# VAPOR INTRUSION INVESTIGATION REPORT

**Ron's Discount Energy Mart**
**2509 Philadelphia Pike**
**Claymont, Delaware**
**October 5, 2009**

**Facility ID# 3-000712**
**Project ID# N8811068**

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Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, Delaware

**QUALITY ASSURANCE/QUALITY CONTROL**

The following personnel have reviewed this report for accuracy, content and quality of presentation:

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## TABLE OF CONTENTS


**Page**

**1.0 INTRODUCTION ..... 1**

**2.0 SITE OVERVIEW ..... 1**

2.1 Site Description ..... 1

2.2 Adjacent Land Use ..... 2

2.3 Previous Site Activities ..... 2

**3.0 GEOLOGY AND HYDROGEOLOGY ..... 3**

**4.0 DISSOLVED HYDROCARBON PLUME STABILITY ..... 5**

**5.0 VAPOR INVESTIGATION APPROACH ..... 6**

5.1 ZONE 1 ..... 6

5.2 ZONE 2 ..... 6

5.3 ZONE 3 ..... 7

**6.0 VAPOR INVESTIGATION IMPLEMENTATION ..... 8**

6.1 Zone 1 – Soil Vapor Monitoring Point Installation ..... 8

6.2 Zone 2 - Soil Vapor Monitoring Point Installation ..... 9

6.3 Zones 1 and 2 - Soil Vapor Monitoring Point Sampling ..... 10

6.4 Zone 3 – Indoor Air Sampling ..... 12

6.4.1 Pre-Sampling Indoor Air Inspection ..... 12

6.4.2 May 2009 Indoor Air Sampling ..... 14

6.4.3 July 2009 - 10 Hillside Road Residence Inspection ..... 14

6.4.4 July 2009 Indoor Air Sampling ..... 15

6.5 Quality Assurance and Quality Control Procedures ..... 16

**7.0 VAPOR ANALYTICAL RESULTS ..... 16**

7.1 Zone 1 – SVMP Sample Results ..... 16

7.2 Zone 2 – SVMP Sample Results ..... 17

7.3 Zone 3 – Indoor Air Sample Results ..... 17

7.3.1 May 2009 Indoor Air Sample Results ..... 17

7.3.1.1 Indoor Air Sample Results – 9 Hillside Road ..... 18

7.3.1.2 Indoor Air Sample Results – 10 Hillside Road ..... 18

7.3.1.3 Indoor Air Sample Results – 11 Hillside Road ..... 19

7.3.1.4 Indoor Air Sample Results – 12 Hillside Road ..... 19




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7.3.2 July 2009 Indoor Air Sample Results ..... 19
7.3.2.1 Indoor Air Sample Results – 10 Hillside Road ..... 20
7.3.2.2 Indoor Air Sample Results – 11 Hillside Road ..... 20
**8.0 VAPOR INTRUSION HEALTH SCREENING EVALUATION .....20**
8.1 Vapor Intrusion Modeling and Risk Based Assessment ..... 21
8.1.1 Calculation of Site Specific Target Levels for Constituents of Concern - Modeling Results 21
8.1.2.1 Zone 1 SSTLs ..... 22
8.1.2.2 Zone 2 SSTLs ..... 22
8.2 Zone 3 Health Screening Evaluation ..... 22
**9.0 SUMMARY AND CONCLUSIONS .....23**
**10.0 RECOMMENDATIONS .....25**
**11.0 LIMITATIONS .....27**
**12.0 REFERENCES.....28**


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## LIST OF FIGURES AND TABLES


| | | |
|---|---|---|
| Figure 1 | - | Regional Area Map |
| Figure 2 | - | Area Map |
| Figure 3 | - | Groundwater Hydrocarbon Distribution/ Groundwater Contour Map (April 28, 2009) |
| Figure 4 | - | Site Conceptual Diagram |
| Table 1 | - | Groundwater Monitoring and Analytical Data |
| Table 2 | - | Historic Groundwater Analytical Data |
| Table 3 | - | Soil Vapor Field Monitoring Data |
| Table 4 | - | Zone 1 Soil Vapor Analytical Data |
| Table 5 | - | Zone 2 Soil Vapor Analytical Data |
| Table 6 | - | Zone 3 Indoor Air Analytical Data |
| Table 7 | - | Summary of J&E Model Input Assumptions |


## LIST OF APPENDICES


| | | |
|---|---|---|
| Appendix A | - | DNREC Correspondence |
| Appendix B | - | Boring and Construction Logs |
| Appendix C | - | Groundwater Trend Analysis |
| Appendix D | - | Photodocumentation |
| Appendix E | - | SIRB *Vapor Intrusion Policy* Attachment IV Forms (9 through 12 Hillside Road) |
| Appendix F | - | Lancaster Laboratories Analysis Report-Soil Vapor Data |
| Appendix G | - | Lancaster Laboratories Analysis Report- Indoor Air Data (May 13 & 14, 2009) |
| Appendix H | - | Lancaster Laboratories Analysis Report-Indoor Air Data (July 7 and 8, 2009) |
| Appendix I | - | Zone 1 EPA Vapor to Indoor Air Model Output |
| Appendix J | - | Zone 2 EPA Vapor to Indoor Air Model Output |



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# 1.0 INTRODUCTION

Kleinfelder has been contracted by the State of Delaware, Department of Natural Resources and Environmental Control (DNREC) Tank Management Branch (TMB) to perform a vapor intrusion investigation and human health risk assessment for the former service station referred to as Ron's Discount Energy Mart (Site) located at 2509 Philadelphia Pike in Claymont, Delaware. The DNREC goals for the vapor intrusion investigation were:

- Assess health hazards that may be associated with petroleum vapor migration into future structures associated with the proposed redevelopment within the boundaries of the Site, and provide recommendations for vapor mitigation if health-based standards for indoor air are exceeded.

- Assess the potential for petroleum vapor migration into off-site residences along Hillside Road, and if appropriate, provide recommendations for vapor mitigation if health-based standards for indoor air are exceeded.

Kleinfelder has completed the investigation in general accordance with the guidelines of the DNREC Tank Management Branch (TMB) and the DNREC Site Investigation and Restoration Branch (SIRB) March 2007 *Policy Concerning the Investigation, Risk Determination and Remediation for the Vapor Intrusion Pathway*. The activities were completed as proposed in the January 23, 2009 *Proposal for Vapor Intrusion Investigation* and approved by DNREC-TMB in a letter dated February 13, 2009 (**Appendix A**). The activities included the installation and sampling of 16 soil vapor monitoring points (SVMPs), indoor air sampling of four residences, one round of groundwater sampling of the site monitoring wells, and preparation of this report.

# 2.0 SITE OVERVIEW

## 2.1 Site Description

Ron's Discount Energy Mart is a former service station (Penny Hill Mobil) located in a commercial area at the intersection of Philadelphia Pike and Riverview Avenue (**Figure 1**). The Site is currently leased and operated as an automotive repair business. The Site consists of a 0.35 acre parcel of land located in a commercial and residential zoned area and is situated at an approximate elevation of 91 feet above mean sea level.


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Located on the Site is a 1,521 square foot, one story, cinder block building with slab on grade construction which contains one service repair bay and the automotive repair facility and a canopy. The underground storage tanks (USTs) at the Site were removed in 1993 and the USTs were reportedly located in the northeast portion of the Site. The area in the vicinity of the Site along Philadelphia Pike is slated for redevelopment. At this time, the nature of the redevelopment of the Site and vicinity, if any, is not known.

### 2.2 Adjacent Land Use

Land use in the vicinity of the Site consists of mixed commercial and residential properties. The area to the east/southeast of the Site consists of single family residential homes with basements along Hillside Road. There is a steep downward slope of approximately 60 feet in elevation to the east/southeast of the Site down Hillside Road towards the Delaware River (**Figure 1**). To the north of the Site across Riverview Avenue is a restaurant, to the northwest and west of the Site are residential properties, adjacent to the southwest side of the Site is a former hardware store. An area map is provided as **Figure 2**.

### 2.3 Previous Site Activities

Based on a review of available DNREC files, the following is a summary of environmental activities performed at the Site:

- In November 1988, several residences along Hillside Road complained of petroleum vapors in their basements. The origin of the vapors was traced to the sanitary sewer line by DNREC – TMB. The vapor source was identified as a petroleum release from the UST system at Ron's Discount Energy Mart.

- In response to the detection of vapors, DNREC –TMB assumed control of the Ron's Discount Energy Mart project and extensive investigation and remedial actions were conducted. The investigations have included indoor air surveys using hand held volatile organic carbon (VOC) meters, test pits, geophysical surveys, monitoring well installation, soil and groundwater sampling, and soil vapor surveys.

- The remedial actions have included redirection of groundwater and mitigation of vapor intrusion into the residences at 10, 11, and 12 Hillside Road. Depth to groundwater in the area of these residences is approximately 4 feet below grade and is at or above the level of the basements.


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- The vapor mitigation efforts at 10 Hillside Road included the installation of perforated pipe in a groundwater interceptor trench upslope of the basement. The perforated pipe connects to the sanitary sewer so that vapors captured in the pipe are passively vented to the atmosphere. Also, cracks in the basement walls and floor were sealed and a trap was installed in the basement floor drain.

- Mitigation at 11 Hillside Road included enclosing the French drain system and sump in the basement, passively venting vapors captured in the piping to the atmosphere, and repairing and sealing the basement floor.

- A subsurface drainage system was installed at 12 Hillside Road to mitigate a groundwater seep in the driveway and intercepted groundwater is diverted to the backfill of the sanitary sewer trench below Hillside Road.

- In August 2005, the injection of oxygen releasing compound (ORC) was completed in the upper section of Hillside Road to enhance biodegradation of the dissolved phase hydrocarbon plume.

## 3.0 GEOLOGY AND HYDROGEOLOGY

The Site is located on the United States Geological Survey (USGS) Marcus Hook, Delaware topographic quadrangle map at 39 degrees 47 minutes 33.75 seconds N latitude and 75 degrees 28 minutes 12.05 seconds W longitude (NAD88) at an approximate elevation of 91 feet (NAVD88) in New Castle County, Delaware.

The City of Claymont, New Castle County, Delaware is located within the Piedmont Physiographic Province. Based on a review of the Delaware Geological Survey (DGS) 2007 Geologic Map of New Castle County, Delaware the area is underlain by the Wilmington Complex. Subsurface materials in this formation generally consist of crystalline bedrock overlain by fluvial sedimentary deposits. The bedrock in the area of the Site is classified as meta-igneous Noritic anorthosite with a geologic contact with Norite located approximately 500 feet southeast of the Site.


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The following generalized interpretation of the area geology is based upon data obtained as part of previous investigations as well as this investigation. The interpretation is only based upon readily available data collected up to the timeframe of this investigation, is for use as guidance in relation to this investigation only, is one of a number of possible interpretations, and is not to be considered conclusive.

The subsurface materials encountered during subsurface investigation at the Site included interbedded brown silt and silty clay to depths of approximately 8 feet below grade with brown to tan sand from 8 to 16 feet below grade underlain by clay from approximately 17 to 25 feet below grade (**Appendix B**). According to the logs the lower clay unit was not encountered in the off-site monitoring wells with exception of HR-4 which indicates clay from grade to 6 feet, sand from 6 feet to 14 feet, and clay from 14 to the termination depth of the boring at 16 feet.

The surficial groundwater at the Site appears to exist as a partially confined aquifer within the unconsolidated sedimentary sandy material and appears to be bounded above by silty clay and below by clay. The off-site aquifer thickness is unknown as the lower confining unit was not encountered during off-site subsurface investigations except at the location of well HR-4.

Depths to groundwater in the on-site monitoring wells range from 15.2 feet to 17.4 feet below top of casing. The depth to groundwater decreases in the monitoring wells to the south/southeast along Hillside Road with depth to water as shallow as 2.6 feet below top of casing in well SMW-1 (**Table 1**). A review of the groundwater contour/hydrocarbon distribution map (April 28, 2009) indicates that the apparent groundwater flow direction is toward the southeast under a hydraulic gradient of 0.055 foot/foot (ft/ft) between monitoring wells MW-2 and HR-6 (**Figure 2**).

The investigation was completed in such a manner as to address the variability of subsurface hydrogeology in the area of the Site and off-site study area. The significant topographic elevation changes and the variable depth to groundwater created unique challenges for a standard vapor investigative approach. As detailed further in *Section 5.0,* the investigation work plan was designed to address these conditions.


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## 4.0 DISSOLVED HYDROCARBON PLUME STABILITY

There are three on-site and six off-site monitoring wells associated with the Site and these wells have been sampled regularly since June 1999. The last two years of groundwater analytical data was provided by DNREC-TMB and is summarized in **Table 2**. A review of **Table 2** indicates that the primary detected constituents of concern have been benzene, ethylbenzene, naphthalene, and methyl tertiary butyl ether (MTBE).

A time-series evaluation of the natural log of benzene and MTBE concentrations was completed for select monitoring wells to evaluate dissolved phase hydrocarbon plume stability using the methods presented in McAllister and Chaing (1994), "*A Practical Approach To Evaluating Natural Attenuation of Contaminants In Ground Water: Ground Water Monitoring Review*". Generally slopes of natural log concentrations that fall between +0.002 and -0.002 are indicative of stable plume characteristics, slopes less than -0.002 are indicative of decreasing plume characteristics, and slopes greater than 0.002 are indicative of increasing plume characteristics. Trend analysis was not completed for monitoring well MW-1 due to the lack of consistent detections of the constituents of concern above the laboratory detection limits. The trend analysis for each well is depicted graphically in **Appendix C**.

A review of the trend analysis indicates decreasing trends in benzene concentrations in monitoring wells HR-1, HR-2, HR-4, HR-5, HR-6, HR-7, and MW-2 with linear trend line slopes ranging from -0.0104 (HR-6) to -0.0815 (HR-2). A review of the April 2009 groundwater analytical data indicates that benzene concentrations range from below the laboratory reporting limits to 150 micrograms per liter (µg/L) in monitoring well HR-4.

A review of the trend analysis indicates decreasing trends in MTBE concentrations in monitoring wells HR-1, HR-2, HR-4, HR-6, HR-7, and MW-2 with linear trend line slopes ranging from -0.0049 (HR-6) to -0.0766 (HR-1). A review of the trend analysis indicates a slight increasing trend in MTBE concentrations in monitoring well HR-5 with a linear trend line slope of 0.01. A review of the April 2009 groundwater analytical data indicates that MTBE concentrations range from below the laboratory reporting limits to 15 µg/L in monitoring well SWM-1.


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## 5.0 VAPOR INVESTIGATION APPROACH

Based on the goals of the investigation described above, review of the above site history, and hydrogeologic conditions, the study area for the vapor intrusion investigation was divided into three zones.

| ***Investigation Summary*** | | | | |
|---|---|---|---|---|
| ***Zone*** | ***Area*** | ***Conceptual Site Model*** | ***Risk Scenario*** | ***Proposed Scope of Work*** |
| *1* | *Site* | *Future Vapor Intrusion* | *Commercial* | *Soil Vapor Investigation* |
| *2* | *2-8 Hillside Road* | *Vapor Intrusion* | *Residential* | *Soil Vapor Investigation* |
| *3* | *9-12 Hillside Road* | *Groundwater Intrusion / Preferential Pathway* | *Residential* | *Indoor Air Sampling* |

The delineation between the Zones is depicted on **Figure 2** and a conceptual diagram is included as **Figure 4** depicting the northern side of Hillside Road and the hydrogeologic constraint leading to the division of the study area into zones.

### 5.1 ZONE 1

Zone 1 is designated as the Site. The depth to groundwater at the Site is 16 feet below grade and soil vapor analytical data was used to evaluate the risk of vapor intrusion for future development. The objectives of the investigation activities in Zone 1 are to provide an initial assessment of the extent and magnitude of soil vapor conditions around the Site and enable periodic monitoring of soil vapor concentrations at these locations.

### 5.2 ZONE 2

Zone 2 is comprised of the seven homes located at the upper end of Hillside Road (2-8 Hillside Road) and is topographically and hydraulically downgradient of Zone 1. The properties in Zone 2 consist primarily of brick, two story, homes with basements and attached garages.


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In Zone 2, the depth to groundwater decreases down Hillside Road from 16 to eight feet below grade and soil vapor data from locations adjacent to the residences was used to evaluate the risk of vapor intrusion. The objectives of the investigation activities in Zone 2 are to provide an initial assessment of the extent and magnitude soil vapor conditions around the foundations of the residences and enable periodic monitoring of soil vapor conditions at these locations.

### 5.3 ZONE 3

Zone 3 is comprised of the four homes located at Numbers 9 through 12 Hillside Road and is topographically and hydraulically downgradient of Zone 2. The properties in Zone 3 consist primarily of brick, two story, homes with basements and attached garages similar to the construction of the homes in Zone 2. The residents in Zone 3 have a history of petroleum odor complaints and the last reported complaint of odors was in November 2004 at 10 Hillside Road. Engineering controls to redirect groundwater and passively vent vapors were installed at 10 and 11 Hillside Road in 1989. The depth to groundwater at these residences is approximately 4 feet below grade. Prior to mitigation efforts by DNREC – TMB, groundwater seeps were documented in the basement of 11 Hillside Road and the driveway of 12 Hillside Road. Based on these groundwater conditions, soil vapor sampling adjacent to the basement or sub slab soil vapor sampling was not considered appropriate for the present investigation.

Since the use of soil vapor sampling was not considered appropriate for Zone 3, screening of vapor intrusion risk was completed using the groundwater analytical data from monitoring well HR-4, which is located adjacent to 10 Hillside Road. The highest detected concentration of benzene recorded at HR-4, 0.27 milligrams per liter (mg/L), was multiplied by the Henry's Law Constant and a slab attenuation factor of 0.001 to estimate the benzene concentration in indoor air. Based on this calculation, the estimated concentration of benzene in indoor air could be as high as 0.61 milligrams per cubic meter (mg/m3), which yields an incremental risk that exceeds the DNREC guideline of $1 \times 10^{-5}$. The attenuation factor of 0.001 was obtained from (Sager et al. 1997).


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## 6.0 VAPOR INVESTIGATION IMPLEMENTATION

### 6.1 Zone 1 – Soil Vapor Monitoring Point Installation

On May 11, 2009, Kleinfelder supervised the installation of four SVMPs (SVMP-1 through SVMP-4) at the Site. The monitoring points were installed by Enviroprobe, Inc. of Collingswood, New Jersey (Enviroprobe) using a direct push rig. The SVMP locations are depicted on **Figure 2** and copies of the boring logs and SVMP construction diagrams are included in **Appendix B**.

Prior to the advancement of the SVMPs, Kleinfelder supervised the location and marking of private utilities at ground surface by Enviroprobe. Each SVMP location was advanced using a direct push rig and soil samples were collected continuously using a macrocore sampler to approximately 16 feet below grade.

The soil samples collected from the macrocore sampler were examined for lithology and field screened at two foot intervals for VOCs using a calibrated photo-ionization detector (PID). The PID readings are provided on the boring logs included as **Appendix B**. In general, the highest PID readings measured in the soil borings from Zone 1 were identified at the groundwater interface (14 to 16 feet) with PID readings ranging from 5 to 236 parts per million (ppm). Elevated PID readings (102 to 468 ppm) were measured in shallow soils (0-3 feet) collected from SVMP-2. The soil samples collected during boring advancement were not submitted for laboratory analysis. Following advancement, the boreholes were abandoned using hydrated granular bentonite and completed to match existing surface completion.

Approximately one foot from each abandoned location, a second boring was completed to a depth of approximately 8 feet for installation of the SVMP. When the planned depth was reached, a 6-inch length of stainless steel screen connected to flexible Teflon tubing was lowered to the bottom of the borehole through the center of the drilling rods. As the probe rods were removed from the borehole, the annulus around the screen and a 1.5-foot interval above the screen was backfilled with a FilPro #2 graded sand, followed by a 5-foot interval of hydrated bentonite pellets placed on top of the sand. Concrete grout was then placed on top of the bentonite and the SVMPs were completed with a 5-inch diameter flush mount curb-box set in cement.


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### 6.2 Zone 2 - Soil Vapor Monitoring Point Installation

On May 11 and May 12, 2009, Kleinfelder supervised the installation of 12 soil vapor monitoring points (SVMPs) (SVMP-5 through SVMP-16) on residential properties (Number 2 and Numbers 4 through 8 Hillside Road) in Zone 2 downgradient of Zone 1 along Hillside Road. Soil vapor monitoring points were not installed at 3 Hillside Road as no response was received from the property owner to Kleinfelder's written requests for property access. The SVMPs were installed by Enviroprobe using a direct push rig. The SVMP locations are presented on **Figure 2** and copies of the boring logs and SVMP construction diagrams are included in **Appendix B**.

Prior to the advancement of the SVMPs, Kleinfelder supervised the location and marking of private utilities at ground surface by Enviroprobe. A steel vent line was identified at 8 Hillside Road that extended toward the driveway. Therefore, the driveway was scanned with ground penetrating radar (GPR) and an anomaly indicative of a UST was identified. After clearing the area for underground utilities, each SVMP location was advanced using a direct push rig and soil samples were collected continuously using a macrocore sampler to approximately 8 feet below grade.

The soil samples collected during drilling were examined for lithology and field screened at two foot intervals for VOCs using a calibrated PID. The PID readings are presented on the boring logs included as **Appendix B**. In general, the highest PID readings measured in the soil borings from Zone 2 were observed at a depth of 8 feet below grade with PID readings ranging from 0 to 3 ppm. The samples collected during boring advancement were not submitted for laboratory analysis.

Following advancement of each SVMP location (SVMP-5 through SVMP-16), a 6-inch length of stainless steel screen connected to flexible Teflon tubing was lowered to the bottom of the borehole through the center of the drilling rods. As the probe rods were removed from the borehole, the annulus around the screen and a 1.5-foot interval above the screen was backfilled with a FilPro #2 graded sand, followed by a 5 foot interval of hydrated bentonite pellets placed on top of the sand. Concrete grout was then placed on top of the bentonite and the SVMPs were completed with a 5-inch diameter flush mount curb-box set in cement.


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### 6.3 Zones 1 and 2 - Soil Vapor Monitoring Point Sampling

On May 19 and 20, 2009, Kleinfelder completed sampling of the SVMPs located in Zones 1 and 2. During sampling the location of each SVMP was horizontally located using a Trimble GeoXH Global Positioning System (GPS). The locations of the SVMPs are presented on **Figure 2**.

Before collecting soil vapor samples, each SVMP was checked for leaks using a helium tracer system. The helium tracer system involves the creation of an artificial atmosphere of helium around the SVMP. The helium concentration within the artificial atmosphere is then measured and recorded. The SVMPs are then purged of approximately three times the volume of each SVMP using a calibrated air sampling pump at a rate of approximate 200 milliliters per minute (mL/min). During purging of each SVMP, an airbag sample is collected and field screened for VOCs, hydrogen sulfide, oxygen, carbon dioxide, carbon monoxide, helium, and lower explosive limit (**Table 3**). The helium concentration from within the air-bag sample is compared to the measured concentration of helium within the artificial atmosphere to ensure that the potential for sample cross-contamination or dilution is minimized.

According to Interstate Technology Regulatory Council (ITRC) *Vapor Intrusion Pathway: A Practical Guide* 2007, a breakthrough of less than 10% helium in screened samples is considered acceptable for sample collection for laboratory submission. The results of the helium tracer testing indicates that between 0% and 0.5% breakthrough of helium was observed in the samples. The SVMP samples were collected using six-liter SUMMA canisters with laboratory-calibrated flow controllers set to collect vapor samples at a rate of approximately 200 mL/min.


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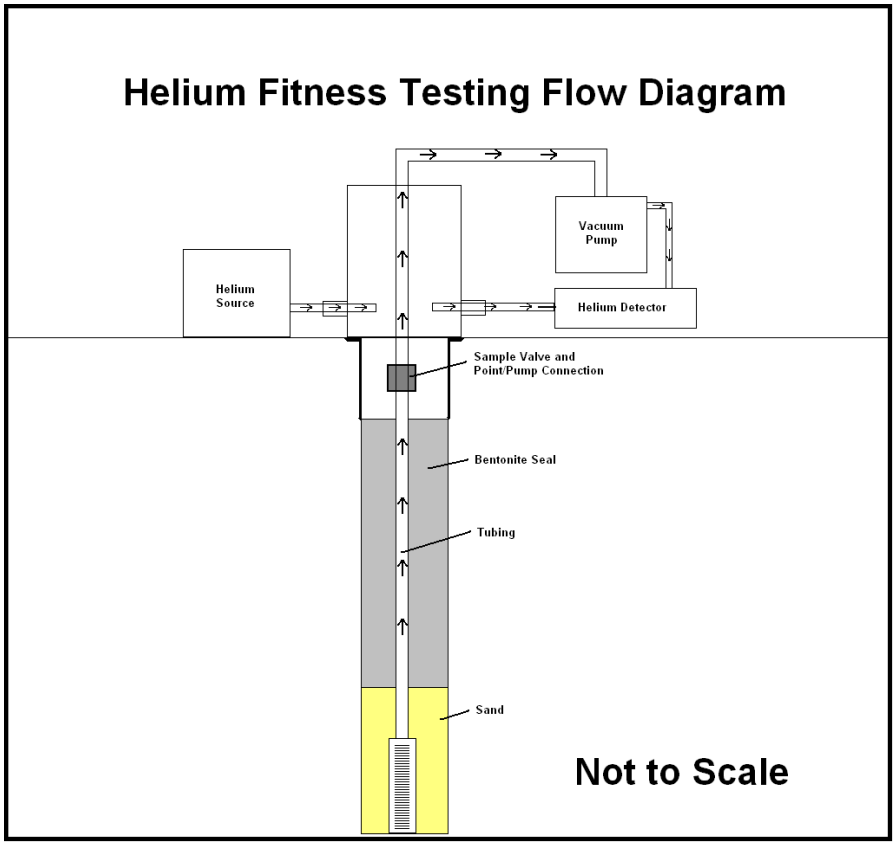
A flow diagram illustrating the helium tracer system is included below.




