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March 22, 2010

Mr. Jerry Wickham
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502

SUBJECT: SUBSURFACE SOIL GAS AND CRAWL SPACE AIR INVESTIGATION REPORT CERTIFICATION
ACEH Case # RO 0000357
Snow Cleaners
2678 Coolidge Avenue
Oakland, CA

Dear Mr. Wickham:

You will find enclosed one copy of the following document prepared by P&D Environmental, Inc.

- Soil Gas and Crawl Space Air Investigation Report (SG19-SG23, CS1-CS3) dated March 22, 2010 (document 0298.R8).

I declare, under penalty of perjury, that the information and/or recommendations contained in the above-mentioned work plan for the subject site is true and correct to the best of my knowledge.

Should you have any questions, please do not hesitate to call me at (800) 818-7669.

Cordially,
Snow Cleaners, Inc.

Harold Turner
President

Cc: Mr. LeRoy Griffin, Oakland Fire Department, Emergency Services, 250 Frank Ogawa Plaza, Suite 3341, Oakland, CA 94612 (with enclosure)

0298.L47

P&D ENVIRONMENTAL, INC.

55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

March 22, 2010
Report 0298.R8

Mr. Harold Turner
Snow Cleaners
2678 Coolidge Avenue
Oakland, CA

SUBJECT: SOIL GAS AND CRAWL SPACE AIR INVESTIGATION REPORT
(SG19-SG23, C1-C3)
ACDEH Case # RO 0000357
Snow Cleaners
2678 Coolidge Avenue
Oakland, CA

Dear Mr. Turner:

P&D Environmental Inc. (P&D) is pleased to present this report documenting the collection of soil gas samples and crawl space air samples in the vicinity of the subject site to further evaluate the presence and extent of petroleum hydrocarbon and tetrachloroethene (PCE). All sample collection activities were performed on February 19, 2010. A Site Location Map is attached as Figure 1 and a Site Vicinity Map Detail showing sample collection locations is attached as Figure 2.

Field activities were performed in accordance with the scope of work set forth in P&D's Subsurface Investigation Work Plan dated November 24, 2009 (document 0298.W4). The Work Plan was approved in a letter from the Alameda County Department of Environmental Health (ACDEH) dated December 5, 2009.

All work was performed under the direct supervision of a professional geologist and in accordance with guidelines set forth in the following documents.

- Tri-Regional Board Staff Recommendations for Preliminary Evaluation and Investigation of Underground Tank Sites" dated August 10, 1990 and "Appendix A - Workplan for Initial Subsurface Investigation" dated August 20, 1991,

- California Code of Regulations Title 23 Sections 2720-2728;

- San Francisco Bay Regional Water Quality Control Board (SFRWQCB) "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater" dated May 2008,

- Department of Toxic Substances Control (DTSC) "Advisory - Active Soil Gas Investigations" dated January 13, 2003,

- DTSC "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" dated December 15, 2004, revised February 7, 2005,

- DTSC "Vapor Intrusion Mitigation Advisory" revised May 8, 2009.

BACKGROUND

A detailed site history is provided in P&D's Subsurface Investigation Report dated August 19, 2009 (document 0298.R6). Additional subsequent document review results for historic topographic maps, City of Oakland storm drain and sanitary sewer maps, Alameda County Flood Control District maps and a creek and watershed map of Oakland and Berkeley are provided in P&D's November 24, 2009 Subsurface Investigation Work Plan (document 0298.W4). Historic soil gas sample results are attached with this investigation report as Table 1.

FIELD ACTIVITIES

Prior to performing field activities, permits were obtained from the Alameda County Public Works Agency (ACPWA), drilling locations were marked with white paint, Underground Service Alert was notified for underground utility location, a health and safety plan was prepared, and site access was obtained from offsite property owners. Notification of the sample collection date was also provided to the ACDEH.

Soil Gas Sample Collection

All of the soil gas samples were collected using temporary soil gas sampling wells. The surface cover materials at each of the soil gas sample collection locations consisted of concrete at location SG19, and bare earth adjacent to concrete cover materials at the remaining locations. The temporary wells were constructed by penetrating the concrete surface cover at location SG19 with a rotohammer and then driving a hollow 1-inch diameter Geoprobe steel rod with an expendable tip with a slide hammer at all of the locations to a depth of five feet below the ground surface. The expendable tip in the drill rod was then dislodged, and a 7-foot length of 0.250-inch outside diameter (0.187-inch inside diameter) Teflon tube was inserted to the bottom of the hollow rod. Prior to inserting the Teflon tubing the lowermost 6 inches of the Teflon tube was perforated at several locations by notching the sides of the tube with a clean razor blade. A #2/16 Lonestar sack sand was then added to the annular space between the hollow rod and the Teflon tube as the hollow rod was withdrawn from the ground until the lowermost 8 inches of the hole was filled with sand. Granular bentonite (with grains measuring approximately 2 millimeters in diameter and similar in size to kitty litter) were placed in the annular space above the sand to the ground surface. The bentonite was hydrated and the 6-liter Suma purge canister and 1-liter Suma sample canister were then connected to the Teflon tubing using the configuration shown in Figure 3. At the time that the sampling manifold was assembled, the vacuum for the sample canister was checked with a vacuum gauge and recorded. The temporary well was then undisturbed for a minimum of 30 minutes prior to purging for sample collection to allow soil gas equilibration.

Following the equilibration period and prior to purging the soil gas from the temporary soil gas sampling well, a 10 minute leak check of the sampling manifold was performed by closing the valve located between the filter and the pressure gauge, opening the purge canister valve, and recording the manifold system vacuum (see Figure 3). No purge testing was done because no mobile laboratory was at the site. A default of three purge volumes was extracted prior to sample

collection. The purge time was calculated using a nominal flow rate provided by the flow controller of 200 milliliters per minute. Purge volume calculations are provided in Appendix A of this report.

Following completion of purging three purge volumes, the valve to the purge canister was closed and a tracer gas (2-Propanol) was placed in a dish adjacent to the purge canister and a clear Rubbermaid bin was placed over the top of the temporary well, the sampling manifold, and the 1-liter Summa sample canister. The vapor concentration of the 2-Propanol was monitored with a photoionization detector (PID) until 2-Propanol vapor concentrations appeared to have equilibrated. The PID was equipped with a 10.6 eV bulb and calibrated with a 100 ppm isobutylene standard prior to use. The Rubbermaid bin was then temporarily and partially lifted long enough to open the sample canister valve and the bin was then replaced over the sampling equipment and the 2-Propanol vapor concentrations were then again monitored with the PID. Once the vacuum for the sample canister decreased to 5 inches of mercury, the Rubbermaid lid was removed and the Summa sample canister valve closed.

One duplicate soil gas sample was collected into a one-liter Summa canister at location SG21 using a stainless steel sampling tee. Following soil gas sample collection, a PID was connected to the Teflon tubing to obtain a preliminary field value for the sample collection location. The soil gas samples were then stored in a box and promptly shipped to the laboratory for extraction and analysis. Measurements of vacuums, purging and equilibration time intervals, and PID readings were recorded on Soil Gas Sampling Data Sheets that are provided in Appendix A of this report. The field PID value obtained from the Teflon tube following sample collection was recorded in the last column of the Soil Gas Sampling Data Sheet. At the time of soil gas sample collection, a substantial number of car parts, including a radiator were observed to be present at and around the SG22 sample collection location. All of the PID values obtained from the Teflon tube following soil gas sample collection were 0 with the exception of location SG22, where the PID value was 10 ppm.

No precipitation occurred during the week preceding the soil gas sampling or on the day of soil gas sampling (February 19, 2010). Weather data, including precipitation and barometric pressure for the day of the sampling event and also for the month of February 2010 is provided as Appendix B. The weather station is located at the intersection of Encinal Avenue and Lafayette Street in Alameda at an elevation of 15 feet, approximately 2.5 miles to the southeast of the subject site. The subject site is located at an elevation of approximately 135 feet above sea level. An internet link to the weather station information is provided in Appendix B.

All drilling rods and associated drilling fittings were cleaned with an Alconox solution wash and clean water rinse followed by a clean water rinse using steam distilled water. New Teflon tubing was used at each sample collection location. Clean, unused vacuum gages and stainless steel tee and valve assemblies were used at each sample collection location. Following soil gas sample collection the Teflon tubing was pulled from each temporary soil gas sampling well and a 1-inch diameter solid steel rod was driven through the bentonite and sand to the total depth of temporary soil gas well construction. The solid steel rod was then removed, and the borehole filled with neat cement.

Crawl Space Air Sample Collection

The building construction at 3320 Davis Street and at 2682 Coolidge Avenue is not slab on grade. Both structures were observed to have crawl spaces with no visible means of access to the crawl space other than through mesh-covered ventilation holes measuring approximately 4 inches tall and 12 inches long. On February 19, 2010 two air samples (CS1 and CS2) were collected from the crawl space at 3320 Davis Street and one air sample (CS3) was collected from the crawl space at 2682 Coolidge Avenue at locations shown on Figure 2 using procedures described below. In addition, one duplicate crawl space air sample (CS3-DUP) was collected using a stainless steel sampling tee at location CS3, and one ambient air sample was collected with the flow controller intake at a height of approximately 4.5 feet above the ground surface on the rear porch of the property located at 3319 Davis Street, Oakland, California (see Figure 2).

The crawl space air samples and the ambient air sample were collected during business hours into SIM-certified 6-liter Summa canisters equipped with SIM-certified 8-hour flow controllers. The duplicate sample was collected with a SIM-certified stainless steel tee

The building width at 3320 Davis Street is approximately 30 feet, and the building width at 2682 Coolidge Avenue in the vicinity of SG3 is approximately 12 feet wide. A high density polyethylene tube was secured with wire to the end of a steel rod and the steel rod was inserted through the vents into the crawl spaces so that the end of the tube was located at the proposed crawl space air sample collection locations shown on Figure 2. Following placement of the rod and tubing beneath the building, an air pump was used to purge air from each tube for approximately one minute. The end of each tube was then connected to the flow controller inlet and the valve to the Summa canister was then opened for each of the samples.

For the duplicate sample, the end of the tube was connected to the stainless steel tee. After approximately 8 hours, the valves to the Summa canisters were closed, and the Summa canisters were stored in a box and promptly shipped to the laboratory for extraction and analysis. Chain of custody procedures were observed for all sample handling.

GEOLOGY AND HYDROGEOLOGY

The hydrogeology at the site is complex and not completely understood. The interpreted groundwater flow direction and associated contaminant movement in the vicinity of the site was developed using multiple lines of evidence (topography, lithology, soil discoloration, contaminant concentration distribution, and the measured depth to water in different wells). Geologic cross sections and a discussion of site geology are provided in P&D's Subsurface Investigation Report dated August 19, 2009 (document 0298.R6).

Based on review of regional geologic maps from U. S. Geological Survey Professional Paper 943, "Flatland Deposits - Their Geology and Engineering Properties and Their Importance to Comprehensive Planning," by E. J. Helley and K. R. Lajoie, 1979, the materials underlying the subject site and it's immediate vicinity consist of Late Pleistocene alluvium (Qpa). Late Pleistocene alluvium is described as weakly consolidated, slightly weathered, poorly sorted, irregularly interbedded clay, silt, sand, and gravel.

Review of the boring logs from historic investigations and the current investigation shows that the subsurface materials encountered in the boreholes consist predominantly of fine-grained materials consisting of clay, silty clay, and silt, with lesser amounts of coarse-grained materials consisting of silty sand, sand and some gravel lenses.

LABORATORY RESULTS

All of the soil gas and crawl space air samples were analyzed at Air Toxics Limited of Folsom, California for the following analytes.

- VOCs, including PCE, TCE, DCE, vinyl chloride, BTEX, naphthalene, and the tracer gas 2-Propanol by modified EPA Method TO15,
- Total Petroleum Hydrocarbons as Stoddard solvent (TPH-SS) by EPA Method TO3 GC/FID.

The sample results are summarized in tables attached with this report as follows.

- Table 2 summarizes the current investigation soil gas sample results.
- Table 3 summarizes current investigation crawl space air sample results.
- Table 4 summarizes the soil gas risk and hazard calculation results.
- Table 5A summarizes the preliminary ambient and indoor air risk calculation results.
- Table 5B summarizes the preliminary ambient and indoor air hazard calculation results.
- Table 5C summarizes the preliminary ambient and indoor air risk and hazard calculation results.

Copies of the laboratory analytical reports and chain of custody documentation are attached with this report as Appendix C.

RISK AND HAZARD EVALUATION

The only complete pathway for exposure at the properties evaluated is considered to be potential vapor intrusion from soil gas to indoor air. In accordance with DTSC guidance recommendations, a concentration of one half of the detection limit was used for compounds that were not detected but which were suspected of potentially being present at the air sample collection locations (TCE for crawl space air sample CS3, and PCE and TCE for the ambient air sample).

Soil Gas

The SFRWQCB May 2008 ESL guidance document "Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater" section 2.7 references the DTSC Vapor Intrusion guide (Interim Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air, revised 2/7/05) for interpretation of sample results exceeding ESLs. The ESL Guidance document indicates that the recommended approach of DTSC for sensitive land use scenarios (i.e.-residential) is appropriate. The DTSC guidance document ("Guidance For The Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" revised February 7, 2005) recommends

that if look up table screening levels are exceeded, that a site-specific evaluation of the site be conducted using appropriate fate and transport modeling (Step 7 in the guidance document). DTSC recommends that the USEPA Johnson and Ettinger (JE) model be used (USEPA Vapor Intrusion Model, 2003). The model predicts risk and hazard from indoor vapor concentrations based on soil gas concentrations. The CalEPA Human and Ecological Risk Division (HERD) has developed a California-specific screening-mode spreadsheet for calculation of the predicted risk and hazard resulting from exposure to chemicals from vapor intrusion which include the volatile petroleum hydrocarbons and HVOCs encountered at the site. The most recently updated version of the spreadsheet is dated February 2009.

The February 2009 HERD screening-mode spreadsheet was used to calculate the predicted risk and hazard index associated with the soil gas sample results. The risk and hazard were calculated using spreadsheet default values and a soil type of silt (SI). The default values assume a residential land use exposure scenario. Evaluation of hazard associated with TPH-SS using the DTSC JE model spreadsheet is not possible because TPH is not one of the chemicals available in the chemical properties lookup table for use in the model. Additionally, TPH is not considered a carcinogen, and it is therefore not possible to calculate risk for TPH-SS.

The predicted risk and hazard from vapor intrusion for the residential structure located at 2688 Coolidge Avenue was calculated by using the results from soil gas sample SG19. The predicted risk and hazard from vapor intrusion for the residential structure located at 2621 34th Avenue was calculated using the highest concentration for each detected chemical from samples SG20, SG21, SG22, SG23, and duplicate sample SG21-DUP. The highest soil gas concentrations from all of these samples were encountered in sample SG22.

The cumulative hazard quotient was calculated to be less than one for each of the properties. The cumulative risk for each property was calculated to be as follows.

2688 Coolidge Avenue - 1.1 per million.
2621 34th Avenue – 1.8 per million.

The HERD vapor intrusion screening-mode spreadsheet output results for each detected chemical are summarized in Table 4, along with the calculated cumulative hazard and risk for each property. The spreadsheet model input, interim calculations (intercalcs) and output sheets for each calculation are attached with this report as Appendix D.

<u>Ambient and Crawl Space Air</u>

The preliminary risk and hazard from vapor intrusion for the ambient air sample and for each of the crawl space air samples was calculated by using equations identified in Appendix C of the DTSC "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" dated December 15, 2004, revised February 7, 2005.

The preliminary ambient and indoor air risk calculation results are provided in Table 5A, and the preliminary ambient and indoor air hazard calculation results are provided in Table 5B. The preliminary ambient and indoor air risk and hazard calculation results are summarized in Table 5C.

The cumulative hazard quotient was calculated to be less than one for each of the samples. The cumulative risk for each sample was calculated to be as follows.

3320 Davis Street
Sample CS1 - 67 per million.
Sample CS1 - 77 per million.

2682 Coolidge Avenue
Sample CS3 - 9 per million.

Ambient Air
7 per million.

DISCUSSION AND RECOMMENDATIONS

Soil Gas

Site Vicinity Map Details showing soil gas concentrations at a depth of 5 feet for TPH-Stoddard solvent, benzene, PCE, and TCE are attached with this report as Figures 4, 5, 6 and 7, respectively. The absence of PCE and TCE in the soil gas samples at concentrations exceeding SFRWQCB May 2008 Table E ESLs shows that the horizontal extent of HVOCs has been defined (see Figures 6 and 7).

Review of Table 4 shows that the majority of the calculated risk at 2688 Coolidge Avenue is from benzene and ethylbenzene, and that all of the calculated risk at 2621 34th Avenue is from benzene and ethylbenzene. A Site Vicinity Map Detail showing detected MBTEX compounds in groundwater in the vicinity of the subject site is attached as Figure 8.

Because a soil type of silt and the highest soil gas concentrations encountered in all of the samples were used at the 2621 34th Avenue property, the calculated risk and hazard provide a conservative assessment of the data.

The DTSC recommends that when the calculated cumulative incremental risk from vapor intrusion to indoor air exceeds one per million, or when the calculated cumulative hazard quotient from vapor intrusion to indoor air exceeds one, that indoor air samples be collected on a semi-annual basis and that permanent sub-slab monitoring points and/or permanent vadose zone monitoring points be installed. Based on these results, an indoor air study is warranted at each property.

