7.6	Not Detected
Propylbenzene	1.1	Not Detected	5.4	Not Detected
4-Ethyltoluene	1.1	4.0	5.4	20
1,3,5-Trimethylbenzene	1.1	1.5	5.4	7.5
1,2,4-Trimethylbenzene	1.1	3.6	5.4	18
1,3-Dichlorobenzene	1.1	Not Detected	6.7	Not Detected
1,4-Dichlorobenzene	1.1	Not Detected	6.7	Not Detected
alpha-Chlorotoluene	1.1	Not Detected	5.7	Not Detected
1,2-Dichlorobenzene	1.1	Not Detected	6.7	Not Detected
1,2,4-Trichlorobenzene	4.4	Not Detected	33	Not Detected
Hexachlorobutadiene	4.4	Not Detected	47	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	93	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: SS-3

Lab ID#: 1503214-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031717**	**Date of Collection:**	**3/11/15 2:54:00 PM**
Dil. Factor:	**3.01**	**Date of Analysis:**	**3/17/15 05:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	1.5	Not Detected	7.4	Not Detected
Freon 114	1.5	Not Detected	10	Not Detected
Chloromethane	15	Not Detected	31	Not Detected
Vinyl Chloride	1.5	Not Detected	3.8	Not Detected
1,3-Butadiene	1.5	Not Detected	3.3	Not Detected
Bromomethane	15	Not Detected	58	Not Detected
Chloroethane	6.0	Not Detected	16	Not Detected
Freon 11	1.5	Not Detected	8.4	Not Detected
Ethanol	6.0	Not Detected	11	Not Detected
Freon 113	1.5	Not Detected	12	Not Detected
1,1-Dichloroethene	1.5	Not Detected	6.0	Not Detected
Acetone	15	120	36	290
2-Propanol	6.0	410	15	1000
Carbon Disulfide	6.0	Not Detected	19	Not Detected
3-Chloropropene	6.0	Not Detected	19	Not Detected
Methylene Chloride	15	Not Detected	52	Not Detected
Methyl tert-butyl ether	1.5	Not Detected	5.4	Not Detected
trans-1,2-Dichloroethene	1.5	Not Detected	6.0	Not Detected
Hexane	1.5	Not Detected	5.3	Not Detected
1,1-Dichloroethane	1.5	Not Detected	6.1	Not Detected
2-Butanone (Methyl Ethyl Ketone)	6.0	Not Detected	18	Not Detected
cis-1,2-Dichloroethene	1.5	Not Detected	6.0	Not Detected
Tetrahydrofuran	1.5	Not Detected	4.4	Not Detected
Chloroform	1.5	Not Detected	7.3	Not Detected
1,1,1-Trichloroethane	1.5	Not Detected	8.2	Not Detected
Cyclohexane	1.5	Not Detected	5.2	Not Detected
Carbon Tetrachloride	1.5	Not Detected	9.5	Not Detected
2,2,4-Trimethylpentane	1.5	Not Detected	7.0	Not Detected
Benzene	1.5	Not Detected	4.8	Not Detected
1,2-Dichloroethane	1.5	Not Detected	6.1	Not Detected
Heptane	1.5	Not Detected	6.2	Not Detected
Trichloroethene	1.5	Not Detected	8.1	Not Detected
1,2-Dichloropropane	1.5	Not Detected	7.0	Not Detected
1,4-Dioxane	6.0	Not Detected	22	Not Detected
Bromodichloromethane	1.5	Not Detected	10	Not Detected
cis-1,3-Dichloropropene	1.5	Not Detected	6.8	Not Detected
4-Methyl-2-pentanone	1.5	Not Detected	6.2	Not Detected
Toluene	1.5	2.2	5.7	8.1
trans-1,3-Dichloropropene	1.5	Not Detected	6.8	Not Detected
1,1,2-Trichloroethane	1.5	Not Detected	8.2	Not Detected
Tetrachloroethene	1.5	170	10	1100
2-Hexanone	6.0	Not Detected	25	Not Detected

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Client Sample ID: SS-3

Lab ID#: 1503214-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031717**	**Date of Collection:**	**3/11/15 2:54:00 PM**
Dil. Factor:	**3.01**	**Date of Analysis:**	**3/17/15 05:12 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	1.5	Not Detected	13	Not Detected
1,2-Dibromoethane (EDB)	1.5	Not Detected	12	Not Detected
Chlorobenzene	1.5	Not Detected	6.9	Not Detected
Ethyl Benzene	1.5	Not Detected	6.5	Not Detected
m,p-Xylene	1.5	2.4	6.5	10
o-Xylene	1.5	Not Detected	6.5	Not Detected
Styrene	1.5	Not Detected	6.4	Not Detected
Bromoform	1.5	Not Detected	16	Not Detected
Cumene	1.5	Not Detected	7.4	Not Detected
1,1,2,2-Tetrachloroethane	1.5	Not Detected	10	Not Detected
Propylbenzene	1.5	Not Detected	7.4	Not Detected
4-Ethyltoluene	1.5	Not Detected	7.4	Not Detected
1,3,5-Trimethylbenzene	1.5	Not Detected	7.4	Not Detected
1,2,4-Trimethylbenzene	1.5	Not Detected	7.4	Not Detected
1,3-Dichlorobenzene	1.5	Not Detected	9.0	Not Detected
1,4-Dichlorobenzene	1.5	Not Detected	9.0	Not Detected
alpha-Chlorotoluene	1.5	Not Detected	7.8	Not Detected
1,2-Dichlorobenzene	1.5	Not Detected	9.0	Not Detected
1,2,4-Trichlorobenzene	6.0	Not Detected	45	Not Detected
Hexachlorobutadiene	6.0	Not Detected	64	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	102	70-130
4-Bromofluorobenzene	95	70-130

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Client Sample ID: SS-2

Lab ID#: 1503214-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031712**	**Date of Collection:**	**3/11/15 3:05:00 PM**
Dil. Factor:	**9.01**	**Date of Analysis:**	**3/17/15 02:08 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	4.5	Not Detected	22	Not Detected
Freon 114	4.5	Not Detected	31	Not Detected
Chloromethane	45	Not Detected	93	Not Detected
Vinyl Chloride	4.5	Not Detected	12	Not Detected
1,3-Butadiene	4.5	Not Detected	10	Not Detected
Bromomethane	45	Not Detected	170	Not Detected
Chloroethane	18	Not Detected	48	Not Detected
Freon 11	4.5	Not Detected	25	Not Detected
Ethanol	18	Not Detected	34	Not Detected
Freon 113	4.5	Not Detected	34	Not Detected
1,1-Dichloroethene	4.5	Not Detected	18	Not Detected
Acetone	45	Not Detected	110	Not Detected
2-Propanol	18	1400	44	3500
Carbon Disulfide	18	Not Detected	56	Not Detected
3-Chloropropene	18	Not Detected	56	Not Detected
Methylene Chloride	45	Not Detected	160	Not Detected
Methyl tert-butyl ether	4.5	Not Detected	16	Not Detected
trans-1,2-Dichloroethene	4.5	Not Detected	18	Not Detected
Hexane	4.5	Not Detected	16	Not Detected
1,1-Dichloroethane	4.5	Not Detected	18	Not Detected
2-Butanone (Methyl Ethyl Ketone)	18	Not Detected	53	Not Detected
cis-1,2-Dichloroethene	4.5	Not Detected	18	Not Detected
Tetrahydrofuran	4.5	Not Detected	13	Not Detected
Chloroform	4.5	Not Detected	22	Not Detected
1,1,1-Trichloroethane	4.5	Not Detected	24	Not Detected
Cyclohexane	4.5	Not Detected	16	Not Detected
Carbon Tetrachloride	4.5	Not Detected	28	Not Detected
2,2,4-Trimethylpentane	4.5	Not Detected	21	Not Detected
Benzene	4.5	Not Detected	14	Not Detected
1,2-Dichloroethane	4.5	Not Detected	18	Not Detected
Heptane	4.5	Not Detected	18	Not Detected
Trichloroethene	4.5	Not Detected	24	Not Detected
1,2-Dichloropropane	4.5	Not Detected	21	Not Detected
1,4-Dioxane	18	Not Detected	65	Not Detected
Bromodichloromethane	4.5	Not Detected	30	Not Detected
cis-1,3-Dichloropropene	4.5	Not Detected	20	Not Detected
4-Methyl-2-pentanone	4.5	Not Detected	18	Not Detected
Toluene	4.5	6.0	17	22
trans-1,3-Dichloropropene	4.5	Not Detected	20	Not Detected
1,1,2-Trichloroethane	4.5	Not Detected	24	Not Detected
Tetrachloroethene	4.5	780	30	5200
2-Hexanone	18	Not Detected	74	Not Detected

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Client Sample ID: SS-2

Lab ID#: 1503214-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031712**	**Date of Collection:**	**3/11/15 3:05:00 PM**
Dil. Factor:	**9.01**	**Date of Analysis:**	**3/17/15 02:08 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	4.5	Not Detected	38	Not Detected
1,2-Dibromoethane (EDB)	4.5	Not Detected	35	Not Detected
Chlorobenzene	4.5	Not Detected	21	Not Detected
Ethyl Benzene	4.5	Not Detected	20	Not Detected
m,p-Xylene	4.5	4.9	20	21
o-Xylene	4.5	Not Detected	20	Not Detected
Styrene	4.5	Not Detected	19	Not Detected
Bromoform	4.5	Not Detected	46	Not Detected
Cumene	4.5	Not Detected	22	Not Detected
1,1,2,2-Tetrachloroethane	4.5	Not Detected	31	Not Detected
Propylbenzene	4.5	Not Detected	22	Not Detected
4-Ethyltoluene	4.5	Not Detected	22	Not Detected
1,3,5-Trimethylbenzene	4.5	Not Detected	22	Not Detected
1,2,4-Trimethylbenzene	4.5	Not Detected	22	Not Detected
1,3-Dichlorobenzene	4.5	Not Detected	27	Not Detected
1,4-Dichlorobenzene	4.5	Not Detected	27	Not Detected
alpha-Chlorotoluene	4.5	Not Detected	23	Not Detected
1,2-Dichlorobenzene	4.5	Not Detected	27	Not Detected
1,2,4-Trichlorobenzene	18	Not Detected	130	Not Detected
Hexachlorobutadiene	18	Not Detected	190	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	97	70-130
1,2-Dichloroethane-d4	104	70-130
4-Bromofluorobenzene	93	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1503214-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031707**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 11:16 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected	10	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 1503214-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031707**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 11:16 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	95	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	96	70-130

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Client Sample ID: CCV

Lab ID#: 1503214-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 07:47 AM**	

Compound	%Recovery
Freon 12	101
Freon 114	101
Chloromethane	105
Vinyl Chloride	97
1,3-Butadiene	92
Bromomethane	107
Chloroethane	95
Freon 11	102
Ethanol	78
Freon 113	98
1,1-Dichloroethene	93
Acetone	96
2-Propanol	82
Carbon Disulfide	94
3-Chloropropene	93
Methylene Chloride	96
Methyl tert-butyl ether	84
trans-1,2-Dichloroethene	95
Hexane	91
1,1-Dichloroethane	92
2-Butanone (Methyl Ethyl Ketone)	89
cis-1,2-Dichloroethene	95
Tetrahydrofuran	87
Chloroform	95
1,1,1-Trichloroethane	94
Cyclohexane	92
Carbon Tetrachloride	100
2,2,4-Trimethylpentane	82
Benzene	97
1,2-Dichloroethane	101
Heptane	88
Trichloroethene	84
1,2-Dichloropropane	94
1,4-Dioxane	94
Bromodichloromethane	99
cis-1,3-Dichloropropene	94
4-Methyl-2-pentanone	84
Toluene	94
trans-1,3-Dichloropropene	97
1,1,2-Trichloroethane	99
Tetrachloroethene	103
2-Hexanone	87

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Client Sample ID: CCV

Lab ID#: 1503214-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031702**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 07:47 AM**	