During SVMP sampling, ambient air samples were collected each day to provide background atmospheric concentrations of the constituents of concern against which the SVMP sampling results could be compared. On May 19 and 20, 2009, ambient air samples were collected from the facility and at 5 Hillside Road. The ambient air samples were collected using six-liter SUMMA canisters with laboratory-calibrated flow controllers calibrated to approximately 200 mL/min.

Following collection of the soil vapor and outdoor ambient air samples, the samples were submitted to Lancaster Laboratories via courier for analysis of VOCs using Environmental Protection Agency (EPA) Method TO-15 and for methane using EPA Method 3C.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## 6.4 Zone 3 – Indoor Air Sampling

Kleinfelder completed indoor air sampling of the residences located at Numbers 9, 10, 11, and 12 Hillside Road. The sampling was completed in general accordance with the DNREC-SIRB, *March 2007 Policy Concerning the Investigation, Risk Determination and Remediation for the Vapor Intrusion Pathway.*

### 6.4.1 Pre-Sampling Indoor Air Inspection

On May 11, 2009, Kleinfelder completed the pre-sampling inspection of residences located at Numbers 9, 10, 11, and 12 Hillside Road. As part of the inspection, the residents were interviewed for prior knowledge on potential sources of VOCs, photos were taken of the interiors of the first floors and basements of the residences (**Appendix D**), and an inventory was created of potential household sources of VOCs. The DNREC-SIRB *Vapor Intrusion Policy* Attachment IV forms were completed for each residence and are included as **Appendix E**. Notable observations from the pre-sampling inspections of the residences included the following:

- Sumps were observed in the basements of 9 and 12 Hillside Road; however, the sumps were sealed and could not be inspected.

- Floor drains were observed in 9, 10, and 11 Hillside Road. VOCs were detected during field screening of these floor drains using a PID and the readings ranged from 0.7 to 23 ppm.

- Heating oil above ground storage tanks (ASTs) were located in the basements of 9 and 11 Hillside Road.

- Photoinization detector readings in the basement of 9 Hillside Road indicated the potential presence of VOCs ranging from 83 parts per billion (ppb) to 217 ppb, readings were collected from areas near VOC sources identified during the inspection. A PID reading collected from the drain located near the eastern corner of the basement indicated VOCs at 511 ppb.


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- During the inspection of 10 Hillside Road, numerous household items were identified in the basement which appeared to be potential sources of VOCs. Items included in use oil based hobby paints, detergents, deodorizers, wood waxes and stains, acrylic latex paints, cleaners, bleach, lubricants, paint removers, rubber cement, fertilizer, pesticides, glaze, water softener, nail polish and non-acetone nail polish remover, and air fresheners. The PID readings in the basement of 10 Hillside Road ranged from 586 ppb to 1,200 ppb, readings were collected from areas near potential VOC sources identified during the inspection. A PID reading collected from the drain located near the washing machine indicated VOCs at 498 ppb.

- The perimeter of the basement floor in 11 Hillside Road was removed. The owner of the property was installing a drainage system to prevent water from getting into the basement. The PID readings in the basement ranged from 60 ppb to 730 ppb, readings were collected from areas near potential VOC sources identified during the inspection. A PID reading collected from the drain located behind the washing machine indicated VOCs at 23 ppm.

- A sub-slab drainage system consisting of a series of Terracotta pipes (3-4 inches in diameter) was exposed and observed in the basement of 11 Hillside Road. Water was observed in the pipes and the discharge point of these pipes is unknown. It is unknown if a similar sub-slab drainage system is present in the 9, 10, and 12 Hillside Road residences.

- During the inspection of 12 Hillside Road, the indoor use of tobacco smoking products was noted.

- Pipes of unknown origin and discharge were unearthed in the backyard of 11 Hillside Road. Inspection by Kleinfelder personnel confirmed that the pipes were transporting water downhill parallel to Hillside Road.


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### 6.4.2 May 2009 Indoor Air Sampling

On May 13 and 14, 2009, air samples were collected from the residences located at Numbers 9, 10, 11, and 12 Hillside Road. Prior to sampling, an inspection was completed near each sample location to ensure that sampling conditions were similar to those during the pre-sampling inspection. At 10 Hillside Road, numerous products known to contain VOCs were identified in the basement of the home during the pre-sampling inspection and the conditions were discussed with DNREC-TMB. Following discussion of the potential interference from background sources of VOCs at 10 Hillside Road, DNREC-TMB approved collecting the indoor air samples from the basement without removal of the identified products.

Three air samples were collected from each property with sample locations in each basement, on the first floor, and outdoors. The samples were collected over a 24 hour period using six-liter SUMMA canisters and flow controllers calibrated by the laboratory to approximately 12.5 mL/min.

The samples were collected from the breathing zone inside the homes at approximately 3 to 5 feet above the floor and placed on anchored shelving outdoors at approximately 5 feet above grade. The outdoor samples were collected to provide ambient atmospheric concentrations of the constituents of concern against which indoor air sampling results could be compared.

Following sample collection, the SUMMAs were submitted to Lancaster Laboratories via courier for analysis of VOCs using EPA Method TO-15 and for methane using EPA Method 3C.

### 6.4.3 July 2009 - 10 Hillside Road Residence Inspection

The May 2009 indoor air sampling laboratory results from 10 Hillside Road indicated that VOCs were detected above the laboratory detection limits which may have been attributable to storage of paints and household chemicals in the basement. Due to these detections, DNREC-TMB authorized Kleinfelder to complete a second sampling event following removal of the paints and household chemicals from the basement.


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On July 2, 2009, Kleinfelder assisted the owners of 10 Hillside Road with the identification and removal of products identified during the initial pre-sampling survey which could potentially release VOCs and interfere with the indoor air sampling. The identified products were removed from the basement with resident assistance and relocated, outside the breathing and regular occupancy areas to the attached garage.

Products removed from the basement included detergents, deodorizers, wood waxes and stains, acrylic latex paints, cleaners, bleach, lubricants, paint removers, rubber cement, fertilizer, pesticides, glaze, water softener, nail polish and non-acetone nail polish remover, air fresheners, and oil based paints.

#### 6.4.4 July 2009 Indoor Air Sampling

On July 7 and 8, 2009, indoor air samples were collected from the residences located at 10 and 11 Hillside Road. Samples were collected from 10 Hillside Road for the reasons stated above. The owner of 11 Hillside Road requested the collection of a second round of air samples and the DNREC-TMB authorized this request. Prior to sampling, an inspection was completed near each sample location to ensure that sampling conditions were similar to those observed during the pre-sampling inspections of 10 and 11 Hillside Road performed in July and May 2009; respectively.

Three air samples were collected from each property with sample locations in each basement, on the first floor, and outdoors. The samples were collected over a 24-hour period using six-liter SUMMA canisters and flow controllers calibrated by the laboratory to approximately 12.5 mL/min.

The samples were collected from breathing elevations inside the homes at approximately 3 to 5 feet in height and placed on anchored shelving outdoors at approximately 5 feet above grade. The outdoor samples were collected to provide ambient atmospheric concentrations of the constituents of concern against which indoor air sampling results could be compared.

Following sample collection the SUMMA canisters were submitted to Lancaster Laboratories via courier for analysis of VOCs using EPA Method TO-15 and for methane using EPA Method 3C.


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### 6.5 Quality Assurance and Quality Control Procedures

During fieldwork, quality assurance and quality control (QA/QC) procedures were followed to maintain the integrity of the samples. Ambient air samples were collected during each phase of vapor sampling and SIRB sampling procedures and forms were utilized to identify potential sources of background VOCs. A field-based helium leak testing system was used to evaluate potential leaks in the soil vapor sample collection system. Chain-of-custody protocols were utilized for sample integrity between the sampler, courier, and laboratory.

## 7.0 VAPOR ANALYTICAL RESULTS

### 7.1 Zone 1 – SVMP Sample Results

On May 19, 2009, Kleinfelder completed sampling of the SVMPs (SVMP-1 through 4) located in Zone 1 according to the procedure summarized in *Section 6.3*. The locations of the SVMPs are presented on **Figure 2**. The SVMP field screening data is summarized in **Table 3** and the soil vapor analytical data is summarized in **Table 4**. The Lancaster Laboratories Analysis Report is included in **Appendix F**.

A review of **Table 3** indicates concentrations of carbon dioxide were over-range (>20,000 ppm) and concentrations of oxygen were less than 10%. The PID field screening results indicate that VOCs were detected at concentrations ranging from 17.1 ppm (SVMP-2) to greater than 500 ppm (SVMP-1). Gasoline-related compounds, including benzene, ethylbenzene, 2,2,4-trimethylpentane, hexane, n-heptane, octane, and pentane were detected in some of the Zone 1 soil vapor samples. Hexane, n-heptane, and pentane were detected in all four SVMP air samples. Non-gasoline-related compounds, including acetone and carbon disulfide, were detected in the soil vapor samples. Acetone and pentane were detected in the outdoor ambient air sample collected from the Site on May 19, 2009. No other constituents of concern were detected in the outdoor or soil vapor samples collected from the SVMPs within Zone 1.


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## 7.2 Zone 2 – SVMP Sample Results

On May 19 and 20, 2009, Kleinfelder completed sampling of the SVMPs (SVMP-5 through 16) located in Zone 2 according to the procedure summarized in *Section 6.3*. The locations of the SVMPs are presented on **Figure 2**.

The SVMP field screening data is summarized in **Table 3** and the soil vapor analytical data is summarized in **Table 5**. The Lancaster Laboratories Analysis Report is included in **Appendix F**.

A review of **Table 3** indicates concentrations of carbon dioxide ranged from 15,000 ppm to overrange (>20,000 ppm) and concentrations of oxygen ranged from 14.3% to 19.6%. The PID field screening results indicates that VOCs were detected at concentrations ranging from 4.9 ppm (SVMP-11) to 228 ppm (SVMP-5). Gasoline-related compounds, including benzene, toluene, ethylbenzene, xylenes, isoproplybenzene, 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, 2,2,4-trimethylpentane, 4-ethyltoluene, hexane, n-heptane, octane, and pentane were detected in some of the Zone 2 soil vapor samples. Non-gasoline-related compounds, including acetone, acetonitrile, carbon disulfide, chlorodifluoromethane, chloroform, chloromethane, dichlorodifluoromethane, methylene chloride propylene, and trichlorofluoromethane were also detected in the Zone 2 soil vapor samples.

Acetone was detected in the ambient air sample collected from the Zone 2 on May 20, 2009. No other constituents of concern were detected in the outdoor or soil vapor samples collected from the SVMPs within Zone 2.

## 7.3 Zone 3 – Indoor Air Sample Results

### 7.3.1 May 2009 Indoor Air Sample Results

On May 13 and 14, 2009, indoor air samples were collected from the residences located at 9, 10, 11, and 12 Hillside Road. The indoor air analytical data is summarized in **Table 6**. The Lancaster Laboratories Analysis Report is included in **Appendix G**. Household products, which could potentially contribute background levels of VOCs and impact the sample results, were identified in each residence.


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As described in Section 6.4.2, upon discussion with the DNREC-TMB, the indoor air sampling was completed without relocation of any identified products to evaluate baseline conditions in each of the residences. A summary of the detected analytes in each residence is presented in the following sections.

#### 7.3.1.1 Indoor Air Sample Results – 9 Hillside Road

The detected analytes from the indoor air sampling event at 9 Hillside Road are summarized in **Table 6**. Gasoline-related compounds, including 1,2,4-trimethylbenzene, ethylbenzene, hexane, o-xylene, pentane, and toluene were detected in the basement air sample. Non-gasoline-related compounds, 2-butanone and acetone, were detected in the ambient and indoor air samples. Ethyl acetate was detected in the basement air sample, and propylene was detected in the basement and first floor air samples; however, these compounds are not considered to be gasoline-related. No other constituents of concern were detected in the May 2009 air samples collected from 9 Hillside Road.

#### 7.3.1.2 Indoor Air Sample Results – 10 Hillside Road

The detected analytes from the indoor air sampling event at 10 Hillside Road are summarized in **Table 6**. 1,2,4-Trimethylbenzene, a gasoline related compound, was detected in the sample collected from the basement. 1,2-Dichloroethane (EDC) was detected in the sample collected from the first floor. Gasoline-related compounds, including 2,2,4-trimethylpentane, benzene, ethylbenzene, hexane, n-heptane, octane, o-xylene, pentane, and toluene were detected in the first floor and basement air samples. Non-gasoline-related compounds, including acetone, dichloromethane, and ethyl acetate were also detected in the 10 Hillside Road indoor air samples. Acetone was also detected in the outdoor air sample and the presence of acetone in the air samples is considered to be from background VOC sources. No other constituents of concern were detected in the May 2009 air samples collected from 10 Hillside Road.


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#### 7.3.1.3 Indoor Air Sample Results – 11 Hillside Road

The detected analytes from the indoor air sampling event at 11 Hillside Road are summarized in **Table 6.** Gasoline-related compounds were not detected above the laboratory detection limits in the indoor air samples, however, non-gasoline-related compounds, including 2-butanone, acetone, and propylene, were detected in these samples. Acetone was detected in the first floor, basement, and outdoor air samples at 11 Hillside Road and the presence of acetone in the air samples is considered to be from background VOC sources. No other constituents of concern were detected in the May 2009 air samples collected from 11 Hillside Road.

#### 7.3.1.4 Indoor Air Sample Results – 12 Hillside Road

The detected analytes from the indoor air sampling event at 12 Hillside Road are summarized in **Table 6**. A review of the indoor air analytical data from 12 Hillside Road indicates that gasoline-related compounds were not detected above the laboratory detection limits with the exception of pentane. Pentane was detected in the first floor and basement samples at concentrations of 0.0033 milligrams per cubic meter ($mg/m^3$) and 0.0047 $mg/m^3$, respectively. Non-gasoline-related compounds, acetone and propylene, were detected in the air samples. Acetone was detected at similar concentrations in the first floor, basement, and outdoor air samples and the presence of acetone in the air samples is considered to be from background VOC sources. No other constituents of concern were detected in the May 2009 air samples collected from 12 Hillside Road.

### 7.3.2 July 2009 Indoor Air Sample Results

As presented previously, confirmation air samples were collected from the residences located at 10 and 11 Hillside Road on July 7 and 8, 2009. The indoor air analytical data is summarized in **Table 6**. A copy of the Lancaster Laboratories Analysis Report is attached as **Appendix H.**


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#### 7.3.2.1 Indoor Air Sample Results – 10 Hillside Road

The detected analytes from the indoor air sampling event at 10 Hillside Road are summarized in **Table 6**. Gasoline-related compounds, including 1,2,4-trimethylbenzene 1,3,5-trimethylbenzene 2,2,4-trimethylpentane, benzene, ethylbenzene, hexane, MTBE, n-heptane, octane, o-xylene, and pentane were detected in the basement air sample. Toluene, a gasoline-related compound and common component of household cleaning and maintenance products and some cosmetics, was detected in the first floor and basement samples. Non-gasoline related compounds, including acetone, chlorodifluoromethane, dichloromethane, ethyl acetate, and propylene were also detected in the 10 Hillside Road indoor air samples. Acetone and chlorodifluoromethane also were detected in the outdoor air sample and are considered to be from background VOC sources. No other constituents of concern were detected in the July 2009 air samples collected from 10 Hillside Road.

#### 7.3.2.2 Indoor Air Sample Results – 11 Hillside Road

A review of the indoor air analytical data from 11 Hillside Road indicates that gasoline-related compounds, including ethylbenzene and toluene, were detected above the laboratory detection limits. Non-gasoline-related compounds, including 2-butanone, acetone, chlorodifluoromethane and propylene, were detected in the indoor air samples. Acetone and chlorodifluoromethane also were detected in the outdoor air sample at 11 Hillside Road. No other constituents of concern were detected in the July 2009 air samples collected from 11 Hillside Road.

## 8.0 VAPOR INTRUSION HEALTH SCREENING EVALUATION

The data obtained from the vapor intrusion investigation was used to calculate site-specific target levels (SSTLs) and evaluate the vapor intrusion risk for each zone. The SSTLs for Zone 1 and 2 were calculated using the US EPA Johnson and Ettinger (J&E) model using the *User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings* (US EPA 2004). The indoor air data from Zone 3 was compared to the target indoor air concentrations listed in Table 2b of the 2002 U.S. EPA draft guidance document, *Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soil* (US EPA (2002)). The SSTLs for each constituent of concern were based on the DNREC target cancer risk of $1 \times 10^{-5}$ and a hazard quotient for non carcinogens of 1.0.


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## 8.1 Vapor Intrusion Modeling and Risk Based Assessment

The 1991 J&E model was used to calculate SSTLs for the vapor intrusion exposure pathway in Zones 1 and 2. The U.S. EPA "User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings," revised February 22, 2004 was followed for use of the J&E Model. Inputs for the J&E model were obtained from the January 2000 Delaware Risk-Based Corrective Action Program (DERBCAP) Guide for UST Sites, the US EPA Chemical Properties Table of Chemical Abstracts Service (CAS) property identifiers, and site specific vapor analytical and property data.

The J&E Model is a one-dimensional analytical solution to convective and diffusive vapor transport into indoor spaces and provides an estimated attenuation coefficient that relates the vapor concentration in the indoor space to the vapor concentration at the source. The model is constructed as both a steady-state solution to vapor transport (infinite or non-diminishing source) and as a quasi-steady-state solution (finite or diminishing source). Inputs to the model include chemical properties of the contaminant, saturated and unsaturated zone soil properties, and structural properties of the building.

For calculation of the SSTLS in Zone 1, the default parameters were used because future property conditions are unknown and the default parameters are conservative, health-protective values developed to result in overestimates of the actual health hazard. The J&E model input parameters for Zones 1 and 2 are summarized in **Table 7**.

### *8.1.1 Calculation of Site Specific Target Levels for Constituents of Concern - Modeling Results*

Site specific target levels for each zone were calculated using the J&E Model. The Zone 1 and Zone 2 model calculations are attached as **Appendices I** and **J**; respectively.


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#### 8.1.2.1 Zone 1 SSTLs

A quantitative risk assessment was performed for the Site using the available data and the J&E model to calculate SSTLs for comparison to soil vapor concentrations measured on-site. The existing Site structure is situated above an area where soil vapor concentrations and the risk to current commercial workers within and around the Site structure are below DNREC guidelines. However, concentrations of benzene detected in the soil vapor sample from SVMP-3 (160 $mg/m^3$), which is located approximately 55 feet east/southeast of the existing Site structure, yield an estimated cancer risk that exceeds DNREC guidelines. A summary of the Zone 1 concentrations compared to the SSTLs is provided in **Table 4** and copies of the model calculations are attached as **Appendix I**.

#### 8.1.2.2 Zone 2 SSTLs

A quantitative risk assessment was performed of the off-site conditions for residences located along Hillside Road in Zone 2 using the available data and the J&E model to calculate SSTLs for comparison to soil vapor concentrations measured within Zone 2. The assessment revealed that the soil vapor concentrations measured adjacent to the residences are lower than the calculated SSTLs indicating that the cancer risk that may be associated with migration of vapors into indoor air is below DNREC guidelines. A summary of the Zone 2 concentrations compared to the SSTLs is provided in **Table 5** and copies of the model calculations are attached as **Appendix J**.

### 8.2 Zone 3 Health Screening Evaluation

Indoor air concentrations of the target analytes were compared to generic indoor air screening levels provided in U.S. EPA (2002). The generic indoor air screening levels were based on a target cancer risk of $1 \times 10^{-5}$ and a target noncancer hazard quotient of 1.0. At Number 9 Hillside Road, 1,2,4-trimethylbenzene was measured at a concentration of 0.015 $mg/m^3$, which exceeds the generic indoor air screening level of 0.006 $mg/m^3$ based on a target hazard quotient of 1.0. No other target analyte was measured at a concentration greater than the corresponding generic screening level in indoor air samples from Number 9 Hillside Road.


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Based on the conclusion that indoor air analyses from Number 10 Hillside Road were confounded by paints and other volatile household chemicals stored by the homeowner, a second sampling event was completed in July 2009 following removal of the paints and household chemicals from the basement. Although, indoor air concentrations of several analytes were lower in the July 2009 samples as compared to the May 2009 samples, some analytes were present at concentrations that exceeded the generic indoor air screening levels provided in U.S. EPA (2002), including benzene, ethylbenzene, 1,2,4 trimethylbenzene, and dichloromethane (**Table 6**). At 10 Hillside Road analytes detected above the target concentrations included:

- Benzene at a concentration of 0.012 $mg/m^3$ in the sample collected from the basement, which is above the target concentration of 0.0031 $mg/m^3$;

- Ethylbenzene at a concentration of 0.028 $mg/m^3$ in the sample collected from the basement, which is above the target concentration of 0.022 $mg/m^3$;

- 1,2,4-Trimethylbenzene at a concentration of 0.015 $mg/m^3$ in the sample collected from the basement, which is above the target concentration of 0.0060 $mg/m^3$; and

- Dichloromethane at a concentration of 0.027 $mg/m^3$ in the sample collected from the basement, which is above the target concentration of 0.0240 $mg/m^3$. Dichloromethane is not considered to be a gasoline-related compound.
- There were no other detections of analytes above the prescribed target concentrations in the samples submitted from 10 Hillside Road.

There were no detections of analytes above the generic indoor air screening levels in the air samples submitted from 11 and 12 Hillside Road.

## 9.0 SUMMARY AND CONCLUSIONS

Kleinfelder has completed a vapor intrusion investigation and risk assessment at the Ron's Discount Energy Mart located at 2509 Philadelphia Pike, Claymont, Delaware. The activities completed included the installation and sampling of 16 soil vapor monitoring points, indoor air sampling of four residences, and preparation of this report.


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The results of the vapor investigation and risk assessment are summarized below:

- Four SMVPs were installed at the Site and soil vapor samples were collected for laboratory analysis. The assessment revealed that the soil vapor concentrations do not pose a vapor intrusion risk to the existing structure above DNREC guidelines. However, the concentrations of benzene detected in the soil vapor sample from SVMP-3 (160 $mg/m^3$) indicate a potential future risk for vapor intrusion in the eastern corner of the Site above DNREC guidelines.

- Twelve SVMPs were installed on six off-site residential properties and soil vapor samples were collected for laboratory analysis. The assessment revealed that the soil vapor concentrations detected adjacent to the residences are lower than the calculated SSTLs indicating that the risk of vapor intrusion into indoor air of the residences is below DNREC guidelines.

- Indoor air samples were collected from the basement, first floor, and outside of 9 Hillside Road in May 2009. In the basement air sample, 1,2,4-trimethylbenzene was detected (0.015 $mg/m^3$) slightly above the target indoor air concentration (0.0060 $mg/m^3$). There were no other detections of analytes above the prescribed target concentrations in the samples submitted from 9 Hillside Road.

- Indoor air samples were collected from the basements, first floor, and outside of 10 Hillside Road in May and July 2009. The May 2009 air sampling event indicated that the results may have been influenced by background VOC levels in the home. The readily apparent VOC products were removed from the basement of the home in July 2009 and a second set of air samples were collected. The July 2009 basement air samples indicated that benzene, ethylbenzene, 1,2,4 trimethylbenzene, and dichloromethane were detected above their respective target indoor air concentrations. There were no other detections of analytes above the prescribed target concentrations in the air samples submitted from 10 Hillside Road.

- Indoor air samples were collected from the basements, first floor, and outside of 11 Hillside Road in May and July 2009. There were no detections of analytes above the prescribed target concentrations in the air samples submitted from 11 Hillside Road.


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- Indoor air samples were collected from the basements, first floor, and outside of 12 Hillside Road in May 2009. There were no detections of analytes above the prescribed target concentrations in the air samples submitted from 12 Hillside Road.

## 10.0 RECOMMENDATIONS

Based on the results of the vapor intrusion health screening evaluation and subsequent conversations with DNREC-TMB, Kleinfelder recommends the following:

- In the case of future development, excavation, or construction in Zone 1, the property owner or developer should file a plan with DNREC-TMB regarding any planned change in Site conditions or usage. The plan should include a vapor intrusion evaluation for the proposed structure and include proposed controls to prevent vapor intrusion.

- To evaluate the potential for temporal changes and establish the baseline conditions in soil vapor concentrations, one additional sampling event is recommended in December 2009 of the SVMPs in Zones 1 and 2. If soil vapor concentrations are consistent with the results of the May 2009 sampling event, it is recommended that Zones 1 and 2 be considered for closure.