Based on the presence of car parts in the vicinity of soil gas sample collection location SG22, it is possible that the petroleum hydrocarbons detected at this location could be the result of activities related to car repair or maintenance at the 2621 34th Avenue property.

Ambient and Crawl Space Air

Bay Area Air Quality Management District ambient air monitoring station data was not readily available for comparison with the ambient air or crawl space air sample results.

In accordance with DTSC "Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air" dated December 15, 2004, revised February 7, 2005 Appendix B, the attenuation factor for a building with a crawl space is considered to be 1.0, meaning that no attenuation is considered to occur between the crawl space and the building interior.

As discussed for soil gas, the DTSC recommends that when the calculated cumulative incremental risk for indoor air exceeds one per million, or when the calculated cumulative hazard quotient for indoor air exceeds one, that indoor air samples be collected on a semi-annual basis and that permanent sub-slab monitoring points and/or permanent vadose zone monitoring points be installed. However, the DTSC also states that representative samples from two different seasons need to be collected and evaluated prior to determining actual risk and hazard at a site. For this reason, the results provided in Tables 5A through 5C are considered preliminary.

Review of the ambient air sample preliminary risk calculation results (Table 5A) shows that including PCE and TCE at concentrations of one half of their detection limits results in a preliminary cumulative risk of 7.3 per million. If PCE and TCE are not included in the preliminary ambient air risk calculation, the calculated preliminary cumulative risk is 7.0 per million. Review of Table 5A also shows that 6.7 million of the total preliminary risk is from benzene.

Review of Table 3 shows that benzene was detected in the ambient air sample and the CS3 air sample at concentrations of 0.56 and 0.65 ug/m3, respectively. Benzene was also detected in air samples CS1 and CS2 at concentrations of 4.7 and 5.3 ug/m3, respectively. The benzene and other BTEX compounds detected in all of the air samples are approximately one order of magnitude greater in the CS1 and CS2 air samples than in the CS3 and ambient air samples. Review of Figure 5 suggests that elevated benzene concentrations are present in soil gas in the vicinity of the 3320 Davis Street property. However, review of Figure 8 shows that benzene was not detected in groundwater in the vicinity of the 3320 Davis Street property. Review of laboratory reports provided in previous investigation reports for the site show that the detection limits for groundwater samples collected from boreholes B13 through B18 and B22 were 10 ug/L or less except for B13, B14 at 25 foot depth, and B17, where the detection limits were 50, 25, and 500 ug/L, respectively.

Review of Table 5A shows that the air sample CS3 calculated preliminary total risk is 9.2 per million, with 7.8 per million of the preliminary total risk from benzene and less than 1 per million of the preliminary total risk from the detected PCE. At locations CS1 and CS2, the calculated preliminary total risk is 67 and 78 per million, respectively, with 56 and 63 per million from benzene, respectively.

In accordance with DTSC guidance, P&D recommends that air sampling be performed at locations CS1, CS2 and CS3 six months from the February 2010 sampling event to determine if sample results are obtained that are consistent with the February 2010 sample results, allowing an actual and not preliminary assessment of risk and hazard for indoor air quality.

DISTRIBUTION

A copy of this report will be uploaded to the ACDEH website, in accordance with ACDEH requirements. In addition, a copy of this report will be uploaded to the GeoTracker database, and one copy of this report will be mailed to LeRoy Griffin of the City of Oakland Fire Department

LIMITATIONS

This report was prepared solely for the use of Snow Cleaners. The content and conclusions provided by P&D in this assessment are based on information collected during our investigation, which may include, but not be limited to, visual site inspections; interviews with the site owner, regulatory agencies and other pertinent individuals; review of available public documents; subsurface exploration and our professional judgment based on said information at the time of preparation of this document. Any subsurface sample results and observations presented herein are considered to be representative of the area of investigation; however, geological conditions may vary between borings and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which vary from these findings, the newly revealed conditions must be evaluated and may invalidate the findings of this report.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to ensure that the information contained herein is brought to the attention of the appropriate regulatory agencies, where required by law. Additionally, it is the sole responsibility of the owner to properly dispose of any hazardous materials or hazardous wastes left onsite, in accordance with existing laws and regulations.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. P&D is not responsible for the accuracy or completeness of information provided by other individuals or entities used in this report. This report presents our professional judgment based upon data and findings identified in this report and interpretation of such data based upon our experience and background, and no warranty, either express or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

Should you have any questions, please do not hesitate to contact us at (510) 658-6916.

Sincerely,

P&D Environmental, Inc.

Paul H. King
President
Professional Geologist #5901
Expires: 12/31/11

PROFESSIONAL GEOLOGIST
PAUL H. KING
No. 5901
STATE OF CALIFORNIA

Attachments:

Table 1 – Summary of Historical Soil Gas Sample Results
Table 2 – Summary of Current Investigation Soil Gas Sample Results
Table 3 – Summary of Ambient Air and Crawl Space Air Sample Results
Table 4 – Summary of Soil Gas Risk and Hazard Evaluation Calculation Results
Table 5A – Preliminary Ambient and Indoor Air Risk Calculation Results
Table 5B – Preliminary Ambient and Indoor Air Hazard Calculation Results
Table 5C – Preliminary Ambient and Indoor Air Risk and Hazard Calculation Results Summary

Figure 1 – Site Location Map
Figure 2 – Site Vicinity Map Detail Showing Sample Collection Locations
Figure 3 – Typical Soil Gas Sample Collection Manifold
Figure 4 – Site Vicinity Map Detail Showing TPH-Stoddard Solvent in Soil Gas at 5 Foot Depth
Figure 5 – Site Vicinity Map Detail Showing Benzene in Soil Gas at 5 Foot Depth
Figure 6 – Site Vicinity Map Detail Showing PCE in Soil Gas at 5 Foot Depth
Figure 7 – Site Vicinity Map Detail Showing TCE in Soil Gas at 5 Foot Depth
Figure 8 – Site Vicinity Map Detail Showing Detected MBTEX Compounds in Groundwater

Appendix A – Soil Gas Sampling Purge Calculations and Field Data Sheets
Appendix B – Weather Information
Appendix C – Laboratory Analytical Reports and Chain of Custody Documentation
Appendix D – HERD February 2009 Vapor Intrusion Risk and Hazard Spreadsheet Calculations

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TABLES

TABLE 1
SUMMARY OF HISTORICAL SOIL GAS SAMPLE RESULTS

Sample ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans1,2--DCE	Vinyl Chloride	TPH-SS	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Naphthalene	2-Propanol, #
SG1	6/30/2008	**990**	8.9	ND<4.5	ND<4.5	ND<2.9	5,500	61	590	57	230	74	NA	NA
SG2	6/30/2008	**8,300**	**12,000**	3,700	110	**60**	**82,000**	**110**	1,000	100	350	110	NA	NA
SG2-DUP	6/30/2008	**8,300**	**12,000**	3,500	110	**57**	**83,000**	**100**	1,000	98	380	120	NA	NA
SG3	6/30/2008	**1,000**	10	ND<4.4	ND<4.4	ND<2.9	2,800	40	510	62	240	74	NA	NA
SG4	6/30/2008	180	ND<6.5	ND<4.8	ND<4.8	ND<3.1	2,100	52	440	48	180	58	NA	NA
SG5	6/30/2008	170	6.7	ND<4.7	ND<4.7	ND<3.0	2,500	53	500	57	220	70	NA	NA
SG6, *	7/30/2008	**550**	34	ND<4.4	ND<4.4	ND<2.9	NA	ND<3.6	4.9	ND<4.9	ND<4.9	ND<4.9	NA	ND<11
SG6-DUP	7/30/2008	210	18	ND<4.7	ND<4.7	ND<3.0	NA	ND<3.8	ND<4.5	ND<5.2	ND<5.2	ND<5.2	NA	ND<12
SG7	7/30/2008	**5,100**	920	ND<12	ND<12	ND<7.9	NA	19	ND<12	ND<13	ND<13	ND<13	NA	ND<30
SG8	7/30/2008	**2,600**	30	ND<9.1	ND<9.1	ND<5.8	NA	38	17	ND<9.9	ND<9.9	ND<9.9	NA	680
SG9	7/30/2008	13	ND<10	ND<7.4	ND<7.4	ND<4.8	NA	ND<6.0	ND<7.0	ND<8.1	ND<8.1	ND<8.1	NA	3,400
SG10	7/30/2008	ND<7.9	ND<6.3	14	ND<4.6	ND<3.0	NA	7.4	12	5.5	30	13	NA	ND<11
SG11	7/30/2008	230	8.8	6.8	ND<4.8	ND<3.1	NA	12	15	ND<5.2	17	6.7	NA	12
SG12	8/29/2008	**2,200**	38	ND<4.8	ND<4.8	ND<3.1	NA	9.8	7.4	ND<5.2	5.2	ND<5.2	NA	ND<12
SG12-DUP	8/29/2008	**2,200**	38	ND<4.6	ND<4.6	ND<3.0	NA	9.8	7.4	ND<5.0	ND<5.0	ND<5.0	NA	14
SG13	8/29/2008	High Vacuum. No Sample Collected.												
SG14	8/29/2008	ND<7.9	ND<6.3	ND<4.6	ND<4.6	ND<3.0	NA	15	100	12	33	13	NA	62
SG15	8/29/2008	ND<17	ND<14	ND<10	ND<10	ND<6.5	NA	ND<8.1	1,600	290	1,000	400	NA	25
SG16	8/29/2008	ND<8.8	ND<6.9	ND<5.1	ND<5.1	ND<3.3	NA	ND<4.1	59	36	130	40	NA	ND<13
SG17	8/29/2008	ND<7.9	ND<6.3	ND<4.6	ND<4.6	ND<3.0	NA	4.6	56	12	52	18	NA	ND<11
SG18	8/29/2008	High Vacuum. No Sample Collected.												
ESL		*410*	*1,200*	*7,300*	*15,000*	*31*	*10,000*	*84*	*63,000*	*980*	*Combined = 21,000*		*72*	*None*

Abbreviations and Notes:
PCE = Tetrachloroethene
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
TPH-SS = Total Petroleum Hydrocarbons as Stoddard solvent.
# = 2-Propanol used as tracer/leak detection during sample collection.
ND = Not Detected.
NA = Not Analyzed.
a = Laboratory analytical note: exceeds instruments calibration range.
* = Soil Gas sample SG6 additionally had a detection of methylene chloride at a concentration of 10 micrograms per cubic meter (µg/m3), which is below the respective ESL value of 5,200 µg/m3.
ESL= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board
(SF-RWQCB), from Table E – Indoor Air and Soil Gas (Vapor Intrusion Concerns)
Shallow Soil Gas Screening Levels for Residential Land Use.
Values in bold exceed their respective ESL values.
Results in µg/m3 , unless otherwise indicated.

TABLE 2
SUMMARY OF CURRENT INVESTIGATION SOIL GAS SAMPLE RESULTS

Sample ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans1,2--DCE	Vinyl Chloride	TPH-SS	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Naphthalene	2-Propanol, #
SG19	2/19/2010	11	ND<6.8	ND<5.0	ND<5.0	ND<3.2	5,400	**84**	1,100	150	700	200	ND<27	28
SG20	2/19/2010	ND<8.5	ND<6.7	ND<5.0	ND<5.0	ND<3.2	ND<360	ND<4.0	7.3	ND<5.4	ND<5.4	ND<5.4	ND<26	ND<12
SG21	2/19/2010	ND<8.2	ND<6.5	ND<4.8	ND<4.8	ND<3.1	4,000	29	990	74	240	60	ND<25	ND<12
SG21-Lab Duplicate		NA	NA	NA	NA	NA	4,000	NA	NA	NA	NA	NA	NA	NA
SG21-DUP	2/19/2010	ND<8.2	ND<6.5	ND<4.8	ND<4.8	ND<3.1	3,800	27	920	70	220	54	ND<25	ND<12
SG22	2/19/2010	ND<39	ND<31	ND<23	ND<23	ND<15	**88,000**	35	23,000, a	**1,600**	4,000	760	ND<**120**	ND<57
SG23	2/19/2010	ND<24	ND<19	ND<14	ND<14	ND<9.0	**24,000**	34	2,600	180	450	120	ND<**74**	ND<35
SG23-Lab Duplicate		NA	NA	NA	NA	NA	**25,000**	NA	NA	NA	NA	NA	NA	NA
ESL		*410*	*1,200*	*7,300*	*15,000*	*31*	*10,000*	*84*	*63,000*	*980*	*Combined = 21,000*		*72*	*None*

Abbreviations and Notes:
PCE = Tetrachloroethene
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
TPH-SS = Total Petroleum Hydrocarbons as Stoddard solvent.
# = 2-Propanol used as tracer/leak detection during sample collection.
ND = Not Detected.
NA = Not Analyzed.
a = Laboratory analytical note: exceeds instruments calibration range.
ESL= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board (SF-RWQCB), from Table E – Indoor Air and Soil Gas (Vapor Intrusion Concerns) Shallow Soil Gas Screening Levels for Residential Land Use.
Values in bold exceed their respective ESL values.
Results in micrograms per cubic meter (µg/m3), unless otherwise indicated.

TABLE 3
SUMMARY OF AMBIENT AIR AND CRAWL SPACE AIR SAMPLE RESULTS

Sample ID	Sample Date	PCE	TCE	cis-1,2-DCE	trans1,2--DCE	Vinyl Chloride	TPH-SS	Benzene	Toluene	Ethyl-benzene	m,p-Xylenes	o-Xylenes	Naphthalene
CS1	2/19/2010	0.38	0.44	ND<0.12	ND<0.60	ND<**0.039**	**310**	**4.7**	48	**9.4**	**36**	**11**	ND<**4.0**
CS1-Lab Duplicate		NA	NA	NA	NA	NA	**280**	NA	NA	NA	NA	NA	NA
CS2	2/19/2010	**1.2**	**3.2**	ND<0.13	ND<0.64	ND<**0.041**	**300**	**5.3**	50	**9.3**	**35**	**10**	ND<**4.2**
CS3	2/19/2010	0.23	ND<0.17	ND<0.12	ND<0.63	ND<**0.040**	ND<**230**	**0.65**	3.7	0.77	3.6	1.0	ND<**4.1**
CS3-DUP	2/19/2010	ND<0.21	ND<0.17	ND<0.12	ND<0.63	ND<**0.040**	ND<**230**	**0.64**	3.9	0.79	3.7	1.0	ND<**4.1**
AMBIENT	2/19/2010	ND<0.22	ND<0.17	ND<0.13	ND<0.64	ND<**0.041**	ND<**230**	**0.56**	1.3	0.29	0.98	0.34	ND<**4.2**
ESL		*0.41*	*1.2*	*7.3*	*15*	*0.031*	*10*	*0.084*	*63*	*0.98*	*Combined = 21*		*0.072*

Abbreviations and Notes:
PCE = Tetrachloroethene
TCE = Trichloroethene
cis-1,2-DCE = cis-1,2-Dichloroethene
trans-1,2-DCE = trans-1,2-Dichloroethene
TPH-SS = Total Petroleum Hydrocarbons as Stoddard solvent.
ND = Not Detected.
NA = Not Analyzed.
ESL= Environmental Screening Level, developed by San Francisco Bay – Regional Water Quality Control Board (SF-RWQCB), from Table E – Indoor Air Screening Levels (Vapor Intrusion Concerns) for Residential Land Use.
Values in bold exceed their respective ESL values.
Results in micrograms per cubic meter (µg/m3), unless otherwise indicated.

TABLE 4
SUMMARY OF SOIL GAS RISK AND HAZARD EVALUATION CALCULATION RESULTS

RESIDENTIAL EXPOSURE SCENARIO							
Chemical	Concentration ($\mu g/m^3$)	Sample Result Location	Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)	NOTES	CAS#
2688 Coolidge Avenue						
Tetrachloroethene	11	SG19	2.2E-08	2.4E-04		127184
Benzene	84	SG19	9.2E-07	2.5E-03		71432
Toluene	1,100	SG19	NA	3.2E-03		108883
Ethyl Benzene	150	SG19	1.3E-07	1.2E-04		100414
m,p-xylene	700	SG19	NA	5.7E-03	used p-xylene CAS #	106423
o-xylene	200	SG19	NA	1.8E-03		95476
		TOTAL	1.1E-06	1.3E-02		
2621 34th Avenue						
Benzene	35	SG22	3.8E-07	1.0E-03		71432
Toluene	23,000	SG22	NA	6.7E-02		108883
Ethyl Benzene	1,600	SG22	1.4E-06	1.3E-03		100414
m,p-xylene	4,000	SG22	NA	3.2E-02	used p-xylene CAS #	106423
o-xylene	760	SG22	NA	6.7E-03		95476
		TOTAL	1.8E-06	1.1E-01		

NOTES:

2688 Coolidge Avenue used SG19 for exposure risk and hazard evaluation.

2621 34th Avenue used SG22 for exposure risk and hazard evaluation.

The highest concentration of each chemical was used for each address.

HERD spreadsheet default values were used, and soil type was SI.