Compound	%Recovery
Dibromochloromethane	104
1,2-Dibromoethane (EDB)	98
Chlorobenzene	97
Ethyl Benzene	94
m,p-Xylene	91
o-Xylene	93
Styrene	94
Bromoform	101
Cumene	91
1,1,2,2-Tetrachloroethane	111
Propylbenzene	93
4-Ethyltoluene	93
1,3,5-Trimethylbenzene	92
1,2,4-Trimethylbenzene	91
1,3-Dichlorobenzene	96
1,4-Dichlorobenzene	99
alpha-Chlorotoluene	93
1,2-Dichlorobenzene	97
1,2,4-Trichlorobenzene	100
Hexachlorobutadiene	102

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	102	70-130

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Client Sample ID: LCS

Lab ID#: 1503214-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 08:11 AM**	

Compound	%Recovery	Method Limits
Freon 12	109	70-130
Freon 114	109	70-130
Chloromethane	110	70-130
Vinyl Chloride	103	70-130
1,3-Butadiene	97	70-130
Bromomethane	114	70-130
Chloroethane	103	70-130
Freon 11	109	70-130
Ethanol	88	70-130
Freon 113	101	70-130
1,1-Dichloroethene	100	70-130
Acetone	97	70-130
2-Propanol	92	70-130
Carbon Disulfide	88	70-130
3-Chloropropene	92	70-130
Methylene Chloride	102	70-130
Methyl tert-butyl ether	86	70-130
trans-1,2-Dichloroethene	86	70-130
Hexane	96	70-130
1,1-Dichloroethane	96	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
cis-1,2-Dichloroethene	111	70-130
Tetrahydrofuran	91	70-130
Chloroform	99	70-130
1,1,1-Trichloroethane	100	70-130
Cyclohexane	96	70-130
Carbon Tetrachloride	106	70-130
2,2,4-Trimethylpentane	89	70-130
Benzene	100	70-130
1,2-Dichloroethane	103	70-130
Heptane	90	70-130
Trichloroethene	87	70-130
1,2-Dichloropropane	98	70-130
1,4-Dioxane	96	70-130
Bromodichloromethane	104	70-130
cis-1,3-Dichloropropene	91	70-130
4-Methyl-2-pentanone	87	70-130
Toluene	96	70-130
trans-1,3-Dichloropropene	101	70-130
1,1,2-Trichloroethane	103	70-130
Tetrachloroethene	106	70-130
2-Hexanone	95	70-130

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Client Sample ID: LCS

Lab ID#: 1503214-06A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031703**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 08:11 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	109	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	102	70-130
Ethyl Benzene	97	70-130
m,p-Xylene	100	70-130
o-Xylene	99	70-130
Styrene	99	70-130
Bromoform	107	70-130
Cumene	93	70-130
1,1,2,2-Tetrachloroethane	114	70-130
Propylbenzene	98	70-130
4-Ethyltoluene	98	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	94	70-130
1,3-Dichlorobenzene	101	70-130
1,4-Dichlorobenzene	104	70-130
alpha-Chlorotoluene	98	70-130
1,2-Dichlorobenzene	103	70-130
1,2,4-Trichlorobenzene	109	70-130
Hexachlorobutadiene	112	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	96	70-130
1,2-Dichloroethane-d4	99	70-130
4-Bromofluorobenzene	99	70-130

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Client Sample ID: LCSD

Lab ID#: 1503214-06AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 08:36 AM**	

Compound	%Recovery	Method Limits
Freon 12	106	70-130
Freon 114	107	70-130
Chloromethane	104	70-130
Vinyl Chloride	100	70-130
1,3-Butadiene	95	70-130
Bromomethane	111	70-130
Chloroethane	98	70-130
Freon 11	107	70-130
Ethanol	82	70-130
Freon 113	97	70-130
1,1-Dichloroethene	98	70-130
Acetone	94	70-130
2-Propanol	89	70-130
Carbon Disulfide	85	70-130
3-Chloropropene	88	70-130
Methylene Chloride	98	70-130
Methyl tert-butyl ether	83	70-130
trans-1,2-Dichloroethene	84	70-130
Hexane	92	70-130
1,1-Dichloroethane	94	70-130
2-Butanone (Methyl Ethyl Ketone)	91	70-130
cis-1,2-Dichloroethene	104	70-130
Tetrahydrofuran	89	70-130
Chloroform	96	70-130
1,1,1-Trichloroethane	97	70-130
Cyclohexane	94	70-130
Carbon Tetrachloride	102	70-130
2,2,4-Trimethylpentane	86	70-130
Benzene	102	70-130
1,2-Dichloroethane	105	70-130
Heptane	94	70-130
Trichloroethene	89	70-130
1,2-Dichloropropane	102	70-130
1,4-Dioxane	97	70-130
Bromodichloromethane	107	70-130
cis-1,3-Dichloropropene	92	70-130
4-Methyl-2-pentanone	90	70-130
Toluene	98	70-130
trans-1,3-Dichloropropene	100	70-130
1,1,2-Trichloroethane	102	70-130
Tetrachloroethene	108	70-130
2-Hexanone	96	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1503214-06AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**j031704**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/17/15 08:36 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	109	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	100	70-130
Ethyl Benzene	98	70-130
m,p-Xylene	96	70-130
o-Xylene	100	70-130
Styrene	99	70-130
Bromoform	107	70-130
Cumene	96	70-130
1,1,2,2-Tetrachloroethane	116	70-130
Propylbenzene	100	70-130
4-Ethyltoluene	106	70-130
1,3,5-Trimethylbenzene	96	70-130
1,2,4-Trimethylbenzene	95	70-130
1,3-Dichlorobenzene	103	70-130
1,4-Dichlorobenzene	105	70-130
alpha-Chlorotoluene	101	70-130
1,2-Dichlorobenzene	104	70-130
1,2,4-Trichlorobenzene	113	70-130
Hexachlorobutadiene	116	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	100	70-130
4-Bromofluorobenzene	100	70-130

Appendix C
ProUCL Statistical Output

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	4/8/2015 8:33:40 AM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

PCE

General Statistics

Total Number of Observations	11	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	250	Mean	6542
Maximum	24000	Median	3800
SD	7583	Std. Error of Mean	2286
Coefficient of Variation	1.159	Skewness	1.585

Normal GOF Test

Shapiro Wilk Test Statistic	0.8	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.224	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.267	Data appear Normal at 5% Significance Level

Data appear Approximate Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	10686	95% Adjusted-CLT UCL (Chen-1995)	11470
		95% Modified-t UCL (Johnson-1978)	10868

Gamma GOF Test

A-D Test Statistic	0.178	**Anderson-Darling Gamma GOF Test**
5% A-D Critical Value	0.759	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.128	**Kolmogrov-Smirnoff Gamma GOF Test**
5% K-S Critical Value	0.264	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	0.824	k star (bias corrected MLE)	0.66
Theta hat (MLE)	7936	Theta star (bias corrected MLE)	9910
nu hat (MLE)	18.14	nu star (bias corrected)	14.52
MLE Mean (bias corrected)	6542	MLE Sd (bias corrected)	8052
		Approximate Chi Square Value (0.05)	6.931
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	6.095

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	13708	95% Adjusted Gamma UCL (use when n<50)	15586

	A	B	C	D	E	F	G	H	I	J	K	L
51	Lognormal GOF Test											
52	Shapiro Wilk Test Statistic					0.976	Shapiro Wilk Lognormal GOF Test					
53	5% Shapiro Wilk Critical Value					0.85	Data appear Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.106	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.267	Data appear Lognormal at 5% Significance Level					
56	Data appear Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					5.521	Mean of logged Data					8.069
60	Maximum of Logged Data					10.09	SD of logged Data					1.397
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					45566	90% Chebyshev (MVUE) UCL					17288
64	95% Chebyshev (MVUE) UCL					21801	97.5% Chebyshev (MVUE) UCL					28064
65	99% Chebyshev (MVUE) UCL					40366						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data appear to follow a Discernible Distribution at 5% Significance Level											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					10302	95% Jackknife UCL					10686
72	95% Standard Bootstrap UCL					10154	95% Bootstrap-t UCL					15322
73	95% Hall's Bootstrap UCL					29939	95% Percentile Bootstrap UCL					10528
74	95% BCA Bootstrap UCL					11368						
75	90% Chebyshev(Mean, Sd) UCL					13401	95% Chebyshev(Mean, Sd) UCL					16507
76	97.5% Chebyshev(Mean, Sd) UCL					20819	99% Chebyshev(Mean, Sd) UCL					29290
77												
78	Suggested UCL to Use											
79	95% Student's-t UCL					10686						
80												
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
82	These recommendations are based upon the results of the simulation studies summarized in Singh, Singh, and Iaci (2002)											
83	and Singh and Singh (2003). However, simulations results will not cover all Real World data sets.											
84	For additional insight the user may want to consult a statistician.											
85												

Appendix D
Johnson-Ettinger Model Output Based on 95UCLM PCE Concentration

USEPA SG-SCREEN
Version 2.0, 04/2003

DTSC Modification
December 2014

Department of Toxic Substances Control
Vapor Intrusion Screening Model - Soil Gas

DATA ENTRY SHEET

Scenario: Commercial
Chemical: Tetrachloroethylene

Results Summary

Soil Gas Conc. ($\mu g/m^3$)	Attenuation Factor (unitless)	Indoor Air Conc. ($\mu g/m^3$)	Cancer Risk	Noncancer Hazard
1.07E+04	2.5E-04	2.7E+00	1.3E-06	1.7E-02

Reset to

Soil Gas Concentration Data

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Soil gas conc., C_g ($\mu g/m^3$)	OR	ENTER Soil gas conc., C_g (ppmv)	Chemical
127184	1.07E+04			Tetrachloroethylene

MORE ↓

ENTER Depth below grade to bottom of enclosed space floor, L_F (15 or 200 cm)	ENTER Soil gas sampling depth below grade, L_s (cm)	ENTER Average soil temperature, T_S (°C)	ENTER Vadose zone SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined vadose zone soil vapor permeability, k_v (cm^2)
15	152	24	SIL		

MORE ↓

Lookup Soil

ENTER Vandose zone SCS soil type	ENTER Vadose zone soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, θ_w^V (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
SIL	1.49	0.439	0.18	5

MORE ↓

Lookup Receptor

	ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Exposure Time ET (hrs/day)	ENTER Air Exchange Rate ACH $(hour)^{-1}$
NEW=> Commercial	70	25	25	250	8 (NEW)	1 (NEW)

END

Scenario: **Commercial**

Chemical: **Tetrachloroethylene**

Source-building separation, L_T (cm)	Vadose zone soil air-filled porosity, θ_a^V (cm^3/cm^3)	Vadose zone effective total fluid saturation, S_{te} (cm^3/cm^3)	Vadose zone soil intrinsic permeability, k_i (cm^2)	Vadose zone soil relative air permeability, k_{rg} (cm^2)	Vadose zone soil effective vapor permeability, k_v (cm^2)	Floor-wall seam perimeter, X_{crack} (cm)	Soil gas conc. ($\mu g/m^3$)	Bldg. ventilation rate, $Q_{building}$ (cm^3/s)
137	0.259	0.307	2.89E-09	0.798	2.30E-09	4,000	1.07E+04	6.78E+04

Area of enclosed space below grade, A_B (cm^2)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} ($atm\text{-}m^3/mol$)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Vadose zone effective diffusion coefficient, D^{eff}_V (cm^2/s)	Diffusion path length, L_d (cm)
1.00E+06	5.00E-03	15	9,410	1.68E-02	6.88E-01	1.80E-04	2.91E-03	137

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu g/m^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm^3/s)	Crack effective diffusion coefficient, D^{crack} (cm^2/s)	Area of crack, A_{crack} (cm^2)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$)
15	1.07E+04	1.25	8.33E+01	2.91E-03	5.00E+03	7.00E+24	**2.50E-04**	2.67E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
5.9E-06	3.5E-02

END

Scenario: **Commercial**
Chemical: **Tetrachloroethylene**

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.3E-06	1.7E-02

MESSAGE SUMMARY BELOW:

END

Appendix E
SCS Engineer's Indoor Air Sampling Report

Environmental Consultants
and Contractors

6601 Koll Center Parkway
Suite 140
Pleasanton, CA 94566

925 426-0080
FAX 925 426-0707
www.scsengineers.com

SCS ENGINEERS

July 27, 2015
Revised August 20, 2015
Project No. 01215124.00

Mr. Gary L. Bates, PG
Director, Environmental Remediation Services
EFI Global, Inc.
11000 Richmond Avenue, Suite 250
Houston, Texas 77042
Office: (832) 518-5145

Subject: Revised Limited Phase II Indoor Air Assessment and Reporting, 6335 – 6339 College Avenue, Oakland, California

Dear Mr. Bates:

SCS Engineers (SCS) is pleased to present the results of a Limited Phase II Indoor Air Assessment (Report) to EFI Global, Inc. (EFI) for the property located at 6335 – 6339 College Avenue in Oakland, California (Site, see Figure 1). We have prepared this Report at your request, to allow EFI to better evaluate the indoor environmental conditions at the Site. This Revised Report was prepared to address an error made by the analytical laboratory regarding volatile organic compound (VOC) concentrations previously reported in select indoor air samples collected at the Site.