- Due to the detection of constituents of concern above the prescribed target risk levels at 10 Hillside Road it is recommended that additional steps be taken to mitigate and monitor the concentrations of the constituents of concern. It is recommended that the mitigation and monitoring activities include the following:

    - An evaluation of potential mitigation technologies for 10 Hillside Road;
    - Design, installation and operation of a mitigation system designed based on the results of the mitigation technology evaluation in general accordance with SIRB guidelines. Based upon available data a sub-slab depressurization system is not considered feasible due to shallow groundwater and the presence of saturated soils beneath the basement slab. The mitigation would likely include:


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- Sealing of identifiable cracks and seams with a non-volatile calking materials to prevent the intrusion of subsurface vapors into the indoor air;
- Installation of a ventilation system to remove or prevent entry of subsurface vapors into indoor air; and
- Development of a routine sampling and operations and maintenance schedule to provide confirmation and upkeep of mitigation effectiveness.

- Two indoor air sampling events were completed at 11 Hillside Road and there were no detections of analytes above the prescribed target concentrations in the indoor air samples. Based on the indoor air sampling results, additional indoor air sampling or evaluation for 11 Hillside Road is not considered warranted.

- An additional indoor air sampling event at 9 and 12 Hillside Road is considered warranted to confirm the initial May 2009 indoor air sampling results, to evaluate the potential for temporal changes, and to establish the baseline conditions for indoor air concentrations. The SIRB indoor air sampling protocol will be followed for the samples collected.


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## 11.0 LIMITATIONS

This work was performed in a manner consistent with that level of care and skill ordinarily exercised by other members of Kleinfelder's profession practicing in the same locality, under similar conditions and at the date the services are provided. Our conclusions, opinions and recommendations are based on a limited number of observations and data. It is possible that conditions could vary between or beyond the data evaluated. Kleinfelder makes no other representation, guarantee or warranty, express or implied, regarding the services, communication (oral or written), report, opinion, or instrument of service provided.

This report may be used only by the Client and only for the purposes stated for this specific engagement within a reasonable time from its issuance, but in no event later than two (2) years from the date of the report.

Kleinfelder offers various levels of investigative and engineering services to suit the varying needs of different clients. It should be recognized that definition and evaluation of geologic and environmental conditions are a difficult and inexact science. Judgments leading to conclusions and recommendations are generally made with incomplete knowledge of the subsurface conditions present due to the limitations of data from field studies. Although risk can never be eliminated, more-detailed and extensive studies yield more information, which may help understand and manage the level of risk. Since detailed study and analysis involves greater expense, our clients participate in determining levels of service that provide adequate information for their purposes at acceptable levels of risk. More extensive studies, including subsurface studies or field tests, should be performed to reduce uncertainties. Acceptance of this report will indicate that DNREC has reviewed the document and determined that it does not need or want a greater level of service than provided.


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## 12.0 REFERENCES

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# FIGURES

1,200 600 0 1,200 Feet

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| | | | |
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| PROJECT NO. | 102570 | REGIONAL AREA MAP | FIGURE |
| DRAWN: | 08/28/09 | | |
| DRAWN BY: | AJP | | |
| CHECKED BY: | MCS | FACILITY ID: 3-000712<br>RON'S DISCOUNT ENERGY MART<br>2509 PHILADELPHIA PIKE<br>CLAYMONT, DE | 1 |
| FILE NAME: | Rons Regional Area Map 082809.mxd | | |

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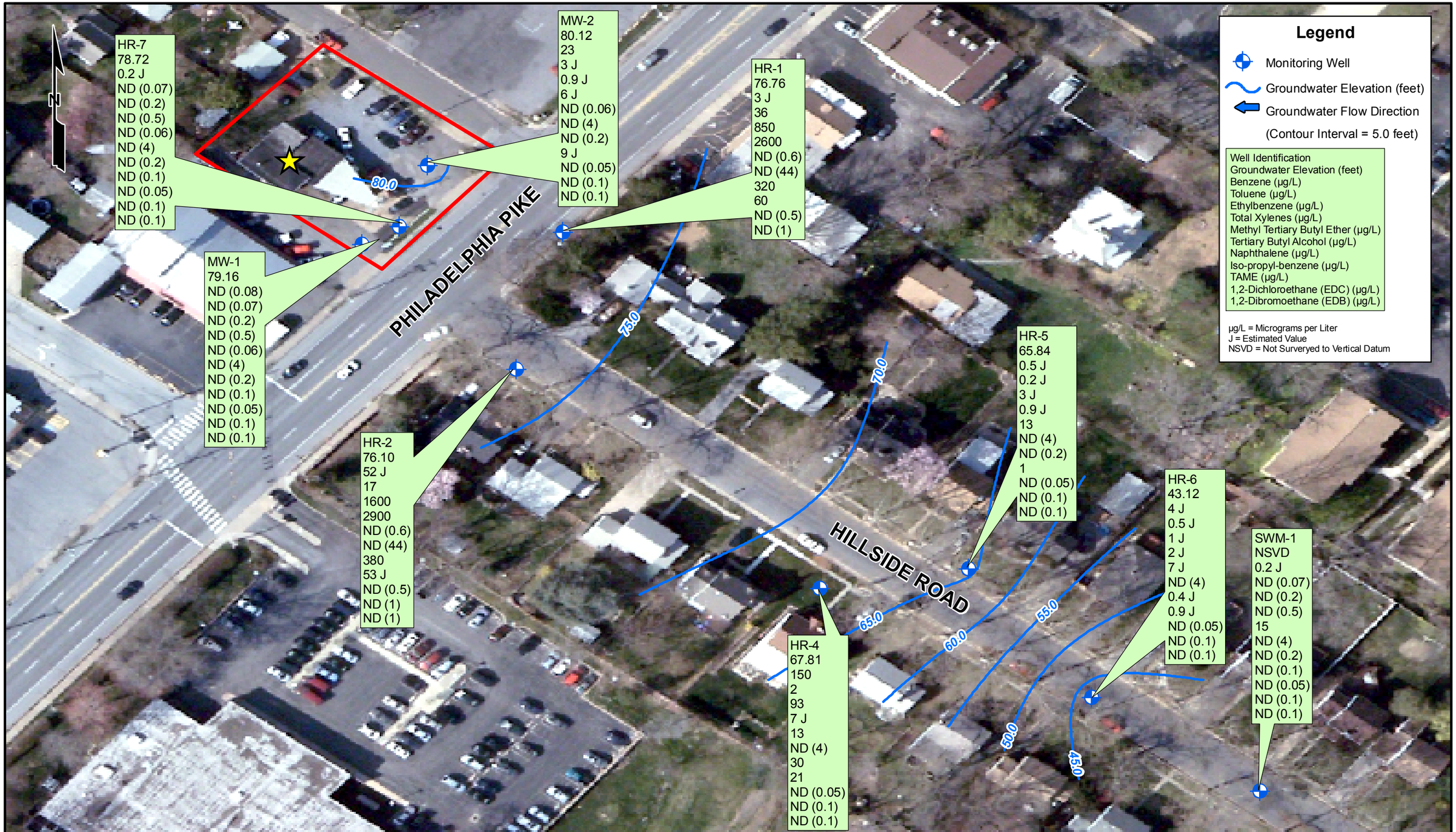
| DRAWN: | 08/27/09 |
| DRAWN BY: | AJP |
| CHECKED BY: | MCS |
| FILE NAME: | Claymont DE Prop SVP Map 012209.mxd |

**AREA MAP**

FACILITY ID: 3-000712
RON'S DISCOUNT ENERGY MART
2509 PHILADELPHIA PIKE
CLAYMONT, DE

FIGURE
**2**

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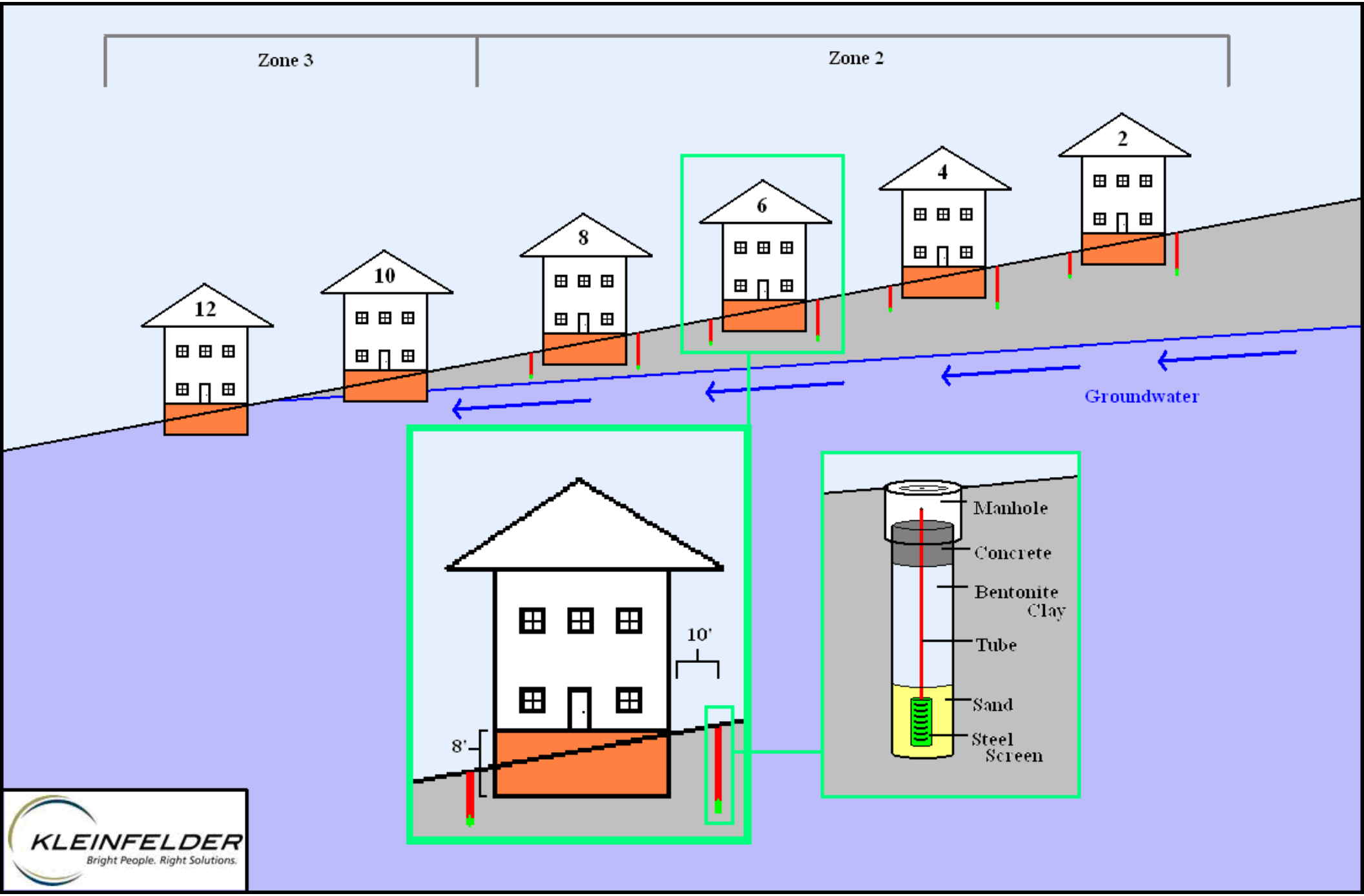
| PROJECT NO. | 102570 |
| DRAWN: | 06/11/09 |
| DRAWN BY: | AJP |
| CHECKED BY: | MCS |
| FILE NAME: | Claymont DE Prop SVP Map 012209.mxd |

**HYDROCARBON DISTRIBUTION/ GROUNDWATER CONTOUR MAP**
**APRIL 28, 2009**

FACILITY ID: 3-000712
RON'S DISCOUNT ENERGY MART
2509 PHILADELPHIA PIKE
CLAYMONT, DE

FIGURE
**3**


Zone 3
Zone 2
12
10
8
6
4
2
Groundwater
10'
8'
Manhole
Concrete
Bentonite Clay
Tube
Sand
Steel Screen
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# TABLES

# Table 1

## Groundwater Monitoring & Analytical Data

Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, DE
April 28, 2009

| | | Gauging Data | | | | | Analytical Data | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sample ID** | **Date** | **Top of Casing Elevation (feet)** | **Depth to Water (feet)** | **Depth to Hydro-carbon (feet)** | **Hydro-carbon Thickness (feet)** | **Corrected GW Elevation (feet)** | **Benzene (µg/L)** | **Toluene (µg/L)** | **Ethyl-benzene (µg/L)** | **Total Xylenes (µg/L)** | **Total BTEX (µg/L)** | **MTBE (µg/L)** | **TBA (µg/L)** | **Naph-thalene (µg/L)** | **Iso-propyl-benzene (Cumene)** | **TAME (µg/L)** | **1,2-Dichloroethane (EDC)** | **1,2-Dibromoethane (EDB)** | **Tetrachloroethylene (PCE) (Tetrachlo** | **Comments** |
| HR-1 | 04/28/2009 | 94.10 | 17.35 | ND | ND | 76.75 | 3 J | 36 | 850 | 2600 | 3489 | ND(0.6) | ND(44) | 320 | 61 | ND(0.5) | ND(1) | ND(1) | ND(1) | |
| HR-2 | 04/28/2009 | 92.81 | 16.71 | ND | ND | 76.10 | 52 J | 17 | 1600 | 2900 | 4569 | ND(0.6) | ND(44) | 380 | 53 J | ND(0.5) | ND(1) | ND(1) | ND(1) | |
| HR-4 | 04/28/2009 | 73.70 | 5.89 | ND | ND | 67.81 | 150 | 2 | 93 | 7 J | 252 | 13 | ND(4) | 30 | 21 | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | |
| HR-5 | 04/28/2009 | 68.64 | 2.80 | ND | ND | 65.84 | 0.5 J | 0.2 J | 3 J | 0.9 J | 5 | 13 | ND(4) | ND(0.2) | 1 | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | |
| HR-6 | 04/28/2009 | 50.71 | 7.59 | ND | ND | 43.12 | 4 J | 0.5 J | 1 J | 2 J | 8 | 7 J | ND(4) | 0.4 J | 0.9 J | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | |
| HR-7 | 04/28/2009 | 94.81 | 16.09 | ND | ND | 78.72 | 0.2 J | ND(0.07) | ND(0.2) | ND(0.5) | 0.2 | ND(0.06) | ND(4) | ND(0.2) | ND(0.1) | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | |
| MW-1 | 04/28/2009 | 94.55 | 15.39 | ND | ND | 79.16 | ND(0.08) | ND(0.07) | ND(0.2) | ND(0.5) | BRL | ND(0.06) | ND(4) | ND(0.2) | ND(0.1) | ND(0.05) | ND(0.1) | ND(0.1) | 0.2 | |
| MW-2 | 04/28/2009 | 95.32 | 15.20 | ND | ND | 80.12 | 23 | 3 J | 0.9 J | 6 J | 33 | ND(0.06) | ND(4) | ND(0.2) | 9 J | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | |
| SWM-1 | 04/28/2009 | NSVD | 2.60 | ND | ND | NSVD | 0.2 J | ND(0.07) | ND(0.2) | ND(0.5) | 0.2 | 15 | ND(4) | ND(0.2) | ND(0.1) | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | |



**Kleinfelder**
1340 Charwood Road, Suite I, Hanover, MD

# Table 1 (Continued)

## Groundwater Monitoring & Analytical Data

Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, DE
April 28, 2009

**Notes:**

µg/L - micrograms per liter (parts per billion)
BRL - Below laboratory reporting limits
BTEX - Benzene, toluene, ethylbenzene, and total xylenes
GW - Groundwater
J - Indicates an estimated value
NA - Not analyzed
ND - Not detected
ND(5.0) - Not detected at or above the laboratory reporting limit, laboratory reporting limit included.
NM - Not monitored
NS - Not sampled
NSVD - Not surveyed to vertical datum



**Kleinfelder**
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# Table 2

## Groundwater Monitoring & Analytical Data

Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, DE
August 2, 2007 through April 28, 2009

| Well ID | Date | Benzene (µg/L) | Toluene (µg/L) | Ethyl-benzene (µg/L) | Total Xylenes (µg/L) | Total BTEX (µg/L) | MTBE (µg/L) | TBA (µg/L) | Naph-thalene (µg/L) | Iso-propyl-benzene (Cumene) (µg/L) | TAME (µg/L) | 1,2-Dichloroethane (EDC) (µg/L) | cis-1,2-Dichloroethene (µg/L) | 1,2-Dibromoethane (EDB) (µg/L) | Tetrachloroethylene (PCE) (µg/L) | Carbon disulfide (µg/L) | Chloroform (µg/L) | Methylcyclohexane (µg/L) | 2-Butanone (MEK) (µg/L) | Acetone (µg/L) | Cyclohexane (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HR-1 | 08/02/2007 | 7 J | 54 | 960 | 3200 | 4221 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/29/2007 | ND | 12 J | 370 | 1200 | 1582 | ND | ND | 200 | 51 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | 6 J | 48 | 840 | 2700 | 3594 | 1 J | ND | 300 | 65 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/08/2008 | 4 J | 28 | 670 | 2000 | 2702 | ND | ND | 240 | 56 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 140 | NA | |
| | 01/22/2009 | 3 J | 31 | 710 | 2000 | 2744 | ND | ND | 240 | 62 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 170 | NA | |
| | 04/28/2009 | 3 J | 36 | 850 | 2600 | 3489 | ND(0.6) | ND(44) | 320 | 61 | ND(0.5) | ND(1) | ND(1) | ND(1) | ND(1) | ND(4) | ND(1) | 160 | ND(8) | ND(7) | 230 | |
| HR-2 | 10/29/2007 | 940 | 15 J | 1600 | 2000 | 4555 | 5 J | ND | 360 | 68 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | 310 | 95 | 2000 | 6300 | 8705 | ND | ND | 360 | 69 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/08/2008 | 220 | 12 | 1500 | 1800 | 3532 | 2 J | ND | 270 | 53 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 81 | NA | |
| | 01/22/2009 | 110 | 28 | 1700 | 4100 | 5938 | ND | ND | 380 | 64 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 64 | NA | |
| | 04/28/2009 | 52 J | 17 | 1600 | 2900 | 4569 | ND(0.6) | ND(44) | 380 | 53 J | ND(0.5) | ND(1) | ND(1) | ND(1) | ND(1) | ND(4) | ND(1) | 34 | ND(8) | ND(7) | 68 | |
| HR-4 | 08/02/2007 | 280 | 9 | 270 | 19 | 578 | 33 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/29/2007 | 67 | 1 J | 140 | 6 | 214 | 5 | ND | 32 | 10 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | 270 | 7 | 120 | 2 J | 399 | 14 | ND | 5 J | 9 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/08/2008 | 170 | 3 J | 170 | ND | 343 | 6 | ND | 27 | 20 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 17 J | NA | |
| | 01/22/2009 | 18 | ND | 32 | 5 | 55 | 7 | ND | 19 | 17 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 21 | NA | |
| | 04/28/2009 | 150 | 2 | 93 | 7 J | 252 | 13 | ND(4) | 30 | 21 | ND(0.05) | ND(0.1) | 0.7 | ND(0.1) | ND(0.1) | ND(0.4) | ND(0.1) | 15 | ND(0.8) | 4 | 14 | |
| HR-5 | 08/02/2007 | 0.6 J | ND | ND | ND | 0.6 | 20 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/29/2007 | ND | ND | ND | ND | BRL | 29 | 13 J | 1 | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | 0.9 J | ND | ND | ND | 0.9 | 25 | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/08/2008 | ND | ND | ND | ND | BRL | 33 | 16 J | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 01/22/2009 | ND | ND | ND | ND | BRL | 14 | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 04/28/2009 | 0.5 J | 0.2 J | 3 J | 0.9 J | 5 | 13 | ND(4) | ND(0.2) | 1 | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.4) | ND(0.1) | ND(0.1) | ND(0.8) | 2 | 0.4 | |



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1340 Charwood Road, Suite I, Hanover, MD

# Table 2 (Continued)

## Groundwater Monitoring & Analytical Data

Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, DE
August 2, 2007 through April 28, 2009

| Well ID | Date | Benzene (µg/L) | Toluene (µg/L) | Ethyl-benzene (µg/L) | Total Xylenes (µg/L) | Total BTEX (µg/L) | MTBE (µg/L) | TBA (µg/L) | Naph-thalene (µg/L) | Iso-propyl-benzene (Cumene) (µg/L) | TAME (µg/L) | 1,2-Dichloroethane (EDC) (µg/L) | cis-1,2-Dichloroethene (µg/L) | 1,2-Dibromoethane (EDB) (µg/L) | Tetrachloroethylene (PCE) (µg/L) | Carbon disulfide (µg/L) | Chloroform (µg/L) | Methylcyclohexane (µg/L) | 2-Butanone (MEK) (µg/L) | Acetone (µg/L) | Cyclohexane (µg/L) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HR-6 | 08/02/2007 | ND | ND | ND | ND | BRL | 11 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/29/2007 | ND | ND | 4 J | ND | 4 | ND | ND | 3 J | 3 J | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | ND | ND | ND | ND | BRL | 17 | 13 J | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/07/2008 | 0.9 J | ND | ND | ND | 0.9 | 17 | 13 J | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 01/23/2009 | 5 J | ND | ND | ND | 5 | 18 | 15 J | ND | 1 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 9 | NA | |
| | 04/28/2009 | 4 J | 0.5 J | 1 J | 2 J | 8 | 7 J | ND(4) | 0.4 J | 0.9 J | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.4) | ND(0.1) | 4 | ND(0.8) | 3 | 14 | |
| HR-7 | 08/02/2007 | 55 | 1 J | 5 | 1 J | 62 | 1 J | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/30/2007 | 89 | 2 J | 13 | 10 J | 114 | 0.7 J | ND | 1 | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | 17 | ND | 0.9 J | ND | 18 | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/07/2008 | 280 | 7 | 41 | 23 | 351 | 1 J | ND | 1 J | 3 J | ND | NA | NA | NA | NA | NA | NA | NA | NA | 16 J | NA | |
| | 01/22/2009 | 29 | ND | 2 J | ND | 31 | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | 10 J | NA | |
| | 04/28/2009 | 0.2 J | ND(0.07) | ND(0.2) | ND(0.5) | 0.2 | ND(0.06) | ND(4) | ND(0.2) | ND(0.1) | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.4) | ND(0.1) | ND(0.1) | ND(0.8) | ND(0.7) | ND(0.2) | |
| MW-1 | 08/02/2007 | ND | ND | ND | ND | BRL | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/30/2007 | ND | ND | ND | ND | BRL | 0.5 J | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | ND | ND | ND | ND | BRL | 0.5 J | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/07/2008 | ND | ND | ND | ND | BRL | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 01/22/2009 | ND | ND | ND | ND | BRL | ND | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 04/28/2009 | ND(0.08) | ND(0.07) | ND(0.2) | ND(0.5) | BRL | ND(0.06) | ND(4) | ND(0.2) | ND(0.1) | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | 0.2 | ND(0.4) | ND(0.1) | ND(0.1) | ND(0.8) | ND(0.7) | ND(0.2) | |
| MW-2 | 08/02/2007 | 80 | 7 | 2 J | 29 | 118 | 9 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/30/2007 | 49 | 3 J | 2 J | 4 J | 58 | 4 J | ND | ND | 8 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 07/03/2008 | 54 | 3 J | 6 | 14 | 77 | 6 | 11 J | 3 J | 10 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/07/2008 | 40 | 6 | 2 | 25 | 73 | 3 J | ND | 4 J | 15 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 56 | NA | |
| | 01/22/2009 | 33 | 4 J | 3 J | 8 | 48 | 2 J | ND | ND | 14 | ND | NA | NA | NA | NA | NA | NA | NA | NA | 74 | NA | |
| | 04/28/2009 | 23 | 3 J | 0.9 J | 6 J | 33 | ND(0.06) | ND(4) | ND(0.2) | 9 J | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.1) | 1 | 2 | 11 | 4 | 100 | 24 | |
| SWM-1 | 08/03/2007 | 2 J | 0.7 J | 8 | 0.8 J | 12 | ND | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | |
| | 10/08/2008 | ND | ND | ND | ND | BRL | 4 J | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 01/23/2009 | ND | ND | ND | ND | BRL | 7 | ND | ND | ND | ND | NA | NA | NA | NA | NA | NA | NA | NA | ND | NA | |
| | 04/28/2009 | 0.2 J | ND(0.07) | ND(0.2) | ND(0.5) | 0.2 | 15 | ND(4) | ND(0.2) | ND(0.1) | ND(0.05) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.1) | ND(0.4) | ND(0.1) | ND(0.1) | ND(0.8) | 2 | 0.4 | |

# Table 2 (Continued)

## Groundwater Monitoring & Analytical Data

Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, DE
August 2, 2007 through April 28, 2009