TABLE 5A

PRELIMINARY AMBIENT AND INDOOR AIR RISK CALCULATION RESULTS

BASED ON ONE SAMPLING EVENT ONLY														Calculated		
RESIDENTIAL EXPOSURE SCENARIO														Individual	Calculated	
														Compound	Cumulative	
Formula		Unit Risk Factor	X	Exposure Frequency	X	Exposure Duration	X	Concentration in Air	all divided by	Averaging Time	X	365		Incremental Carcinogenic Risk	Incremental Carcinogenic Risk	Notes
Units		ug/m3		350 days/yr		30 yrs		ug/m3		70 yrs		days/yr				
Location	Compound															
CS1	PCE	5.9E-06		350		30		0.38		70		365		9.2137E-07		
	TCE	2.0E-06		350		30		0.44		70		365		3.61644E-07		
	Benzene	2.9E-05		350		30		4.7		70		365		5.6014E-05		
	Toluene	0.0E+00		350		30		48		70		365		0		
	Ethylbenzene	2.5E-06		350		30		9.4		70		365		9.6575E-06		
	m,p-Xylenes	0.0E+00		350		30		36		70		365		0		
	o-Xylenes	0.0E+00		350		30		11		70		365		0.0000E+00	6.6954E-05	
CS2	PCE	5.9E-06		350		30		1.2		70		365		2.90959E-06		
	TCE	2.0E-06		350		30		3.2		70		365		2.63014E-06		
	Benzene	2.9E-05		350		30		5.3		70		365		6.31644E-05		
	Toluene	0.0E+00		350		30		50		70		365		0		
	Ethylbenzene	2.5E-06		350		30		9.3		70		365		9.55479E-06		
	m,p-Xylenes	0.0E+00		350		30		35		70		365		0		
	o-Xylenes	0.0E+00		350		30		10		70		365		0	7.8259E-05	
CS3	PCE	5.9E-06		350		30		0.23		70		365		5.577E-07		
	TCE	2.0E-06		350		30		0.085		70		365		6.9863E-08		
	Benzene	2.9E-05		350		30		0.65		70		365		7.747E-06		
	Toluene	0.0E+00		350		30		3.7		70		365		0		
	Ethylbenzene	2.5E-06		350		30		0.77		70		365		7.911E-07		
	m,p-Xylenes	0.0E+00		350		30		3.6		70		365		0		
	o-Xylenes	0.0E+00		350		30		1		70		365		0.000E+00	9.1652E-06	
Ambient	PCE	5.9E-06		350		30		0.11		70		365		2.66712E-07		
	TCE	2.0E-06		350		30		0.085		70		365		6.9863E-08		
	Benzene	2.9E-05		350		30		0.56		70		365		6.67397E-06		
	Toluene	0.0E+00		350		30		1.3		70		365		0		
	Ethylbenzene	2.5E-06		350		30		0.29		70		365		2.97945E-07		
	m,p-Xylenes	0.0E+00		350		30		0.98		70		365		0		
	o-Xylenes	0.0E+00		350		30		0.34		70		365		0	7.3085E-06	
NOTES:																
For dimensional analysis, the Unit Risk Factor units are expressed as 1 over ug/m3, but the Unit Risk Factor value used for calcuation is not.																
Unit Risk Factor value obtained from HERD Soil Gas Screeing Model VLOOK sheet (last updated 2/4/09).																
Yellow high light indicates compound was not detected and value of one half of the detection limit was used for risk calculation.																
Where duplicate samples were analyzed, the highest concentration for all analyses was used.																

TABLE 5B

PRELIMINARY AMBIENT AND INDOOR AIR HAZARD CALCULATION RESULTS

BASED ON ONE SAMPLING EVENT ONLY																		
RESIDENTIAL EXPOSURE SCENARIO																Calculated		
Formula		1 Over Reference Factor Concentration	X	Exposure Frequency	X	Exposure Duration	X	Concentration in Air	X	Conversion of Air Conc from ug/m3 to mg/m3	all divided by	Averaging Time	X	365		Individual Compound Hazard Quotient	Calculated Cumulative Hazard Quotient	Notes
Units		1/(mg/m3)		350 days/yr		30 yrs		ug/m3		(mg/m3)/(ug/m3)		30 yrs		days/yr				
Location	Compound																	
CS1	PCE	28.571		350		30		0.38		0.001		30		365		1.0411E-02		
	TCE	1.67		350		30		0.44		0.001		30		365		7.0320E-04		
	Benzene	33.33		350		30		4.7		0.001		30		365		1.5021E-01		
	Toluene	3.33		350		30		48		0.001		30		365		1.5327E-01		
	Ethylbenzene	1.0		350		30		9.4		0.001		30		365		9.0137E-03		
	m,p-Xylenes	10		350		30		36		0.001		30		365		3.4521E-01		
	o-Xylenes	10		350		30		11		0.001		30		365		1.0548E-01	7.7430E-01	
CS2	PCE	28.571		350		30		1.2		0.001		30		365		3.2877E-02		
	TCE	1.67		350		30		3.2		0.001		30		365		5.1142E-03		
	Benzene	33.33		350		30		5.3		0.001		30		365		1.6939E-01		
	Toluene	3.33		350		30		50		0.001		30		365		1.5966E-01		
	Ethylbenzene	1.0		350		30		9.3		0.001		30		365		8.9178E-03		
	m,p-Xylenes	10		350		30		35		0.001		30		365		3.3562E-01		
	o-Xylenes	10		350		30		10		0.001		30		365		9.5890E-02	8.0746E-01	
CS3	PCE	28.571		350		30		0.23		0.001		30		365		6.3014E-03		
	TCE	1.67		350		30		0.085		0.001		30		365		1.3584E-04		
	Benzene	33.33		350		30		0.65		0.001		30		365		2.0774E-02		
	Toluene	3.33		350		30		3.7		0.001		30		365		1.1815E-02		
	Ethylbenzene	1.0		350		30		0.77		0.001		30		365		7.3836E-04		
	m,p-Xylenes	10		350		30		3.6		0.001		30		365		3.4521E-02		
	o-Xylenes	10		350		30		1		0.001		30		365		9.5890E-03	8.3874E-02	
Ambient	PCE	28.571		350		30		0.11		0.001		30		365		3.0137E-03		
	TCE	1.67		350		30		0.085		0.001		30		365		1.3584E-04		
	Benzene	33.33		350		30		0.56		0.001		30		365		1.7898E-02		
	Toluene	3.33		350		30		1.3		0.001		30		365		4.1511E-03		
	Ethylbenzene	1.0		350		30		0.29		0.001		30		365		2.7808E-04		
	m,p-Xylenes	10		350		30		0.98		0.001		30		365		9.3973E-03		
	o-Xylenes	10		350		30		0.34		0.001		30		365		3.2603E-03	3.8134E-02	
NOTES:																		
Reference Factor Concentration value obtained from HERD Soil Gas Screeing Model VLOOK sheet (last updated 2/4/09).																		
Reference Factor Concentration values used were as follows (values in mg/m3):																		
	PCE	0.035																
	TCE	0.60																
	Benzene	0.03																
	Toluene	0.30																
	Ethylbenzene	1.0																
	m,p-Xylenes	0.1 is RFC for each m,p,o																
	o-Xylenes																	
	Yellow high light indicates compound was not detected and value of one half of the detection limit was used for hazard calculation.																	
Where duplicate samples were analyzed, the highest concentration for all analyses was used.																		

TABLE 5C

PRELIMINARY AMBIENT AND INDOOR AIR RISK AND HAZARD CALCULATION RESULTS SUMMARY

BASED ON ONE SAMPLING EVENT ONLY
RESIDENTIAL EXPOSURE SCENARIO

Air Sample Designation	Sample Collection Date	Calculated Cumulative Incremental Carcinogenic Risk	Calculated Cumulative Incremental Carcinogenic Risk	Calculated Cumulative Hazard Quotient	Calculated Incremental Carcinogenic Risk Alternate Description	Recommendations Based on DTSC-Recommended Guidance for Action or Response (Minimum of Two Adequately-Spaced (With Respect To Time) Indoor Air Sampling Events Needed)
CS1	2/19/2010	6.70E-05	0.000067	0.77	67 in a million	Monitoring based on incremental carcinogenic risk
CS2	2/19/2010	7.83E-05	0.0000783	0.81	78 in a million	Monitoring based on incremental carcinogenic risk
CS3	2/19/2010	9.17E-06	0.00000917	0.084	9 in a million	Monitoring based on incremental carcinogenic risk
Ambient	2/19/2010	7.31E-06	0.00000731	0.0381	7 in a million	None- sample is outdoor ambient air

NOTES:

DTSC-Recommended Response Guidelines

Risk	Hazard	Response	Activities
Less than 1 in a million	less than 1.0	Minimal	Determine that the soil vapor plume is stable.
1 to 100 in a million	1.0 to 3.0	Monitoring	Install permanent sublsab monitoring points and collect soil gas samples and indoor air samples semi-annually.
More than 100 in a million	more than 3.0	Mitigation	Institute engineering controls to mitigate exposure and collect soil gas samples and indoor air samples semi-annually to verify mitigation of exposure.

FIGURES

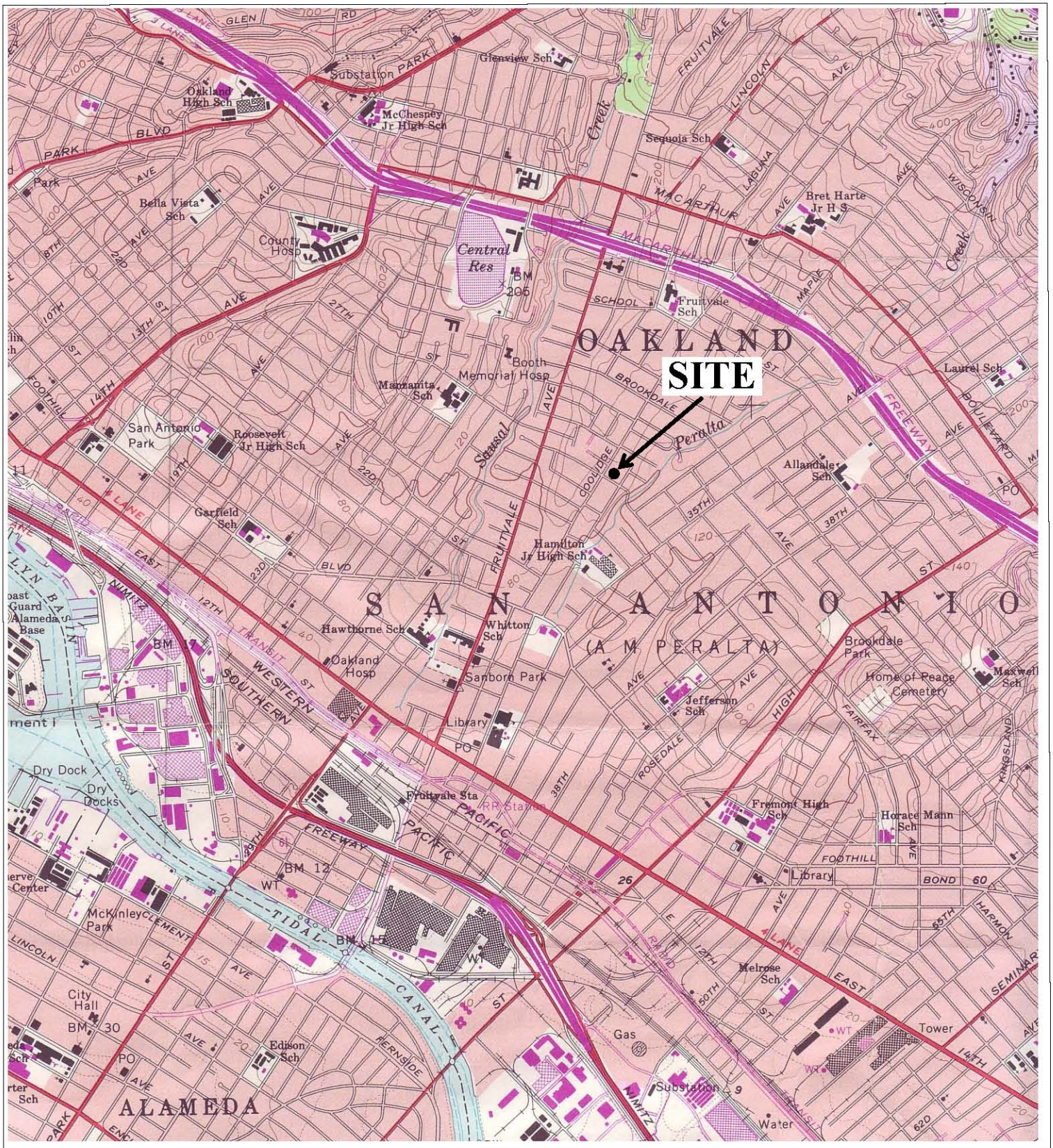


Figure 1
Site Location Map
Snow Cleaners
2678 Coolodge Avenue
Oakland, California

N

Base Map From:
U.S. Geological Survey
Oakland East, California
7.5-Minute Quadrangle
Photorevised 1980

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 1,000 2,000
Scale In Feet

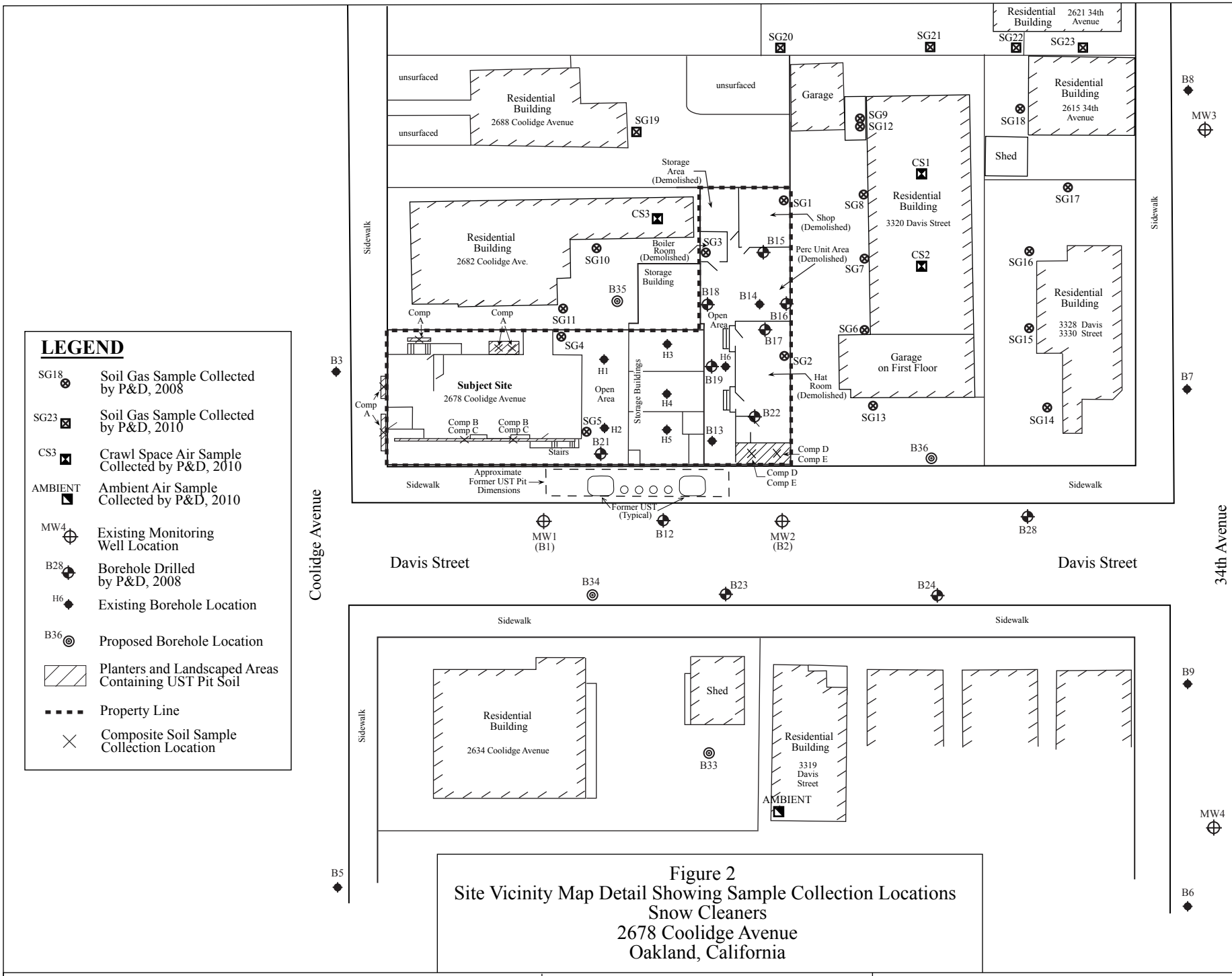


Figure 2
Site Vicinity Map Detail Showing Sample Collection Locations
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

Base Map from: Kier & Wright Engineers Surveyors, Inc. September 2008 survey	P&D Environmental, Inc. 55 Santa Clara Ave., Suite 240 Oakland, CA 94610	0 20 40 Scale in Feet N

Figure 3
Typical Soil Gas Sample Collection Manifold
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