BACKGROUND

SCS reviewed the April 28, 2015 *Phase II Environmental Site Assessment Soil Gas Investigation Report*, issued by Youngdahl Consulting Group, Inc. (Youngdahl). Based upon our review, we understand the Site consists of a three-story building, a parking area, and associated landscaping. The first floor of the building is unoccupied, and the second and third floors of the building are currently occupied by various tenants. The ground floor was most recently occupied by a dry cleaning facility (Former Red Hanger Cleaners). The Site is listed as Alameda County Department of Environmental Health (ACDEH) Case No. RO00002981 and California State Water Resources Control Board (SWRCB) GeoTracker Global ID T10000000416.

There have been a series of Site investigations by various consultants dating back to 2005. The investigations identified VOCs in the Site subsurface, and the most recent work performed by Youngdahl was performed to further evaluate the extent of tetrachloroethylene (PCE), chloroform, and other dry cleaning solvent degradation products in soil gas. The recent work consisted of advancing probes to five feet below ground surface (bgs) followed by vapor sample collection for analyses of VOCs using an on-Site mobile laboratory, and collection of sub-slab vapor samples for analysis of VOCs using an off-Site laboratory.

The soil gas sampling reportedly followed California Department of Toxic Substances Control (DTSC) and San Francisco Regional Water Quality Control Board (RWQCB) guidelines. Potential vapor intrusion health risks were evaluated at the Site by comparing detected soil gas concentrations to the RWQCB Environmental Screening Levels or ESLs (RWQCB, 2013), and by using the DTSC Johnson-Ettinger (J&E) vapor intrusion model with key Site-specific information, such as soil type and depth to sample collection, to predict an indoor air concentration based on diffusion and advection of soil gas through the building slab, taking into account Site-specific soil and building parameters. Each risk evaluation that was performed assumed commercial use of the property.

Youndahl concluded that PCE was released to the environment at Red Hanger Cleaners, and soil gas underlying the foundation exceeds the RWQCB ESL value of 2,100 micrograms per cubic meter ($\mu g/m^3$) for PCE although the locations exceeding the soil gas ESL for PCE are limited in extent. With the exception of the sewer line, soil gas concentrations appear to attenuate with distance away from the area of the former dry cleaning machines. Cracks were observed in the concrete at the location of SV-6 near the former dry cleaning machines, which may have provided preferential pathways for PCE to enter into the soils beneath the foundation. The highest concentration of PCE in soil gas was found at the sewer cleanout. The highest concentration of PCE in the sub-slab samples was found near the former location of the dry cleaning machines next to a crack in the slab.

The vapor intrusion health risk assessment modeling was done based on soil gas and sub-slab samples. The modeling based on the soil gas sample results passed the applicable health risk-based screening criteria, while the modeling based on the sub-slab results did not pass applicable health risk based screening criteria. Furthermore, trichloroethylene (TCE) was not detected in soil gas or sub-slab gas samples, and the Youngdahl report concluded that the U.S. Environmental Protection Agency (USEPA) response action levels for TCE do not apply.

SCOPE OF WORK

Based upon review of the Youngdahl Report, and following correspondence with Dr. Paul Damian, toxicologist, SCS collected indoor and ambient air samples to further assess the potential for intrusion of VOC containing vapors in the indoor air at the Site. The work consisted of three primary tasks:

Task 1 - Preliminary Field Work;

Task 2 - Field Work; and,

Task 3 - Reporting.

Preliminary Field Activities

To facilitate an expedient evaluation of the potential for intrusion of VOC-containing vapors into indoor air, a Work Plan was not prepared for submittal to overseeing regulatory agencies. In lieu of a Work Plan, SCS followed DTSC and RWQCB guidelines for investigation of indoor air. SCS prepared a Site-specific Health and Safety Plan (HASP) for use by SCS personnel during the on-Site activities. SCS notified building management of the proposed work and preformed a pre-sampling survey within the existing building. On May 21, 2015, SCS performed a pre-sampling survey eight days prior to indoor air sampling to identify whether materials containing the identified constituents of potential concern (COPC) were present. The survey also evaluated whether there were any obvious migration pathways from the building sub-slab into the interior air space (such as obvious cracks in the slab or unsealed penetrations). SCS personnel recorded preliminary field observations on field logs which are included as Appendix A to this Report.

Field Investigation

The indoor air sampling event performed on May 29, 2015 included collection of samples from five interior points (IA-1 through IA-5), including two samples from the first floor (IA-1 and IA-2) of the structure, two samples from the second floor (IA-3 and IA-4) of the structure, and one sample from the third floor bathroom area (IA-5). Two outdoor background, or ambient, air samples (BG-1 and BG-2) were also collected. The samples were collected in certified clean (SIM certified) 6 liter Summa™ brand passive stainless steel canisters equipped with regulators to collect the samples over an approximate 8 hour period. Indoor air samples were collected from within the adult breathing zone (approximately five feet above floor level) between the hours of 8 am and 4 pm by affixing each Summa™ canister to a sampling cane. The building exterior samples were collected in the same manner, but the sample collection began approximately one hour prior to the indoor air sampling per DTSC guidelines.

SCS personnel were on-Site during the sampling to monitor the equipment and verify that tampering did not occur. The first floor (location of former Red Hanger Cleaners) windows and doors were closed during sampling activities, with the exception of sampling personnel entering and exiting the building. The first floor heating, ventilation, and air conditioning (HVAC) system was inoperable during the course of sampling. The second and third floor of the building consists of approximately 20 individual offices. The HVAC system for the second and third floor areas operated under normal conditions, controlled by a thermostat. Indoor air samples were collected from the second floor hallway (IA-3 and IA-4) and third floor bathroom (IA-5) with the building ventilation occurring under typical conditions.

The indoor (IA-1 through IA-5) and outdoor (BG-1 and BG-2) air samples were submitted under Chain of Custody (COC) documentation to Air Toxics Laboratory for analysis of VOCs by USEPA Method TO-15 SIM. SCS requested the air sample analysis be performed to meet or exceed the method detection limit (MDL) requirements specified in the San Francisco Bay RWQCB Letter. Generally the MDL requirements were below the analytical reporting limits listed by the RWQCB ESLs for commercial and industrial land use (RWQCB, 2013). The list of

analytes included the full list of VOCs, including PCE, TCE, and daughter products dichloroethylene (DCE) and vinyl chloride, as well as oxygen, carbon dioxide, methane.

SCS collected five ambient indoor air (IA-1 through IA-5) samples from the Site. Two of the samples were collected from the first floor former Red Hanger Cleaners suite (IA-1 and IA-2) and two of the samples were collected from the second floor office hallways (IA-3 and IA-4) located approximately in the same location, although one floor above the first floor locations. SCS also collected a sample from the third floor of the building (IA-5) in the third floor bathroom in an attempt to identify any potential vertical pathways of indoor air contamination.

The Site location is shown on the attached **Figure 1**. Indoor air sampling locations are shown on the attached **Figure 2**.

Indoor Ambient Air Investigation Analytical Results

The results of the indoor air sampling activities completed by SCS on May 29, 2015 are presented in **Table 1**. Copies of the revised laboratory analytical reports are attached as **Appendix B** to this Report. The results of the indoor and ambient air sample analysis may be summarized as follows:

The indoor air sample analysis yielded the following results:

- PCE was reported in each sample at concentrations ranging from 3.3 to 4.1 µg/m^3;
- TCE was reported in three of five samples at concentrations ranging from 5.1 to 8.8 µg/m^3;
- 1,2-dichloroethane (DCA) was reported in two samples at concentrations of 0.14 and 0.25 µg/m^3 and in one sample at estimated ("J-flagged value") concentration of 0.43 µg/m^3;
- Benzene was reported in four of five samples at concentrations ranging from 0.40 to 0.62 µg/m^3;
- Toluene was reported in each sample at concentrations ranging from 1.6 to 2.0 µg/m^3;
- Ethylbenzene was reported in four of five samples at concentrations ranging from 0.25 to 0.37 µg/m^3;
- Xylenes were reported in four of five samples at concentrations ranging from 1.09 to 1.66 µg/m^3;
- Carbon tetrachloride was reported in four of five samples at concentrations ranging from 0.48 to 0.54 µg/m^3;
- Chloroform was reported in each sample at concentrations ranging from 0.32 to 3.3 µg/m^3;
- Chloromethane was reported each sample at concentrations ranging from 1.2 to 1.6 µg/m^3;
- Freon 12 was reported in each sample at concentrations ranging from 2.5 to 3.0 µg/m^3; and,
- 1,4-dichlorobenzene was reported in one sample at a concentration of 0.21 µg/m^3.

The outdoor ambient air samples yielded the following results (for samples BG-1 and BG-2, respectively):

- Benzene was reported in both samples at concentrations of 0.40 and 0.66 µg/m^3;
- Toluene was reported in both samples at concentrations of 0.91 and 1.4 µg/m^3;
- Ethylbenzene was reported in both samples at concentrations of 0.18 and 0.26 µg/m^3;
- Xylenes were reported in both samples at concentrations of 0.84 and 1.42 µg/m^3;
- Carbon tetrachloride was reported in both samples at concentrations of 0.48 and 0.51 µg/m^3;
- Chloroform was reported in sample BG-1 at a concentration of 0.16 µg/m^3;
- Chloromethane was reported in each sample at a concentration of 1.3 µg/m^3: and,
- Freon 12 was reported in each sample at a concentration of 2.5 µg/m^3.

DISCUSSION

As previously noted, prior to conducting indoor air sampling, SCS performed a building contents survey. Then, to evaluate the condition of indoor air, SCS collected five indoor air samples (IA-1 through IA-5) for analysis, as well as two ambient air samples exterior to the on-Site building (BG-1 and BG-2). Outdoor ambient air sample locations BG-1 and BG-2 were placed on opposite sides of the on-Site building, in locations presumed to be least affected by pedestrian traffic (**Figure 2**). Samples IA-1 and IA-2 were collected from the first floor former Red Hanger Cleaners suite. Samples IA-3 and IA-4 were collected from the second floor hallways in approximately the same locations as those collected on the first floor, although one floor above. Sample IA-5 was collected from the third floor bathroom in an effort to determine if a vertical conduit (i.e. shared sanitary sewer pipeline) existed between the first, second, and third floors. Each building interior sample was collected from an approximate height of five feet above ground surface, considered representative of a breathing zone location.

The results of the indoor and outdoor air sampling event suggest that ambient or background concentrations of benzene, toluene, ethylbenzene and xylenes (BTEX compounds), carbon tetrachloride, chloroform, chloromethane, and Freon 12 are present in the Site vicinity. The most elevated concentrations of the primary COPC, PCE and TCE, were reported in samples IA-4 and IA-5. Those samples were located in approximately the same locations on the second and third floors of the on-Site building – near the bathroom and elevator. The detection of TCE in indoor air on the second and third floors, but not in indoor air on the first floor suggests a source other that the former dry cleaning facility.

The presence of carbon tetrachloride, Freon 12, chloroform, and chloromethane may be wholly attributed to background conditions, to laboratory “carry over”, and/or may in part be the result of historic Site operations.

CLOSING

SCS appreciates the opportunity to work with you on this important project. Should you have any questions, please call us at (925) 426-0080.