**Notes:**

µg/L - micrograms per liter (parts per billion)
BRL - Below laboratory reporting limits
BTEX - Benzene, toluene, ethylbenzene, and total xylenes
GW - Groundwater
J - Indicates an estimated value
NA - Not analyzed
ND - Not detected
ND(5.0) - Not detected at or above the laboratory reporting limit, laboratory reporting limit included.
NM - Not monitored
NS - Not sampled
NSVD - Not surveyed to vertical datum



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**TABLE 3**

**SVMP Vapor Field Monitoring Data**
**Ron's Discount Energy Mart**
**2509 Philadelphia Pike**
**Claymont, DE**

**May 19 and 20, 2009**

| Sample ID | PID (ppm) | CO2 (ppm) | CO (ppm) | RH (%) | O2 (%) | Ambient Temp (F) | H2S (ppm) |
|---|---|---|---|---|---|---|---|
| Ambient | 0 | 20000+ | 2 | 6 | 20.9 | 78.7 | 0 |
| SVMP-1 | 327 | 20000+ | 10 | 6 | 4.3 | 78.9 | 2 |
| SVMP-2 | 385 | 20000+ | 53 | 7 | 3.2 | 79.3 | 4 |
| SVMP-3 | 285 | 20000+ | 532 | 6 | 7.8 | 79.5 | 6 |
| SVMP-4 | 331 | 20000+ | 386 | 6 | 8.2 | 79.5 | 3 |
| SVMP-5 | 22.4 | 20000+ | 153 | 6 | 15.4 | 79.7 | 1 |
| SVMP-6 | 15.2 | 20000+ | 87 | 6 | 14.4 | 79.8 | 0 |
| SVMP-7 | 16.5 | 15000 | 53 | 7 | 18.6 | 79.9 | 0 |
| SVMP-8 | 7.3 | 20000+ | 47 | 6 | 18 | 80.2 | 0 |
| SVMP-9 | 7.1 | 20000+ | 35 | 6 | 17 | 80.3 | 0 |
| SVMP-10 | 7.4 | 20000+ | 29 | 6 | 19 | 80.3 | 0 |
| SVMP-11 | 4.9 | 18500 | 24 | 6 | 19.6 | 80.3 | 0 |
| SVMP-12 | 5.8 | 20000+ | 23 | 6 | 16.3 | 80.4 | 0 |
| SVMP-13 | 4.3 | 20000+ | 22 | 6 | 18.6 | 80.5 | 0 |
| SVMP-14 | 3.6 | 20000+ | 23 | 6 | 19.6 | 80.6 | 0 |
| SVMP-15 | 3.6 | 20000+ | 17 | 6 | 16.5 | 80.6 | 0 |
| SVMP-16 | 3 | 20000+ | 16 | 6 | 14.3 | 80.6 | 0 |

**Notes:**

PID - Photo-Ionization Detector field screening results
ppm - parts per million
CO2 - Carbon Dioxide
CO - Carbon Monoxide
RH - Relative Humidity
O2 - Oxygen
Ambient Temp - Ambient temperatures
F - Farenheight
H2S - Hydrogen Sulfide



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Hanover, MD 21076

**TABLE 4**

**Zone 1 - SVMP Vapor Analytical Data**
**Ron's Discount Energy Mart**
**2509 Philadelphia Pike**
**Claymont, DE**

**May 19, 2009**

| Sample ID | Date | Benzene (mg/m3) | Toluene (mg/m3) | Ethyl-benzene (mg/m3) | Total Xylenes (mg/m3) | Methyl Tertiary Butyl Ether (mg/m3) | Isopropyl-benzene (mg/m3) | 1,2-Dichloro-ethane (EDC) (mg/m3) | 1,2,4-Trimethyl-benzene (mg/m3) | 1,3,5-Trimethyl-benzene (mg/m3) | 2,2,4-Trimethyl-pentane (mg/m3) | Acetone (mg/m3) | Aceto-nitrile (mg/m3) | Carbon disulfide (mg/m3) | CFC-11 (Trichloro-fluoro-methane) (mg/m3) | CFC-12 (Dichloro-difluoro-methane) (mg/m3) | Chloro-difluoro-methane (mg/m3) | Dichloro-methane (Methylene chloride) (mg/m3) | Chloro-form (mg/m3) | Chloro-methane (mg/m3) | Hexane (mg/m3) | n-Heptane (mg/m3) | Octane (mg/m3) | Pentane (mg/m3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Facilty/Ambient | 5/19/2009 | ND(0.0032) | 0.0056 | ND(0.0043) | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | ND(0.0047) | 0.016 | ND(0.0034) | ND(0.0031) | ND(0.0056) | ND(0.0049) | ND(0.0035) | ND(0.0035) | ND(0.0049) | ND(0.0021) | ND(0.0035) | ND(0.0041) | ND(0.0047) | 0.0037 |
| SVMP-1 | 5/19/2009 | ND(3.2) | ND(3.8) | ND(4.3) | ND(4.3) | ND(3.6) | ND(4.9) | ND(4) | ND(4.9) | ND(4.9) | 360 | ND(4.8) | ND(3.4) | ND(3.1) | ND(5.6) | ND(4.9) | ND(3.5) | ND(3.5) | ND(4.9) | ND(2.1) | 8.3 | 4.1 | ND(4.7) | 10 |
| SVMP-2 | 5/19/2009 | ND(32) | ND(38) | ND(43) | ND(43) | ND(36) | ND(49) | ND(40) | ND(49) | ND(49) | 2100 | 160 | ND(34) | 82 | ND(56) | ND(49) | ND(35) | ND(35) | ND(49) | ND(21) | 1100 | 320 | 55 | 890 |
| SVMP-3 | 5/19/2009 | **160** | ND(38) | 68 | ND(43) | ND(36) | ND(49) | ND(40) | ND(49) | ND(49) | 4400 | ND(48) | ND(34) | 110 | ND(56) | ND(49) | ND(35) | ND(35) | ND(49) | ND(21) | 3100 | 690 | 110 | 2700 |
| SVMP-4 | 5/19/2009 | 41 | ND(38) | ND(43) | ND(43) | ND(36) | ND(49) | ND(40) | ND(49) | ND(49) | 3000 | 180 | ND(34) | 90 | ND(56) | ND(49) | ND(35) | ND(35) | ND(49) | ND(21) | 1300 | 350 | ND(47) | 1400 |
| DNREC SSTLs | | **77** | **8500** | **22000** | **2100** | **65000** | **8700** | **23** | **130** | **130** | **NA** | **7200** | **1250** | **15000** | **15000** | **4400** | **1050000** | **1250** | **26** | **580** | **4000** | **NA** | **NA** | **NA** |

**Notes:**

This table summarizes the soil vapor monitoring point analytical data for common gasoline constituents including BTEX and MTBE as well as detections of the analytes reported by the laboratory.
mg/m3 - milligrams per cubic meter
NA - Chemical Specific properties for this analyte are not included in the US EPA properties table associated with the Johnson and Ettinger model.
ND(5.0) - Not detected at or above the laboratory reporting limit, laboratory reporting limit included.
NS - Not sampled
DNREC SSTLs - Delaware Department of Naturals and Envionmrntal Control Site Specific Target Levels. Please note that the DNREC SSTLs were calculated using the US EPA Johnson and Ettinger models. The model outputs as depicted are not absolute and are subject to the parameters and assumptions of model input. For more information on the Johnson and Ettinger model and US EPA guidance on use of the model please reference: http://www.epa.gov/oswer/riskassessment/airmodel/johnson_ettinger.htm



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# TABLE 5

## SVMP Vapor Analytical Data
## Ron's Discount Energy Mart
## 2509 Philadelphia Pike
## Claymont, DE

**May 19, 2009 through May 20, 2009**

| Sample ID | Date | Benzene (mg/m3) | Toluene (mg/m3) | Ethylbenzene (mg/m3) | Total Xylenes (mg/m3) | Methyl Tertiary Butyl Ether (mg/m3) | Isopropylbenzene (mg/m3) | 1,2-Dichloroethane (EDC) (mg/m3) | 1,2,4-Trimethylbenzene (mg/m3) | 1,3,5-Trimethylbenzene (mg/m3) | 2,2,4-Trimethylpentane (mg/m3) | 4-Ethyltoluene (mg/m3) | Acetone (mg/m3) | Acetonitrile (mg/m3) | Carbon disulfide (mg/m3) | CFC-11 (Trichlorofluoromethane) (mg/m3) | CFC-12 (Dichlorodifluoromethane) (mg/m3) | Chlorodifluoromethane (mg/m3) | Dichloromethane (Methylene chloride) (mg/m3) | Chloroform (mg/m3) | Chloromethane (mg/m3) | Hexane (mg/m3) | n-Heptane (mg/m3) | Octane (mg/m3) | Pentane (mg/m3) | Propylene (Propene) (mg/m3) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 Hillside/Ambient | 5/20/2009 | ND(0.0032) | ND(0.0038) | ND(0.0043) | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | ND(0.0047) | ND(0.0049) | 0.011 | ND(0.0034) | ND(0.0031) | ND(0.0056) | ND(0.0049) | ND(0.0035) | ND(0.0035) | ND(0.0049) | ND(0.0021) | ND(0.0035) | ND(0.0041) | ND(0.0047) | ND(0.003) | ND(0.0017) |
| Facilty/Ambient | 5/19/2009 | ND(0.0032) | 0.0056 | ND(0.0043) | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | ND(0.0047) | ND(0.0049) | 0.016 | ND(0.0034) | ND(0.0031) | ND(0.0056) | ND(0.0049) | ND(0.0035) | ND(0.0035) | ND(0.0049) | ND(0.0021) | ND(0.0035) | ND(0.0041) | ND(0.0047) | 0.0037 | ND(0.0017) |
| SVMP-5 | 5/19/2009 | 0.63 | 0.17 | 1.3 | ND(0.087) | ND(0.072) | ND(0.098) | ND(0.081) | 0.51 | 0.33 | 5.4 | 0.17 | 0.46 | ND(0.067) | 0.3 | ND(0.11) | ND(0.099) | ND(0.071) | 0.18 | ND(0.098) | ND(0.041) | 2.8 | 1.6 | 0.64 | 1.2 | ND(0.034) |
| SVMP-6 | 5/19/2009 | 0.37 | 0.086 | 0.74 | ND(0.087) | ND(0.072) | ND(0.098) | ND(0.081) | ND(0.098) | 0.11 | 5.9 | ND(0.098) | 0.42 | ND(0.067) | 0.25 | ND(0.11) | ND(0.099) | ND(0.071) | 0.18 | ND(0.098) | ND(0.041) | 2.3 | 1.9 | 0.57 | 0.83 | ND(0.034) |
| SVMP-7 | 5/19/2009 | 0.1 | ND(0.038) | 0.22 | ND(0.043) | ND(0.036) | ND(0.049) | ND(0.04) | 0.13 | 0.071 | 0.96 | ND(0.049) | ND(0.048) | ND(0.034) | ND(0.031) | ND(0.056) | ND(0.049) | ND(0.035) | ND(0.035) | ND(0.049) | ND(0.021) | 0.59 | 0.25 | 0.095 | 0.2 | ND(0.017) |
| SVMP-8 | 5/19/2009 | 0.52 | 0.093 | 1.4 | ND(0.087) | ND(0.072) | 0.18 | ND(0.081) | 0.12 | 0.26 | 6.2 | 0.11 | 0.25 | ND(0.067) | 0.08 | ND(0.11) | ND(0.099) | ND(0.071) | 0.34 | ND(0.098) | ND(0.041) | 2.6 | 1.2 | 0.85 | 1.4 | ND(0.034) |
| SVMP-9 | 5/20/2009 | 0.28 | 0.097 | 0.77 | ND(0.043) | ND(0.036) | 0.06 | ND(0.04) | 0.6 | 0.31 | 1 | 0.16 | 0.14 | ND(0.034) | 0.061 | ND(0.056) | ND(0.049) | 0.041 | 0.31 | ND(0.049) | ND(0.021) | 0.91 | 0.61 | 0.3 | 0.25 | 0.27 |
| SVMP-10 | 5/20/2009 | ND(0.0032) | ND(0.0038) | ND(0.0043) | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | ND(0.0047) | ND(0.0049) | 0.012 | ND(0.0034) | 0.022 | ND(0.0056) | ND(0.0049) | ND(0.0035) | ND(0.0035) | ND(0.0049) | ND(0.0021) | ND(0.0035) | ND(0.0041) | ND(0.0047) | 0.0048 | ND(0.0017) |
| SVMP-11 | 5/20/2009 | ND(0.0032) | ND(0.0038) | ND(0.0043) | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | ND(0.0047) | ND(0.0049) | 0.048 | 0.004 | ND(0.0031) | 0.01 | 0.0059 | ND(0.0035) | 0.042 | 0.0088 | 0.0026 | ND(0.0035) | ND(0.0041) | ND(0.0047) | ND(0.003) | ND(0.0017) |
| SVMP-12 | 5/20/2009 | ND(0.0032) | ND(0.0038) | 0.0075 | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | 0.03 | ND(0.0049) | 0.021 | ND(0.0034) | ND(0.0031) | ND(0.0056) | ND(0.0049) | ND(0.0035) | 0.027 | 0.0072 | ND(0.0021) | 0.011 | 0.0074 | ND(0.0047) | 0.0035 | ND(0.0017) |
| SVMP-13 | 5/20/2009 | 0.2 | 0.12 | 0.58 | 0.14 | ND(0.036) | 0.07 | ND(0.04) | ND(0.049) | 0.088 | 4.1 | ND(0.049) | 0.47 | ND(0.034) | 0.42 | ND(0.056) | ND(0.049) | ND(0.035) | 0.22 | ND(0.049) | ND(0.021) | 1.3 | 0.99 | 0.41 | 0.4 | 0.045 |
| SVMP-14 | 5/20/2009 | 0.43 | 0.12 | 1 | ND(0.043) | ND(0.036) | 0.1 | ND(0.04) | 0.92 | 0.5 | 2.3 | 0.25 | 0.18 | ND(0.034) | 0.094 | ND(0.056) | ND(0.049) | ND(0.035) | 0.089 | ND(0.049) | ND(0.021) | 1.1 | 0.89 | 0.44 | 0.26 | 0.035 |
| SVMP-15 | 5/20/2009 | 0.14 | 0.092 | 0.48 | 0.085 | ND(0.036) | 0.068 | ND(0.04) | 0.05 | 0.1 | 2.5 | ND(0.049) | 0.44 | ND(0.034) | 0.37 | ND(0.056) | ND(0.049) | ND(0.035) | 0.26 | ND(0.049) | ND(0.021) | 0.79 | 0.65 | 0.29 | 0.25 | 0.017 |
| SVMP-16 | 5/20/2009 | ND(0.0032) | ND(0.0038) | ND(0.0043) | ND(0.0043) | ND(0.0036) | ND(0.0049) | ND(0.004) | ND(0.0049) | ND(0.0049) | ND(0.0047) | ND(0.0049) | 0.017 | 0.0055 | 0.0032 | ND(0.0056) | ND(0.0049) | ND(0.0035) | 0.06 | ND(0.0049) | ND(0.0021) | ND(0.0035) | ND(0.0041) | ND(0.0047) | ND(0.003) | ND(0.0017) |
| **DNREC SSTLs** | | **51** | **7000** | **18000** | **1750** | **52000** | **7200** | **15.5** | **105** | **105** | **NA** | **NA** | **5900** | **1000** | **12000** | **12000** | **3500** | **870000** | **850** | **18** | **400** | **3100** | **NA** | **NA** | **NA** | **NA** |

**Notes:**
mg/m3 - milligrams per cubic meter
NA - Not analyzed
ND(5.0) - Not detected at or above the laboratory reporting limit, laboratory reporting limit included.
NS - Not sampled