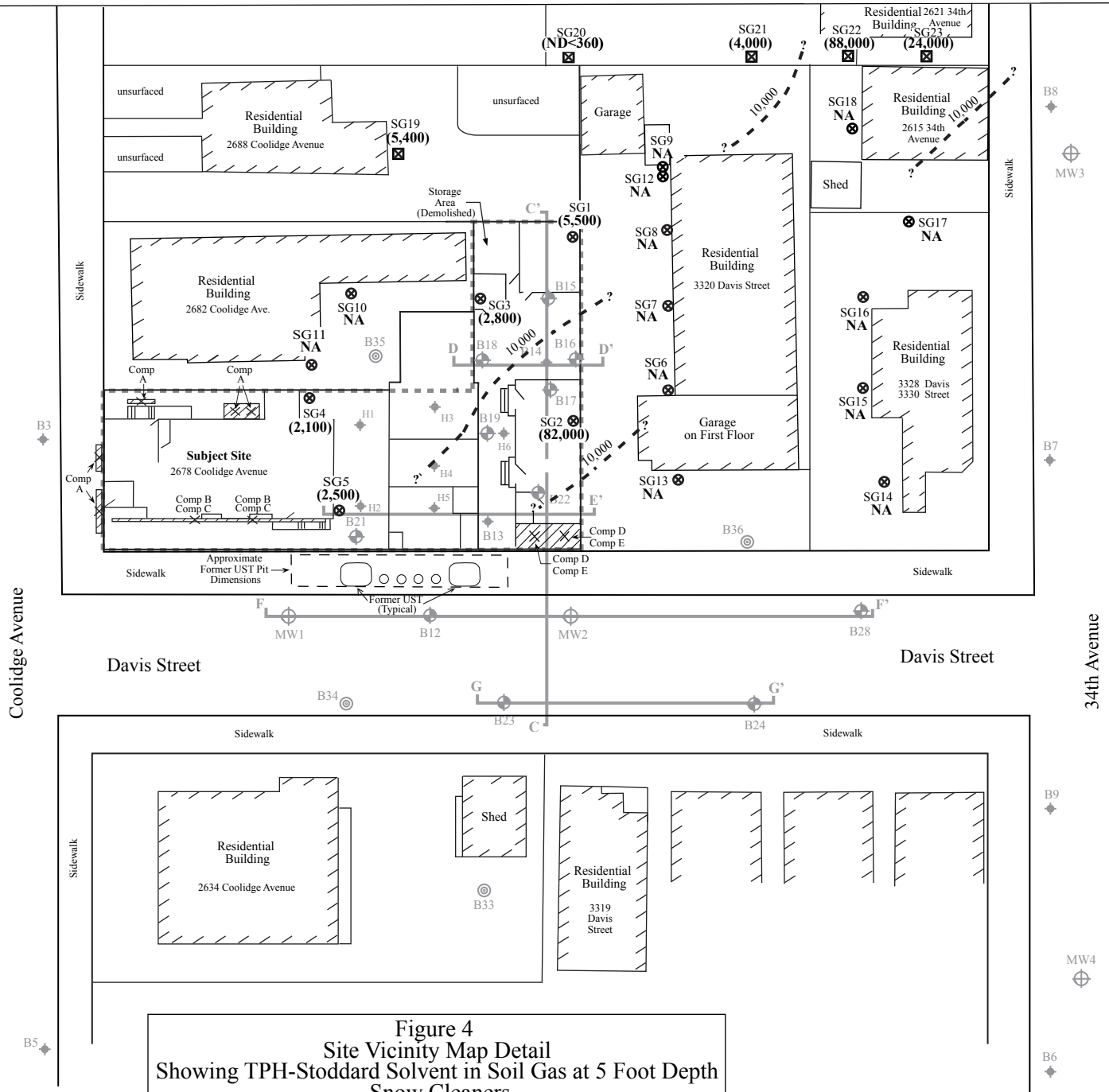


Figure 4
Site Vicinity Map Detail
Showing TPH-Stoddard Solvent in Soil Gas at 5 Foot Depth
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

Base Map from:
Kier & Wright Engineers Surveyors, Inc.
September 2008 survey

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 20 40
Scale in Feet

N

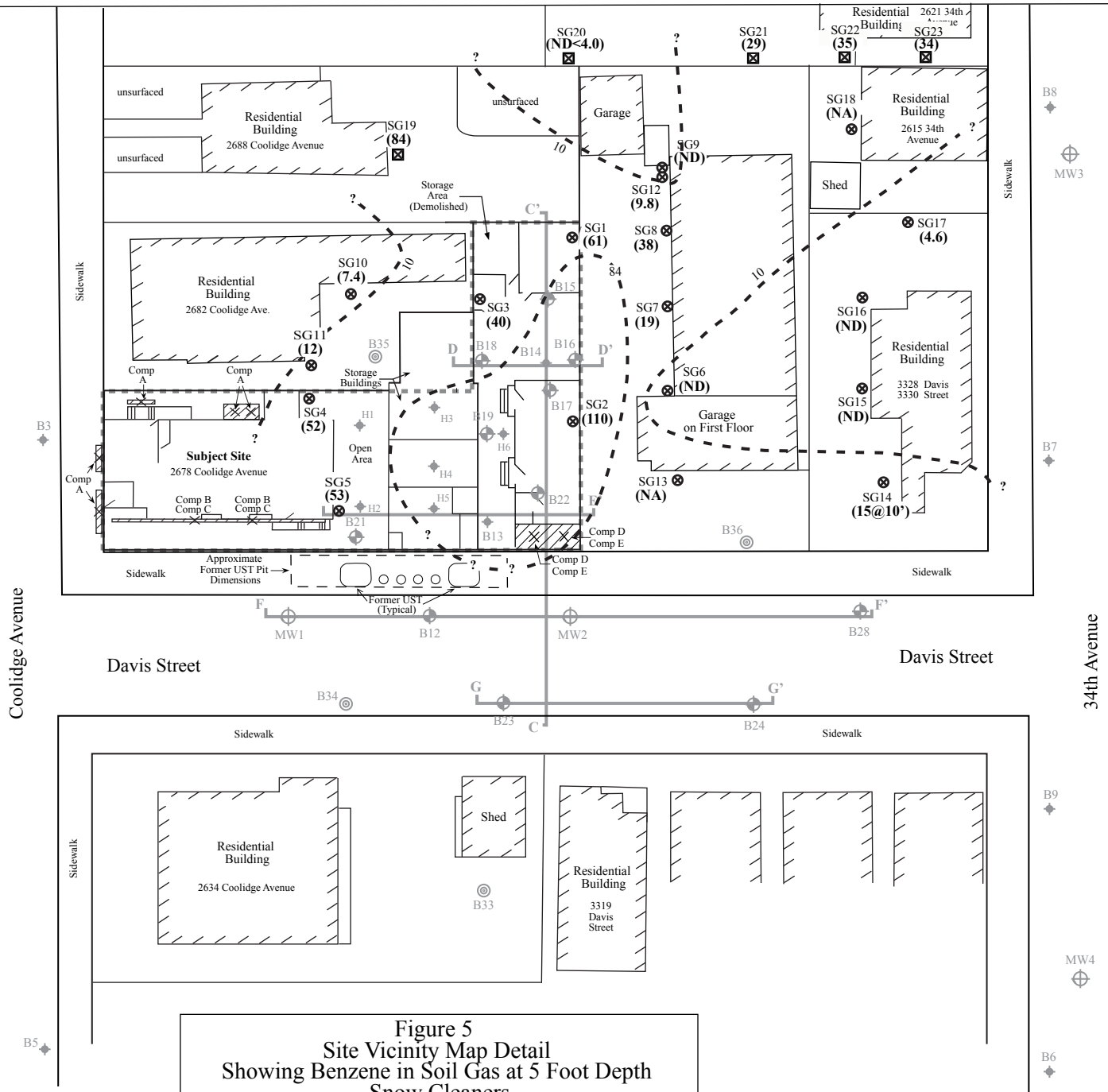


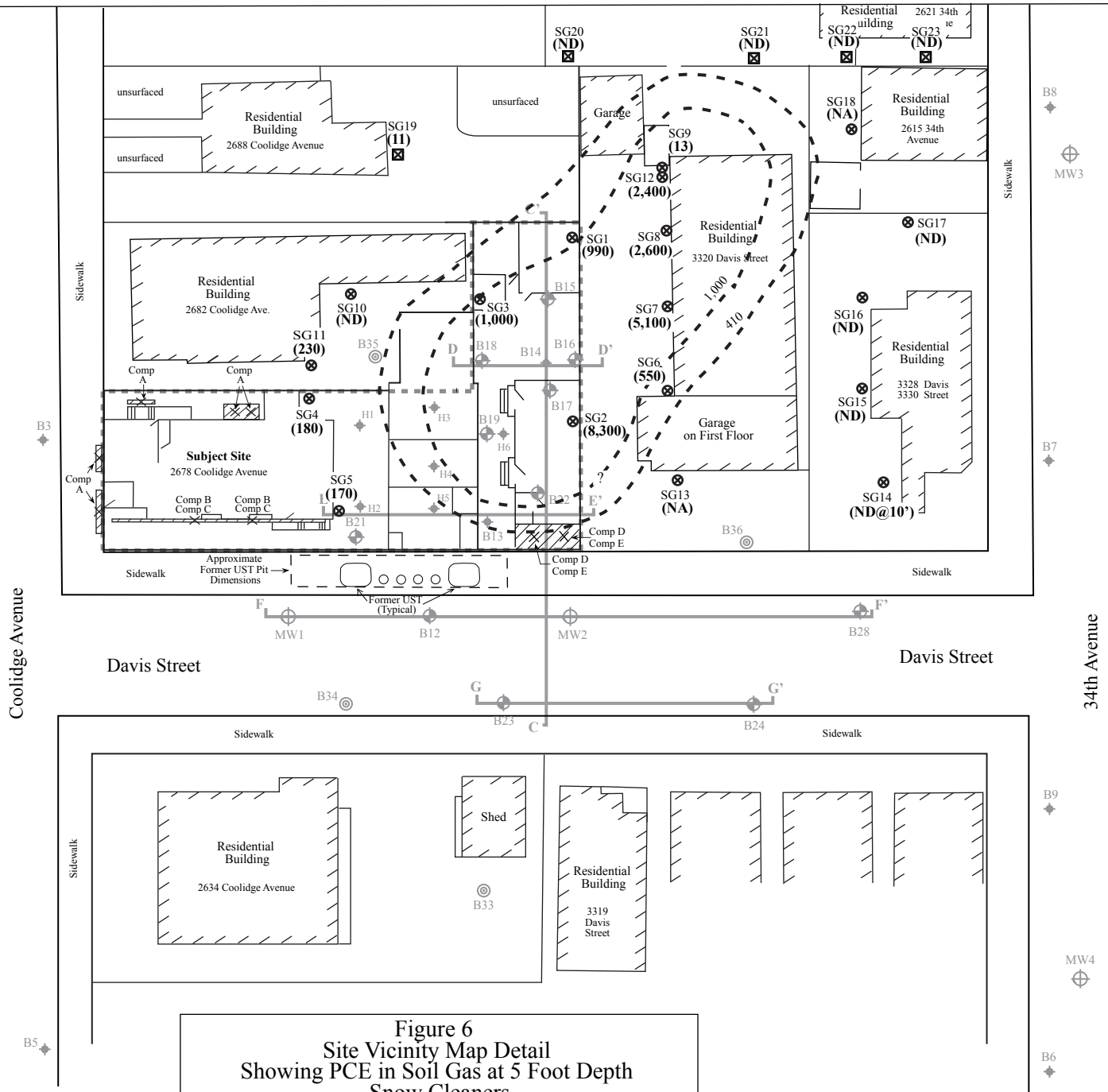
Figure 5
Site Vicinity Map Detail
Showing Benzene in Soil Gas at 5 Foot Depth
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

Base Map from:
Kier & Wright Engineers Surveyors, Inc.
September 2008 survey

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 20 40
Scale in Feet

N



LEGEND

- (8,300) PCE Soil Gas Concentration in ug/m³
- ND Not Detected
- NA Not Analyzed
- PCE Isoconcentration Contour
- SG18 Soil Gas Sample Collected by P&D, 2008
- SG23 Soil Gas Sample Collected by P&D, 2010
- MW4 Existing Monitoring Well Location
- B28 Borehole Drilled by P&D, 2008
- H6 Existing Borehole Location
- B36 Proposed Borehole Location
- Planters and Landscaped Areas Containing UST Pit Soil
- Property Line
- Composite Soil Sample Collection Location
- G G' Geologic Cross Section Location

Figure 6
Site Vicinity Map Detail
Showing PCE in Soil Gas at 5 Foot Depth
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

Base Map from:
Kier & Wright Engineers Surveyors, Inc.
September 2008 survey

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 20 40
Scale in Feet

N

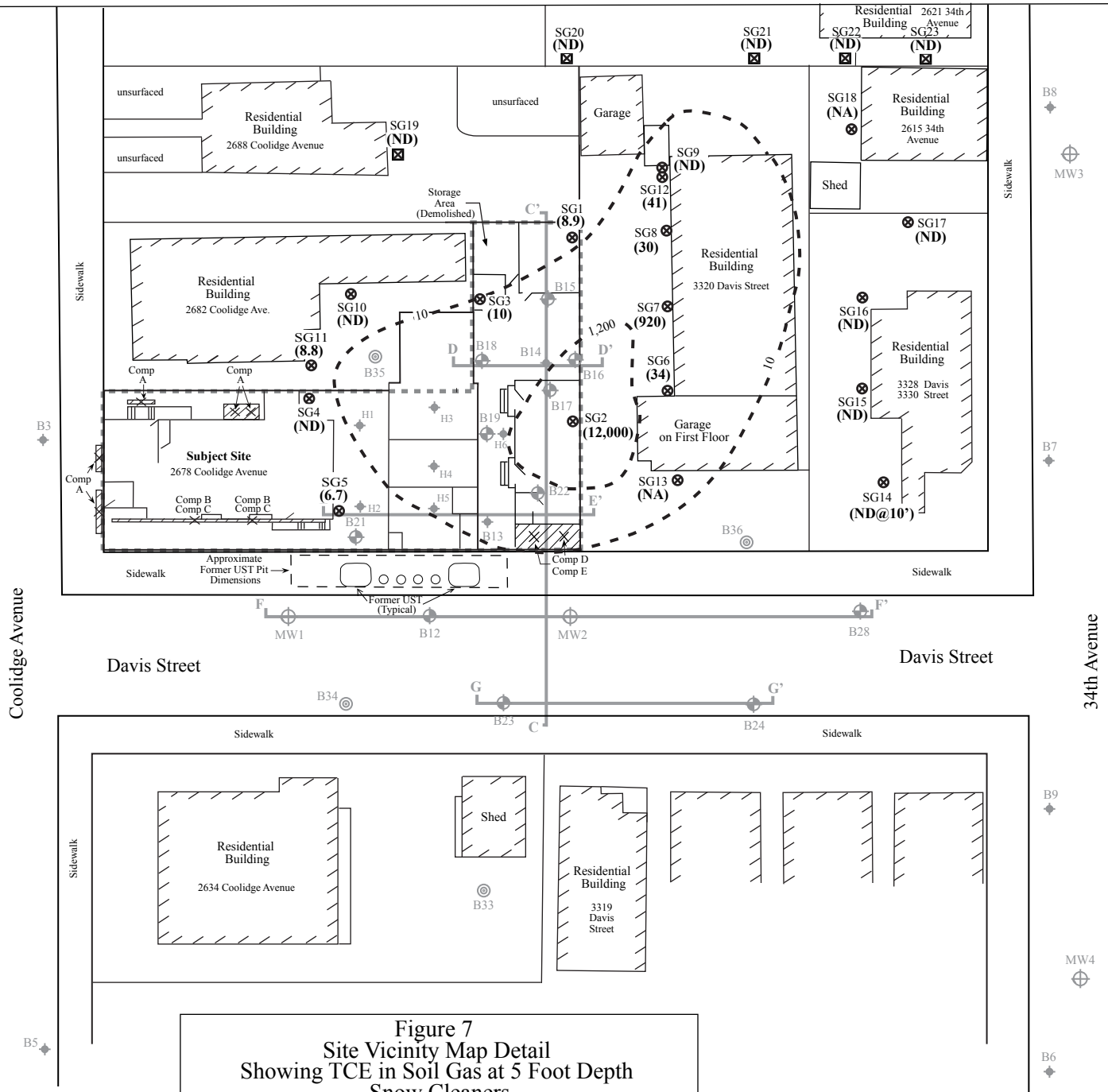


Figure 7
Site Vicinity Map Detail
Showing TCE in Soil Gas at 5 Foot Depth
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