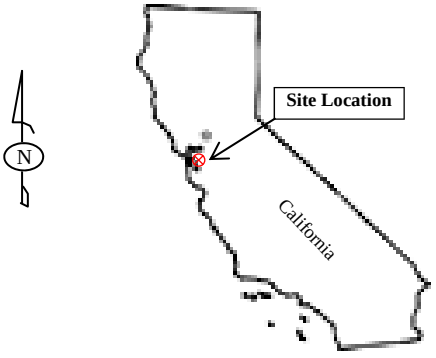
Sincerely,

Alex Tuveson, EIT
Project Engineer
SCS ENGINEERS

James G. Ritchie, PG, QSD
Project Director
SCS ENGINEERS

PROFESSIONAL GEOLOGIST
JAMES G. RITCHIE
No. 4974
expires 5-31-16
STATE OF CALIFORNIA

Attachments:
Figure 1 – Site Location Map
Figure 2 – Indoor Air Sampling Locations
Table 1 – Indoor Air Sampling Results
Appendix A – Field Logs and Pre-Sample Survey
Appendix B – Laboratory Analytical Reports



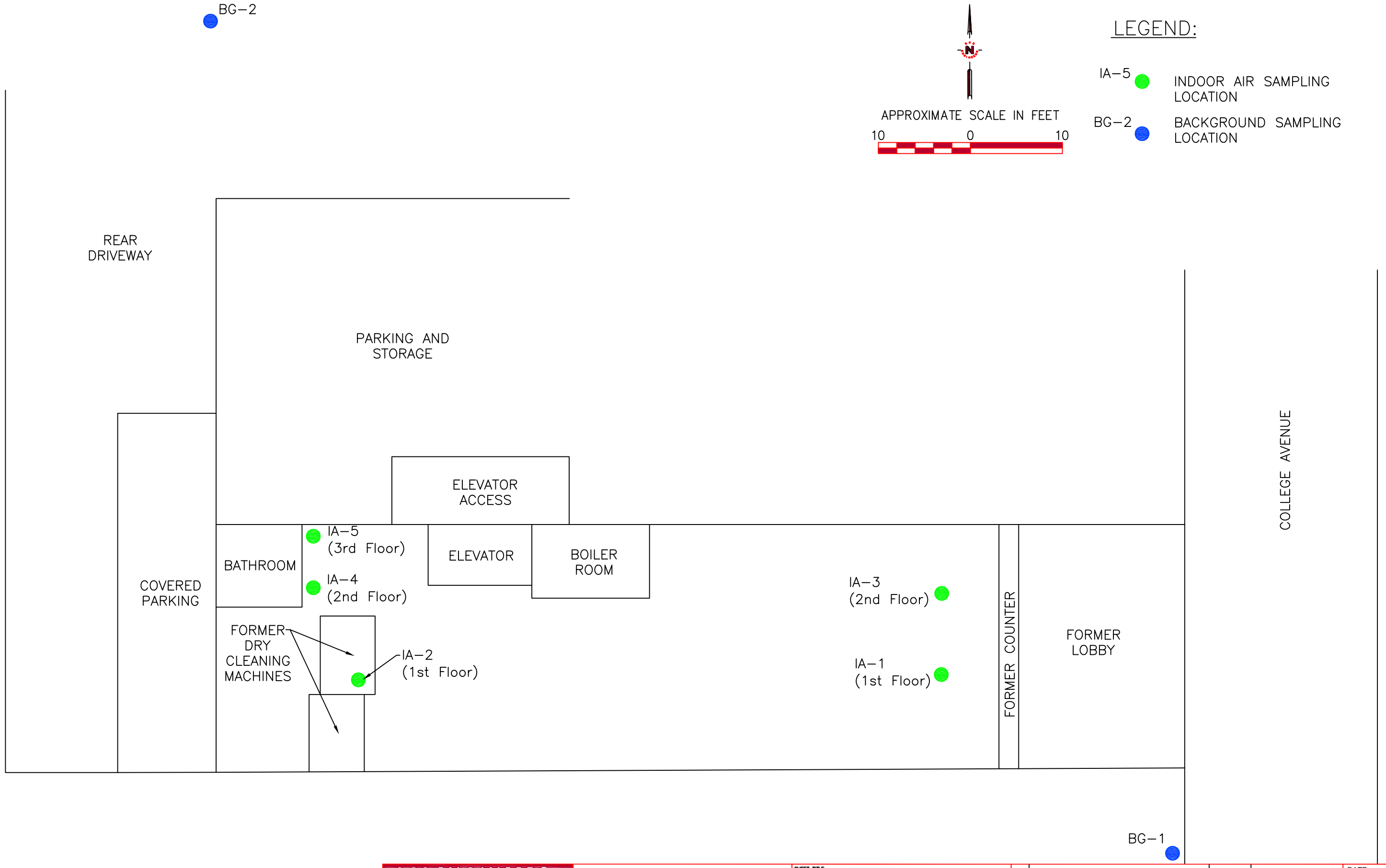
Source: Google Earth Professional, Imagery Date: 04/05/14

SCS ENGINEERS
ENVIRONMENTAL CONSULTANTS AND CONTRACTORS
6601 KOLL CENTER PARKWAY, SUITE 140
PLEASANTON, CA 94566
PH. (925) 426-0080 FAX (925) 426-0707

		CHECKED BY: ALT
DESIGNED BY: JJM	SCALE: None	APPROVED BY: JGR
DRAWN BY: ALT	DATE: 06/05/15	FILE: 01215124.00

FIGURE 1 - SITE LOCATION MAP

Former Red Hanger Dry Cleaners
6335-6339 College Avenue
Oakland, CA



SCS ENGINEERS
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6601 Koll Center Parkway, Suite 140
Pleasanton, California 94566
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PROJ. NO.	DWN. BY:	ACAD FILE:
01215124.00	ALT	Fig 02 Site Plan.dwg
DSN. BY:	CHK. BY:	APP. BY:
ALT	JGR	J. RITCHIE

BASE: THE PLOTS SHOWN HEREIN ARE A COMPILATION OF GOOGLE EARTH IMAGES, FIGURES PROVIDED BY YOUNGDAHL CONSULTING GROUP, INC., AND SCS ENGINEERS FIELD OBSERVATIONS. NOT A PRODUCT OF PROFESSIONAL SURVEY.

SHEET TITLE:
INDOOR AIR SAMPLING LOCATIONS

PROJECT TITLE:
FORMER RED HANGER DRY CLEANERS
6335-6339 COLLEGE AVENUE
OAKLAND, CA

NO.	REVISION	DATE

DATE: 06/11/15
SCALE: AS SHOWN
FIGURE NO. 2

Table 1. Indoor Air Analytical Results
6335 - 6339 College Avenue, Oakland, California

Sample Location	Date	VOCs											Atmospheric Gas		
		Benzene	Toluene	Ethylbenzene	Xylenes	Carbon Tetrachloride	Chloroform	Chloromethane	Dichlorodifluoromethane (Freon 12)	1,2-Dichloroethane (1,2-DCA)	Tetrachloroethylene	Trichloroethylene	Methane	Oxygen	Carbon Dioxide
		µg/m^3											Percentage (%)		
IA-1	05/29/15	**0.62**	1.6	0.31	1.16	**0.50**	0.32	1.3	2.5	<0.13	**3.5**	<0.17	0.00028	22	0.046
IA-2	05/29/15	**0.61**	1.7	0.37	1.66	**0.54**	0.34	1.2	2.6	<0.13	**3.3**	<0.17	0.00030	21	0.045
IA-3	05/29/15	<0.86	2.0	<0.47	<0.94	<0.68	1.8	1.4	3.0	0.43 J	**3.5**	**5.1**	0.00025	21	0.079
IA-4[1]	05/29/15	**0.43**	1.9	0.30	1.21	**0.51**	**3.3**	1.6	2.7	0.25	**4.0**	**8.8**	0.00027	21	0.075
IA-5	05/29/15	0.40	1.6	0.25	1.09	**0.48**	**3.2**	1.5	2.8	0.14	**4.1**	**6.6**	0.00028	21	0.065
BG-1	05/29/15	0.40	0.91	0.18	0.84	**0.48**	0.16	1.3	2.5	<0.13	<0.21	<0.17	0.00022	21	0.040
BG-2	05/29/15	**0.66**	1.4	0.26	1.42	**0.51**	<0.15	1.3	2.5	<0.13	<0.21	<0.17	0.00021	21	0.041
Commercial/Industrial ESL		0.42	1,300	4.9	440	0.29	2.3	390	NE	0.58	2.1	3.0	NE	NE	NE

Notes:

VOCs = volatile organic compounds; analyzed using Method TO-15. VOCs not listed were not detected.

NE = Not Established

µg/m^3 = micrograms per cubic meter

µL/L = microliters per liter (also referred to as ppm)

ppm = parts per million

Commercial/Industrial ESL = Table E-3. Ambient and Indoor Air Screening Levels (Commercial/Industrial Exposure). - San Francisco Bay Regional Water Quality Control Board, December 2013

Bold = Exceeds Commercial/Industrial ESL

J = Estimated Value

1 - Sample yielded 1,4-dichlorobenzene at 0.21 µg/m3.

APPENDIX A

FIELD LOGS AND PRE-SAMPLE SURVEY

Environmental Consultants
and Contractors

6601 Koll Center Parkway
Suite 140
Pleasanton, CA 94566

925 426-0080
FAX 925 426-0707
www.scsengineers.com

SCS ENGINEERS

FORMER RED HANGER DRY CLEANERS

Pre Sample Survey Checklist

Date 5/21/15 **Suite** 6239 COLLEGE AVE, OAKLAND, CA

1. Floor Material/Coverings

1ST FLOOR - CONCRETE SLAB (W/ SOME TILE ON CONCRETE SLAB NEAR ENTRANCE - SEE PHOTOS). 2ND & 3RD FLOOR - CARPETED, BATHROOMS ARE TILED. MINOR CRACKS ON 1ST FLOOR SLAB (< 1/4"), SEE PHOTOS.

2. Floor Condition/Problem Areas

MINOR CRACKS IN CONCRETE SLAB FOUNDATION (1ST FLOOR, LESS THAN 1/4" WIDE). PREVIOUS PENETRATIONS FROM SOIL VAPOR & SUB SLAB VAPOR SAMPLING. NO ISSUES ON 2ND & 3RD FLOOR.

3. HVAC System

EXHAUST FAN & HVAC SYSTEM ON 1ST FLOOR (NON-OPERATIONAL SINCE 1ST FLOOR WAS VACATED). HVAC SYSTEM (SEPARATE FROM 1ST FLOOR) ON 2ND & 3RD FLOORS OPERATES AS NEEDED BY INDIVIDUAL TENANTS (APPROX. 25 INDIVIDUAL OFFICES).

4. Observed Chemicals

- 3 - 1 GALLON CLOROX BLEACH } LOCATED ON FIRST FLOOR, REMOVED BY PROPERTY
- 1 - 1 GALLON AMYL ACETATE } MANAGER PATRICK ELLWOOD.
- NO ~~CHEMICALS~~ OTHER CHEMICALS OBSERVED ON 1ST FLOOR (FORMER RED HANGER CLEANERS).
- NO CHEMICALS OBSERVED ON 2ND & 3RD FLOOR. UNABLE TO MAKE CONTACT W/ ALL TENANTS (~25 TENANTS), BUT NO CHEMICALS LOCATED. ACCORDING TO PROPERTY MANAGER, PATRICK ELLWOOD, JANITORIAL SERVICE ARRIVES TO CLEAN 2ND & 3RD FLOORS, BUT NO CHEMICALS ARE STORED ON-SITE.