**Kleinfelder**
1340 Charwood Road, Suite I, Hanover, MD

# TABLE 6

## Zone 3 - Indoor Air Analytical Data
## Ron's Discount Energy Mart
## 2509 Philadelphia Pike
## Claymont, DE

| Analyte | Unit | Target Indoor Air Concentration to Satisfy both the Prescribed Risk Level (RL =$10^{-6}$) and the Target Hazard Index (HI =1) | 5/13/2009 | 5/13/2009 | 5/13/2009 | 5/13/2009 | 7/7/2009 | 5/13/2009 | 7/7/2009 | 5/13/2009 | 7/7/2009 | 5/13/2009 | 7/7/2009 | 5/13/2009 | 7/7/2009 | 5/13/2009 | 7/7/2009 | 5/13/2009 | 5/13/2009 | 5/13/2009 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 9 Hillside 1st Flr | 9 Hillside Basement | 9 Hillside Outdoor | 10 Hillside 1st Flr | 10 Hillside 1st Flr | 10 Hillside Basement | 10 Hillside Basement | 10 Hillside Outdoor | 10 Hillside Outdoor | 11 Hillside 1st Flr | 11 Hillside 1st Flr | 11 Hillside Basement | 11 Hillside Basement | 11 Hillside Outdoor | 11 Hillside Outdoor | 12 Hillside 1st Flr | 12 Hillside Basement | 12 Hillside Outdoor |
| 1,1,1,2-Tetrachloroethane | mg/m3 | 0.0033 | ND(0.0069) | ND(0.0069) | ND(0.0069) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0069) | ND(0.0069) |
| 1,1,1-Trichloroethane | mg/m3 | 2.2000 | ND(0.0055) | ND(0.0055) | ND(0.0055) | ND(0.0055) | ND(0.005) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0055) | ND(0.0055) |
| 1,1,2,2-Tetrachloroethane | mg/m3 | 0.0004 | ND(0.0069) | ND(0.0069) | ND(0.0069) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0062) | ND(0.0069) | ND(0.0069) | ND(0.0069) |
| 1,1,2-Trichloroethane | mg/m3 | 0.0015 | ND(0.0055) | ND(0.0055) | ND(0.0055) | ND(0.0055) | ND(0.005) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0050) | ND(0.0055) | ND(0.0055) | ND(0.0055) |
| 1,1-Dichloroethane | mg/m3 | 0.5000 | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0040) | ND(0.0040) |
| 1,1-Dichloroethylene (1,1-Dichloroethene) | mg/m3 | 0.2000 | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0040) | ND(0.0040) |
| 1,2,3-Trichloropropane | mg/m3 | 0.0049 | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0060) | ND(0.0060) |
| 1,2,4-Trichlorobenzene | mg/m3 | 0.2000 | ND(0.015) | ND(0.015) | ND(0.015) | ND(0.015) | ND(0.013) | ND(0.015) | ND(0.013) | ND(0.015) | ND(0.013) | ND(0.015) | ND(0.013) | ND(0.015) | ND(0.013) | ND(0.015) | ND(0.013) | ND(0.015) | ND(0.015) | ND(0.015) |
| 1,2,4-Trimethylbenzene | mg/m3 | 0.0060 | ND(0.0049) | **0.015** | ND(0.0049) | ND(0.0049) | ND(0.0045) | **0.013** | **0.015** | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0049) | ND(0.0049) |
| 1,2-Dichlorobenzene | mg/m3 | 0.2000 | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0060) | ND(0.0060) |
| 1,2-Dichloroethane (EDC) | mg/m3 | 0.00094 | ND(0.0040) | ND(0.0040) | ND(0.0040) | **0.0047** | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0037) | ND(0.0040) | ND(0.0040) | ND(0.0040) |
| 1,2-Dichloropropane | mg/m3 | 0.0040 | ND(0.0046) | ND(0.0046) | ND(0.0046) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0046) | ND(0.0046) |
| 1,2-Dichlorotetrafluoroethane;Fluorocarbon 114 | mg/m3 | NA | ND(0.0070) | ND(0.0070) | ND(0.0070) | ND(0.0070) | ND(0.0064) | ND(0.0070) | ND(0.0064) | ND(0.0070) | ND(0.0064) | ND(0.0070) | ND(0.0064) | ND(0.0070) | ND(0.0064) | ND(0.0070) | ND(0.0064) | ND(0.0070) | ND(0.0070) | ND(0.0070) |
| 1,3,5-Trimethylbenzene | mg/m3 | 0.0060 | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0045) | ND(0.0049) | 0.0049 | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0049) | ND(0.0049) |
| 1,3-Butadiene | mg/m3 | 0.0001 | ND(0.0044) | ND(0.0044) | ND(0.0044) | ND(0.0044) | ND(0.004) | ND(0.0044) | ND(0.0040) | ND(0.0044) | ND(0.0040) | ND(0.0044) | ND(0.0040) | ND(0.0044) | ND(0.0040) | ND(0.0044) | ND(0.0040) | ND(0.0044) | ND(0.0044) | ND(0.0044) |
| 1,4-Dichlorobenzene | mg/m3 | 0.2000 | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0060) | ND(0.0060) |
| 1,4-Dioxane (Diethylene oxide) | mg/m3 | NA | ND(0.0036) | ND(0.0036) | ND(0.0036) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0036) | ND(0.0036) |
| 2,2,4-Trimethylpentane | mg/m3 | NA | ND(0.0047) | ND(0.0047) | ND(0.0047) | 0.043 | ND(0.0042) | 0.12 | 0.024 | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0047) | ND(0.0047) |
| 2-Butanone (MEK) | mg/m3 | 1.0000 | ND(0.0059) | 0.0074 | 0.0064 | 0.0071 | ND(0.0054) | 0.0074 | ND(0.0054) | ND(0.0059) | ND(0.0054) | 0.0084 | ND(0.0054) | 0.024 | 0.019 | ND(0.0059) | ND(0.0054) | ND(0.0059) | ND(0.0059) | ND(0.0059) |
| 2-Hexanone | mg/m3 | NA | ND(0.0082) | ND(0.0082) | ND(0.0082) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0082) | ND(0.0082) |
| 4-Ethyltoluene | mg/m3 | NA | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0049) | ND(0.0049) |
| 4-Methyl-2-pentanone (MIBK) | mg/m3 | 0.0800 | ND(0.0082) | ND(0.0082) | ND(0.0082) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0074) | ND(0.0082) | ND(0.0082) | ND(0.0082) |
| Acetone | mg/m3 | 0.3500 | 0.015 | 0.036 | 0.016 | 0.032 | 0.024 | 0.031 | 0.024 | 0.012 | 0.0058 | 0.023 | 0.0095 | 0.018 | 0.031 | 0.012 | 0.0068 | 0.011 | 0.020 | 0.012 |
| Acetonitrile | mg/m3 | 0.060 | ND(0.0034) | ND(0.0034) | ND(0.0034) | ND(0.0034) | ND(0.0031) | ND(0.0034) | ND(0.0031) | ND(0.0034) | ND(0.0031) | ND(0.0034) | ND(0.0031) | ND(0.0034) | ND(0.0031) | ND(0.0034) | ND(0.0031) | ND(0.0034) | ND(0.0034) | ND(0.0034) |
| Acrolein | mg/m3 | 0.00002 | ND(0.0046) | ND(0.0046) | ND(0.0046) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0046) | ND(0.0046) |
| Acrylonitrile | mg/m3 | 0.0004 | ND(0.0043) | ND(0.0043) | ND(0.0043) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0043) | ND(0.0043) |
| Benzene | mg/m3 | 0.0031 | ND(0.0032) | ND(0.0032) | ND(0.0032) | **0.019** | ND(0.0029) | **0.055** | **0.012** | ND(0.0032) | ND(0.0029) | ND(0.0032) | ND(0.0029) | ND(0.0032) | ND(0.0029) | ND(0.0032) | ND(0.0029) | ND(0.0032) | ND(0.0032) | ND(0.0032) |
| Bromobenzene | mg/m3 | NA | ND(0.0064) | ND(0.0064) | ND(0.0064) | ND(0.0064) | ND(0.0058) | ND(0.0064) | ND(0.0058) | ND(0.0064) | ND(0.0058) | ND(0.0064) | ND(0.0058) | ND(0.0064) | ND(0.0058) | ND(0.0064) | ND(0.0058) | ND(0.0064) | ND(0.0064) | ND(0.0064) |
| Bromodichloromethane | mg/m3 | 0.0014 | ND(0.0067) | ND(0.0067) | ND(0.0067) | ND(0.0067) | ND(0.0061) | ND(0.0067) | ND(0.0061) | ND(0.0067) | ND(0.0061) | ND(0.0067) | ND(0.0061) | ND(0.0067) | ND(0.0061) | ND(0.0067) | ND(0.0061) | ND(0.0067) | ND(0.0067) | ND(0.0067) |
| Bromoform | mg/m3 | 0.0220 | ND(0.010) | ND(0.010) | ND(0.010) | ND(0.010) | ND(0.0094) | ND(0.010) | ND(0.0094) | ND(0.010) | ND(0.0094) | ND(0.010) | ND(0.0094) | ND(0.010) | ND(0.0094) | ND(0.010) | ND(0.0094) | ND(0.010) | ND(0.010) | ND(0.010) |
| Bromomethane | mg/m3 | NA | ND(0.0039) | ND(0.0039) | ND(0.0039) | ND(0.0039) | ND(0.0035) | ND(0.0039) | ND(0.0035) | ND(0.0039) | ND(0.0035) | ND(0.0039) | ND(0.0035) | ND(0.0039) | ND(0.0035) | ND(0.0039) | ND(0.0035) | ND(0.0039) | ND(0.0039) | ND(0.0039) |
| Carbon disulfide | mg/m3 | 0.70 | 0.0054 | ND(0.0031) | ND(0.0031) | ND(0.0031) | ND(0.0028) | ND(0.0031) | ND(0.0028) | ND(0.0031) | ND(0.0028) | ND(0.0031) | ND(0.0028) | ND(0.0031) | ND(0.0028) | ND(0.0031) | ND(0.0028) | ND(0.0031) | ND(0.0031) | ND(0.0031) |
| Carbon Tetrachloride | mg/m3 | 0.0016 | ND(0.0063) | ND(0.0063) | ND(0.0063) | ND(0.0063) | ND(0.0057) | ND(0.0063) | ND(0.0057) | ND(0.0063) | ND(0.0057) | ND(0.0063) | ND(0.0057) | ND(0.0063) | ND(0.0057) | ND(0.0063) | ND(0.0057) | ND(0.0063) | ND(0.0063) | ND(0.0063) |
| CFC-11 (Trichlorofluoromethane) | mg/m3 | 0.7000 | ND(0.0056) | ND(0.0056) | ND(0.0056) | ND(0.0056) | ND(0.0051) | ND(0.0056) | ND(0.0051) | ND(0.0056) | ND(0.0051) | ND(0.0056) | ND(0.0051) | ND(0.0056) | ND(0.0051) | ND(0.0056) | ND(0.0051) | ND(0.0056) | ND(0.0056) | ND(0.0056) |
| CFC-12 (Dichlorodifluoromethane) | mg/m3 | 0.2000 | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0049) | ND(0.0049) |
| Chlorinated fluorocarbon (Freon 113) | mg/m3 | NA | ND(0.015) | ND(0.015) | ND(0.015) | ND(0.015) | ND(0.014) | ND(0.015) | ND(0.014) | ND(0.015) | ND(0.014) | ND(0.015) | ND(0.014) | ND(0.015) | ND(0.014) | ND(0.015) | ND(0.014) | ND(0.015) | ND(0.015) | ND(0.015) |
| Chlorobenzene | mg/m3 | 0.060 | ND(0.0046) | ND(0.0046) | ND(0.0046) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0042) | ND(0.0046) | ND(0.0046) | ND(0.0046) |
| Chlorodibromomethane(Dibromochloromethane) | mg/m3 | 0.0010 | ND(0.0085) | ND(0.0085) | ND(0.0085) | ND(0.0085) | ND(0.0077) | ND(0.0085) | ND(0.0077) | ND(0.0085) | ND(0.0077) | ND(0.0085) | ND(0.0077) | ND(0.0085) | ND(0.0077) | ND(0.0085) | ND(0.0077) | ND(0.0085) | ND(0.0085) | ND(0.0085) |
| Chlorodifluoromethane | mg/m3 | 50.0 | ND(0.0035) | ND(0.0035) | ND(0.0035) | ND(0.0035) | 0.011 | ND(0.0035) | 0.011 | ND(0.0035) | 0.013 | ND(0.0035) | 0.022 | ND(0.0035) | 0.018 | ND(0.0035) | 0.020 | ND(0.0035) | ND(0.0035) | ND(0.0035) |
| Chloroethane | mg/m3 | 10.0 | ND(0.0026) | ND(0.0026) | ND(0.0026) | ND(0.0026) | ND(0.0024) | ND(0.0026) | ND(0.0024) | ND(0.0026) | ND(0.0024) | ND(0.0026) | ND(0.0024) | ND(0.0026) | ND(0.0024) | ND(0.0026) | ND(0.0024) | ND(0.0026) | ND(0.0026) | ND(0.0026) |
| Chloroform | mg/m3 | 0.0011 | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0044) | ND(0.0049) | ND(0.0044) | ND(0.0049) | ND(0.0044) | ND(0.0049) | ND(0.0044) | ND(0.0049) | ND(0.0044) | ND(0.0049) | ND(0.0044) | ND(0.0049) | ND(0.0049) | ND(0.0049) |
| Chloromethane | mg/m3 | 0.0240 | ND(0.0021) | ND(0.0021) | ND(0.0021) | ND(0.0021) | ND(0.0019) | ND(0.0021) | ND(0.0019) | ND(0.0021) | ND(0.0019) | ND(0.0021) | ND(0.0019) | ND(0.0021) | ND(0.0019) | ND(0.0021) | ND(0.0019) | ND(0.0021) | ND(0.0021) | ND(0.0021) |
| cis-1,2-Dichloroethene | mg/m3 | 0.0350 | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0040) | ND(0.0040) |
| cis-1,3-Dichloropropene | mg/m3 | 0.0061 | ND(0.0045) | ND(0.0045) | ND(0.0045) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0045) | ND(0.0045) |
| Dibromomethane | mg/m3 | 0.0350 | ND(0.0071) | ND(0.0071) | ND(0.0071) | ND(0.0071) | ND(0.0065) | ND(0.0071) | ND(0.0065) | ND(0.0071) | ND(0.0065) | ND(0.0071) | ND(0.0065) | ND(0.0071) | ND(0.0065) | ND(0.0071) | ND(0.0065) | ND(0.0071) | ND(0.0071) | ND(0.0071) |
| Dichloromethane (Methylene chloride) | mg/m3 | 0.0240 | ND(0.0035) | ND(0.0035) | ND(0.0035) | 0.0097 | 0.0048 | **0.038** | **0.027** | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0035) | ND(0.0035) |
| Dichloromonofluoromethane | mg/m3 | NA | ND(0.0042) | ND(0.0042) | ND(0.0042) | ND(0.0042) | ND(0.0038) | ND(0.0042) | ND(0.0038) | ND(0.0042) | ND(0.0038) | ND(0.0042) | ND(0.0038) | ND(0.0042) | ND(0.0038) | ND(0.0042) | ND(0.0038) | ND(0.0042) | ND(0.0042) | ND(0.0042) |
| Ethyl acetate | mg/m3 | 3.2 | 0.0074 | ND(0.0036) | ND(0.0036) | 0.0065 | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0036) | ND(0.0036) |
| Ethyl methacrylate | mg/m3 | 0.32 | ND(0.0047) | ND(0.0047) | ND(0.0047) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0047) | ND(0.0047) |
| Ethylbenzene | mg/m3 | 0.022 | ND(0.0043) | 0.017 | ND(0.0043) | 0.0071 | ND(0.0039) | **0.023** | **0.028** | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | 0.0080 | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0043) | ND(0.0043) |
| Ethylene Dibromide(1,2-Dibromoethane) | mg/m3 | 0.0001 | ND(0.0077) | ND(0.0077) | ND(0.0077) | ND(0.0077) | ND(0.007) | ND(0.0077) | ND(0.0070) | ND(0.0077) | ND(0.0070) | ND(0.0077) | ND(0.0070) | ND(0.0077) | ND(0.0070) | ND(0.0077) | ND(0.0070) | ND(0.0077) | ND(0.0077) | ND(0.0077) |
| Hexachloro-1,3-Butadiene (Hexachlorobutadiene) | mg/m3 | 0.0011 | ND(0.021) | ND(0.021) | ND(0.021) | ND(0.021) | ND(0.019) | ND(0.021) | ND(0.019) | ND(0.021) | ND(0.019) | ND(0.021) | ND(0.019) | ND(0.021) | ND(0.019) | ND(0.021) | ND(0.019) | ND(0.021) | ND(0.021) | ND(0.021) |
| Hexachloroethane | mg/m3 | 0.0061 | ND(0.0097) | ND(0.0097) | ND(0.0097) | ND(0.0097) | ND(0.0088) | ND(0.0097) | ND(0.0088) | ND(0.0097) | ND(0.0088) | ND(0.0097) | ND(0.0088) | ND(0.0097) | ND(0.0088) | ND(0.0097) | ND(0.0088) | ND(0.0097) | ND(0.0097) | ND(0.0097) |
| Hexane | mg/m3 | 0.20 | ND(0.0035) | 0.0037 | ND(0.0035) | 0.074 | ND(0.0032) | **0.21** | 0.019 | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0035) | ND(0.0035) |
| Iodomethane | mg/m3 | NA | ND(0.0058) | ND(0.0058) | ND(0.0058) | ND(0.0058) | ND(0.0053) | ND(0.0058) | ND(0.0053) | ND(0.0058) | ND(0.0053) | ND(0.0058) | ND(0.0053) | ND(0.0058) | ND(0.0053) | ND(0.0058) | ND(0.0053) | ND(0.0058) | ND(0.0058) | ND(0.0058) |
| Isopropylbenzene | mg/m3 | 0.4000 | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0045) | ND(0.0049) | ND(0.0049) | ND(0.0049) |
| M-Dichlorobenzene | mg/m3 | 0.1100 | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0055) | ND(0.0060) | ND(0.0060) | ND(0.0060) |
| Methyl acrylate | mg/m3 | 0.1100 | ND(0.0035) | ND(0.0035) | ND(0.0035) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0035) | ND(0.0035) |
| Methyl methacrylate | mg/m3 | 0.7000 | ND(0.0041) | ND(0.0041) | ND(0.0041) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0041) | ND(0.0041) |
| Methyl Tertiary Butyl Ether | mg/m3 | 3.0 | ND(0.0036) | ND(0.0036) | ND(0.0036) | ND(0.0036) | ND(0.0033) | ND(0.0036) | 0.0089 | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0033) | ND(0.0036) | ND(0.0036) | ND(0.0036) |
| n-Heptane | mg/m3 | NA | ND(0.0041) | ND(0.0041) | ND(0.0041) | 0.030 | ND(0.0037) | 0.11 | 0.011 | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0037) | ND(0.0041) | ND(0.0041) | ND(0.0041) |
| Octane | mg/m3 | NA | ND(0.0047) | ND(0.0047) | ND(0.0047) | 0.0061 | ND(0.0042) | 0.013 | 0.0095 | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0042) | ND(0.0047) | ND(0.0047) | ND(0.0047) |
| o-Xylene | mg/m3 | 7.0 | ND(0.0043) | 0.0062 | ND(0.0043) | 0.0077 | ND(0.0039) | 0.024 | 0.043 | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0043) | ND(0.0043) |
| Pentane | mg/m3 | NA | ND(0.0030) | 0.0070 | ND(0.0030) | 0.029 | ND(0.0027) | 0.080 | 0.019 | ND(0.0030) | ND(0.0027) | ND(0.0030) | ND(0.0027) | ND(0.0030) | ND(0.0027) | ND(0.0030) | ND(0.0027) | 0.0033 | 0.0047 | ND(0.0030) |
| Propylene (Propene) | mg/m3 | NA | 0.011 | 0.024 | ND(0.0017) | ND(0.0017) | 0.003 | ND(0.0017) | 0.012 | ND(0.0017) | ND(0.0016) | ND(0.0017) | ND(0.0016) | 0.0047 | 0.0066 | ND(0.0017) | ND(0.0016) | ND(0.0017) | 0.0062 | ND(0.0017) |
| Styrene (Monomer) | mg/m3 | 1.0 | ND(0.0043) | ND(0.0043) | ND(0.0043) | ND(0.0043) | ND(0.0039) | ND(0.0043) | 0.0040 | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0043) | ND(0.0043) |
| Tert-butyl Alcohol | mg/m3 | NA | ND(0.0030) | ND(0.0030) | ND(0.0030) | ND(0.0030) | ND(0.0028) | ND(0.0030) | ND(0.0028) | ND(0.0030) | ND(0.0028) | ND(0.0030) | ND(0.0028) | ND(0.0030) | ND(0.0028) | ND(0.0030) | ND(0.0028) | ND(0.0030) | ND(0.0030) | ND(0.0030) |
| Tetrachloroethene (PCE) | mg/m3 | 0.0081 | ND(0.0068) | ND(0.0068) | ND(0.0068) | ND(0.0068) | ND(0.0062) | ND(0.0068) | ND(0.0062) | ND(0.0068) | ND(0.0062) | ND(0.0068) | ND(0.0062) | ND(0.0068) | ND(0.0062) | ND(0.0068) | ND(0.0062) | ND(0.0068) | ND(0.0068) | ND(0.0068) |
| Toluene | mg/m3 | 0.40 | 0.0045 | 0.0053 | ND(0.0038) | 0.083 | 0.0055 | 0.23 | 0.083 | ND(0.0038) | ND(0.0034) | ND(0.0038) | ND(0.0034) | ND(0.0038) | 0.027 | ND(0.0038) | ND(0.0034) | ND(0.0038) | ND(0.0038) | ND(0.0038) |
| Total Xylenes | mg/m3 | NA | ND(0.0043) | 0.0062 | ND(0.0043) | 0.0077 | ND(0.0039) | 0.024 | 0.043 | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0039) | ND(0.0043) | ND(0.0043) | ND(0.0043) |
| trans-1,2-Dichloroethene | mg/m3 | 0.2000 | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0036) | ND(0.0040) | ND(0.0040) | ND(0.0040) |
| trans-1,3-Dichloropropene | mg/m3 | 0.0061 | ND(0.0045) | ND(0.0045) | ND(0.0045) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0041) | ND(0.0045) | ND(0.0045) | ND(0.0045) |
| Trichloroethylene (TCE) | mg/m3 | 0.0002 | ND(0.0054) | ND(0.0054) | ND(0.0054) | ND(0.0054) | ND(0.0049) | ND(0.0054) | ND(0.0049) | ND(0.0054) | ND(0.0049) | ND(0.0054) | ND(0.0049) | ND(0.0054) | ND(0.0049) | ND(0.0054) | ND(0.0049) | ND(0.0054) | ND(0.0054) | ND(0.0054) |
| Vinyl acetate | mg/m3 | 0.020 | ND(0.0035) | ND(0.0035) | ND(0.0035) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0032) | ND(0.0035) | ND(0.0035) | ND(0.0035) |
| Vinyl Chloride | mg/m3 | 0.0028 | ND(0.0026) | ND(0.0026) | ND(0.0026) | ND(0.0026) | ND(0.0023) | ND(0.0026) | ND(0.0023) | ND(0.0026) | ND(0.0023) | ND(0.0026) | ND(0.0023) | ND(0.0026) | ND(0.0023) | ND(0.0026) | ND(0.0023) | ND(0.0026) | ND(0.0026) | ND(0.0026) |

**Notes:**

mg/m3 - milligrams per cubic meter

NA - Not analyzed

ND(5.0) - Not detected at or above the laboratory reporting limit, laboratory reporting limit included.

Target Indoor Air Concentration to Satisfy both the Prescribed Risk Level and the Target Hazard Index. Reference EPA draft guidance document 2002 "*Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soil*" Table 2b

**TABLE 7**

**Summary of J&E Model Assumptions**

| Parameter | Comment |
|---|---|
| Average soil temperature | 13.3°C, selected from Woodruff, K.D. (1989) Shallow Subsurface Temperatures at Selected Locations in Delaware, Delaware Geological Survey, report of Investigations No. 46 |
| SCS Soil type | SIC (Silty Clay) from Table 11 of EQM (2003) and sandy silt/silty sand from Kleinfelder testing of soil samples. |
| Depth below grade to bottom of enclosed space floor | 200 cm Off-Site and 15 cm On-Site, default value for slab-on-grade construction. |
| Soil gas sampling depth | 243.84 cm (8 feet) |
| Vadose zone soil dry bulk density | 1.38 g/cm$^3$, default value recommended in EQM (2003) for loam. |
| Vadose zone soil total porosity | 0.481, default value recommended in EQM (2003) for Silty Clay. |
| Vadose zone soil water-filled porosity | 0.216 cm$^3$/cm$^3$, default value recommended in EQM (2003) for Silty Clay. |
| Enclosed space floor thickness | 10.16 cm, Estimated floor thickness of northeast basement slabs |
| Enclosed space floor length | 840 cm (27.6 feet), based on average square footage of basements at 2 through 8 Hillside Road as recorded by the New Castle County Tax Database. |
| Enclosed space floor width | 840 cm (27.6 feet), based on average square footage of basements at 2 through 8 Hillside Road as recorded by the New Castle County Tax Database |
| Enclosed space height | 243.84 cm (8 feet), residential model default. |
| Indoor air exchange rate | 0.726 cm$^3$/sec, calculated by model, EQM (2003) |
| Averaging time for carcinogens | 70 years, DERBCAP (2000). |
| Averaging time for noncarcinogens | 30 years (Off-Site) and 25 years (On-Site) DERBCAP (2000). |
| Exposure duration | 30 years (Off-Site) and 25 years (On-Site) DERBCAP (2000). |
| Exposure frequency | 350 days per year (Off-Site) and 250 days per year (On-Site) DERBCAP (2000). |
| Target risk for carcinogens | 1 x 10$^{-5}$, considered the de minimis standard for screening of carcinogens in DERBCAP (2000). |
| Target hazard quotient for noncarcinogens | 1, considered the hazard quotient for screening of non-carcinogens in DERBCAP (2000). |

# Appendix A

# DNREC Correspondence

STATE OF DELAWARE
DEPARTMENT OF NATURAL RESOURCES
AND ENVIRONMENTAL CONTROL
DIVISION OF AIR & WASTE MANAGEMENT
391 LUKENS DRIVE
NEW CASTLE, DELAWARE 19720-2774

WASTE MANAGEMENT SECTION
TANK MANAGEMENT BRANCH

TELEPHONE: (302) 395-2500
FAX NO.: (302) 395-2555

February 13, 2009

**CERTIFIED MAIL**
**RETURN RECEIPT REQUESTED**

Mark C. Steele
Kleinfelder East, Inc
1340 Charwood Road
Suite 1
Hanover, MD 21076

RE: Ron's Discount Energy Mart
2509 Philadelphia Pike
Claymont, DE 19703

Facility ID: 3-000712
Project #: N8811068
File Code: 72

SUBJECT: Acceptance of Work Plan and Cost Proposal
State of Delaware Hydrogeological Investigation Services Contract
Contract #: 07-002-TMB

Dear Mr. Steele:

The Delaware Department of Natural Resources and Environmental Control, Tank Management Branch (DNREC-TMB) has reviewed the work plan and cost proposal, dated January 23, 2009, submitted by Kleinfelder East, Inc., for investigation services at the above-referenced facility. The project includes performing a vapor intrusion investigation and risk assessment for the referenced facility and several off-site residential properties. The project also includes Kleinfelder's assistance in community outreach efforts, including preparation for and attendance at a public workshop.

The proposal is accepted as written, contingent upon incorporating the following items:

1. As part of the project scope, representatives of Kleinfelder East, Inc. will attend a public workshop in Claymont, DE on *Thursday March 19, 6:00 pm to 9:00 pm*. Representatives of Kleinfelder East, Inc. will also participate in a planning meeting, at the DNREC-TMB offices, on a date and time yet to be determined.

2. Kleinfelder East, Inc. is responsible for coordinating all site visits/field work with property owners. The DNREC-TMB is currently pursuing enforcement action against the responsible party for the petroleum release at the facility. The DNREC-TMB will therefore provide guidance for contacting property owners, particularly the owner of the subject facility. The property owners and the DNREC-TMB shall be notified at least five (5) days in advance of field activities.

3. Kleinfelder East, Inc. is responsible for contacting Miss Utility to locate public utilities. Kleinfelder East, Inc. must also contact the property owners for information on the locations of any known private utilities.

A purchase order (PO) request has been submitted, and may take two to four weeks to be processed. The DNREC-TMB will inform you when notification is received that the PO has been approved. Due to the time-sensitive nature of the public workshop, the DNREC-TMB requests that Kleinfelder East, Inc. begin the activities outlined in the proposal as quickly as possible following PO approval notification. The DNREC-TMB will be in contact with you to discuss the tentative project schedule including the date and agenda for the pre-workshop planning meeting.

If you have any questions, please contact me at (302) 395-2500.

Sincerely,

Christopher L. Brown

Christopher L. Brown, P.G.
Hydrologist
Tank Management Branch

JSR:CLB\dpc
clb2009-007

# Appendix B

# Boring and Construction Logs

KLEINFELDER
Bright People. Right Solutions.

1340 Charwood Road, Suite I
Hanover, MD 21076
(410) 850-0404

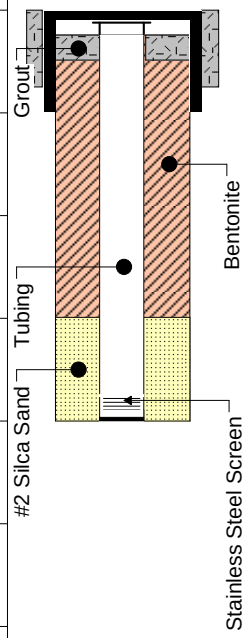
# DRILLING LOG

## Well No. SVMP-1

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***2509 Philadelphia Pike, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***16 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT with medium angular gravels, orange-brown | SB-1 (0-2) | 48 | 11 |
| | | **ML** Sandy SILT with clay, brown | SB-1 (2-4) | | 90 |
| 5.0 | | **MH** Clayey SILT with some medium sand and medium sub-angular gravels, brown | SB-1 (4-6) | 36 | 11 |
| | | | SB-1 (6-8) | | 7 |
| 10.0 | | **SC** SAND with clay, brown to tan, coarse, poorly graded | SB-1 (8-10) | 42 | 8 |
| | | | SB-1 (10-12) | | 10 |
| 15.0 | | | SB-1 (12-16) | 24 | 5 |
| 20.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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(410) 850-0404

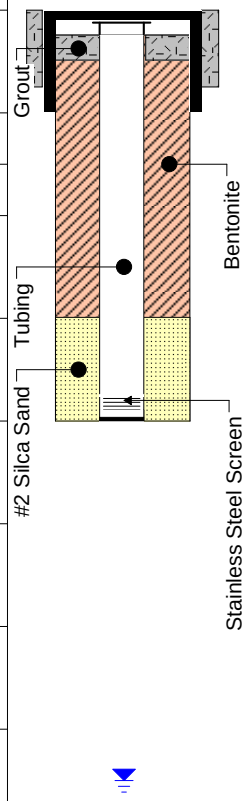
# DRILLING LOG

## Well No. SVMP-2

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***2509 Philadelphia Pike, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***16 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***15 feet*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT with coarse sand, brown; Moist @~3' bg, perched water | SB-2 (0-2) | 48 | 102 |
| | | | SB-2 (2-3) | | 468 |
| | | **CH** Silty CLAY | SB-2 (3-4) | | 6 |
| 5.0 | | | SB-2 (4-6) | 48 | 0 |
| | | **MH** Clayey SILT with coarse sand and some medium sub-angular to rounded gravel, brown | SB-2 (6-8) | | 3 |
| | | **SC** SAND with clay, dark brown, coarse, poorly graded | SB-2 (8-10) | 36 | 8 |
| 10.0 | | | SB-2 (10-12) | | 5 |
| | | **ML** Sandy SILT, dark brown, fine, poorly graded | SB-2 (12-14) | 24 | 104 |
| 15.0 | | | SB-2 (14-16) | | 236 |
| 20.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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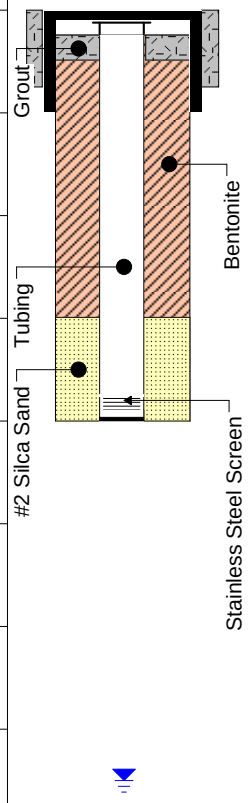
# DRILLING LOG

## Well No. SVMP-3

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***2509 Philadelphia Pike, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***16 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***15 feet*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** SILT, brown | SB-3 (0-2) | 48 | 0 |
| | | **ML** SILT, brown | SB-3 (2-4) | | 0 |
| 5.0 | | | SB-3 (4-6) | 48 | 0 |
| | | **ML** Sandy SILT with some clay, light brown, coarse, well graded | SB-3 (6-8) | | 2 |
| | | **SM** Silty SAND, light brown, fine, poorly graded | SB-3 (8-10) | 42 | 0 |
| 10.0 | | | SB-3 (10-12) | | 0 |
| | | **ML** Sandy SILT with small sub-angular gravels, brown, coarse, poorly graded | SB-3 (12-14) | 24 | 0 |
| 15.0 | | | SB-3 (14-16) | | 25 |
| 20.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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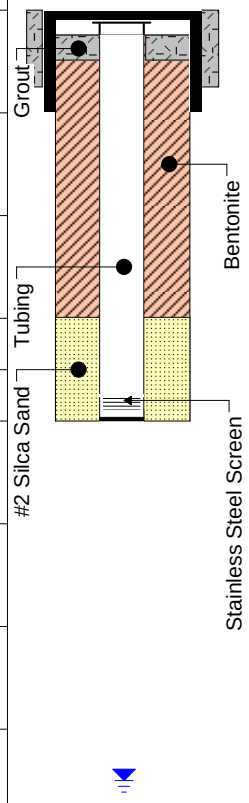
# DRILLING LOG