Base Map from:
Kier & Wright Engineers Surveyors, Inc.
September 2008 survey

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

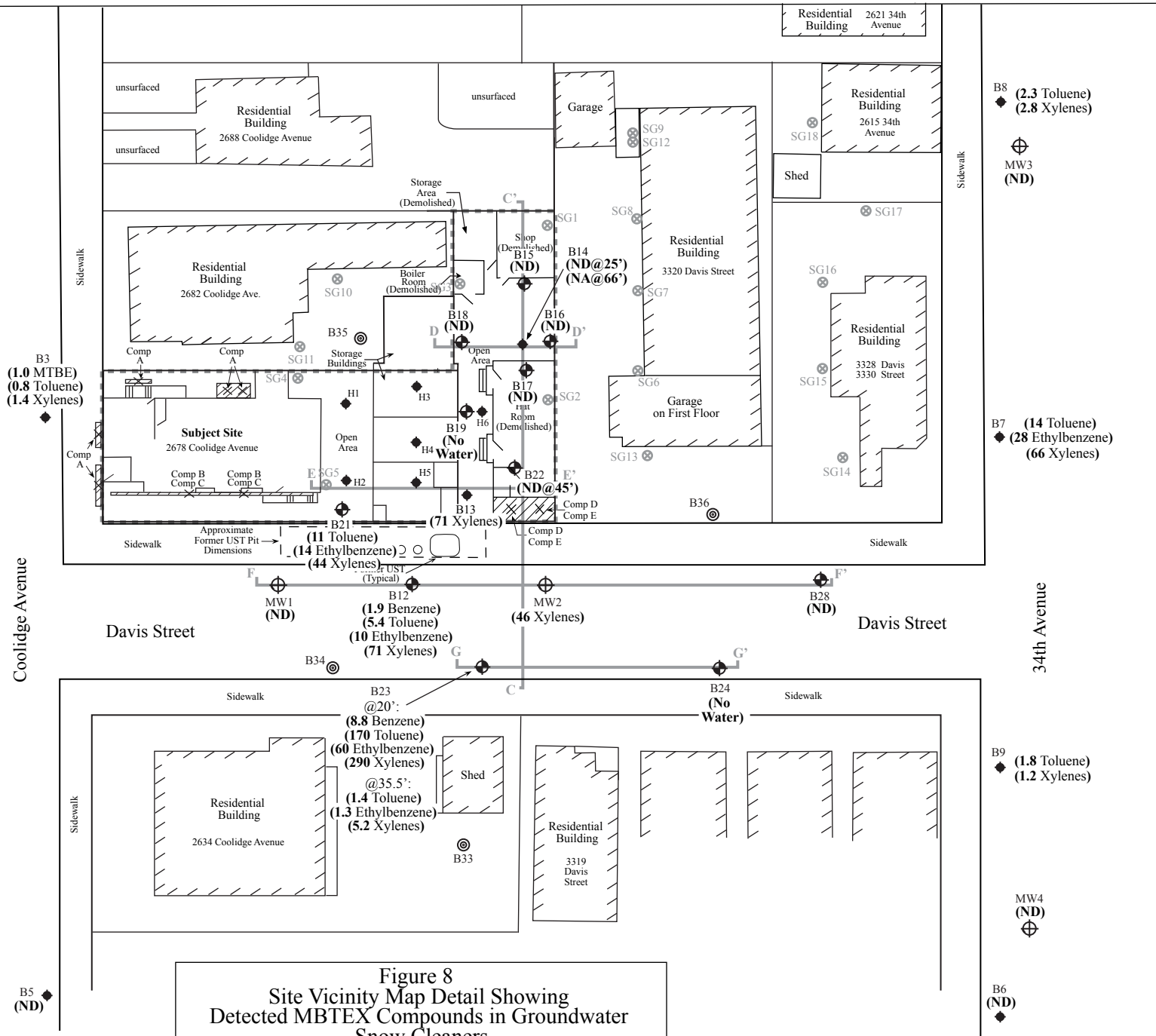


Figure 8
Site Vicinity Map Detail Showing
Detected MBTEX Compounds in Groundwater
Snow Cleaners
2678 Coolidge Avenue
Oakland, California

Base Map from:
Kier & Wright Engineers Surveyors, Inc.
September 2008 survey

P&D Environmental, Inc.
55 Santa Clara Ave., Suite 240
Oakland, CA 94610

0 20 40
Scale in Feet

N

APPENDIX A

Soil Gas Sampling Purge Calculations and Field Data Sheets

Report 0298.R8
Appendix A
7 feet tubing, 8 inch sand interval

Soil Gas Purge Volume Calculations

One Purge Volume is calculated as the volume of the tubing interior plus the volume of the sand interval of the borehole.

The tubing interior volume is calculated as follows:

V tubing = pi x (r x r) x h, where pi = 3.14, r = 0.187 in./2, and h = 7 ft.

V tubing = 3.14 x (0.0935 x 0.0935) x (7 ft. x 12 in./ft.) =	2.31	cubic inches

The sand interval volume is calculated as follows:

V sand interval = pi x (r x r) x h x porosity, where pi = 3.14, r = 1.0 in./2, h = 8 in., and porosity = 0.35

V sand interval = 3.14 x (0.5 x 0.5) x 8 x 0.35 =	2.20	cubic inches

The total volume for one purge volume is V tubing + V sand interval, where

V total = 2.31 cubic inches + 2.20 cubic inches =	4.50	cubic inches

To convert to cubic centimeters:

V total = 4.50 cubic inches x 16.39 cubic centimeters/cubic inches =	73.8	cubic centimeters

The total volume to be purged is 3 purge volumes.

V purge total = 73.8 cubic centimeters x 3 =	221	cubic centimeters

The flow controller has a nominal flow rate of 200 cubic centimeters per minute.

The purge time is calculated as follows:

T purge = 221 cubic centimeters/200 cubic centimeters per minute =	1.11	minutes
Converting the purge time to seconds,1.11 minutes x 60seconds/ minute =	66	seconds

SOIL GAS SAMPLING DATA SHEET

Address 2678 Coolidge Ave

Job # 8296.R8

Date 2/19/10

P&D Sampler MLD

Drilling Company Vironex.

Probe Method (check one)

o PRT

x Temp Well

Soil Gas Location Designation	Probe Depth (Ft.)	Time Probe Installed	Canister #	Sample Canister Initial Vacuum Check (In. Hg) and time	Start leak check vacuum (In. Hg) and time	End leak check vacuum (In. Hg) and time	ADDITIONAL leak check vacuum (In. Hg) and time	Start PURGE time	End PURGE time	Start of tracer gas equilibration time	Time and conc. (ppm) of tracer gas equilibration	Begin sample collection vacuum (In. Hg) and time	End sample collection vacuum (In. Hg) and time	NOTES
SG 19	5	8:58	34083	vac -29.5 time 0945	vac -26 time 095000	vac -26 time 1000	vac time	time 114000	time 114007	time 1143	conc 26 time 1148	vac -29.5 time 114917	vac -5 time 124945	1250 0 ppm
SG 20	5	1220	3048	vac -30 time 1553	vac -26 time 1555	vac -26 time 1605	vac time	time 160600	time 160707	time 160730	conc. 34 time 161000	vac -28 time 161100	vac -5 time 161655	1617 0 ppm
SG 21	5	1200	36503	vac -30 time 1432	vac -27 time 1435	vac -27 time 1445	vac time	time 153600	time 153707	time 153730	conc. 28 time 154000	vac -29 time 154200	vac -5 time 155738	1600 0 ppm
SG 21 DUP			34692	vac -30 time 1434	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG 22	5	1135	34653	vac -30 time 1324	vac -28 time 1326	vac -28 time 1336	vac time	time 151600	time 151707	time 151730	conc. 32 time 152100	vac -29 time 152130	vac -5 time 152850	car parts and radiator. 1532 10 ppm
SG 23	5	1126	34120	vac -30 time 1214	vac -28 time 1218	vac -28 time 1228	vac time	time 130900	time 131007	time 131015	conc. 36 time 131420	vac -28 time 131430	vac -5 time 151600	1532 0 ppm
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	

SOIL GAS SAMPLING DATA SHEET AIR SAMPLE

Address 2678 COOLIDGE AVE

Job # 0298. R8

Date 2/19/10

P&D Sampler MLD

Drilling Company VIRONEX

Probe Method (check one)
- o PRT
- o Temp Well

Soil Gas Location Designation	Probe Depth (Ft.)	Time Probe Installed	Canister #	Sample Canister Initial Vacuum Check (In. Hg) and time	Start leak check vacuum (In Hg) and time	End leak check vacuum (In Hg) and time	ADDITIONAL leak check vacuum (In. Hg) and time	Start PURGE time	End PURGE time	Start of tracer gas equilibration time	Time and conc. (ppm) of tracer gas equilibration	Begin sample collection vacuum (In. Hg) and time	End sample collection vacuum (In Hg) and time	NOTES
~~SG~~ SS1			21004	vac time	vac time	vac time	vac time	time 100815	time 100715	time	conc time	vac -29.5 time 101120	vac -6 time 181120	16 FEET INTO CRAWL SPACE
~~SG~~ SS2			32120	vac time	vac time	vac time	vac time	time 101225	time 101325	time	conc. time	vac -29.5 time 101430	vac -5 time 181430	16 FEET INTO CRAWL SPACE
~~SG~~ SS3			13674	vac time	vac time	vac time	vac time	time 091230	time 091330	time	conc. time	vac -30 time 091500	vac -7 time 171500	6 FEET INTO CRAWL SPACE
~~SG~~ SS3 DUP			34258	vac time	vac time	vac time	vac time	time	time	time	conc. time	vac -30 time 091500	vac -5 time 171500	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
~~SG~~ AMBIENT			3734	vac time	vac time	vac time	vac time	time	time	time	conc. time	vac -30 time 085500	vac -6 time 165500	
SG				vac time	vac time	vac time	vac time	time	time	time	conc time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	
SG				vac time	vac time	vac time	vac time	time	time	time	conc. time	vac time	vac time	

APPENDIX B

Weather Information

About This PWS:

Lat: N 37 ° 46 ' 3 " (37.768 °)
Lon: W 122 ° 15 ' 18 " (-122.255 °)
Elevation (ft): 15
Hardware: Davis Vantage Pro 2
Weather Station Software

Encinal Avenue & Lafayette St., Alameda, CA

http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KCAALAME1&day=19&year=2010&month=2&graphspan=day

« Previous Day Next Day »

February | 19 | 2010 | View

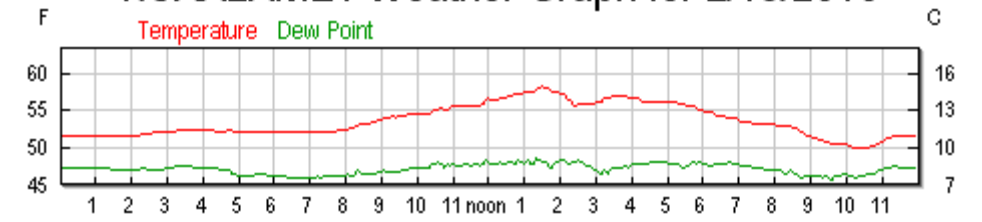
Daily | Weekly | Monthly | Yearly | Custom

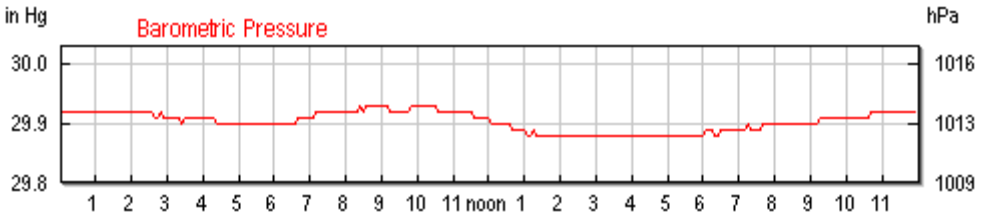
	Current:	High:	Low:	Average:
Temperature:	**63.5** °F	**58.3** °F	**49.9** °F	**53.6** °F
Dew Point:	**44.0** °F	**48.5** °F	**45.8** °F	**47.1** °F
Humidity:	49%	88%	68%	79%
Wind Speed:	**3.5**mph	**11.5**mph	-	**1.6**mph
Wind Gust:	**3.5**mph	**11.5**mph	-	-
Wind:	NW	-	-	NW
Pressure:	**30.15**in	**29.93**in	**29.88**in	-
Precipitation:	**0.00**in			

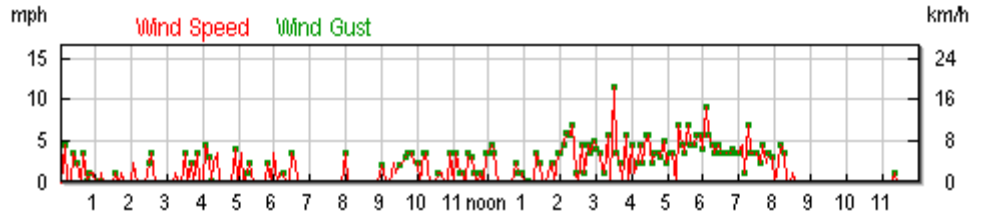
Statistics for the rest of the month:

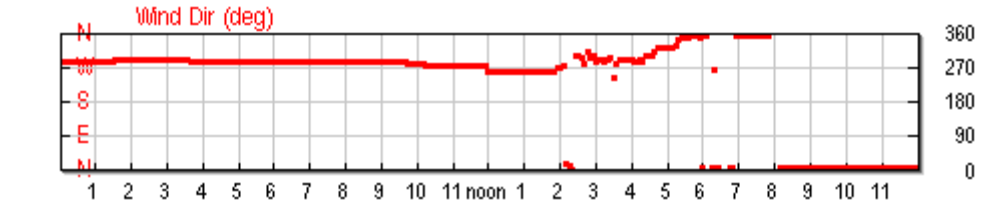
	High:	Low:	Average:
Temperature:	**68.4** °F	**42.6** °F	**53.5** °F
Dew Point:	**55.3** °F	**26.1** °F	**47.2** °F
Humidity:	95.0%	27.0%	80.1%
Wind Speed:	**32.2**mph from the SSW	-	**2.8**mph
Wind Gust:	**32.2**mph from the SSW	-	-
Wind:	-	-	SW
Pressure:	**30.28**in	**29.64**in	-

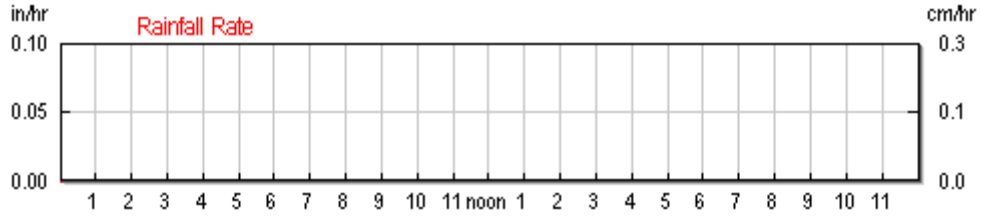
KCAALAME1 Weather Graph for 2/19/2010











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wunderground.com

http://www.wunderground.com/weatherstation/WXDailyHistory.asp?ID=KCAALAME1&day=19&year=2010&month=2&graphspan=month

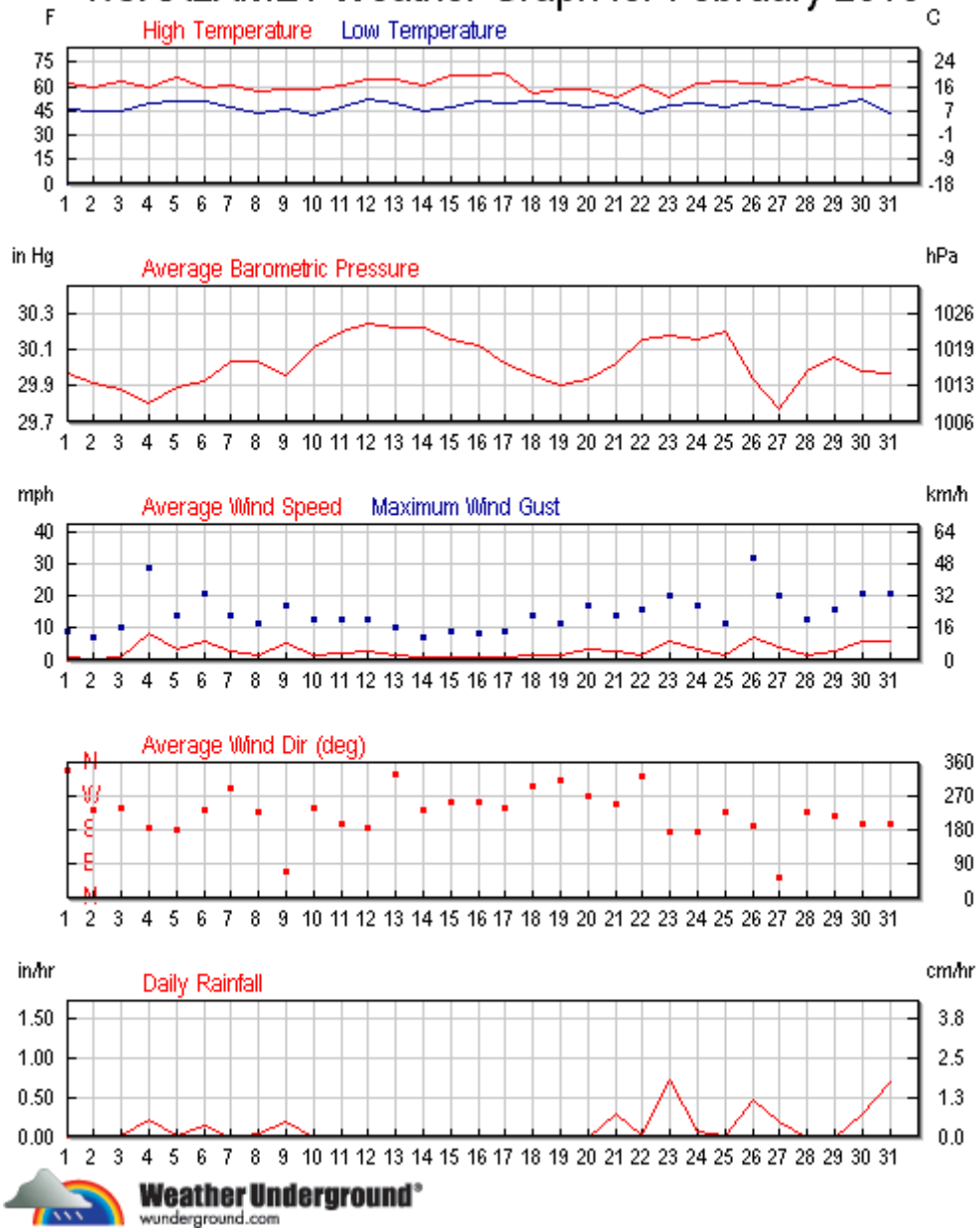
« Previous Month Next Month »