PHOTO LOG

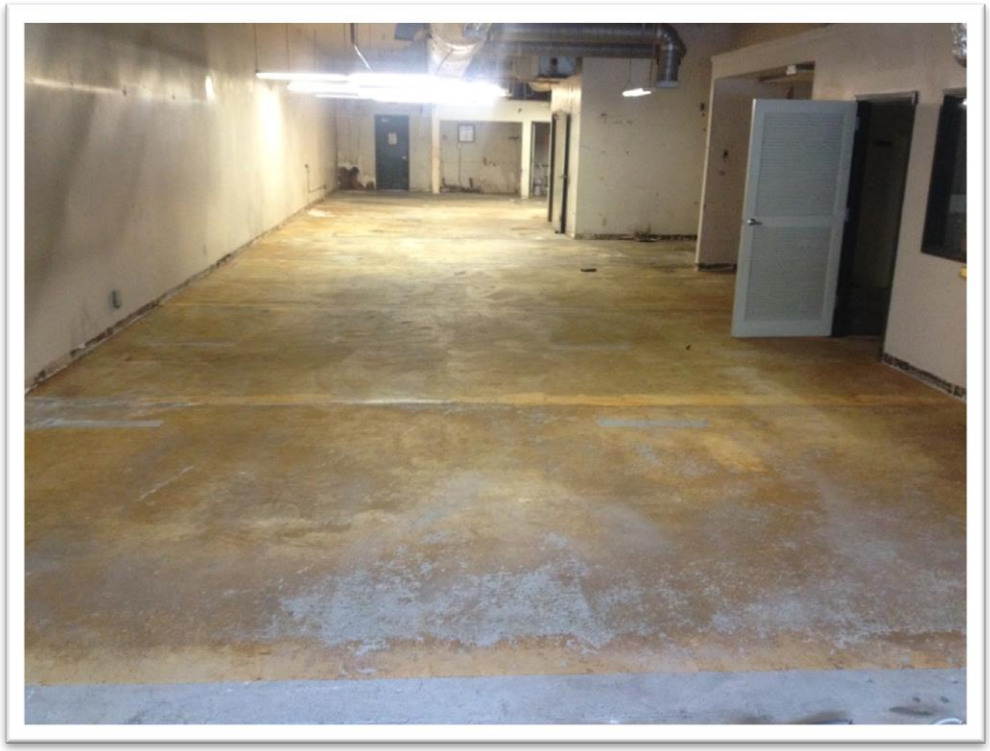

Photo 1. Former Red Hanger Cleaners Operating Area.

Photo 2. Former Red Hanger Cleaners Front Reception Area.

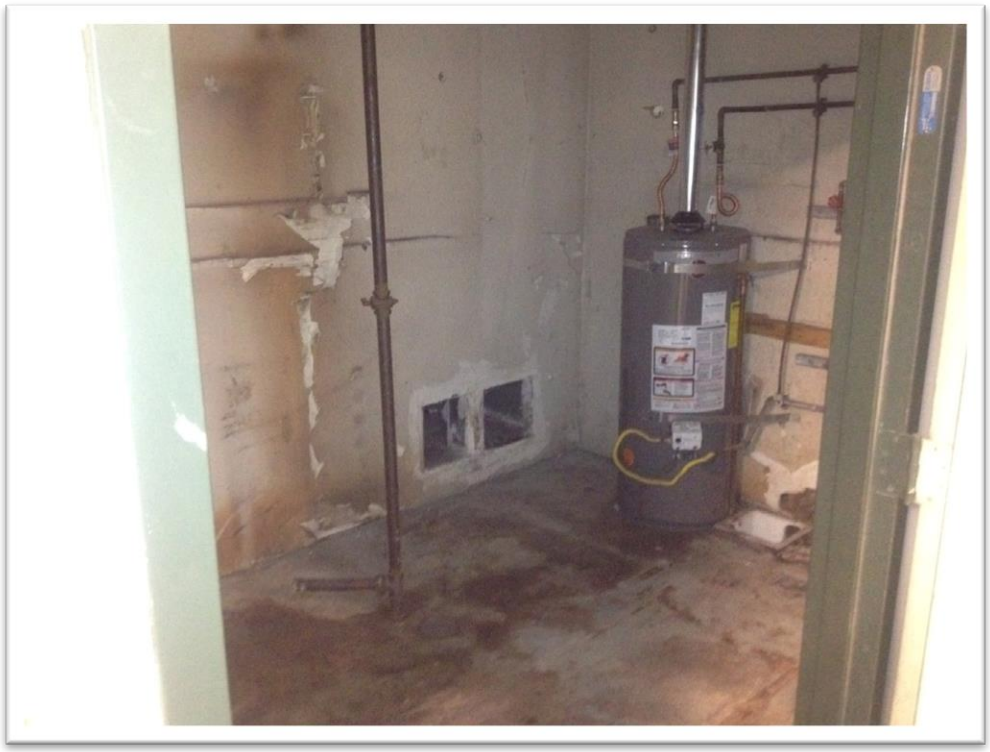

Photo 3. Former Red Hanger Cleaners Boiler Room.

Photo 4. Former Red Hanger Cleaners Bathroom.

Photo 5. Former Red Hanger Cleaners (Rear of Suite, Looking Toward Front Door).

EFI GLOBAL

SCS Engineers

Air Sampling Log

Date: 5/29/15 | Site: FORMER RED HANGER CLEANER, OAKLAND, CA

Client: 01215124.00 | Operator: A. TUVESON

Sample Location	Summa Serial Numer	Start Time	Initial Pressure (in./Hg)	Finish Time	Ending Pressure (in./HG)	Notes
BG-1	5746	0700	30	1500	5	B OF A PARKING LOT LANDSCAPE
BG-2	5666	0710	30	1510	4.5	REAR BUILDING PARKING LOT/3RD ST
IA-5	3724	0800	30	1600	3	3RD FLOOR BATHROOM
IA-4	12940	0810	31	1610	5.5	2ND FLOOR REAR HALLWAY
IA-3	12693	0820	30.5	1620	6	2ND FLOOR FRONT HALLWAY
IA-2	6L 1264	0830	30	1630	5	1ST FLOOR REAR BUILDING
IA-1	~~429~~ 439	0840	30.5	1640	6	1ST FLOOR FRONT BUILDING
***	IA-5 FLOW CONTROLLER NOT FUNCTIONING PROPERLY AT START-UP; SEEMED TO ADJUST CORRECTLY AFTER 1-2 MIN & TAPPING ON GAUGE.					

AIR SAMPLE SUMMARY LOG

Project: 01215124.00 EFI GLOBAL

Date: 5/29/15

Time	Location	Temp (°F)	Windspeed (MPH)	Wind Direction (DIRECTION WIND IS GOING)	Pressure (IN Hg)	CAN PRESSURE (IN Hg)
0700	BG-1	56	4	SOUTHEAST(SE)	29.80	30 INITIAL
0710	BG-2	57.5	Ø	N/A	29.79	30 INITIAL
0750	BG-1	54.5	2	SE	29.80	27
0755	BG-2	58	1	SE	29.79	27
0800	IA-5	69	Ø	N/A	29.77	30 INITIAL
0810	IA-4	69.5	Ø	N/A	29.78	31 INITIAL
0820	IA-3	77	Ø	N/A	29.77	30.5 INITIAL
0830	IA-2	67	Ø	N/A	29.79	30 INITIAL
0840	IA-1	66	Ø	N/A	29.79	30.5 INITIAL
0850	BG-1	54.6	2.5	SE	29.79	22
0900	BG-2	61	1	SE	29.79	23
0910	IA-5	68	Ø	N/A	29.77	23.5
0920	IA-4	70.5	Ø	N/A	29.78	27
0930	IA-3	72	Ø	N/A	29.77	26
0940	IA-2	67	Ø	N/A	29.79	27
0950	IA-1	66	Ø	N/A	29.81	26.5
1000	BG-1	55	5	SE	29.80	17.5
1005	BG-2	60	0.5	SE	29.80	18
1010	IA-5	69	Ø	N/A	29.77	19.5
1015	IA-4	70.5	Ø		29.78	22.5
1020	IA-3	72	Ø		29.78	22
1025	IA-2	70	Ø		29.80	23
1030	IA-1	68	Ø		29.80	23.5
1100	BG-1	56.5	3.5	SE	29.80	15
1105	BG-2	59	Ø	N/A	29.80	15
1110	IA-5	68.5	Ø	N/A	29.78	~~17.5~~ 17
1115	IA-4	70	Ø		29.78	19.5
1120	IA-3	71	Ø		29.78	19
1125	IA-2	69	Ø		29.79	19.5
1130	IA-1	69.5	Ø		29.80	20
1200	BG-1	58	3	SE	29.81	11
1205	BG-2	59.5	0.5	SE	29.81	11
1210	IA-5	68.5	Ø	N/A	29.77	14
1215	IA-4	69.5	Ø		29.79	15
1220	IA-3	70.5	Ø		29.78	15
1225 ~~1230~~	IA-2	68	Ø		29.80	15
1230	IA-1	67.5	Ø		29.79	15.5
1300	BG-1	62	4	SE	29.78	8
1305	BG-2	66.5	Ø	N/A	29.78	8.5
1310	IA-5	69.5	Ø	N/A	29.75	11
1315	IA-4	70.5	Ø		29.76	12
1320	IA-3	73	Ø		29.76	12
1325	IA-2	68	Ø		29.77	11.5
1330	IA-1	68	Ø		29.77	12.5
1400	BG-1	65.5	1.5	SE	29.76	6.5
1405	BG-2	66.5	2	SE	29.75	6
1410	IA-5	73	Ø	N/A	29.74	9

AIR SAMPLE SUMMARY LOG

Project: 0121S124.00 EFI GLOBAL
Date: 5/29/15

Time	Location	Temp (°F)	Windspeed (MPH)	Wind Direction (DIRECTION WIND IS GOING)	Pressure (IN Hg)	CAN PRESSURE (IN Hg)
1415	IA-4	74	0	N/A	29.75	9
1420	IA-3	74	0		29.75	9.5
1425	IA-2	70.5	0		29.76	9
1430	IA-1	68.5	0	↓	29.77	9
1500	BG-1	68	1	SE	29.76	5 END
1510	BG-2	73	0	N/A	29.75	4.5 END
1520	IA-5	75	0	N/A	29.72	8
1525	IA-4	74.5	0		29.73	7
1530	IA-3	75	0		29.73	7
1535	IA-2	70.5	0		29.74	6.5
1540	IA-1	72	0	↓	29.74	7
1600	IA-5	78.5	0	N/A	29.71	3 END
1610	IA-4	77.5	0		29.72	5.5 END
1620	IA-3	75.5	0		29.72	6 END
1630	IA-2	74	0		29.74	5 END
1640	IA-1	73	0	↓	29.74	6 END

APPENDIX B

LABORATORY ANALYTICAL REPORTS

eurofins | Air Toxics

8/13/2015
Mr. Ted Sison
SCS BT Squared
6601 Koll Center Pkwy
Suite 140
Pleasanton CA 94566

Project Name: RED HANGER CLEANERS
Project #: 01215124.00
Workorder #: 1506041AR1

Dear Mr. Ted Sison

The following report includes the data for the above referenced project for sample(s) received on 6/1/2015 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-15 SIM are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Air Toxics Ltd. for your air analysis needs. Air Toxics Ltd. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Kelly Buettner at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kelly Buettner

Project Manager

eurofins | Air Toxics

WORK ORDER #: 1506041AR1

Work Order Summary

CLIENT:	Mr. Ted Sison SCS BT Squared 6601 Koll Center Pkwy Suite 140 Pleasanton, CA 94566	**BILL TO:**	Mr. Ted Sison SCS BT Squared 6601 Koll Center Pkwy Suite 140 Pleasanton, CA 94566
PHONE:	925-426-0080	**P.O. #**	01-PL00614
FAX:	925-426-0707	**PROJECT #**	01215124.00 RED HANGER CLEANERS
DATE RECEIVED:	06/01/2015	**CONTACT:**	Kelly Buettner
DATE COMPLETED:	06/12/2015		
DATE REISSUED:	08/13/2015		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	BG-1	Modified TO-15 SIM	4.3 "Hg	5 psi
02A	BG-2	Modified TO-15 SIM	4.1 "Hg	5.3 psi
03A	IA-1	Modified TO-15 SIM	4.1 "Hg	5.4 psi
04A	IA-2	Modified TO-15 SIM	4.1 "Hg	5.2 psi
05A	IA-3	Modified TO-15 SIM	5.1 "Hg	5.1 psi
06A	IA-4	Modified TO-15 SIM	4.7 "Hg	5.1 psi
07A	IA-5	Modified TO-15 SIM	4.3 "Hg	5.2 psi
08A	Lab Blank	Modified TO-15 SIM	NA	NA
08B	Lab Blank	Modified TO-15 SIM	NA	NA
09A	CCV	Modified TO-15 SIM	NA	NA
09B	CCV	Modified TO-15 SIM	NA	NA
10A	LCS	Modified TO-15 SIM	NA	NA
10AA	LCSD	Modified TO-15 SIM	NA	NA
10B	LCS	Modified TO-15 SIM	NA	NA
10BB	LCSD	Modified TO-15 SIM	NA	NA

CERTIFIED BY:  DATE: 08/13/15

Technical Director

Certification numbers: AZ Licensure AZ0775, NJ NELAP - CA016, NY NELAP - 11291,
TX NELAP - T104704343-14-7, UT NELAP CA009332014-5, VA NELAP - 460197, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005, Effective date: 10/18/2014, Expiration date: 10/17/2015.
Eurofins Air Toxics Inc.. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 9563
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 SIM
SCS BT Squared
Workorder# 1506041AR1

Seven 6 Liter Summa Canister (SIM Certified) samples were received on June 01, 2015. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the SIM acquisition mode.