## Well No. SVMP-4

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***2509 Philadelphia Pike, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***16 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***15 feet*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT, brown | SB-4 (0-2) | 36 | 0 |
| | | | SB-4 (2-4) | | 0 |
| 5.0 | | **ML** Clayey SILT, brown | SB-4 (4-6) | 48 | 0 |
| | | | SB-4 (6-7) | | 0 |
| | | **SC** Clayey SAND with silt, orange-brown, coarse, poorly graded | SB-4 (7-8) | | 0 |
| | | | SB-4 (8-10) | 36 | 0 |
| 10.0 | | | SB-4 (10-12) | | 0 |
| | | **MH** Clayey SILT with some sand, brown, poorly graded | SB-4 (12-14) | 24 | 0 |
| 15.0 | | | SB-4 (14-16) | | 25 |
| 20.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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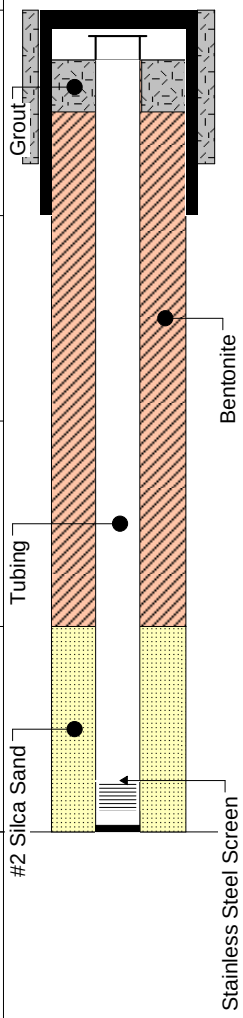
# DRILLING LOG

## Well No. SVMP-5

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***2 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT, brown | SB-5 (0-2) | 48 | 0 |
| | | **CH** CLAY with silt, light brown | SB-5 (2-4) | | 0 |
| 5.0 | | **CL** Silty CLAY, light brown | SB-5 (4-6) | 48 | 0 |
| | | **CL** Sandy, silty CLAY, light brown, coarse, poorly graded | SB-5 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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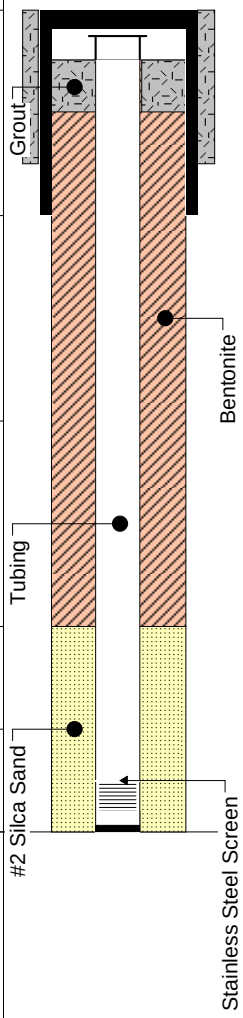
# DRILLING LOG

## Well No. SVMP-6

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***2 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT, brown | SB-6 (0-2) | 48 | 0 |
| | | **CL** CLAY with silt, brown | SB-6 (2-4) | | 0 |
| 5.0 | | **CL** Silty CLAY, brown | SB-6 (4-6) | 48 | 0 |
| | | **SC** Clayey SAND, light brown | SB-6 (6-7) | | 2 |
| | | **CL** Sandy CLAY, light brown, poorly graded | SB-6 (7-8) | | 3 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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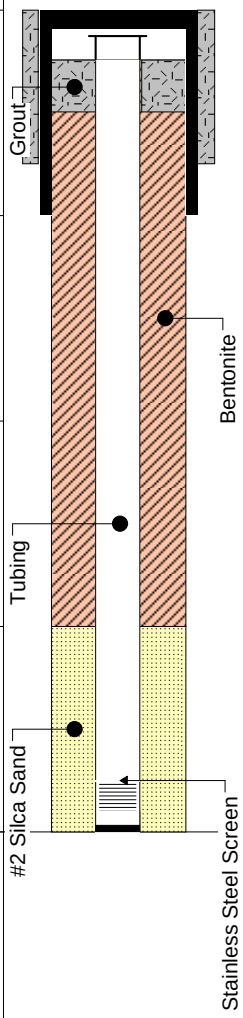
# DRILLING LOG

## Well No. SVMP-7

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***4 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **CL** Silty CLAY, brown | SB-7 (0-2) | 48 | 0 |
| | | **CL** Silty CLAY, light brown | SB-7 (2-4) | | 0 |
| 5.0 | | **CL** Sandy CLAY, brown | SB-7 (4-6) | 36 | 0 |
| | | **SC** SAND with clay, brown to tan, coarse, poorly graded | SB-7 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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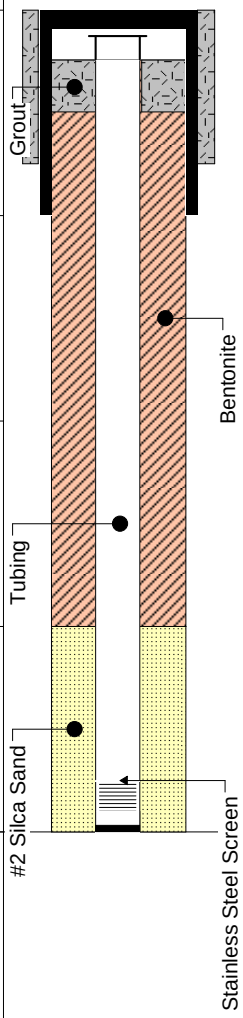
# DRILLING LOG

## Well No. SVMP-8

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***5 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT, brown | SB-8 (0-2) | 48 | 0 |
| | | **ML** Clayey SILT with sand, brown | SB-8 (2-4) | | 0 |
| 5.0 | | **SM** Silty Sand, brown, poorly graded | SB-8 (4-6) | 36 | 0 |
| | | **CL** Sandy CLAY, light brown, poorly graded | SB-8 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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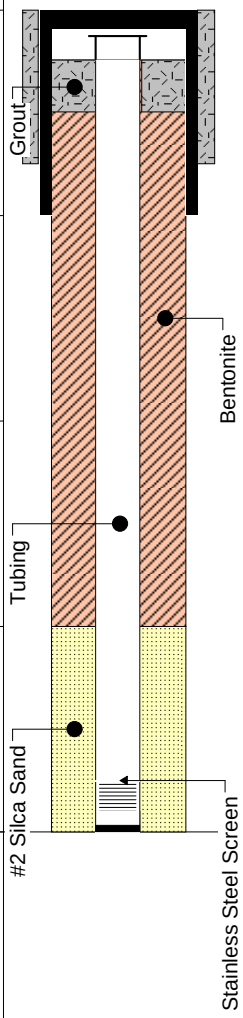
# DRILLING LOG

## Well No. SVMP-9

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***5 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** Clayey SILT, brown | SB-9 (0-2) | 24 | 0 |
| | | **CL** CLAY with silt, brown | SB-9 (2-4) | | 0 |
| 5.0 | | **CL** Sandy CLAY, brown, poorly graded | SB-9 (4-6) | 48 | 0 |
| | | **ML** Sandy CLAY, light brown, poorly graded | SB-9 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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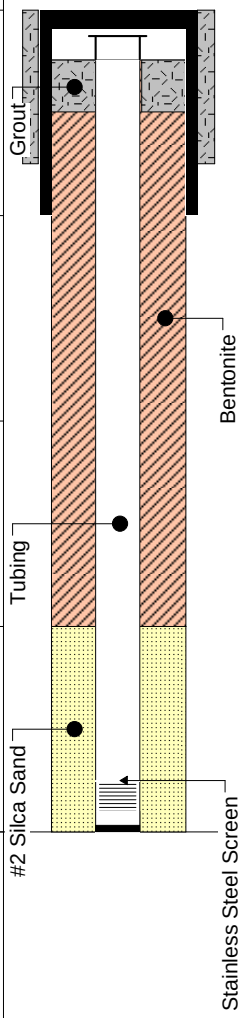
# DRILLING LOG

## Well No. SVMP-10

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-11-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***5 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-11-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **CL** Silty CLAY, brown | SB-10 (0-2) | 36 | 0 |
| | | **CL** CLAY with silt, light brown | SB-10 (2-4) | | 0 |
| 5.0 | | **ML** Clayey SILT with some cobbles, light brown | SB-10 (4-6) | 48 | 0 |
| | | **SC** SAND, brown, poorly graded | SB-10 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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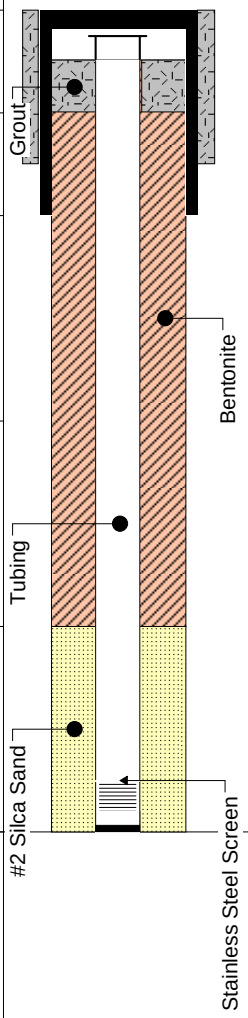
# DRILLING LOG

## Well No. SVMP-11

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-12-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***7 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-12-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **OH** SILT, dark brown | SB-11 (0-1) | | 0 |
| | | **MH** Clayey SILT, brown | SB-11 (1-2) | | 0 |
| | | | | 42 | |
| | | | SB-11 (2-4) | | 0 |
| | | **ML** Clayey SILT with coarse sand, brown | | | |
| 5.0 | | | SB-11 (4-6) | | 0 |
| | | | | 42 | |
| | | | SB-11 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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(410) 850-0404

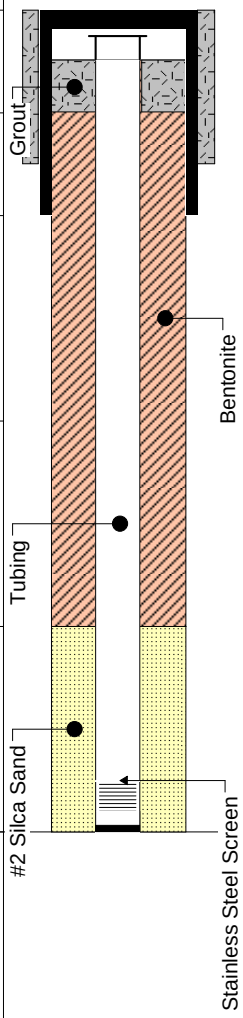
# DRILLING LOG

## Well No. SVMP-12

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-12-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***7 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-12-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **OH** SILT, dark brown | SB-12 (0-1) | 42 | 0 |
| | | **MH** Clayey SILT, brown | SB-12 (1-2) | | 0 |
| | | **ML** SILT with clay, brown | SB-12 (2-4) | | 0 |
| | | **MH** Clayey SILT, brown | SB-12 (4-6) | 48 | 0 |
| 5.0 | | | SB-12 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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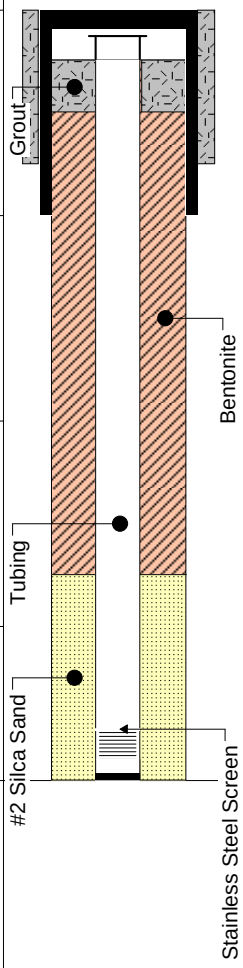
# DRILLING LOG

## Well No. SVMP-13

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-12-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***6 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-12-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **ML** SILT with clay, brown | SB-13 (0-2) | 36 | 0 |
| | | **CH** CLAY with silt, light brown | SB-13 (2-4) | | 0 |
| 5.0 | | **MH** Sandy SILT with clay, light brown, medium grained, poorly graded | SB-13 (4-6) | 12 | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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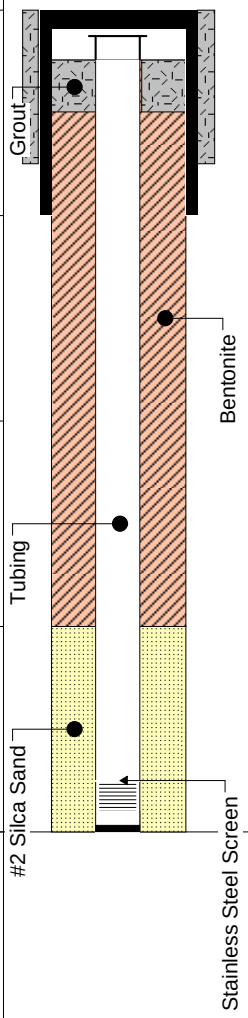
# DRILLING LOG

## Well No. SVMP-14

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-12-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***6 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-12-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **MH** Clayey SILT with sand, light brown, medium grained | SB-14 (0-2) | 42 | 0 |
| | | **ML** SILT with clay, brown | SB-14 (2-4) | | 0 |
| | | **CL** Sandy CLAY with silt, orange-brown, coarse, poorly graded | SB-14 (4-6) | 24 | 0 |
| 5.0 | | | SB-14 (6-8) | | 0 |
| 10.0 | | | | | |

**Well Completion Details**




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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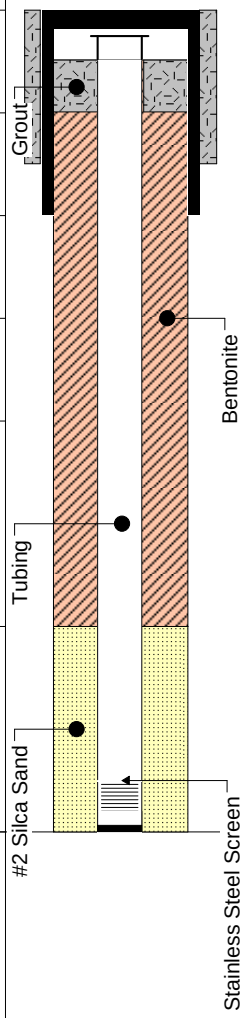
# DRILLING LOG

## Well No. SVMP-15

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-12-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***8 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-12-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) |
|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | |
| | | **OH** SILT with clay, dark brown | SB-15 (0-1) | 48 | 0.6 |
| | | **MH** Clayey SILT, brown | SB-15 (1-2) | | 0.5 |
| | | | SB-15 (2-3) | | 0.6 |
| | | **MH** Sandy SILT with clay, brown, medium grained | SB-15 (3-4) | | 0.4 |
| 5.0 | | | SB-15 (4-6) | 36 | 0.2 |
| | | | SB-15 (6-8) | | 0.2 |
| 10.0 | | | | | |




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

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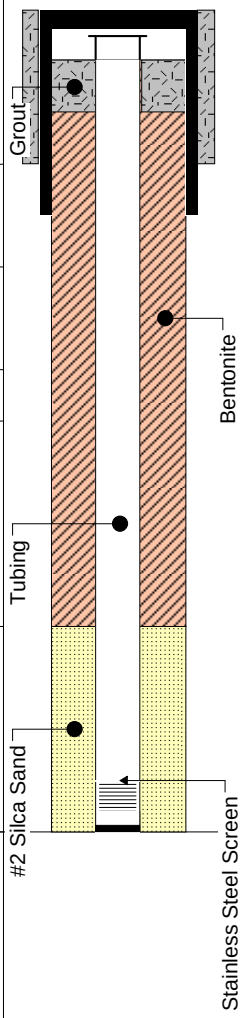
# DRILLING LOG

## Well No. SVMP-16

| | | | | | |
|---|---|---|---|---|---|
| ***Project Name:*** | ***Ron's Discount Energy Mart*** | ***Start Date:*** | ***05-12-09*** | ***Logged By:*** | ***BPS*** |
| ***Site Location:*** | ***8 Hillside Road, Claymont, DE*** | ***End Date:*** | ***05-12-09*** | ***Permit No.:*** | ***NA*** |
| ***Project No:*** | ***102570*** | ***Total Hole Depth:*** | ***8 feet*** | ***Checked By:*** | ***MCS*** |
| ***Client:*** | ***DNREC-TMB*** | ***Hole Diameter:*** | ***2 inches*** | ***Notes:*** | |
| ***Drilling Company:*** | ***Enviroprobe*** | ***Depth to Bedrock:*** | ***NA*** | | |
| ***Driller:*** | ***Jason Kuni*** | ***Well Diameter:*** | ***NA*** | | |
| ***Drill Rig Type:*** | ***Dingo TX-420*** | ***Water Level (Initial):*** | ***NA*** | | |
| ***Drilling Method:*** | ***Direct Push*** | ***Screen Length:*** | ***0.5 feet*** | | |
| ***Sampling Method:*** | ***Continuous Macrocore*** | ***TOC Elevation:*** | ***NA*** | | |

| Depth (feet) | Graphic Log | Soil/Geologic Description | Sample ID | Recovery (in) | PID Headspace (ppm) | Well Completion Details | Depth (feet) |
|---|---|---|---|---|---|---|---|
| 0.0 | | GROUND SURFACE | | | | | 0.0 |
| | | **ML** SILT with clay, light brown | | | | | |
| | | | SB-16 (2) | | 0.4 | | |
| | | | SB-16 (3) | | 0.4 | | |
| | | **ML** Sandy SILT, brown, fine | | | | | |
| 5.0 | | | SB-16 (4-6) | | 0.1 | | 5.0 |
| | | | SB-16 (6-8) | | 0.1 | | |
| 10.0 | | | | | | | 10.0 |




PID - Photoionization Detector
ppm - Parts per million
NA - Not Applicable
* Sample submitted for laboratory analysis

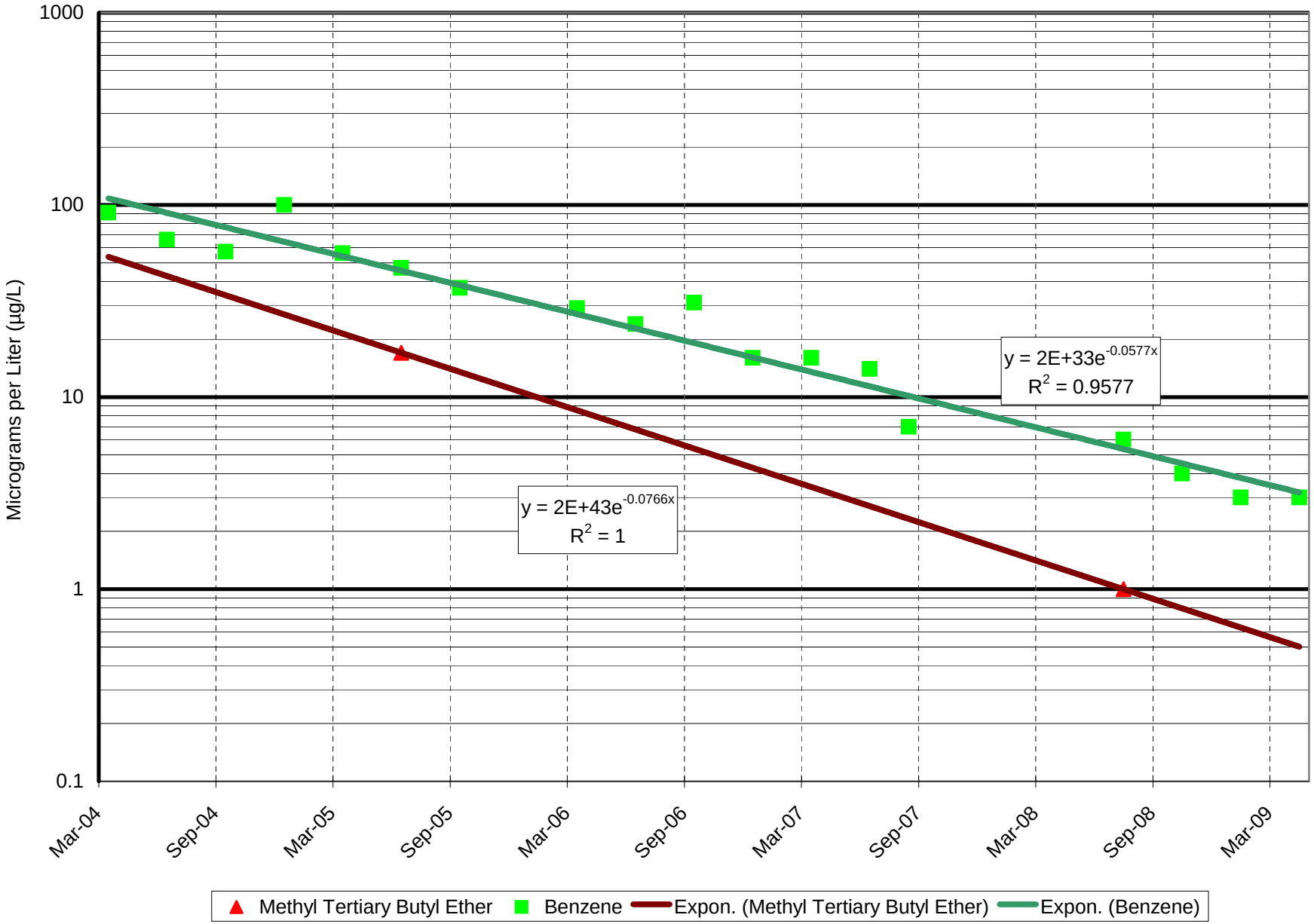
- Water Level Initial Measurement
- Water Level Subsequent Measurement

HA - Hand Auger Sample
S - Split Spoon Sample
GS - Grab Sample
C - Macrocore Sleeve