February 19 2010 View

Daily | Weekly | **Monthly** | Yearly | Custom

	High:	Low:	Average:
Temperature:	**68.4** °F	**42.6** °F	**53.5** °F
Dew Point:	**55.3** °F	**26.1** °F	**47.2** °F
Humidity:	95.0%	27.0%	80.1%
Wind Speed:	**32.2**mph from the SSW	-	**2.8**mph
Wind Gust:	**32.2**mph from the SSW	-	-
Wind:	-	-	SW
Pressure:	**30.28**in	**29.64**in	-
Precipitation:	**2.43**in		

KCAALAME1 Weather Graph for February 2010



Weather Underground®
wunderground.com

APPENDIX C

Laboratory Analytical Reports and Chain of Custody Documentation

Air Toxics LTD.
Laboratory Services Since 1989

3/9/2010
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Snow Cleaners 2678 Coolidge Ave, Oakland
Project #: 0298
Workorder #: 1002488A

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 2/24/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

WORK ORDER #: 1002488A

Work Order Summary

CLIENT: Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland, CA 94610

BILL TO: Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland, CA 94610

PHONE: 510-658-6916

FAX: 510-834-0772

DATE RECEIVED: 02/24/2010

DATE COMPLETED: 03/09/2010

P.O. #

PROJECT # 0298 Snow Cleaners 2678 Coolidge Ave, Oakland

CONTACT: Kyle Vagadori

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	CS1	Modified TO-15	3.5 "Hg	5 psi
01B	CS1	Modified TO-15	3.5 "Hg	5 psi
02A	CS2	Modified TO-15	5.0 "Hg	5 psi
02B	CS2	Modified TO-15	5.0 "Hg	5 psi
03A	CS3	Modified TO-15	4.5 "Hg	5 psi
03B	CS3	Modified TO-15	4.5 "Hg	5 psi
04A	CS3-DUP	Modified TO-15	4.5 "Hg	5 psi
04B	CS3-DUP	Modified TO-15	4.5 "Hg	5 psi
05A	AMBIENT	Modified TO-15	5.0 "Hg	5 psi
05B	AMBIENT	Modified TO-15	5.0 "Hg	5 psi
06A	Lab Blank	Modified TO-15	NA	NA
06B	Lab Blank	Modified TO-15	NA	NA
06C	Lab Blank	Modified TO-15	NA	NA
06D	Lab Blank	Modified TO-15	NA	NA
07A	CCV	Modified TO-15	NA	NA
07B	CCV	Modified TO-15	NA	NA
07C	CCV	Modified TO-15	NA	NA

Continued on next page

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1002488A

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	**BILL TO:**	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	**P.O. #**	
FAX:	510-834-0772	**PROJECT #**	0298 Snow Cleaners 2678 Coolidge Ave, Oakland
DATE RECEIVED:	02/24/2010	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	03/09/2010		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
07D	CCV	Modified TO-15	NA	NA
08A	LCS	Modified TO-15	NA	NA
08B	LCS	Modified TO-15	NA	NA
08C	LCS	Modified TO-15	NA	NA
08D	LCS	Modified TO-15	NA	NA

CERTIFIED BY: Linda J. Truman DATE: 03/09/10

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15 Full Scan/SIM
P & D Environmental
Workorder# 1002488A

Five 6 Liter Summa Canister (SIM Certified) samples were received on February 24, 2010. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the Full Scan and SIM acquisition modes. The method involves concentrating up to 1.0 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

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	For Full Scan: 30% RSD with 4 compounds allowed out to < 40% RSD For SIM: Project specific; default criteria is </=30% RSD with 10% of compounds allowed out to < 40% RSD
Daily Calibration	+- 30% Difference	For Full Scan: </= 30% Difference with four allowed out up to </=40%.; flag and narrate outliers For SIM: 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

The results for each sample in this report were acquired from two separate data files originating from the same analytical run. The two data files have the same base file name and are differentiated with a "sim" extension on the SIM data file.

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.

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

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: CS1

Lab ID#: 1002488A-01A

No Detections Were Found.

Client Sample ID: CS1

Lab ID#: 1002488A-01B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.030	0.056	0.21	0.38
Trichloroethene	0.030	0.082	0.16	0.44
Benzene	0.076	1.5	0.24	4.7
Toluene	0.030	13	0.11	48
Ethyl Benzene	0.030	2.2	0.13	9.4
m,p-Xylene	0.061	8.4	0.26	36
o-Xylene	0.030	2.5	0.13	11

Client Sample ID: CS2

Lab ID#: 1002488A-02A

No Detections Were Found.

Client Sample ID: CS2

Lab ID#: 1002488A-02B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.032	0.17	0.22	1.2
Trichloroethene	0.032	0.59	0.17	3.2
Benzene	0.080	1.7	0.26	5.3
Toluene	0.032	13	0.12	50
Ethyl Benzene	0.032	2.1	0.14	9.3
m,p-Xylene	0.064	8.0	0.28	35
o-Xylene	0.032	2.4	0.14	10

Client Sample ID: CS3

Lab ID#: 1002488A-03A

No Detections Were Found.

Client Sample ID: CS3

Lab ID#: 1002488A-03B

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: CS3

Lab ID#: 1002488A-03B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	0.032	0.034	0.21	0.23
Benzene	0.079	0.20	0.25	0.65
Toluene	0.032	0.99	0.12	3.7
Ethyl Benzene	0.032	0.18	0.14	0.77
m,p-Xylene	0.063	0.82	0.27	3.6
o-Xylene	0.032	0.23	0.14	1.0

Client Sample ID: CS3-DUP

Lab ID#: 1002488A-04A

No Detections Were Found.

Client Sample ID: CS3-DUP

Lab ID#: 1002488A-04B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.079	0.20	0.25	0.64
Toluene	0.032	1.0	0.12	3.9
Ethyl Benzene	0.032	0.18	0.14	0.79
m,p-Xylene	0.063	0.86	0.27	3.7
o-Xylene	0.032	0.24	0.14	1.0

Client Sample ID: AMBIENT

Lab ID#: 1002488A-05A

No Detections Were Found.

Client Sample ID: AMBIENT

Lab ID#: 1002488A-05B

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	0.080	0.18	0.26	0.56
Toluene	0.032	0.34	0.12	1.3
Ethyl Benzene	0.032	0.067	0.14	0.29
m,p-Xylene	0.064	0.22	0.28	0.98
o-Xylene	0.032	0.078	0.14	0.34

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS1

Lab ID#: 1002488A-01A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022618**	**Date of Collection: 2/19/10 6:11:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 2/26/10 09:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.76	Not Detected	4.0	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	108	70-130
4-Bromofluorobenzene	102	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS1

Lab ID#: 1002488A-01B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022618sim**	**Date of Collection: 2/19/10 6:11:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 2/26/10 09:24 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.030	Not Detected	0.12	Not Detected
trans-1,2-Dichloroethene	0.15	Not Detected	0.60	Not Detected
Tetrachloroethene	0.030	0.056	0.21	0.38
Trichloroethene	0.030	0.082	0.16	0.44
Vinyl Chloride	0.015	Not Detected	0.039	Not Detected
Benzene	0.076	1.5	0.24	4.7
Toluene	0.030	13	0.11	48
Ethyl Benzene	0.030	2.2	0.13	9.4
m,p-Xylene	0.061	8.4	0.26	36
o-Xylene	0.030	2.5	0.13	11

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	110	70-130
4-Bromofluorobenzene	103	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS2

Lab ID#: 1002488A-02A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022619**	**Date of Collection: 2/19/10 6:14:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 2/26/10 10:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.80	Not Detected	4.2	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	109	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS2

Lab ID#: 1002488A-02B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022619sim**	**Date of Collection: 2/19/10 6:14:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 2/26/10 10:04 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Tetrachloroethene	0.032	0.17	0.22	1.2
Trichloroethene	0.032	0.59	0.17	3.2
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Benzene	0.080	1.7	0.26	5.3
Toluene	0.032	13	0.12	50
Ethyl Benzene	0.032	2.1	0.14	9.3
m,p-Xylene	0.064	8.0	0.28	35
o-Xylene	0.032	2.4	0.14	10

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	109	70-130
4-Bromofluorobenzene	100	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS3

Lab ID#: 1002488A-03A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030108**	**Date of Collection: 2/19/10 5:15:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 3/1/10 12:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.79	Not Detected	4.1	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	100	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS3

Lab ID#: 1002488A-03B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030108sim**	**Date of Collection: 2/19/10 5:15:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 3/1/10 12:16 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Tetrachloroethene	0.032	0.034	0.21	0.23
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Benzene	0.079	0.20	0.25	0.65
Toluene	0.032	0.99	0.12	3.7
Ethyl Benzene	0.032	0.18	0.14	0.77
m,p-Xylene	0.063	0.82	0.27	3.6
o-Xylene	0.032	0.23	0.14	1.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	99	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS3-DUP

Lab ID#: 1002488A-04A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030109**	**Date of Collection: 2/19/10 5:15:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 3/1/10 01:13 PM**	

Compound	**Rpt. Limit (ppbv)**	**Amount (ppbv)**	**Rpt. Limit (ug/m3)**	**Amount (ug/m3)**
Naphthalene	0.79	Not Detected	4.1	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	96	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS3-DUP

Lab ID#: 1002488A-04B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030109sim**	**Date of Collection: 2/19/10 5:15:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 3/1/10 01:13 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.032	Not Detected	0.12	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.63	Not Detected
Tetrachloroethene	0.032	Not Detected	0.21	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Vinyl Chloride	0.016	Not Detected	0.040	Not Detected
Benzene	0.079	0.20	0.25	0.64
Toluene	0.032	1.0	0.12	3.9
Ethyl Benzene	0.032	0.18	0.14	0.79
m,p-Xylene	0.063	0.86	0.27	3.7
o-Xylene	0.032	0.24	0.14	1.0

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMBIENT

Lab ID#: 1002488A-05A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030110**	**Date of Collection: 2/19/10 4:55:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/1/10 02:00 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Naphthalene	0.80	Not Detected	4.2	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	96	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMBIENT

Lab ID#: 1002488A-05B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030110sim**	**Date of Collection: 2/19/10 4:55:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/1/10 02:00 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.032	Not Detected	0.13	Not Detected
trans-1,2-Dichloroethene	0.16	Not Detected	0.64	Not Detected
Tetrachloroethene	0.032	Not Detected	0.22	Not Detected
Trichloroethene	0.032	Not Detected	0.17	Not Detected
Vinyl Chloride	0.016	Not Detected	0.041	Not Detected
Benzene	0.080	0.18	0.26	0.56
Toluene	0.032	0.34	0.12	1.3
Ethyl Benzene	0.032	0.067	0.14	0.29
m,p-Xylene	0.064	0.22	0.28	0.98
o-Xylene	0.032	0.078	0.14	0.34

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002488A-06A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022606**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/26/10 12:56 PM**	

Compound	**Rpt. Limit (ppbv)**	**Amount (ppbv)**	**Rpt. Limit (ug/m3)**	**Amount (ug/m3)**
Naphthalene	0.50	Not Detected	2.6	Not Detected

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	96	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002488A-06B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022606sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/26/10 12:56 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
Toluene	0.020	Not Detected	0.075	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	104	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002488A-06C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030107**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/1/10 11:24 AM**	

Compound	**Rpt. Limit (ppbv)**	**Amount (ppbv)**	**Rpt. Limit (ug/m3)**	**Amount (ug/m3)**
Naphthalene	0.50	Not Detected	2.6	Not Detected

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	95	70-130
Toluene-d8	98	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002488A-06D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030107sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/1/10 11:24 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
cis-1,2-Dichloroethene	0.020	Not Detected	0.079	Not Detected
trans-1,2-Dichloroethene	0.10	Not Detected	0.40	Not Detected
Tetrachloroethene	0.020	Not Detected	0.14	Not Detected
Trichloroethene	0.020	Not Detected	0.11	Not Detected
Vinyl Chloride	0.010	Not Detected	0.026	Not Detected
Benzene	0.050	Not Detected	0.16	Not Detected
Toluene	0.020	Not Detected	0.075	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

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	99	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1002488A-07A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022604**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/26/10 11:02 AM**	

Compound	**%Recovery**
Naphthalene	87

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	101	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	104	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1002488A-07B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022604sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/26/10 11:02 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	114
trans-1,2-Dichloroethene	110
Tetrachloroethene	105
Trichloroethene	107
Vinyl Chloride	107
Benzene	115
Toluene	113
Ethyl Benzene	123
m,p-Xylene	128
o-Xylene	130

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	104	70-130
4-Bromofluorobenzene	106	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1002488A-07C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030102**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/1/10 07:35 AM**	

Compound	**%Recovery**
Naphthalene	88

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	97	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	101	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1002488A-07D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030102sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/1/10 07:35 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	80
trans-1,2-Dichloroethene	80
Tetrachloroethene	78
Trichloroethene	79
Vinyl Chloride	81
Benzene	78
Toluene	79
Ethyl Benzene	80
m,p-Xylene	80
o-Xylene	80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	98	70-130
Toluene-d8	100	70-130
4-Bromofluorobenzene	102	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002488A-08A

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022603**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/26/10 10:09 AM**	

Compound	**%Recovery**
Naphthalene	95

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	110	70-130
Toluene-d8	103	70-130
4-Bromofluorobenzene	110	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002488A-08B

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**s022603sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/26/10 10:09 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	106
trans-1,2-Dichloroethene	107
Tetrachloroethene	97
Trichloroethene	101
Vinyl Chloride	110
Benzene	107
Toluene	106
Ethyl Benzene	121
m,p-Xylene	129
o-Xylene	129

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	106	70-130
Toluene-d8	107	70-130
4-Bromofluorobenzene	109	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002488A-08C

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/1/10 08:16 AM**	

Compound	**%Recovery**
Naphthalene	98

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
1,2-Dichloroethane-d4	102	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	101	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002488A-08D

MODIFIED EPA METHOD TO-15 GC/MS SIM/FULL SCAN

File Name:	**e030103sim**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/1/10 08:16 AM**	

Compound	%Recovery
cis-1,2-Dichloroethene	95
trans-1,2-Dichloroethene	95
Tetrachloroethene	92
Trichloroethene	93
Vinyl Chloride	98
Benzene	91
Toluene	91
Ethyl Benzene	97
m,p-Xylene	97
o-Xylene	97

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
1,2-Dichloroethane-d4	103	70-130
Toluene-d8	101	70-130
4-Bromofluorobenzene	103	70-130

P & D ENVIRONMENTAL, INC.
55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

1002488

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0298 ~~RB~~	SNOW CLEANERS 2678 COOLIDGE AVE OAKLAND, CA

SAMPLED BY: (PRINTED AND SIGNATURE)
MICHAEL DESCHENES Michael Deschenes

	SAMPLE NUMBER	DATE	TIME	TYPE	INIT VACUUM	SAMPLE LOCATION canister #	FINAL VACUUM	NUMBER OF CONTAINERS	ANALYSIS(ES): PCE, TCE, DCE	Vinyl Chloride and Naph Hydrocarbons by TO-15	TPH-Gasoline by TO-3M	Standard Solvent by TO-15	PRESERVATIVE	REMARKS
01AB	CS1	2/19/10	1811	AIR	-29.5	21004	-6	1	X	X			None	Normal Turn Around
02AB	CS2	2/19/10	1814	AIR	-29.5	32120	-5	1	X	X			"	"
03AB	CS3	2/19/10	1715	AIR	-30	13674	-7	1	X	X			"	"
04AB	CS3-DUP	2/19/10	1715	AIR	-30	34258	-5	1	X	X			"	"
05AB	AMBIENT	2/19/10	1655	AIR	-30	3734	-6	1	X	X			"	"

FEDEX
CUSTODY SEAL INTACT?
Y N (NONE) TEMP N/A

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Michael Deschenes	2/23/10	1200	Lisa ATL 2/24/10 0905
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

TOTAL NO. OF SAMPLES (THIS SHIPMENT): 5
TOTAL NO. OF CONTAINERS (THIS SHIPMENT): 5
LABORATORY: AIR TOXICS
LABORATORY CONTACT: KYLE JAGADORI
LABORATORY PHONE NUMBER: (916) 985-1000
SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (✓)NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:

Air Toxics LTD.
Laboratory Services Since 1989

3/8/2010
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Snow Cleaners 2678 Coolidge Ave, Oakland
Project #: 0298
Workorder #: 1002488B

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 2/24/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

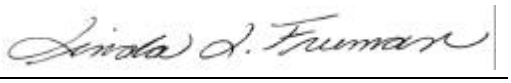
Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1002488B

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	**BILL TO:**	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	**P.O. #**	
FAX:	510-834-0772	**PROJECT #**	0298 Snow Cleaners 2678 Coolidge Ave, Oakland
DATE RECEIVED:	02/24/2010	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	03/08/2010		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	CS1	Modified TO-3	3.5 "Hg	5 psi
01AA	CS1 Lab Duplicate	Modified TO-3	3.5 "Hg	5 psi
02A	CS2	Modified TO-3	5.0 "Hg	5 psi
03A	CS3	Modified TO-3	4.5 "Hg	5 psi
04A	CS3-DUP	Modified TO-3	4.5 "Hg	5 psi
05A	AMBIENT	Modified TO-3	5.0 "Hg	5 psi
06A	Lab Blank	Modified TO-3	NA	NA
07A	LCS	Modified TO-3	NA	NA

CERTIFIED BY:  DATE: 03/08/10

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-3
P & D Environmental
Workorder# 1002488B

Five 6 Liter Summa Canister (SIM Certified) samples were received on February 24, 2010. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

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

Requirement	***TO-3***	***ATL Modifications***
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch </= 20 samples.
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.