This workorder was independently validated prior to submittal using 'USEPA National Functional Guidelines' as generally applied to the analysis of volatile organic compounds in air. A rules-based, logic driven, independent validation engine was employed to assess completeness, evaluate pass/fail of relevant project quality control requirements and verification of all quantified amounts.

Method modifications taken to run these samples are summarized in the table below. Specific project requirements may over-ride the ATL modifications.

Requirement	***TO-15***	***ATL Modifications***
ICAL %RSD acceptance criteria	</=30% RSD with 2 compounds allowed out to < 40% RSD	Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	Project specific; default criteria is </= 30% Difference with 10% of compounds allowed out up to </=40%.; flag and narrate outliers
Blank and standards	Zero air	Nitrogen
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on samples IA-3 due to the presence of high level non-target species.

Due to laboratory error, data was reissued on 8/13/15 to correct the documented load volume for samples IA-4 and IA-5. As a result, sample results for IA-4 and IA-5 were requantified using the correct dilution factor.

Additionally, the aforementioned dilution narrative was amended to reflect the current reissue changes.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: BG-1

Lab ID#: 1506041AR1-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.50	0.15	2.5
Chloromethane	0.078	0.64	0.16	1.3
Chloroform	0.031	0.033	0.15	0.16
Carbon Tetrachloride	0.031	0.077	0.20	0.48
Benzene	0.078	0.13	0.25	0.40
Toluene	0.031	0.24	0.12	0.91
Ethyl Benzene	0.031	0.041	0.14	0.18
m,p-Xylene	0.062	0.14	0.27	0.61
o-Xylene	0.031	0.054	0.14	0.23

Client Sample ID: BG-2

Lab ID#: 1506041AR1-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.50	0.16	2.5
Chloromethane	0.078	0.63	0.16	1.3
Carbon Tetrachloride	0.031	0.080	0.20	0.51
Benzene	0.078	0.21	0.25	0.66
Toluene	0.031	0.38	0.12	1.4
Ethyl Benzene	0.031	0.061	0.14	0.26
m,p-Xylene	0.063	0.23	0.27	0.99
o-Xylene	0.031	0.099	0.14	0.43

Client Sample ID: IA-1

Lab ID#: 1506041AR1-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Chloromethane	0.079	0.63	0.16	1.3
Chloroform	0.032	0.066	0.15	0.32
Carbon Tetrachloride	0.032	0.079	0.20	0.50
Benzene	0.079	0.20	0.25	0.62
Toluene	0.032	0.42	0.12	1.6

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: IA-1

Lab ID#: 1506041AR1-03A

Tetrachloroethene	0.032	0.52	0.21	3.5
Ethyl Benzene	0.032	0.071	0.14	0.31
m,p-Xylene	0.063	0.20	0.27	0.87
o-Xylene	0.032	0.066	0.14	0.29

Client Sample ID: IA-2

Lab ID#: 1506041AR1-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.52	0.16	2.6
Chloromethane	0.078	0.60	0.16	1.2
Chloroform	0.031	0.070	0.15	0.34
Carbon Tetrachloride	0.031	0.086	0.20	0.54
Benzene	0.078	0.19	0.25	0.61
Toluene	0.031	0.45	0.12	1.7
Tetrachloroethene	0.031	0.49	0.21	3.3
Ethyl Benzene	0.031	0.085	0.14	0.37
m,p-Xylene	0.063	0.29	0.27	1.2
o-Xylene	0.031	0.11	0.14	0.46

Client Sample ID: IA-3

Lab ID#: 1506041AR1-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.11	0.60	0.53	3.0
Chloromethane	0.27	0.68	0.56	1.4
Chloroform	0.11	0.36	0.53	1.8
1,2-Dichloroethane	0.11	0.10 J	0.44	0.43 J
Trichloroethene	0.11	0.95	0.58	5.1
Toluene	0.11	0.53	0.41	2.0
Tetrachloroethene	0.11	0.52	0.73	3.5

Client Sample ID: IA-4

Lab ID#: 1506041AR1-06A

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Summary of Detected Compounds
MODIFIED EPA METHOD TO-15 GC/MS SIM

Client Sample ID: IA-4

Lab ID#: 1506041AR1-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.55	0.16	2.7
Chloromethane	0.080	0.76	0.16	1.6
Chloroform	0.032	0.67	0.16	3.3
Carbon Tetrachloride	0.032	0.081	0.20	0.51
Benzene	0.080	0.13	0.26	0.43
1,2-Dichloroethane	0.032	0.062	0.13	0.25
Trichloroethene	0.032	1.6	0.17	8.8
Toluene	0.032	0.51	0.12	1.9
Tetrachloroethene	0.032	0.60	0.22	4.0
Ethyl Benzene	0.032	0.070	0.14	0.30
m,p-Xylene	0.064	0.20	0.28	0.87
o-Xylene	0.032	0.080	0.14	0.34
1,4-Dichlorobenzene	0.032	0.035	0.19	0.21

Client Sample ID: IA-5

Lab ID#: 1506041AR1-07A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.56	0.16	2.8
Chloromethane	0.079	0.72	0.16	1.5
Chloroform	0.032	0.65	0.15	3.2
Carbon Tetrachloride	0.032	0.076	0.20	0.48
Benzene	0.079	0.12	0.25	0.40
1,2-Dichloroethane	0.032	0.034	0.13	0.14
Trichloroethene	0.032	1.2	0.17	6.6
Toluene	0.032	0.43	0.12	1.6
Tetrachloroethene	0.032	0.60	0.21	4.1
Ethyl Benzene	0.032	0.057	0.14	0.25
m,p-Xylene	0.063	0.17	0.27	0.74
o-Xylene	0.032	0.081	0.14	0.35

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Client Sample ID: BG-1

Lab ID#: 1506041AR1-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060412sim**	**Date of Collection:**	**5/29/15 3:00:00 PM**
Dil. Factor:	**1.56**	**Date of Analysis:**	**6/4/15 04:37 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.50	0.15	2.5
Freon 114	0.031	Not Detected	0.22	Not Detected
Chloromethane	0.078	0.64	0.16	1.3
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.078	Not Detected	0.20	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.062	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.56	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	0.033	0.15	0.16
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.077	0.20	0.48
Benzene	0.078	0.13	0.25	0.40
1,2-Dichloroethane	0.031	Not Detected	0.13	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Toluene	0.031	0.24	0.12	0.91
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	0.041	0.14	0.18
m,p-Xylene	0.062	0.14	0.27	0.61
o-Xylene	0.031	0.054	0.14	0.23
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.21	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	123	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: BG-2

Lab ID#: 1506041AR1-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060413sim**	**Date of Collection:**	**5/29/15 3:10:00 PM**
Dil. Factor:	**1.57**	**Date of Analysis:**	**6/4/15 05:53 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.50	0.16	2.5
Freon 114	0.031	Not Detected	0.22	Not Detected
Chloromethane	0.078	0.63	0.16	1.3
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.078	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.062	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	Not Detected	0.15	Not Detected
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.080	0.20	0.51
Benzene	0.078	0.21	0.25	0.66
1,2-Dichloroethane	0.031	Not Detected	0.13	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Toluene	0.031	0.38	0.12	1.4
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	Not Detected	0.21	Not Detected
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	0.061	0.14	0.26
m,p-Xylene	0.063	0.23	0.27	0.99
o-Xylene	0.031	0.099	0.14	0.43
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	121	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	86	70-130

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Client Sample ID: IA-1

Lab ID#: 1506041AR1-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060414sim**	**Date of Collection:**	**5/29/15 4:40:00 PM**
Dil. Factor:	**1.58**	**Date of Analysis:**	**6/4/15 06:48 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.50	0.16	2.5
Freon 114	0.032	Not Detected	0.22	Not Detected
Chloromethane	0.079	0.63	0.16	1.3
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.079	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	0.066	0.15	0.32
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.079	0.20	0.50
Benzene	0.079	0.20	0.25	0.62
1,2-Dichloroethane	0.032	Not Detected	0.13	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Toluene	0.032	0.42	0.12	1.6
1,1,2-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	0.52	0.21	3.5
1,2-Dibromoethane (EDB)	0.032	Not Detected	0.24	Not Detected
Ethyl Benzene	0.032	0.071	0.14	0.31
m,p-Xylene	0.063	0.20	0.27	0.87
o-Xylene	0.032	0.066	0.14	0.29
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.032	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	121	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	84	70-130

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Client Sample ID: IA-2

Lab ID#: 1506041AR1-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060508sim**	**Date of Collection:**	**5/29/15 4:30:00 PM**
Dil. Factor:	**1.57**	**Date of Analysis:**	**6/5/15 02:27 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.031	0.52	0.16	2.6
Freon 114	0.031	Not Detected	0.22	Not Detected
Chloromethane	0.078	0.60	0.16	1.2
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.078	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.062	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.62	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
1,1-Dichloroethane	0.031	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.031	Not Detected	0.12	Not Detected
Chloroform	0.031	0.070	0.15	0.34
1,1,1-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.031	0.086	0.20	0.54
Benzene	0.078	0.19	0.25	0.61
1,2-Dichloroethane	0.031	Not Detected	0.13	Not Detected
Trichloroethene	0.031	Not Detected	0.17	Not Detected
Toluene	0.031	0.45	0.12	1.7
1,1,2-Trichloroethane	0.031	Not Detected	0.17	Not Detected
Tetrachloroethene	0.031	0.49	0.21	3.3
1,2-Dibromoethane (EDB)	0.031	Not Detected	0.24	Not Detected
Ethyl Benzene	0.031	0.085	0.14	0.37
m,p-Xylene	0.063	0.29	0.27	1.2
o-Xylene	0.031	0.11	0.14	0.46
1,1,2,2-Tetrachloroethane	0.031	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.031	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	123	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: IA-3

Lab ID#: 1506041AR1-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060418sim**	**Date of Collection:**	**5/29/15 4:20:00 PM**
Dil. Factor:	**5.40**	**Date of Analysis:**	**6/4/15 10:15 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.11	0.60	0.53	3.0
Freon 114	0.11	Not Detected	0.76	Not Detected
Chloromethane	0.27	0.68	0.56	1.4
Vinyl Chloride	0.054	Not Detected	0.14	Not Detected
Chloroethane	0.27	Not Detected	0.71	Not Detected
1,1-Dichloroethene	0.054	Not Detected	0.21	Not Detected
trans-1,2-Dichloroethene	0.54	Not Detected	2.1	Not Detected
Methyl tert-butyl ether	0.54	Not Detected	1.9	Not Detected
1,1-Dichloroethane	0.11	Not Detected	0.44	Not Detected
cis-1,2-Dichloroethene	0.11	Not Detected	0.43	Not Detected
Chloroform	0.11	0.36	0.53	1.8
1,1,1-Trichloroethane	0.11	Not Detected	0.59	Not Detected
Carbon Tetrachloride	0.11	Not Detected	0.68	Not Detected
Benzene	0.27	Not Detected	0.86	Not Detected
1,2-Dichloroethane	0.11	0.10 J	0.44	0.43 J
Trichloroethene	0.11	0.95	0.58	5.1
Toluene	0.11	0.53	0.41	2.0
1,1,2-Trichloroethane	0.11	Not Detected	0.59	Not Detected
Tetrachloroethene	0.11	0.52	0.73	3.5
1,2-Dibromoethane (EDB)	0.11	Not Detected	0.83	Not Detected
Ethyl Benzene	0.11	Not Detected	0.47	Not Detected
m,p-Xylene	0.22	Not Detected	0.94	Not Detected
o-Xylene	0.11	Not Detected	0.47	Not Detected
1,1,2,2-Tetrachloroethane	0.11	Not Detected	0.74	Not Detected
1,4-Dichlorobenzene	0.11	Not Detected	0.65	Not Detected

J = Estimated value.