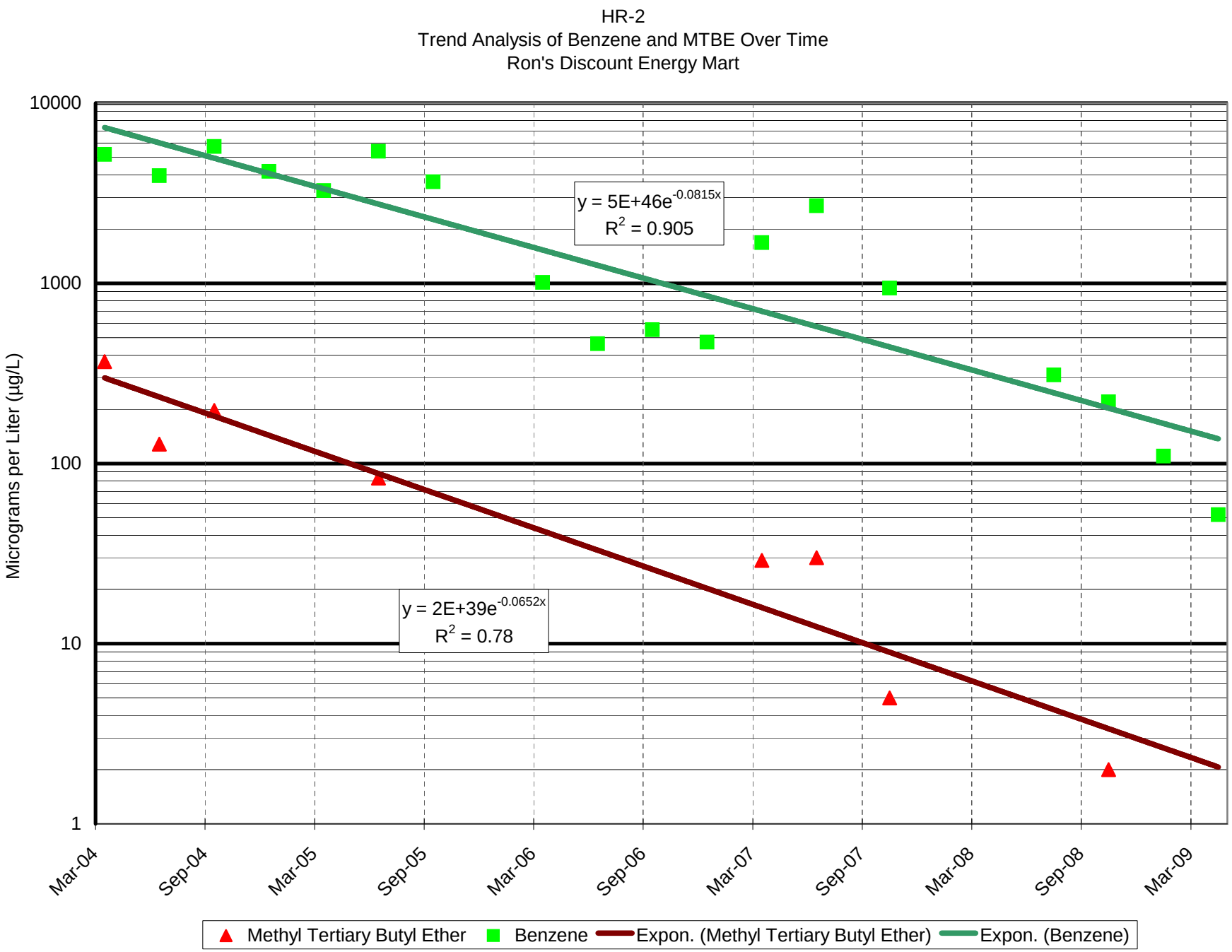
# Appendix C

# Groundwater Trend Analysis

HR-1
Trend Analysis of Benzene and MTBE Over Time
Ron's Discount Energy Mart

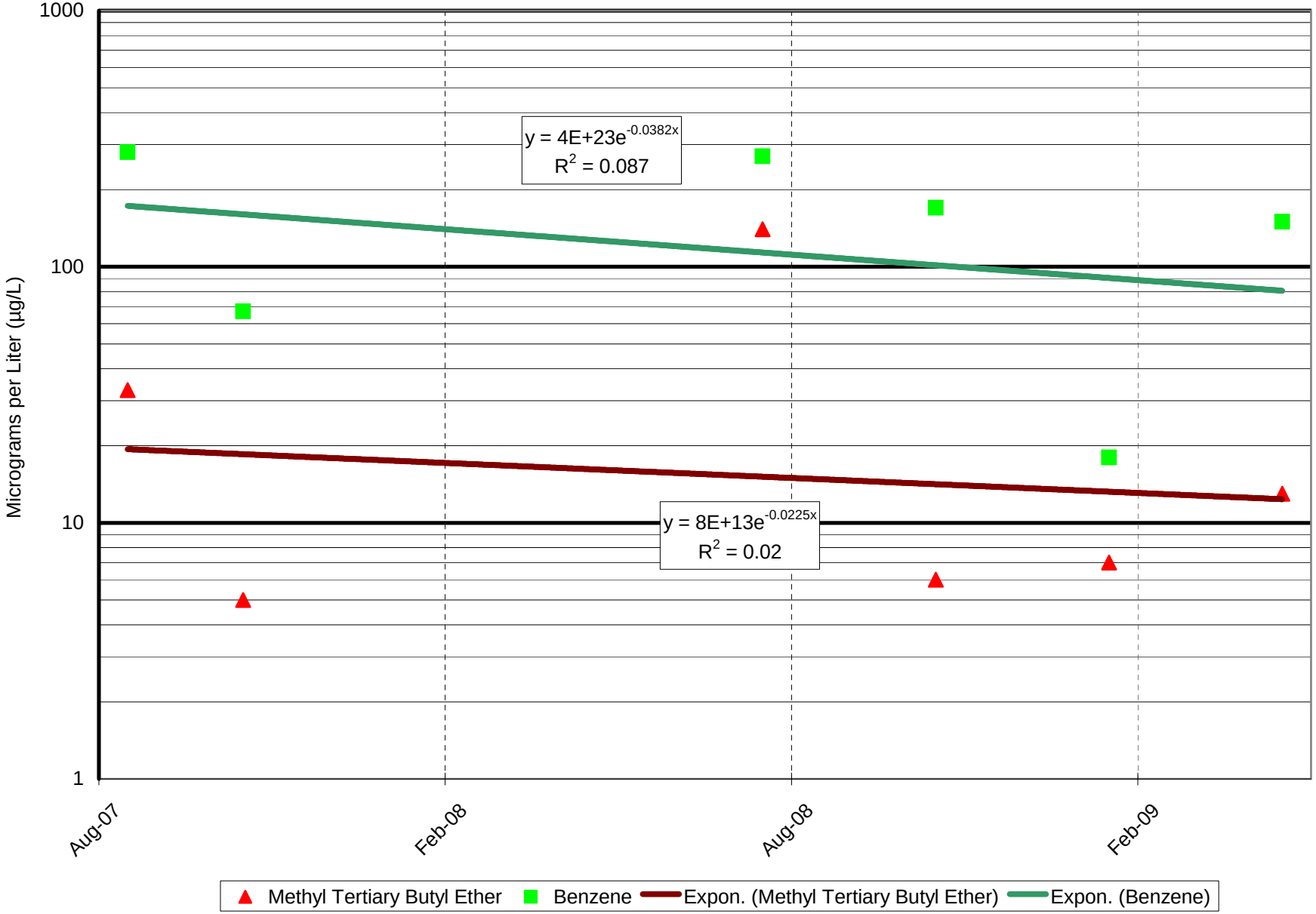



Ref# 0101602_Tbl_Charts 06-07.xls\Chart5



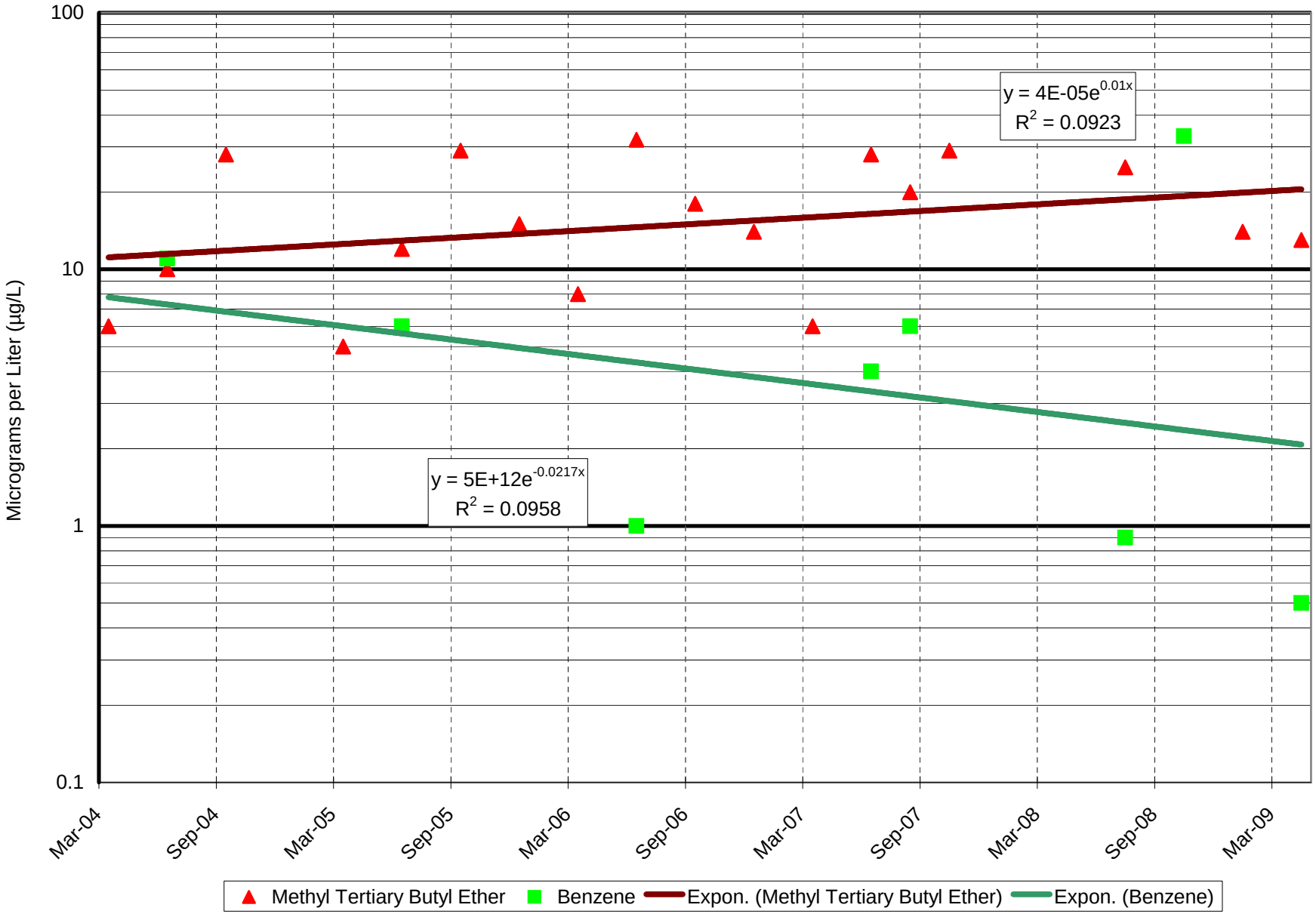

Ref# 0101602_Tbl_Charts 06-07.xls\Chart5

HR-4
Trend Analysis of Benzene and MTBE Over Time
Ron's Discount Energy Mart



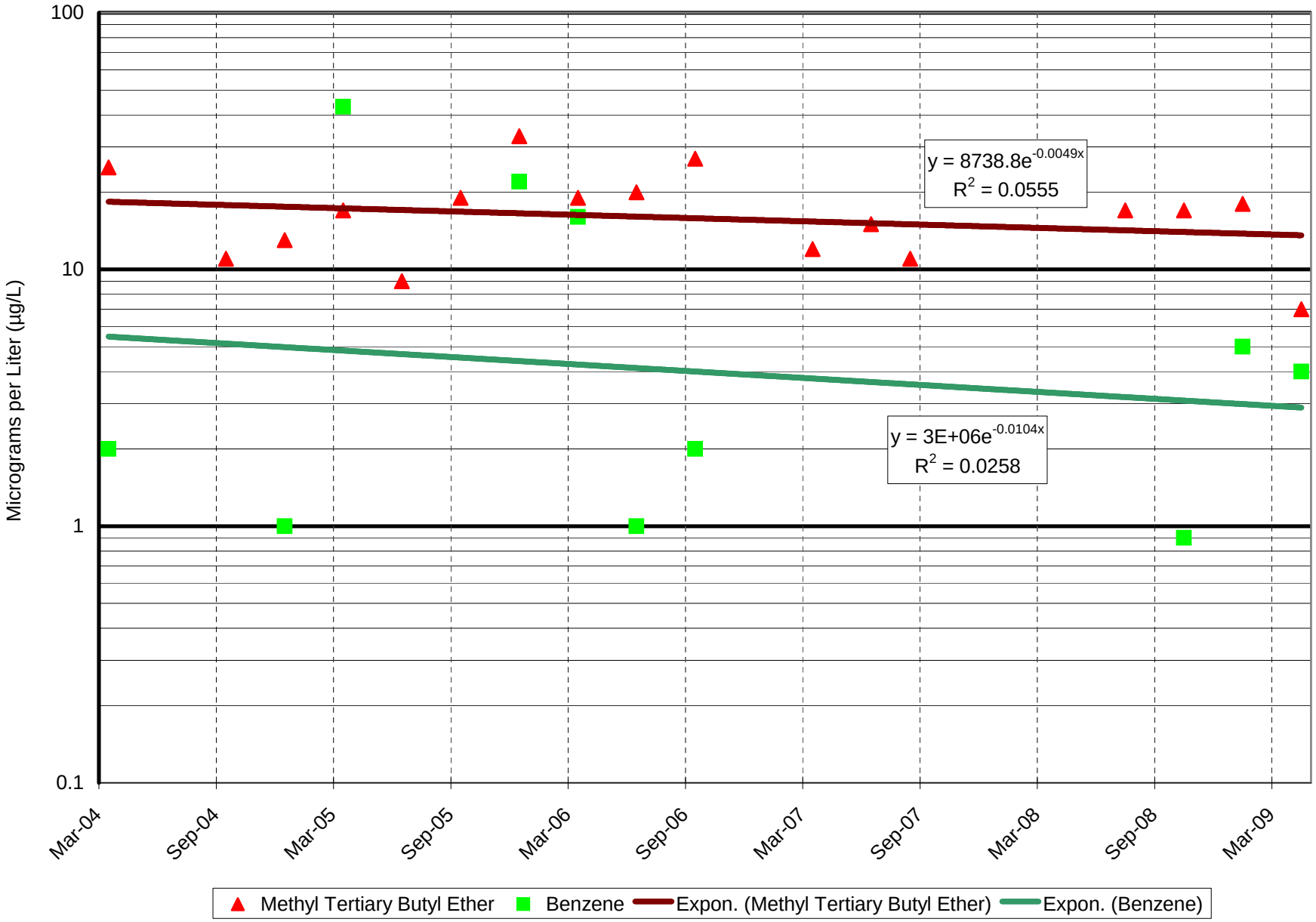

Ref# 0101602_Tbl_Charts 06-07.xls\Chart5

HR-5
Trend Analysis of Benzene and MTBE Over Time
Ron's Discount Energy Mart



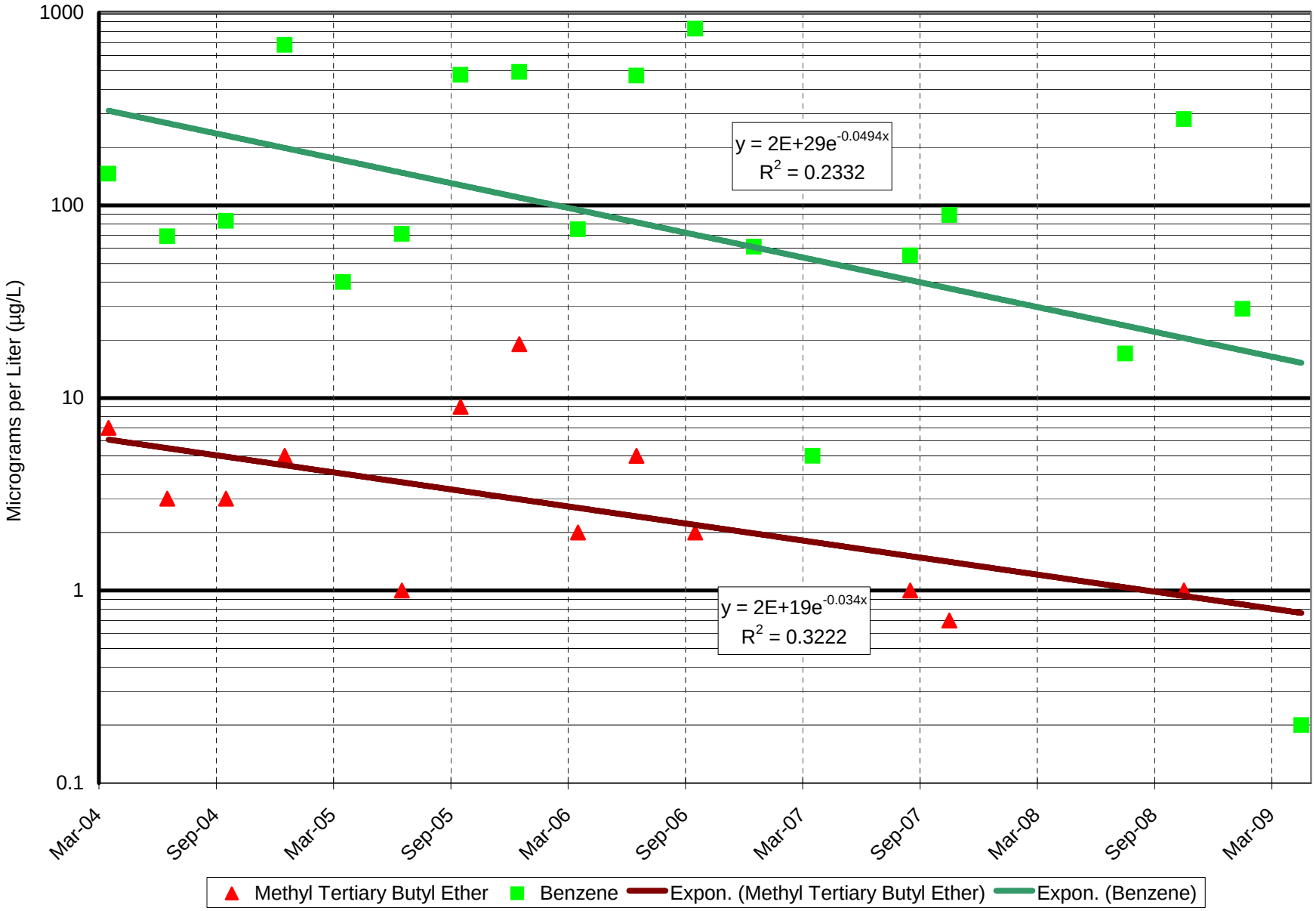

Ref# 0101602_Tbl_Charts 06-07.xls\Chart5

HR-6
Trend Analysis of Benzene and MTBE Over Time
Ron's Discount Energy Mart



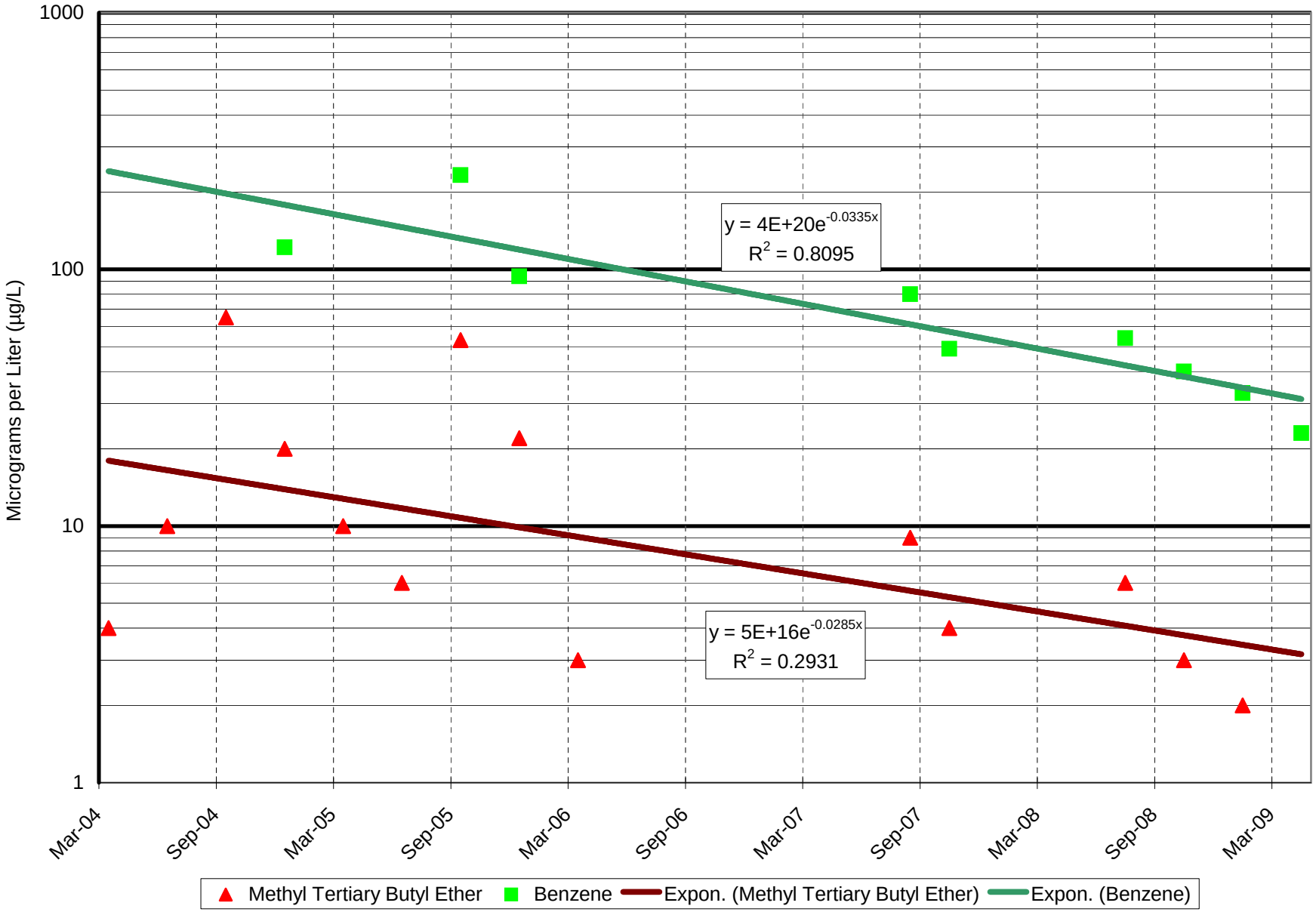

Ref# 0101602_Tbl_Charts 06-07.xls\Chart5

HR-7
Trend Analysis of Benzene and MTBE Over Time
Ron's Discount Energy Mart




Ref# 0101602_Tbl_Charts 06-07.xls\Chart5

MW-2
Trend Analysis of Benzene and MTBE Over Time
Ron's Discount Energy Mart




Ref# 0101602_Tbl_Charts 06-07.xls\Chart5

# Appendix D

# Photodocumentation

Photo 1: View of Zone 1 from Hillside Drive facing west.

Photo 2: View of SVMP installation facing Hillside Road.

Photo 3: View of Zone 2 from the site facing east.

Photo 4: View of Zone 2 from Hillside Road facing east during SVMP installation.

Photo 5: View of heating oil tank located in the basement of 9 Hillside Road.

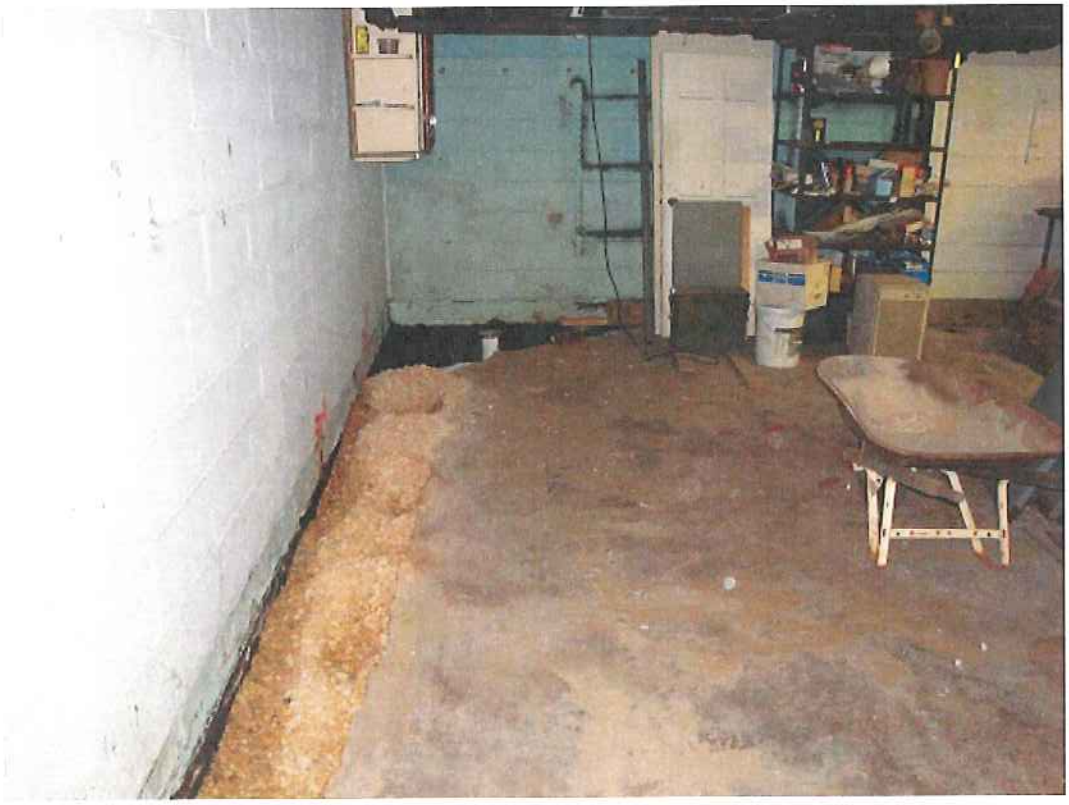


Photo 6: View of excavated basement floor located in 11 Hillside Road.