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

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
MODIFIED EPA METHOD TO-3 GC/FID

Client Sample ID: CS1

Lab ID#: 1002488B-01A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.038	0.22	0.053	0.31

Client Sample ID: CS1 Lab Duplicate

Lab ID#: 1002488B-01AA

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.038	0.22	0.048	0.28

Client Sample ID: CS2

Lab ID#: 1002488B-02A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.040	0.23	0.051	0.30

Client Sample ID: CS3

Lab ID#: 1002488B-03A

No Detections Were Found.

Client Sample ID: CS3-DUP

Lab ID#: 1002488B-04A

No Detections Were Found.

Client Sample ID: AMBIENT

Lab ID#: 1002488B-05A

No Detections Were Found.

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS1

Lab ID#: 1002488B-01A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030311**	**Date of Collection: 2/19/10 6:11:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 3/3/10 06:46 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.038	0.22	0.053	0.31

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	104	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS1 Lab Duplicate

Lab ID#: 1002488B-01AA

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030316**	**Date of Collection: 2/19/10 6:11:00 PM**	
Dil. Factor:	**1.52**	**Date of Analysis: 3/3/10 10:46 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.038	0.22	0.048	0.28

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	103	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS2

Lab ID#: 1002488B-02A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030312**	**Date of Collection: 2/19/10 6:14:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/3/10 07:58 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.040	0.23	0.051	0.30

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	104	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS3

Lab ID#: 1002488B-03A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030313**	**Date of Collection: 2/19/10 5:15:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 3/3/10 08:46 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.040	0.23	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	104	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CS3-DUP

Lab ID#: 1002488B-04A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030314**	**Date of Collection: 2/19/10 5:15:00 PM**	
Dil. Factor:	**1.58**	**Date of Analysis: 3/3/10 09:19 PM**	

Compound	**Rpt. Limit (ppmv)**	**Rpt. Limit (ug/L)**	**Amount (ppmv)**	**Amount (ug/L)**
Stoddard Solvent	0.040	0.23	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	**%Recovery**	**Method Limits**
Fluorobenzene (FID)	102	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: AMBIENT

Lab ID#: 1002488B-05A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030315**	**Date of Collection: 2/19/10 4:55:00 PM**	
Dil. Factor:	**1.61**	**Date of Analysis: 3/3/10 09:52 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.040	0.23	Not Detected	Not Detected

Container Type: 6 Liter Summa Canister (SIM Certified)

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	103	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002488B-06A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030310**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/10 05:56 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.025	0.14	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	105	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002488B-07A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030307**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/3/10 03:10 PM**	

Compound	**%Recovery**
Stoddard Solvent	121

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Fluorobenzene (FID)	103	75-150

P & D ENVIRONMENTAL, INC.
55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

1002488

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0298 ~~RS~~	SNOW CLEANERS 2678 COOLIDGE AVE OAKLAND, CA

SAMPLED BY: (PRINTED AND SIGNATURE)
MICHAEL DESCHENES Michael Deschenes

	SAMPLE NUMBER	DATE	TIME	TYPE	INIT VACUUM	SAMPLE LOCATION	FINAL VACUUM	NUMBER OF CONTAINERS	ANALYSIS(ES): PCE, TCE, DCE, Vinyl Chloride and Naph. Analyzed by TO-15	TPH-Stoddard solvent by TO-3	PRESERVATIVE	REMARKS
01A	CS1	2/19/10	1811	AIR	-29.5	21004	-6	1	X	X	None	Normal Turn Around
02A	CS2	2/19/10	1814	AIR	-29.5	32120	-5	1	X	X	"	"
03A	CS3	2/19/10	1715	AIR	-30	13674	-7	1	X	X	"	"
04A	CS3-DUP	2/19/10	1715	AIR	-30	34258	-5	1	X	X	"	"
05A	AMBIENT	2/19/10	1655	AIR	-30	3734	-6	1	X	X	"	"

FEDEX
CUSTODY SEAL INTACT?
Y N NONE TEMP N/A

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Michael Deschenes	2/23/10	1200	Li Ji ATL 2/24/10 0905
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

TOTAL NO. OF SAMPLES (THIS SHIPMENT): 5
TOTAL NO. OF CONTAINERS (THIS SHIPMENT): 5
LABORATORY: AIR TOXICS
LABORATORY CONTACT: KYLE VAGADORI
LABORATORY PHONE NUMBER: (916) 985-1000
SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (✓)NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:

Air Toxics LTD.
Laboratory Services Since 1989

3/9/2010
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Snow Cleaners 2678 Coolidge Ave, Oakland
Project #: 0298
Workorder #: 1002489A

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 2/24/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1002489A

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	**BILL TO:**	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	**P.O. #**	
FAX:	510-834-0772	**PROJECT #**	0298 Snow Cleaners 2678 Coolidge Ave, Oakland
DATE RECEIVED:	02/24/2010	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	03/09/2010		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SG-19	Modified TO-15	6.2 "Hg	15 psi
02A	SG-20	Modified TO-15	5.8 "Hg	15 psi
03A	SG-21	Modified TO-15	4.8 "Hg	15 psi
04A	SG-21 DUP	Modified TO-15	5.0 "Hg	15 psi
05A	SG-22	Modified TO-15	4.0 "Hg	15 psi
06A	SG-23	Modified TO-15	21.4 "Hg	15 psi
07A	Lab Blank	Modified TO-15	NA	NA
07B	Lab Blank	Modified TO-15	NA	NA
08A	CCV	Modified TO-15	NA	NA
08B	CCV	Modified TO-15	NA	NA
09A	LCS	Modified TO-15	NA	NA
09B	LCS	Modified TO-15	NA	NA

CERTIFIED BY: Linda J. Fruman DATE: 03/09/10

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
P & D Environmental
Workorder# 1002489A

Six 1 Liter Summa Canister samples were received on February 24, 2010. The laboratory performed analysis via modified 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.

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***
Daily CCV	</= 30% Difference	</= 30% Difference; Compounds exceeding this criterion and associated data are flagged and narrated.
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
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

Sample SG-23 was placed on hold per the client's request.

Sample SG-23 was received with significant vacuum remaining in the canister. The residual canister vacuum resulted in elevated reporting limits.

Sample SG-23 was removed from "Hold" and placed on "Active" status per client request on 2/26/10.

Analytical Notes

Dilution was performed on sample SG-22 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.

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

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: SG-19

Lab ID#: 1002489A-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Tetrachloroethene	1.3	1.6	8.6	11
2-Propanol	5.1	11	12	28
Benzene	1.3	26	4.1	84
Toluene	1.3	300	4.8	1100
Ethyl Benzene	1.3	35	5.5	150
m,p-Xylene	1.3	160	5.5	700
o-Xylene	1.3	45	5.5	200

Client Sample ID: SG-20

Lab ID#: 1002489A-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Toluene	1.2	1.9	4.7	7.3

Client Sample ID: SG-21

Lab ID#: 1002489A-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.2	9.2	3.8	29
Toluene	1.2	260	4.5	990
Ethyl Benzene	1.2	17	5.2	74
m,p-Xylene	1.2	55	5.2	240
o-Xylene	1.2	14	5.2	60

Client Sample ID: SG-21 DUP

Lab ID#: 1002489A-04A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	1.2	8.5	3.9	27
Toluene	1.2	240	4.6	920
Ethyl Benzene	1.2	16	5.2	70
m,p-Xylene	1.2	51	5.2	220
o-Xylene	1.2	12	5.2	54

Air Toxics LTD.
Laboratory Services Since 1989

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

Client Sample ID: SG-22

Lab ID#: 1002489A-05A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	5.8	11	18	35
Toluene	5.8	6100 E	22	23000 E
Ethyl Benzene	5.8	380	25	1600
m,p-Xylene	5.8	920	25	4000
o-Xylene	5.8	170	25	760

Client Sample ID: SG-23

Lab ID#: 1002489A-06A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Benzene	3.5	10	11	34
Toluene	3.5	700	13	2600
Ethyl Benzene	3.5	40	15	180
m,p-Xylene	3.5	100	15	450
o-Xylene	3.5	28	15	120

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-19

Lab ID#: 1002489A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022715**	**Date of Collection: 2/19/10 12:49:00 PM**	
Dil. Factor:	**2.55**	**Date of Analysis: 2/27/10 05:14 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.3	Not Detected	3.2	Not Detected
cis-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
trans-1,2-Dichloroethene	1.3	Not Detected	5.0	Not Detected
Tetrachloroethene	1.3	1.6	8.6	11
Trichloroethene	1.3	Not Detected	6.8	Not Detected
2-Propanol	5.1	11	12	28
Benzene	1.3	26	4.1	84
Toluene	1.3	300	4.8	1100
Ethyl Benzene	1.3	35	5.5	150
m,p-Xylene	1.3	160	5.5	700
o-Xylene	1.3	45	5.5	200
Naphthalene	5.1	Not Detected	27	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	92	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-20

Lab ID#: 1002489A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022716**	**Date of Collection: 2/19/10 4:16:00 PM**	
Dil. Factor:	**2.50**	**Date of Analysis: 2/27/10 05:42 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.2	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	5.0	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	5.0	Not Detected
Tetrachloroethene	1.2	Not Detected	8.5	Not Detected
Trichloroethene	1.2	Not Detected	6.7	Not Detected
2-Propanol	5.0	Not Detected	12	Not Detected
Benzene	1.2	Not Detected	4.0	Not Detected
Toluene	1.2	1.9	4.7	7.3
Ethyl Benzene	1.2	Not Detected	5.4	Not Detected
m,p-Xylene	1.2	Not Detected	5.4	Not Detected
o-Xylene	1.2	Not Detected	5.4	Not Detected
Naphthalene	5.0	Not Detected	26	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	93	70-130
4-Bromofluorobenzene	96	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-21

Lab ID#: 1002489A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022717**	**Date of Collection: 2/19/10 3:57:00 PM**	
Dil. Factor:	**2.41**	**Date of Analysis: 2/27/10 06:29 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrachloroethene	1.2	Not Detected	8.2	Not Detected
Trichloroethene	1.2	Not Detected	6.5	Not Detected
2-Propanol	4.8	Not Detected	12	Not Detected
Benzene	1.2	9.2	3.8	29
Toluene	1.2	260	4.5	990
Ethyl Benzene	1.2	17	5.2	74
m,p-Xylene	1.2	55	5.2	240
o-Xylene	1.2	14	5.2	60
Naphthalene	4.8	Not Detected	25	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	97	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-21 DUP

Lab ID#: 1002489A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022718**	**Date of Collection: 2/19/10 3:57:00 PM**	
Dil. Factor:	**2.42**	**Date of Analysis: 2/27/10 06:54 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	1.2	Not Detected	3.1	Not Detected
cis-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
trans-1,2-Dichloroethene	1.2	Not Detected	4.8	Not Detected
Tetrachloroethene	1.2	Not Detected	8.2	Not Detected
Trichloroethene	1.2	Not Detected	6.5	Not Detected
2-Propanol	4.8	Not Detected	12	Not Detected
Benzene	1.2	8.5	3.9	27
Toluene	1.2	240	4.6	920
Ethyl Benzene	1.2	16	5.2	70
m,p-Xylene	1.2	51	5.2	220
o-Xylene	1.2	12	5.2	54
Naphthalene	4.8	Not Detected	25	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	104	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	96	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-22

Lab ID#: 1002489A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d030911**	**Date of Collection: 2/19/10 3:28:00 PM**	
Dil. Factor:	**11.6**	**Date of Analysis: 3/9/10 12:59 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	5.8	Not Detected	15	Not Detected
cis-1,2-Dichloroethene	5.8	Not Detected	23	Not Detected
trans-1,2-Dichloroethene	5.8	Not Detected	23	Not Detected
Tetrachloroethene	5.8	Not Detected	39	Not Detected
Trichloroethene	5.8	Not Detected	31	Not Detected
2-Propanol	23	Not Detected	57	Not Detected
Benzene	5.8	11	18	35
Toluene	5.8	6100 E	22	23000 E
Ethyl Benzene	5.8	380	25	1600
m,p-Xylene	5.8	920	25	4000
o-Xylene	5.8	170	25	760
Naphthalene	23	Not Detected	120	Not Detected

E = Exceeds instrument calibration range.

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	93	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-23

Lab ID#: 1002489A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d030910**	**Date of Collection: 2/19/10 3:16:00 PM**	
Dil. Factor:	**7.05**	**Date of Analysis: 3/9/10 12:35 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	3.5	Not Detected	9.0	Not Detected
cis-1,2-Dichloroethene	3.5	Not Detected	14	Not Detected
trans-1,2-Dichloroethene	3.5	Not Detected	14	Not Detected
Tetrachloroethene	3.5	Not Detected	24	Not Detected
Trichloroethene	3.5	Not Detected	19	Not Detected
2-Propanol	14	Not Detected	35	Not Detected
Benzene	3.5	10	11	34
Toluene	3.5	700	13	2600
Ethyl Benzene	3.5	40	15	180
m,p-Xylene	3.5	100	15	450
o-Xylene	3.5	28	15	120
Naphthalene	14	Not Detected	74	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	113	70-130
4-Bromofluorobenzene	93	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002489A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022707a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/27/10 12:02 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	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
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

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

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002489A-07B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d030909**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/9/10 11:38 AM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
Toluene	0.50	Not Detected	1.9	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
Naphthalene	2.0	Not Detected	10	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	92	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1002489A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022703a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/27/10 10:12 AM**	

Compound	%Recovery
Vinyl Chloride	97
cis-1,2-Dichloroethene	106
trans-1,2-Dichloroethene	102
Tetrachloroethene	108
Trichloroethene	102
2-Propanol	101
Benzene	104
Toluene	104
Ethyl Benzene	114
m,p-Xylene	118
o-Xylene	120
Naphthalene	110

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	96	70-130
4-Bromofluorobenzene	97	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: CCV

Lab ID#: 1002489A-08B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d030902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/9/10 08:08 AM**	

Compound	%Recovery
Vinyl Chloride	108
cis-1,2-Dichloroethene	103
trans-1,2-Dichloroethene	108
Tetrachloroethene	99
Trichloroethene	106
2-Propanol	108
Benzene	108
Toluene	106
Ethyl Benzene	102
m,p-Xylene	103
o-Xylene	102
Naphthalene	96

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	114	70-130
4-Bromofluorobenzene	92	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002489A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d022704a**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 2/27/10 10:29 AM**	

Compound	%Recovery
Vinyl Chloride	96
cis-1,2-Dichloroethene	103
trans-1,2-Dichloroethene	100
Tetrachloroethene	99
Trichloroethene	96
2-Propanol	96
Benzene	97
Toluene	93
Ethyl Benzene	106
m,p-Xylene	111
o-Xylene	112
Naphthalene	97

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	98	70-130

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002489A-09B

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**d030907**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/9/10 10:42 AM**	

Compound	%Recovery
Vinyl Chloride	70
cis-1,2-Dichloroethene	97
trans-1,2-Dichloroethene	102
Tetrachloroethene	96
Trichloroethene	103
2-Propanol	99
Benzene	103
Toluene	95
Ethyl Benzene	101
m,p-Xylene	100
o-Xylene	98
Naphthalene	80

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	112	70-130
4-Bromofluorobenzene	95	70-130

P & D ENVIRONMENTAL, INC.
55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

1002489

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0298 ~~-B1~~	SNOW CLEANERS 2678 COOLIDGE AVE OAKLAND, CA

SAMPLED BY: (PRINTED AND SIGNATURE)
MICHAEL DESCHENES Michael Deschenes

	SAMPLE NUMBER	DATE	TIME	TYPE	INIT VACUUM	SAMPLE LOCATION CANISTER#	FINAL VACUUM	NUMBER OF CONTAINERS	ANALYSIS(ES): PCE	TCE	DCE	Vinyl Chloride ext	Naphthalene by TO-15	TPH-Stoddard solvent by TO-3		PRESERVATIVE	REMARKS
01A	SG-19	2/19/10	124945	Soil/GAS	-29.5	34083	-5	1	X				X			None	Normal Turn Around
02A	SG-20	2/19/10	161655	Soil/GAS	-28	3048	-5	1	X				X			"	" " "
03A	SG-21	2/19/10	155738	Soil/GAS	-29	36503	-5	1	X				X			"	" " "
04A	SG-21 DUP	2/19/10	155738	Soil/GAS	-29	34092	-5	1	X				X			"	" " "
05A	SG-22	2/19/10	152850	Soil/GAS	-29	34653	-5	1	X				X			"	" " "
06A	SG-23	2/19/10	151600	Soil/GAS	-28	34120	-5	1	X				X			"	HOLD

FED EX

CUSTODY SEAL INTACT?
Y N NONE TEMP N/A

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
Michael Deschenes	2/23/10	1200	Li Li ATL 2/24/10 0905
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)

TOTAL NO. OF SAMPLES (THIS SHIPMENT): 6
TOTAL NO. OF CONTAINERS (THIS SHIPMENT): 6
LABORATORY: AIR TOXICS
LABORATORY CONTACT: KYLE VAGADORI
LABORATORY PHONE NUMBER: (916) 985-1000
SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( )YES (X)NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:
2-PROPANOL WAS OUR TRACER GAS

Air Toxics LTD.
Laboratory Services Since 1989

3/9/2010
Mr. Paul King
P & D Environmental
55 Santa Clara
Suite 240
Oakland CA 94610

Project Name: Snow Cleaners 2678 Coolidge Ave, Oakland
Project #: 0298
Workorder #: 1002489B

Dear Mr. Paul King

The following report includes the data for the above referenced project for sample(s) received on 2/24/2010 at Air Toxics Ltd.