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	86	70-130

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Client Sample ID: IA-4

Lab ID#: 1506041AR1-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060509simr1**	**Date of Collection:**	**5/29/15 4:10:00 PM**
Dil. Factor:	**1.60**	**Date of Analysis:**	**6/5/15 03:32 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.55	0.16	2.7
Freon 114	0.032	Not Detected	0.22	Not Detected
Chloromethane	0.080	0.76	0.16	1.6
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Chloroethane	0.080	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.58	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
Chloroform	0.032	0.67	0.16	3.3
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.081	0.20	0.51
Benzene	0.080	0.13	0.26	0.43
1,2-Dichloroethane	0.032	0.062	0.13	0.25
Trichloroethene	0.032	1.6	0.17	8.8
Toluene	0.032	0.51	0.12	1.9
1,1,2-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	0.60	0.22	4.0
1,2-Dibromoethane (EDB)	0.032	Not Detected	0.24	Not Detected
Ethyl Benzene	0.032	0.070	0.14	0.30
m,p-Xylene	0.064	0.20	0.28	0.87
o-Xylene	0.032	0.080	0.14	0.34
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.032	0.035	0.19	0.21

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	125	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: IA-5

Lab ID#: 1506041AR1-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060510simr1**	**Date of Collection:**	**5/29/15 4:00:00 PM**
Dil. Factor:	**1.58**	**Date of Analysis:**	**6/5/15 04:33 PM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.032	0.56	0.16	2.8
Freon 114	0.032	Not Detected	0.22	Not Detected
Chloromethane	0.079	0.72	0.16	1.5
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Chloroethane	0.079	Not Detected	0.21	Not Detected
1,1-Dichloroethene	0.016	Not Detected	0.063	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Methyl tert-butyl ether	0.16	Not Detected	0.57	Not Detected
1,1-Dichloroethane	0.032	Not Detected	0.13	Not Detected
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
Chloroform	0.032	0.65	0.15	3.2
1,1,1-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Carbon Tetrachloride	0.032	0.076	0.20	0.48
Benzene	0.079	0.12	0.25	0.40
1,2-Dichloroethane	0.032	0.034	0.13	0.14
Trichloroethene	0.032	1.2	0.17	6.6
Toluene	0.032	0.43	0.12	1.6
1,1,2-Trichloroethane	0.032	Not Detected	0.17	Not Detected
Tetrachloroethene	0.032	0.60	0.21	4.1
1,2-Dibromoethane (EDB)	0.032	Not Detected	0.24	Not Detected
Ethyl Benzene	0.032	0.057	0.14	0.25
m,p-Xylene	0.063	0.17	0.27	0.74
o-Xylene	0.032	0.081	0.14	0.35
1,1,2,2-Tetrachloroethane	0.032	Not Detected	0.22	Not Detected
1,4-Dichlorobenzene	0.032	Not Detected	0.19	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	124	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	86	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1506041AR1-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060407sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/4/15 11:20 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.050	Not Detected	0.10	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	122	70-130
Toluene-d8	105	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: Lab Blank

Lab ID#: 1506041AR1-08B

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060507sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/15 01:36 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.020	Not Detected	0.099	Not Detected
Freon 114	0.020	Not Detected	0.14	Not Detected
Chloromethane	0.050	Not Detected	0.10	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Chloroethane	0.050	Not Detected	0.13	Not Detected
1,1-Dichloroethene	0.010	Not Detected	0.040	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Methyl tert-butyl ether	0.10	Not Detected	0.36	Not Detected
1,1-Dichloroethane	0.020	Not Detected	0.081	Not Detected
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
Chloroform	0.020	Not Detected	0.098	Not Detected
1,1,1-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Carbon Tetrachloride	0.020	Not Detected	0.12	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
1,2-Dichloroethane	0.020	Not Detected	0.081	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Toluene	0.020	Not Detected	0.075	Not Detected
1,1,2-Trichloroethane	0.020	Not Detected	0.11	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
1,2-Dibromoethane (EDB)	0.020	Not Detected	0.15	Not Detected
Ethyl Benzene	0.020	Not Detected	0.087	Not Detected
m,p-Xylene	0.040	Not Detected	0.17	Not Detected
o-Xylene	0.020	Not Detected	0.087	Not Detected
1,1,2,2-Tetrachloroethane	0.020	Not Detected	0.14	Not Detected
1,4-Dichlorobenzene	0.020	Not Detected	0.12	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	130	70-130
Toluene-d8	106	70-130
4-Bromofluorobenzene	86	70-130

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Client Sample ID: CCV

Lab ID#: 1506041AR1-09A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060403sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/4/15 08:04 AM**	

Compound	%Recovery
Freon 12	88
Freon 114	81
Chloromethane	115
Vinyl Chloride	104
Chloroethane	88
1,1-Dichloroethene	82
trans-1,2-Dichloroethene	96
Methyl tert-butyl ether	107
1,1-Dichloroethane	103
cis-1,2-Dichloroethene	96
Chloroform	92
1,1,1-Trichloroethane	92
Carbon Tetrachloride	82
Benzene	82
1,2-Dichloroethane	97
Trichloroethene	77
Toluene	88
1,1,2-Trichloroethane	89
Tetrachloroethene	80
1,2-Dibromoethane (EDB)	94
Ethyl Benzene	91
m,p-Xylene	98
o-Xylene	99
1,1,2,2-Tetrachloroethane	90
1,4-Dichlorobenzene	82

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	113	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: CCV

Lab ID#: 1506041AR1-09B

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060503sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/15 10:08 AM**	

Compound	%Recovery
Freon 12	94
Freon 114	84
Chloromethane	120
Vinyl Chloride	108
Chloroethane	91
1,1-Dichloroethene	83
trans-1,2-Dichloroethene	98
Methyl tert-butyl ether	110
1,1-Dichloroethane	107
cis-1,2-Dichloroethene	99
Chloroform	96
1,1,1-Trichloroethane	98
Carbon Tetrachloride	75
Benzene	84
1,2-Dichloroethane	102
Trichloroethene	80
Toluene	91
1,1,2-Trichloroethane	92
Tetrachloroethene	82
1,2-Dibromoethane (EDB)	98
Ethyl Benzene	94
m,p-Xylene	101
o-Xylene	102
1,1,2,2-Tetrachloroethane	94
1,4-Dichlorobenzene	86

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: LCS

Lab ID#: 1506041AR1-10A

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060404sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/4/15 08:56 AM**	

Compound	%Recovery	Method Limits
Freon 12	88	70-130
Freon 114	84	70-130
Chloromethane	112	70-130
Vinyl Chloride	106	70-130
Chloroethane	90	70-130
1,1-Dichloroethene	81	70-130
trans-1,2-Dichloroethene	80	70-130
Methyl tert-butyl ether	98	70-130
1,1-Dichloroethane	99	70-130
cis-1,2-Dichloroethene	103	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	90	70-130
Carbon Tetrachloride	93	60-140
Benzene	78	70-130
1,2-Dichloroethane	93	70-130
Trichloroethene	75	70-130
Toluene	86	70-130
1,1,2-Trichloroethane	86	70-130
Tetrachloroethene	77	70-130
1,2-Dibromoethane (EDB)	92	70-130
Ethyl Benzene	87	70-130
m,p-Xylene	94	70-130
o-Xylene	96	70-130
1,1,2,2-Tetrachloroethane	88	70-130
1,4-Dichlorobenzene	80	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	115	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	87	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 1506041AR1-10AA

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060405sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/4/15 09:40 AM**	

Compound	%Recovery	Method Limits
Freon 12	88	70-130
Freon 114	83	70-130
Chloromethane	113	70-130
Vinyl Chloride	104	70-130
Chloroethane	89	70-130
1,1-Dichloroethene	79	70-130
trans-1,2-Dichloroethene	80	70-130
Methyl tert-butyl ether	96	70-130
1,1-Dichloroethane	99	70-130
cis-1,2-Dichloroethene	102	70-130
Chloroform	89	70-130
1,1,1-Trichloroethane	90	70-130
Carbon Tetrachloride	93	60-140
Benzene	78	70-130
1,2-Dichloroethane	93	70-130
Trichloroethene	75	70-130
Toluene	85	70-130
1,1,2-Trichloroethane	86	70-130
Tetrachloroethene	78	70-130
1,2-Dibromoethane (EDB)	93	70-130
Ethyl Benzene	89	70-130
m,p-Xylene	95	70-130
o-Xylene	98	70-130
1,1,2,2-Tetrachloroethane	90	70-130
1,4-Dichlorobenzene	82	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	114	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	88	70-130

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Client Sample ID: LCS

Lab ID#: 1506041AR1-10B

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060504sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/15 10:52 AM**	

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	85	70-130
Chloromethane	114	70-130
Vinyl Chloride	106	70-130
Chloroethane	90	70-130
1,1-Dichloroethene	78	70-130
trans-1,2-Dichloroethene	79	70-130
Methyl tert-butyl ether	96	70-130
1,1-Dichloroethane	101	70-130
cis-1,2-Dichloroethene	102	70-130
Chloroform	91	70-130
1,1,1-Trichloroethane	93	70-130
Carbon Tetrachloride	97	60-140
Benzene	80	70-130
1,2-Dichloroethane	99	70-130
Trichloroethene	76	70-130
Toluene	88	70-130
1,1,2-Trichloroethane	87	70-130
Tetrachloroethene	78	70-130
1,2-Dibromoethane (EDB)	94	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	97	70-130
o-Xylene	99	70-130
1,1,2,2-Tetrachloroethane	92	70-130
1,4-Dichlorobenzene	84	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	118	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: LCSD

Lab ID#: 1506041AR1-10BB

MODIFIED EPA METHOD TO-15 GC/MS SIM

File Name:	**e060505sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 6/5/15 11:37 AM**	

Compound	%Recovery	Method Limits
Freon 12	90	70-130
Freon 114	84	70-130
Chloromethane	114	70-130
Vinyl Chloride	104	70-130
Chloroethane	87	70-130
1,1-Dichloroethene	78	70-130
trans-1,2-Dichloroethene	80	70-130
Methyl tert-butyl ether	96	70-130
1,1-Dichloroethane	100	70-130
cis-1,2-Dichloroethene	103	70-130
Chloroform	92	70-130
1,1,1-Trichloroethane	93	70-130
Carbon Tetrachloride	97	60-140
Benzene	80	70-130
1,2-Dichloroethane	98	70-130
Trichloroethene	76	70-130
Toluene	87	70-130
1,1,2-Trichloroethane	87	70-130
Tetrachloroethene	78	70-130
1,2-Dibromoethane (EDB)	94	70-130
Ethyl Benzene	90	70-130
m,p-Xylene	96	70-130
o-Xylene	99	70-130
1,1,2,2-Tetrachloroethane	92	70-130
1,4-Dichlorobenzene	84	70-130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	119	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	88	70-130

Appendix F
Product Information Regarding Toner Aide

PRODUCT TECHNICAL DATA SHEET

SW208 Toner Aide

DESCRIPTION: No. 208 Toner Aide greatly improves toner generated image quality. Dries in minutes and is 100% transparent. Develops higher resolutions while it enhances the detail clarity.

USES: Use No. 208 on paper, vellum, transparency film, any dry toner generated media.