The data and associated QC analyzed by Modified TO-3 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: Kyle Vagadori at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Kyle Vagadori

Project Manager

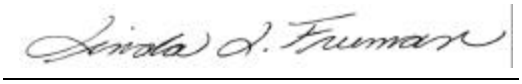
Air Toxics LTD.
Laboratory Services Since 1989

WORK ORDER #: 1002489B

Work Order Summary

CLIENT:	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610	**BILL TO:**	Mr. Paul King P & D Environmental 55 Santa Clara Suite 240 Oakland, CA 94610
PHONE:	510-658-6916	**P.O. #**	
FAX:	510-834-0772	**PROJECT #**	0298 Snow Cleaners 2678 Coolidge Ave, Oakland
DATE RECEIVED:	02/24/2010	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	03/09/2010		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	SG-19	Modified TO-3	6.2 "Hg	15 psi
02A	SG-20	Modified TO-3	5.8 "Hg	15 psi
03A	SG-21	Modified TO-3	4.8 "Hg	15 psi
03AA	SG-21 Lab Duplicate	Modified TO-3	4.8 "Hg	15 psi
04A	SG-21 DUP	Modified TO-3	5.0 "Hg	15 psi
05A	SG-22	Modified TO-3	4.0 "Hg	15 psi
06A	SG-23	Modified TO-3	21.4 "Hg	15 psi
06AA	SG-23 Lab Duplicate	Modified TO-3	21.4 "Hg	15 psi
07A	Lab Blank	Modified TO-3	NA	NA
07B	Lab Blank	Modified TO-3	NA	NA
08A	LCS	Modified TO-3	NA	NA
08B	LCS	Modified TO-3	NA	NA

CERTIFIED BY:  DATE: 03/09/10

Laboratory Director

Certfication numbers: CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763,
NY NELAP - 11291, UT NELAP - 9166389892, AZ Licensure AZ0719
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/09, Expiration date: 06/30/10
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-3
P & D Environmental
Workorder# 1002489B

Six 1 Liter Summa Canister samples were received on February 24, 2010. The laboratory performed analysis for volatile organic compounds in air via modified EPA Method TO-3 using gas chromatography with flame ionization detection. The method involves concentrating up to 200 mL of sample. The concentrated aliquot is then dry purged to remove water vapor prior to entering the chromatographic system.

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

Requirement	***TO-3***	***ATL Modifications***
Daily Calibration Standard Frequency	Prior to sample analysis and every 4 - 6 hrs	Prior to sample analysis and after the analytical batch </= 20 samples.
Initial Calibration Calculation	4-point calibration using a linear regression model	5-point calibration using average Response Factor
Initial Calibration Frequency	Weekly	When daily calibration standard recovery is outside 75 - 125 %, or upon significant changes to procedure or instrumentation
Moisture Control	Nafion system	Sorbent system
Minimum Detection Limit (MDL)	Calculated using the equation DL = A+3.3S, where A is intercept of calibration line and S is the standard deviation of at least 3 reps of low level standard	40 CFR Pt. 136 App. B
Preparation of Standards	Levels achieved through dilution of gas mixture	Levels achieved through loading various volumes of the gas mixture

Receiving Notes

Sample SG-23 was placed on hold per the client's request.

Sample SG-23 was removed from "Hold" and placed on "Active" status per client request on 2/26/10.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
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 detection limit.
M - Reported value may be biased due to apparent matrix interferences.

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

Air Toxics LTD.
Laboratory Services Since 1989

Summary of Detected Compounds
MODIFIED EPA METHOD TO-3 GC/FID

Client Sample ID: SG-19

Lab ID#: 1002489B-01A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.064	0.37	0.94	5.4

Client Sample ID: SG-20

Lab ID#: 1002489B-02A

No Detections Were Found.

Client Sample ID: SG-21

Lab ID#: 1002489B-03A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.060	0.35	0.69	4.0

Client Sample ID: SG-21 Lab Duplicate

Lab ID#: 1002489B-03AA

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.060	0.35	0.68	4.0

Client Sample ID: SG-21 DUP

Lab ID#: 1002489B-04A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.060	0.35	0.65	3.8

Client Sample ID: SG-22

Lab ID#: 1002489B-05A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.12	0.68	15	88

Client Sample ID: SG-23

Lab ID#: 1002489B-06A

Summary of Detected Compounds
MODIFIED EPA METHOD TO-3 GC/FID

Client Sample ID: SG-23

Lab ID#: 1002489B-06A

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.18	1.0	4.1	24

Client Sample ID: SG-23 Lab Duplicate

Lab ID#: 1002489B-06AA

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.18	1.0	4.3	25

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Client Sample ID: SG-19

Lab ID#: 1002489B-01A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030403**	**Date of Collection: 2/19/10 12:49:00 PM**	
Dil. Factor:	**2.55**	**Date of Analysis: 3/4/10 09:46 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.064	0.37	0.94	5.4

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	103	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-20

Lab ID#: 1002489B-02A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030404**	**Date of Collection: 2/19/10 4:16:00 PM**	
Dil. Factor:	**2.50**	**Date of Analysis: 3/4/10 10:19 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.062	0.36	Not Detected	Not Detected

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	103	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-21

Lab ID#: 1002489B-03A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030405**	**Date of Collection: 2/19/10 3:57:00 PM**	
Dil. Factor:	**2.40**	**Date of Analysis: 3/4/10 10:51 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.060	0.35	0.69	4.0

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	102	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-21 Lab Duplicate

Lab ID#: 1002489B-03AA

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030406**	**Date of Collection: 2/19/10 3:57:00 PM**	
Dil. Factor:	**2.40**	**Date of Analysis: 3/4/10 11:24 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.060	0.35	0.68	4.0

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	101	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-21 DUP

Lab ID#: 1002489B-04A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030407**	**Date of Collection: 2/19/10 3:57:00 PM**	
Dil. Factor:	**2.42**	**Date of Analysis: 3/4/10 12:04 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.060	0.35	0.65	3.8

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	101	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-22

Lab ID#: 1002489B-05A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030409**	**Date of Collection: 2/19/10 3:28:00 PM**	
Dil. Factor:	**4.66**	**Date of Analysis: 3/4/10 01:27 PM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.12	0.68	15	88

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	101	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-23

Lab ID#: 1002489B-06A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030903**	**Date of Collection: 2/19/10 3:16:00 PM**	
Dil. Factor:	**7.05**	**Date of Analysis: 3/9/10 10:10 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.18	1.0	4.1	24

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	98	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: SG-23 Lab Duplicate

Lab ID#: 1002489B-06AA

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030904**	**Date of Collection: 2/19/10 3:16:00 PM**	
Dil. Factor:	**7.05**	**Date of Analysis: 3/9/10 10:42 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.18	1.0	4.3	25

Container Type: 1 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	95	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002489B-07A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030402**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/4/10 09:03 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.025	0.14	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	110	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: Lab Blank

Lab ID#: 1002489B-07B

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030902**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/9/10 09:25 AM**	

Compound	Rpt. Limit (ppmv)	Rpt. Limit (ug/L)	Amount (ppmv)	Amount (ug/L)
Stoddard Solvent	0.025	0.14	Not Detected	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	98	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002489B-08A

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030410**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/4/10 02:01 PM**	

Compound	%Recovery
Stoddard Solvent	121

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Fluorobenzene (FID)	96	75-150

Air Toxics LTD.
Laboratory Services Since 1989

Client Sample ID: LCS

Lab ID#: 1002489B-08B

MODIFIED EPA METHOD TO-3 GC/FID

File Name:	**d030905**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 3/9/10 11:15 AM**	

Compound	**%Recovery**
Stoddard Solvent	104

Container Type: NA - Not Applicable

Surrogates	**%Recovery**	**Method Limits**
Fluorobenzene (FID)	102	75-150

P & D ENVIRONMENTAL, INC.

55 Santa Clara Ave, Suite 240
Oakland, CA 94610
(510) 658-6916

1002489

CHAIN OF CUSTODY RECORD

PAGE 1 OF 1

PROJECT NUMBER:	PROJECT NAME:
0298 ~~B~~	SNOW CLEANERS 2678 COOLIDGE AVE OAKLAND, CA

SAMPLED BY: (PRINTED AND SIGNATURE) MICHAEL DESCHENES Michael Deschenes

	SAMPLE NUMBER	DATE	TIME	TYPE	INIT. VACUUM	SAMPLE LOCATION	FINAL CANISTER # VACUUM	NUMBER OF CONTAINERS	ANALYSIS(ES): PCE, TCE, DCE, Vinyl Chloride w/ Modified 8260 by TO-15, TPH-Stoddard Solvent by TO-17	PRESERVATIVE	REMARKS
01A	SG-19	2/9/10	12:45	Soil Gas	-29.5	34083	-5	1	X X	None	Normal Turn Around
02A	SG-20	2/9/10	14:35	Soil Gas	-28	3048	-5	1	X X	"	" " "
03A	SG-21	2/9/10	15:37	Soil Gas	-29	36503	-5	1	X X	"	" " "
04A	SG21 DUP	2/9/10	15:37	Soil Gas	-29	34092	-5	1	X X	"	" " "
05A	SG-22	2/9/10	15:28	Soil Gas	-29	34653	-5	1	X X	"	" " "
06A	SG-23	2/9/10	15:16	Soil Gas	-29	34120	-24	1	X X	"	HOLD ⇐

FOR EK

CUSTODY SEAL INTACT?
Y N NONE TEMP N/A

RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	TOTAL NO. OF SAMPLES (THIS SHIPMENT)	LABORATORY:
Michael Deschenes	2/23/10	1200	Li Li ATL 2/24/10 0905	6	AIR TOXICS
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	TOTAL NO. OF CONTAINERS (THIS SHIPMENT) 6	LABORATORY CONTACT: KYLE VAGADORI
RELINQUISHED BY: (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY: (SIGNATURE)		LABORATORY PHONE NUMBER: (916) 985-1000
					SAMPLE ANALYSIS REQUEST SHEET ATTACHED: ( ) YES (X) NO

Results and billing to:
P&D Environmental, Inc.
lab@pdenviro.com

REMARKS:
2-PROPANOL WAS OUR TRACER GAS

APPENDIX D

HERD February 2009 Vapor Intrusion Risk and Hazard Spreadsheet Calculations

DATA ENTRY SHEET

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
71432	8.40E+01			Benzene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	8.40E+01	3.39E+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-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	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	137.4

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	8.40E+01	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	9.22E-04	7.74E-02

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
9.2E-07	2.5E-03

MESSAGE SUMMARY BELOW:

END

Report 0298.R8

DATA ENTRY SHEET

SG19 Toluene

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
108883	1.10E+03			Toluene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

SG19 Toluene

INTERMEDIATE CALCULATIONS SHEET

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	1.10E+03	3.39E+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-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	9,001	6.29E-03	2.58E-01	1.80E-04	6.79E-03	137.4

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	1.10E+03	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	1.01E+00

Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	3.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.2E-03

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
100414	1.50E+02			Ethylbenzene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

SG19 Ethylbenzene

INTERMEDIATE CALCULATIONS SHEET

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	1.50E+02	3.39E+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-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	9,994	7.43E-03	3.05E-01	1.80E-04	5.85E-03	137.4

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	1.50E+02	1.25	8.33E+01	5.85E-03	5.00E+03	2.36E+12	8.32E-04	1.25E-01

Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.5E-06	1.0E+00

END

RESULTS SHEET

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-07	1.2E-04

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
106423	7.00E+02			p-Xylene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

SG19 p-Xylene

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	7.00E+02	3.39E+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-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	10,083	7.22E-03	2.96E-01	1.80E-04	6.00E-03	137.4

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	7.00E+02	1.25	8.33E+01	6.00E-03	5.00E+03	1.17E+12	8.45E-04	5.92E-01

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	5.7E-03

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
95476	2.00E+02			o-Xylene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

SG19 o-Xylene

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	2.00E+02	3.39E+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-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	10,245	4.88E-03	2.00E-01	1.80E-04	6.79E-03	137.4

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	2.00E+02	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	1.83E-01

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

SG19 o-Xylene

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	1.8E-03

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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	1.10E+01			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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

INTERMEDIATE CALCULATIONS SHEET

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	1.10E+01	3.39E+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-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	1.74E-02	7.14E-01	1.80E-04	5.62E-03	137.4

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	1.10E+01	1.25	8.33E+01	5.62E-03	5.00E+03	7.73E+12	8.09E-04	8.90E-03

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

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
2.2E-08	2.4E-04

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
71432	3.50E+01			Benzene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, $\rho_b{}^A$ (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	3.50E+01	3.39E+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-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	7,977	5.29E-03	2.17E-01	1.80E-04	6.86E-03	137.4

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	3.50E+01	1.25	8.33E+01	6.86E-03	5.00E+03	3.50E+10	9.22E-04	3.23E-02

Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.9E-05	3.0E-02

END

RESULTS SHEET

SG22 Benzene

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
3.8E-07	1.0E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG22 Toluene

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
108883	2.30E+04			Toluene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	2.30E+04	3.39E+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-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	9,001	6.29E-03	2.58E-01	1.80E-04	6.79E-03	137.4

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	2.30E+04	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	2.10E+01

Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	3.0E-01

END

RESULTS SHEET

SG22 Toluene

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.7E-02

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG22 Ethylbenzene

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
100414	1.60E+03			Ethylbenzene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, $\rho_b{}^A$ (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	1.60E+03	3.39E+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-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	9,994	7.43E-03	3.05E-01	1.80E-04	5.85E-03	137.4

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	1.60E+03	1.25	8.33E+01	5.85E-03	5.00E+03	2.36E+12	8.32E-04	1.33E+00

Unit risk factor, URF ($\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
2.5E-06	1.0E+00

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
1.4E-06	1.3E-03

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG22 p-Xylene

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
106423	4.00E+03			p-Xylene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	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)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	4.00E+03	3.39E+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-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	10,083	7.22E-03	2.96E-01	1.80E-04	6.00E-03	137.4

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	4.00E+03	1.25	8.33E+01	6.00E-03	5.00E+03	1.17E+12	8.45E-04	3.38E+00

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

RESULTS SHEET

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	3.2E-02

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG22 o-Xylene

SG-SCREEN
?A Version 2.0; 04/

Reset to Defaults

DTSC
Vapor Intrusion Guidance
Interim Final 12/04
(last modified 2/4/09)

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
95476	7.60E+02			o-Xylene

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	152.4	24	SI		1.00E-08

Enter either a vadose zone SCS soil type OR a user-defined permeability.

MORE ↓

ENTER Vandose zone SCS soil type (Lookup Soil Parameters)	ENTER Vadose zone soil dry bulk density, $\rho_b{}^A$ (g/cm^3)	ENTER Vadose zone soil total porosity, n^V (unitless)	ENTER Vadose zone soil water-filled porosity, $\theta_w{}^V$ (cm^3/cm^3)	ENTER Average vapor flow rate into bldg. (Leave blank to calculate) Q_{soil} (L/m)
	1.5	0.43	0.15	5

MORE ↓

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)
70	30	30	350

END

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)
137.4	0.280	0.263	6.91E-09	0.833	ERROR	4,000	7.60E+02	3.39E+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-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	10,245	4.88E-03	2.00E-01	1.80E-04	6.79E-03	137.4

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	7.60E+02	1.25	8.33E+01	6.79E-03	5.00E+03	4.63E+10	9.15E-04	6.95E-01

Unit risk factor, URF $(\mu g/m^3)^{-1}$	Reference conc., RfC (mg/m^3)
NA	1.0E-01

END

INCREMENTAL RISK CALCULATIONS:

Incremental risk from vapor intrusion to indoor air, carcinogen (unitless)	Hazard quotient from vapor intrusion to indoor air, noncarcinogen (unitless)
NA	6.7E-03

MESSAGE SUMMARY BELOW:

END