SPECS:	Can Size:	16 oz.
	Net Weight:	12 oz.
	Shipping Weight:	13 lbs.
	Packaged:	12 cans per case
	UPC Number:	0 41911 00208 0
PHYSICAL CHARACTERISTICS:	Color:	Clear, colorless liquid
	Fragrance:	Butyl acetate odor
	Shelf Life:	1 Year +
REGULATORY:	Ozone Depleting Compounds:	None
	Recyclable Packaging:	Yes
	VOC Compliant CARB/OTC:	Yes
	CPSC Flame Extension:	Required to be labeled as extremely flammable per 16 CFR 1500
	24 HOUR MEDICAL EMERGENCY:	1-866-836-8855

PRODUCT FEATURES:

- Improves toner generated image quality
- Contains no methylene chloride
- Dries in minutes

Manufactured by:
SPRAYWAY, INC.
1005 Westgate Drive • Addison, IL 60101
800-332-9000 • Fax: 630-543-7797 • www.spraywayinc.com

MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Product number	208-003
Product name	Toner Aide
Effective date	06-Jun-2011
Company information	Sprayway, Inc. 1005 Westgate Addison, IL 60101 United States
Company phone	General Assistance 630-543-7600
Emergency telephone US	800-424-9300
Emergency telephone outside US	703-527-3887
Version #	04
Supersedes date	28-Dec-2007

2. Hazards Identification

Emergency overview

Will be easily ignited by heat, spark or flames.
Cancer hazard. Irritating to skin. Irritating to eyes. Irritating to respiratory system. Prolonged exposure may cause chronic effects. EXTREMELY FLAMMABLE CONTENTS UNDER PRESSURE. Aerosol.

Potential health effects

Routes of exposure	Inhalation. Skin contact. Ingestion.
Eyes	Causes eye irritation.
Skin	This product may be harmful if it is absorbed through the skin. Irritating to skin. Prolonged or repeated contact can result in defatting and drying of the skin which may result in skin irritation and dermatitis (rash).
Inhalation	Intentional misuse by concentrating and inhaling the product can be harmful or fatal. Irritating to respiratory system. Prolonged inhalation may be harmful.
Ingestion	Exposure by ingestion of an aerosol is unlikely. May cause delayed lung damage. Components of the product may be absorbed into the body by ingestion.
Target organs	2-Butoxy ethanol may be absorbed through the skin in toxic amounts if contact is repeated and prolonged and may cause blood damage. These effects have not been observed in humans. Central nervous system. Lungs.
Chronic effects	Unconsciousness. May cause central nervous system disorder (e.g., narcosis involving a loss of coordination, weakness, fatigue, mental confusion, and blurred vision) and/or damage. May cause delayed lung damage. Prolonged skin contact may defat the skin and produce dermatitis.
Signs and symptoms	Discomfort in the chest. Narcosis. Cyanosis. Jaundice. Defatting of the skin. Irritation.

3. Composition / Information on Ingredients

Components	CAS #	Percent
n-Butane	106-97-8	20 - 30
n-Butyl Acetate	123-86-4	20 - 30
Trichloroethylene	79-01-6	15 - 20
Propane	74-98-6	10 - 15
Acetone	67-64-1	10 - 15
Stoddard Solvent	8052-41-3	1 - 3
2-Butoxyethanol	111-76-2	1 - 3
Non-hazardous and other components below reportable levels		1 - 2.5

4. First Aid Measures

First aid procedures

Eye contact	Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention if irritation develops or persists.
Skin contact	Remove and isolate contaminated clothing and shoes. Wash off with warm water and soap. Get medical attention if irritation develops or persists. For minor skin contact, avoid spreading material on unaffected skin.
Inhalation	Move to fresh air. Oxygen or artificial respiration if needed. Do not use mouth-to-mouth method if victim inhaled the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If symptoms persist, get medical attention.
Ingestion	If material is ingested, immediately contact a poison control center. Do not induce vomiting without advice from poison control center. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration. Do not use mouth-to-mouth method if victim ingested the substance. Induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
Notes to physician	In case of shortness of breath, give oxygen. Keep victim warm. Keep victim under observation. Symptoms may be delayed.

5. Fire Fighting Measures

Flammable properties	Vapor or gas may spread to distant ignition sources and flash back. Runoff to sewer may cause fire or explosion hazard.
Extinguishing media	
Suitable extinguishing media	Alcohol foam. Dry chemical. Carbon dioxide (CO_2). Do not use water jet. Water may be ineffective.
Protection of firefighters	
Specific hazards arising from the chemical	Fire may produce irritating, corrosive and/or toxic gases.
Protective equipment and precautions for firefighters	In the event of fire and/or explosion do not breathe fumes. Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask. Containers should be cooled with water to prevent vapor pressure build up. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

6. Accidental Release Measures

Methods for containment	Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Move the cylinder to a safe and open area if the leak is irreparable. Stop the flow of material, if this is without risk. Prevent entry into waterways, sewers, basements or confined areas.
Methods for cleaning up	Should not be released into the environment. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean contaminated surface thoroughly.

7. Handling and Storage

Handling	Pressurized container: Do not pierce or burn, even after use. Do not handle or store near an open flame, heat or other sources of ignition. Do not smoke while using or until sprayed surface is thoroughly dry. Do not use if spray button is missing or defective. Use only with adequate ventilation. Do not get this material in contact with eyes. Do not get this material in contact with skin. Wear personal protective equipment. Avoid prolonged exposure.
Storage	Level 2 Aerosol. Contents under pressure. Do not puncture, incinerate or crush. The pressure in sealed containers can increase under the influence of heat. Keep away from heat, sparks, and flame. Avoid exposure to long periods of sunlight. Store in cool place. Keep in an area equipped with sprinklers. Keep out of the reach of children. Level 2 Aerosol. Do not store, incinerate, or heat this material above 120 degrees Fahrenheit.

8. Exposure Controls / Personal Protection

Exposure limits

ACGIH

Components	CAS #	TWA	STEL	Ceiling
n-Butane	106-97-8	1000 ppm	Not established	Not established
n-Butyl Acetate	123-86-4	150 ppm	200 ppm	Not established
Trichloroethylene	79-01-6	10 ppm	25 ppm	Not established
Propane	74-98-6	1000 ppm	Not established	Not established
Acetone	67-64-1	500 ppm	750 ppm	Not established
Stoddard Solvent	8052-41-3	100 ppm	Not established	Not established
2-Butoxyethanol	111-76-2	20 ppm	Not established	Not established

OSHA

Components	CAS #	TWA	STEL	Ceiling
n-Butyl Acetate	123-86-4	150 ppm	Not established	Not established
Trichloroethylene	79-01-6	100 ppm	Not established	200 ppm
Propane	74-98-6	1000 ppm	Not established	Not established
Acetone	67-64-1	1000 ppm	Not established	Not established
Stoddard Solvent	8052-41-3	500 ppm	Not established	Not established
2-Butoxyethanol	111-76-2	50 ppm	Not established	Not established

Personal protective equipment

Eye / face protection Wear chemical goggles.

Skin protection Wear appropriate chemical resistant gloves. Wear appropriate chemical resistant clothing.

Respiratory protection When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. If permissible levels are exceeded use NIOSH mechanical filter / organic vapor cartridge or an air-supplied respirator.

9. Physical & Chemical Properties

Appearance Compressed liquefied gas.

Boiling point 114.8 °F (46.1 °C) estimated

Color clear colorless

Density 0.7486 g/cm3 estimated

Flammability (HOC) 29.3282 kJ/g estimated

Flash back Yes

Flash point -156 °F (-104.4 °C) Propellant

Form Liquid. Aerosol.

Freezing point Not available

Odor fruity

pH Not applicable

Physical state Liquid.

Pressure 50 - 70 psig @ 70F

Solubility Negligible

Specific gravity 0.7487 estimated

10. Chemical Stability & Reactivity Information

Chemical stability Risk of ignition.

Conditions to avoid Heat, flames and sparks.

Hazardous decomposition products Irritants. Toxic gas. May include oxides of nitrogen.

11. Toxicological Information

Acute effects Acute LD50: 7292 mg/kg estimated, Rat, Dermal

Component analysis - LD50

Toxicology Data - Selected LD50s and LC50s

2-Butoxyethanol	111-76-2	Inhalation LC50 Rat 2.21 mg/L 4 h; Inhalation LC50 Rat 450 ppm 4 h; Oral LD50 Rat 470 mg/kg; Dermal LD50 Rat 2270 mg/kg; Dermal LD50 Rabbit 220 mg/kg
Acetone	67-64-1	Oral LD50 Rat 5800 mg/kg
n-Butane	106-97-8	Inhalation LC50 Rat 658 mg/L 4 h
n-Butyl Acetate	123-86-4	Inhalation LC50 Rat 390 ppm 4 h; Oral LD50 Rat 10768 mg/kg; Dermal LD50 Rabbit >17600 mg/kg
Propane	74-98-6	Inhalation LC50 Rat 658 mg/L 4 h
Trichloroethylene	79-01-6	Inhalation LC50 Rat 8000 ppm 4 h; Inhalation LC50 Rat 26300 ppm 1 h; Oral LD50 Rat 4290 mg/kg; Dermal LD50 Rabbit >20 g/kg

Sensitization Not expected to be hazardous by OSHA criteria.

Carcinogenicity Hazardous by OSHA criteria.

IARC - Group 2A (Probably Carcinogenic to Humans)

Trichloroethylene	79-01-6	Monograph 63 [1995]; Supplement 7 [1987]

Teratogenicity Not expected to be hazardous by OSHA criteria.

12. Ecological Information

Ecotoxicity Components of this product are hazardous to aquatic life.

LC50 56.29 mg/L estimated, Fish, 96.00 Hours,
EC50 12.21 mg/L estimated, Daphnia, 48.00 Hours,
IC50 810 mg/L estimated, Algae, 72.00 Hours,

13. Disposal Considerations

Waste codes D001: Waste Flammable material with a flash point <140 F
D040: Waste Trichloroethylene

Disposal instructions Contents under pressure. Do not puncture, incinerate or crush. Dispose of this material and its container at hazardous or special waste collection point. Do not allow this material to drain into sewers/water supplies. If discarded, this product is considered a RCRA ignitable waste, D001. Dispose in accordance with all applicable regulations.

14. Transport Information

Department of Transportation (DOT) Requirements

Basic shipping requirements:	
Proper shipping name	Consumer commodity
Hazard class	ORM-D
Subsidiary hazard class	None
Additional information:	
Packaging exceptions	156, 306
Packaging non bulk	156, 306
Packaging bulk	None

IMDG

Basic shipping requirements:	
Proper shipping name	AEROSOLS, toxic, flammable
Hazard class	2.1
UN number	1950
Additional information:	
Packaging exceptions	NOT a LTD QTY
Item	5TF
Labels required	2.1 +6.1
Transport Category	If <1L: Consumer Commodity

IATA

Basic shipping requirements:

Proper shipping name	Aerosols, flammable, containing substances in Division 6.1, Packing Group III
Hazard class	2.1
Subsidiary hazard class	6.1
UN number	1950
Additional information:	
Packaging exceptions	LTD QTY
Labels required	2.1, 6.1

15. Regulatory Information

US federal regulations This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

U.S. - CERCLA/SARA - Section 313 - Emission Reporting

2-Butoxyethanol	111-76-2	1.0 % de minimis concentration (applies to R-(OCH2CH2)n-OR', where n = 1,2, or 3, R=alkyl C7 or less, or R = phenyl or alkyl substituted phenyl, R' = H or alkyl C7 or less, or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate, Chemical Category N230)
Trichloroethylene	79-01-6	0.1 % de minimis concentration

Occupational Safety and Health Administration (OSHA)

29 CFR 1910.1200 hazardous chemical	Yes

CERCLA (Superfund) reportable quantity

n-Butyl Acetate: 5000.0000
Trichloroethylene: 100.0000
Acetone: 5000.0000

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 302 extremely hazardous substance	No
Section 311 hazardous chemical	Yes
Hazard categories (311/312)	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - Yes Pressure Hazard - Yes Reactivity Hazard - No

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
China	Inventory of Existing Chemical Substances in China (IECSC)	No
Europe	European Inventory of New and Existing Chemicals (EINECS)	No
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)

State regulations WARNING: This product contains a chemical known to the State of California to cause cancer and birth defects or other reproductive harm.

U.S. - Pennsylvania - RTK (Right to Know) List

2-Butoxyethanol	111-76-2	Present
Acetone	67-64-1	Environmental hazard
n-Butane	106-97-8	Present
n-Butyl Acetate	123-86-4	Environmental hazard
Propane	74-98-6	Present
Stoddard Solvent	8052-41-3	Present
Trichloroethylene	79-01-6	Environmental hazard

16. Other Information

Further information HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings	Health: 2* Flammability: 3 Physical hazard: 0
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication, The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification, The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
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Prepared by	Regulatory Compliance