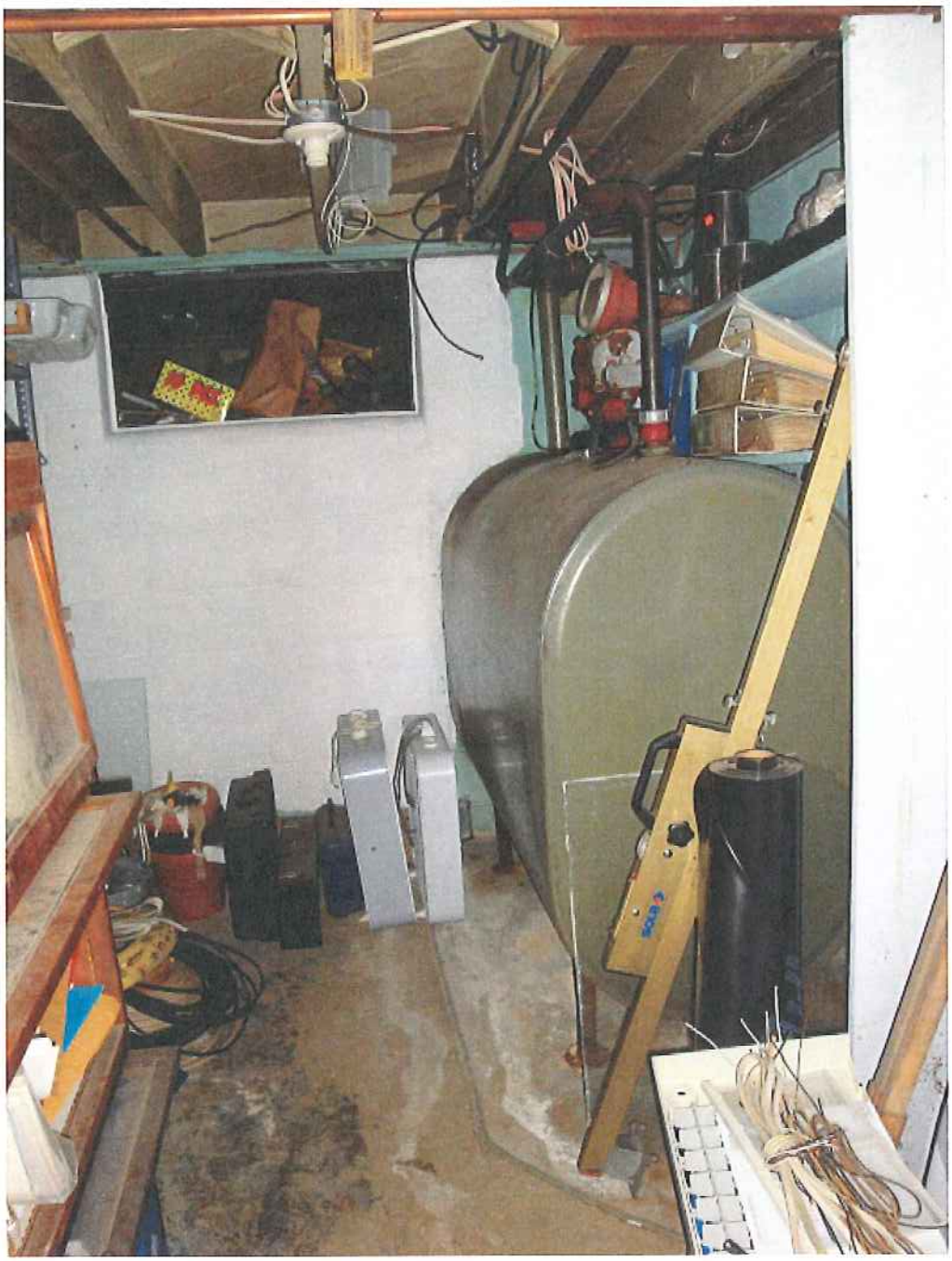


Photo 7: View of heating oil tank located in the basement of 11 Hillside Road.

Photo 8: View of chemical storage on shelving in basement of 10 Hillside Road.

Photo 9: View of oil based paints in use for art project in basement of residence located at 10 Hillside Road.

# Appendix E

## SIRB *Vapor Intrusion Policy* Attachment IV Forms

## (9 through 12 Hillside Road)

**DNREC SIRB Vapor Intrusion Policy**

**Field Sampling Form**

Project #: 9 Hillside Rd. Sample #: See page 25 **(Attach Sample Map)**

Project Name: Ron's Discount Energy

Sampled By: Brian Sladd

Date Sampled: 5/13 - 5/14/07 Time: See page 25

**General Site Conditions:**

Atmospheric Data:

| | |
|---|---|
| weatherunderground.com | Source of Data |
| 0 inches | Precipitation during sampling |
| 3.93 inches | Amount of Precipitation (month to date) |
| 30.37 inches | Barometric Pressure |
| 57°F | Temperature (Ave) |
| 9 mpH | Wind Speed |
| SSE | Wind Direction |

**Sampling System (check one)**

( ) Whole-Air active approach

( ) Whole-Air passive approach

( ) Sorbed contaminants-active approach

( ) Sorbed contaminants-passive approach

( ) Headspace or extraction approach

( ) soil pore liquid headspace approach

Spiked _____ with _____ cc

Potential reaction products due to spiking: _____

**Sample Type**

( X ) Direct Field Sample

( ) Field Blank

( ) Travel Blank

( ) Sample Container Blank

( ) Sample Probe Blank

( ) Sample Replicate of _____

System Purge Volume: NA Volumes Purged: _____ Sample Volume: _____

Sorbent Device: Installed: _____ Date/time

Recovered _____ Date/time

Sample Container Type: SUMMA Sample Container #: 529, 170, 190 basement 1st floor outdoor

Analytical Method: TO-15 (Chain of Custody Attached)

Integral _____ Detector: ppb RAE **(attach equipment calibration, detections** (see map for basement screening results)

9 Hillside

Analyzer: _____ _____ **to this form)**

Analyzer Result: _____

Surface cover: _____

Sample Depth: _____ Sampling rate _____

Sample Horizon data visual estimates:

Vadose Zone Make-up: NA Native soil+rock _____ fill _____ rock

Soil Composition:

| | | |
|---|---|---|
| Clay | _____ | % |
| Soil Organic matter | _____ | % |
| Fine Granular Material | _____ | % |
| Coarse Granular Material | _____ | % |

Moisture Content: NA

Other characteristics:

| | | | |
|---|---|---|---|
| _____ | free water present | _____ | indurated |
| _____ | Free product | _____ | soil discoloration |
| _____ | contaminant odors | _____ | probable connnection to surface macropores |
| _____ | poor perm. To vapor | | |
| _____ | near slope or vent | | |

**STATE OF DELAWARE**
**DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL**

## INDOOR AIR BUILDING SURVEY & SAMPLING FORM

Survey Completed by: Brian Shedd - Kleinfelder Date: 5/11/09

Site Name: Ron's Discount Energy - 9 Hillside Rd
DE#: _____

***Part I - Occupants***

Building Address:
9 Hillside Road, Claymont, DE

Property Contact: George Lewis
Owner/Renter/Other: owner

Contact's Phone: home ( ) _____ work (302) 798-4818
cell ( ) _____

Contact's Email: _____

Building occupants: Children under age 13 _____ Children age 13-18 _____ Adults
2

Special Health Conditions (respiratory, cardiovascular; partially able or homebound?)
None mentioned

Allergies _____ Other (describe)

***Part II – Building Characteristics***

9 Hillside

Building type: single-family residential / trailer or mobile / multi-family residential (duplex, row, apartment?) / office / strip mall / commercial / industrial

Describe building:
1) age Built in 1937
2) construction frame / masonry / steel / other; wood siding
3) type of insulation; plaster walls
4) type of roof gable, asphalt
5) general condition and air tightness
6) fireplace or chimney (serviced recently?)
fireplace, did not appear to be currently in use

Number of floors - below grade: 1 (full basement / crawl space / slab) at or above grade: 2
basement is unfinished

Number of rooms 1 room in basement 6 rooms total Do windows open? yes

Basement size: ~1000 ft$^2$ Basement floor: concrete / dirt / floating / other (specify): ____

Foundation type: poured concrete / cinder blocks (hollow?) / stone / other (specify):

Type of ground cover around outside of building: grass / concrete / asphalt / other (specify):

If vegetation, does it appear stressed? No French drain?_____
Flooding experienced?_____

Floor drains present? yes If yes, trap present? yes Water in trap?
Unable to observe, sealed plate over sump system w/ pump

Connected to a: a) sanitary sewer b) storm sewer c) septic system

9 Hillside

d) surface discharge e) unknown

Basement sump present? *Yes* / *No* Sump pump? *Yes* / *No*

Type of heating system (circle all that apply):

hot air circulation hot air radiation wood steam radiation
hot water radiation
kerosene heater electric baseboard heat pump
other (specify): oil heat
solar/air solar/glycol or other heat transfer fluid
solar/water

If air, when were filters changed last? N A

Type of ventilation system (circle all that apply):
central air conditioning mechanical fans
bathroom ventilation fans individual air conditioning units kitchen
range hood fan other (specify): _____

Type of fuel utilized (circle all that apply):

Natural gas / electric / fuel oil / wood-wood pellets / coal / solar / kerosene / waste oil/ outside (fresh) air intake

Septic system? *Yes* / *Yes (but not used)* / *No* Irrigation/private well? *Yes* / *Yes (but not used)* / *No*

Public or private well *Yes* / *No* If public, name of company

_____

Existing subsurface depressurization (radon) system in place? *Yes* / *No*
and running? *Yes* / *No*

***Part III - Outside Contaminant Sources***

DNREC DEN/Marplot/Brownfields lists (1000-ft. radius):

Previous land use in area:
residential, Former Ron's Discount Energy located

Other stationary sources nearby:

Former Gas stations Emission stacks Refineries/chemical plants

9 Hillside

Waste disposal facilities (LFS & WWTPs) Hot-mix plants Fuel oil tanks
Dry cleaners Beauty shops Auto repair/body shops Road or roof repair w/hot tar

Wetlands nearby? (distance and direction)

No, NWI web mapper checked, closest is .025 miles to the southeast along river boundary

Heavy vehicular traffic nearby (or other mobile sources):

I-495 and I-95 located .20 miles SE and 1 mile N/NW respectively

Known groundwater or soil contamination within 1000 feet

yes, ongoing investigation @ Rons Discount energy

Physical parameters of unsaturated zone (summarize or attach)

primarily silty clay and clayey silt

Sinkholes or Debris Pits

None observed

***Part IV – Indoor Contaminant Sources***

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor & room), and whether the item was removed from the building 48 hours prior to indoor air sampling event.

| ***Potential Sources*** | **Location(s)** | **Removed Prior to Sampling? (Yes / No / NA)** |
|---|---|---|
| Gasoline storage cans | None observed | NA |
| Gas-powered equipment | None observed | NA |

9 Hillside

| | | |
|---|---|---|
| Kerosene storage cans | None observed | NA |
| Paints / thinners / strippers / glues / caulks | See attached listing | no |
| Cleaning solvents | See attached listing | no |
| Oven cleaners | None observed | NA |
| Carpet / upholstery cleaners | None observed | NA |
| Other house cleaning products/laundry products | See attached listing | no |
| Moth balls | None observed | NA |
| Polishes / waxes | None observed | NA |
| Insecticides | None observed | NA |
| Furniture / floor polish | See attached listing | no |
| Nail polish / polish remover | None observed | NA |
| Hairspray | None observed | NA |
| Cologne / perfume / after-shave, etc. | | |
| Air fresheners | | |
| Fuel tank (inside building) (outside) | See attached listing (inside) | NA |
| Wood stove or fireplace | yes, 1st floor | NA |
| New furniture / upholstery | None observed | NA |
| New carpeting / flooring /paneling | None observed | NA |
| Recent painting in building? Roof repair? | None observed | NA |
| Hobbies - glues, paints, etc. | See attached listing | no |
| Toilet or septic additives | See attached listing | no |
| Dry drain traps, plugged drains, toilets won't flush | None observed | NA |
| Garbage/spoiled food | None observed | NA |
| Standing water/tire piles/recent flooding | None observed | NA |
| Sewage/septage | None observed | NA |
| Dead animals (including unusual numbers of insects)? | None observed | NA |
| Mold/mildew | None observed | NA |
| Wet sheetrock/paneling/flooring | None observed | NA |
| Neighbors making drugs/Explosives | None observed | NA |
| Mercury-containing switches or instruments | None observed | NA |
| Alcohol/bleach/disinfectants | See attached listing | no |
| Recent concrete/masonry work | None observed | NA |
| Flowers | yes, kitchen and dining room table | no |
| Pets (specify); scented kitty litter | Dogs (2) | no |
| Compost/manure | None observed | NA |

***Part V – Miscellaneous Items***

9 Hillside

Do any occupants of the building smoke? *Yes* / *No* How often? _____

Any chronic health problems? *Yes* / *No*

Has anyone smoked within the building within the last 48 hours? *Yes* / *No*

Does the building have an attached garage? *Yes* / *No*
If yes, does garage have heat/ventilation?
_____

Connected to house or separate? separate Windows? *Yes* / *No*

If so, is a car usually parked in the garage? *Yes* / *No*

Do the occupants of the building have their clothes dry-cleaned? *Yes* / *No*
If yes, name of dry cleaner
unknown

When were dry-cleaned clothes last brought into the building?

unknown

Have the occupants ever noticed any unusual odors in the building? *Yes* / *No*

Describe (with location): Date worst during heavy rain events Amount
_____

Any known spills of a chemical, fuel or sewage immediately outside or inside the building?
*Yes* / *No* Fires? *Yes* / *No*

Describe (with location):_____

Have any pesticides/herbicides been applied around the building foundation or in the yard/gardens? *Yes* / No unknown

Have any pesticides been applied regionally, e.g. by Mosquito Control or DSWC? *Yes* / *No*

9 Hillside

If so, when and which chemicals?

Are odors more noticeable under certain weather conditions? Describe (wind direction/ speed/precipitation/temperature/humidity):
yes, during rain events

***Part VI – Sampling Information***

Sample Technician: Brian Shedd Phone number: (410) 850-0404

Sampler Type: Tedlar / Sorbent / Canister
Analytical Method: TO-15 / TO-17 / other:

Laboratory: Lancaster Laboratories NJ Certified Lab? Yes / No

| Sample # | Floor | Room | Canister / Tube # | Pump ID # (if applicable) | Sample Start Date / Time | Sample End Date / Time |
|---|---|---|---|---|---|---|
| 1 | Basement | — | 524 | 334066 | 5/13/09 / 1746 | 5/14/09 / 1733 |
| 2 | 1st floor | Dining | 170 | 303465 | 5/13/09 / 1407 | 5/14/09 / 1735 |
| 3 | Outdoor | — | 190 | 236422 | 5/13/09 / 1416 | 5/14/09 / 1741 |

9 Halsick

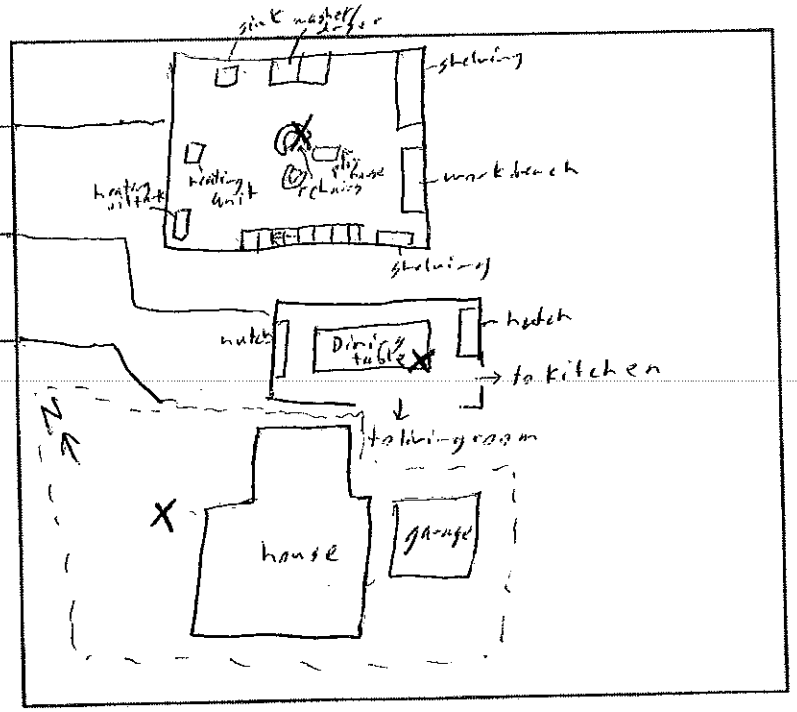
Sample location(s):
Location(s) in Building

Sample # 1 - X = sample location basement

Sample # 2 - 1st floor

Sample # 3 - Outdoor

Provide Drawing of Sample




Did the occupants **not** follow any of the "Instructions for Residents" directions? *Yes* / *No*

If so, describe modifications: VOC items not removed

***Part VII - Weather Conditions***

Outside temperature at time of sampling: 57 °F

Expected high temperature: 71 °F Expected low temperature: 43 °F

Humidity: 54 Barometric pressure: 30.37 Ozone: Red/Orange alert?

Was there significant precipitation within 12 hours of (or during) the sampling event? *Yes* / *No*

PHillside

Wind direction and speed
9 mph / SSE

Describe the general weather conditions:
Cool and clear with slight wind, w/ strong winds gusting overnight to max of 24mph

***Fill out and attach DNREC SIRB Vapor Intrusion Guidance Document Field Sampling Form 1 to this form.***

***Part VIII – General Observations***

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.
See attached map and product inventory sheet; product screening results depicted on map

9 Hillside Road Product Inventory Sheet

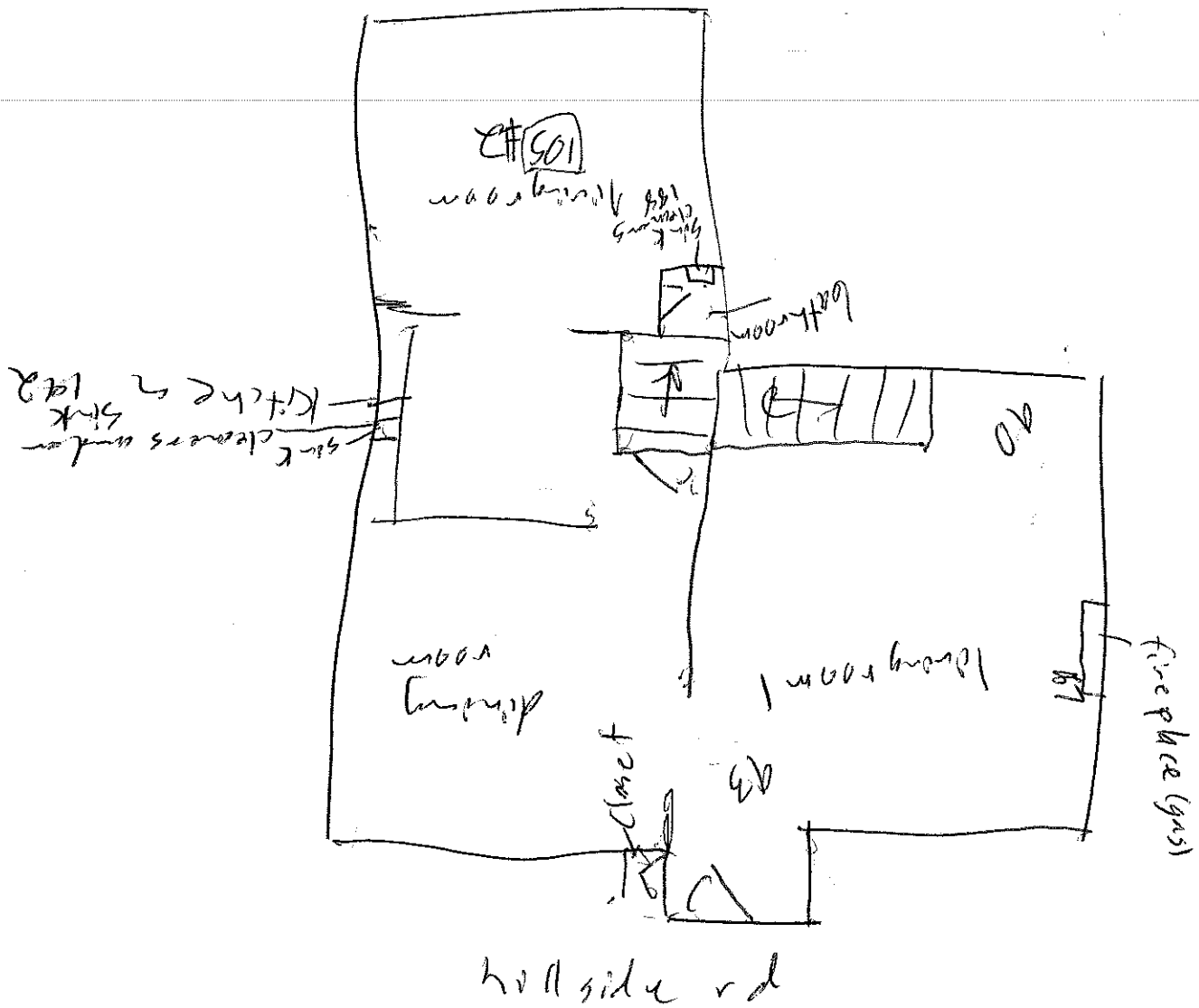
Basement –

- Pledge (1) - furniture cleaner/polish
- Zout (1) – Laundry stain remover
- Tide (1) – Laundry detergent
- Shout (3)– Laundry stain remover
- Sun and Earth (2) – Hand sanitizer
- Fantastik (2) – All purpose cleaner
- Purex (3) – Ultra concentrate laundry detergent
- Bleach (2) – Off brand regular scent and Clorox scented
- Paints
    - Glidden(1) – Interior ceiling paint {Latex}
    - Moorcraft (1) – Super Spec {Latex}
    - Dulux (5) – Interior Wall and Trim Enamel {Acrylic}
    - Ultra Hide (1) – Semi-gloss {Latex}
    - Krylon (1)– Interior/Exterior spray paint
    - American Accent (2) – Satin spray paint
- Olympic (1) – Interior varnish
- Quickrete (1) – Concrete surface seal
- Oil (2) - Miscellaneous Lube in original container
- Gear Oil (1)
- Heating Oil Tank (1)

1st Floor –

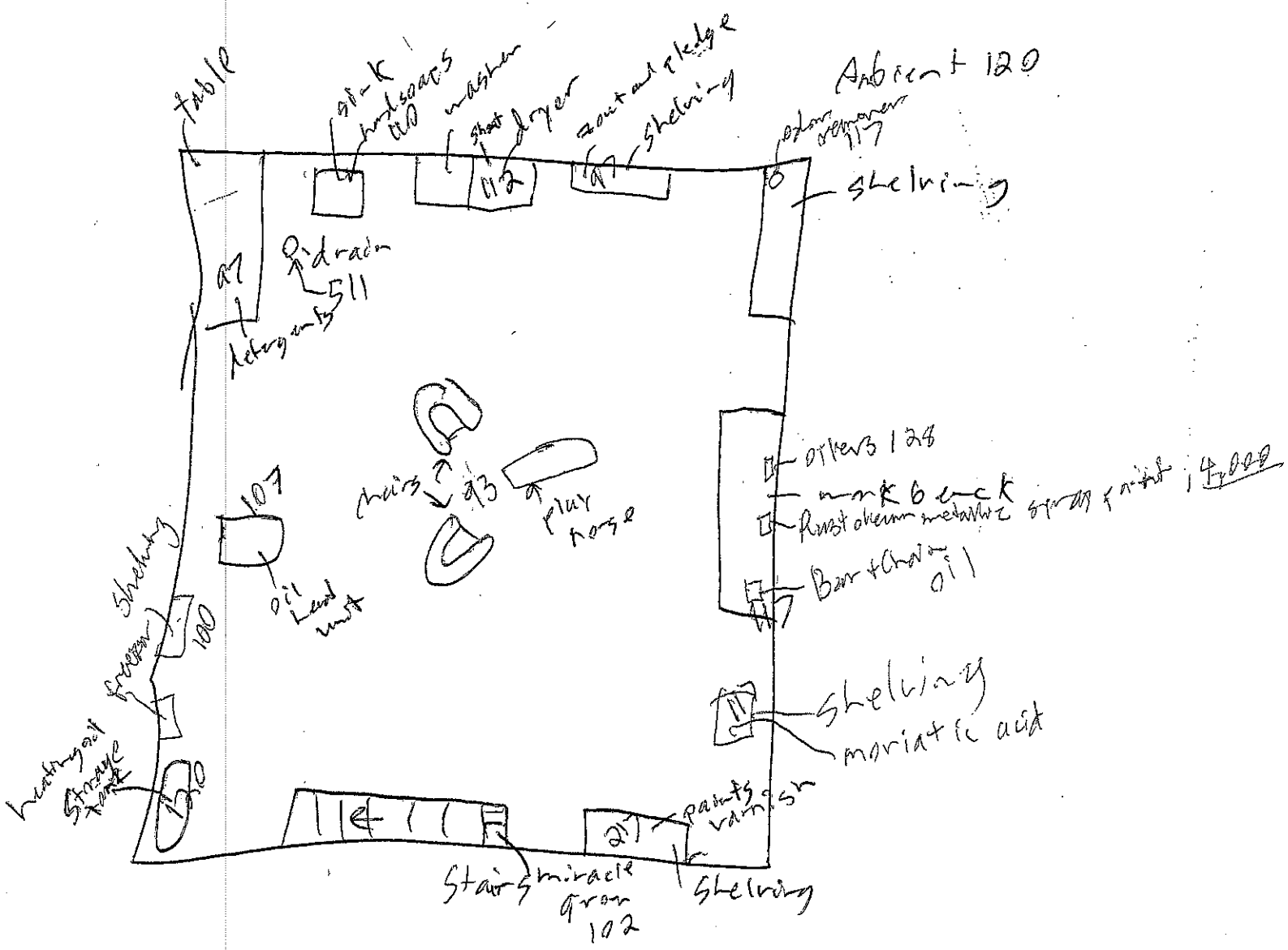
- Windex (2) – Glass cleaner
- Clorox (2) – Disinfecting wipes, bleach free
- Lysol (1) – Disinfecting wipes, bleach free
- Lysol (1) – Disinfecting spray
- Palmolive (2) – Dish detergent
- Endust (1) – furniture cleaner/polish
- Bob's Affordable (1) – Carpet cleaner
- Electrosol (1) – Dish detergent
- Simple Solution (1) – Hardfloor stain and odor remover
- Apple Barrel Colors (1)– Craft Paint
- Wegmens Lens wipes (1)
- Listerine (1)
- Lysol (1) – Toilet bowl cleaner w/ Bleach

9 Hillside Rd 1st floor




1645-done at 9 Hillside

9 Hillside Rd Basement



**DNREC SIRB Vapor Intrusion Policy**

**Field Sampling Form**

Project #: 10 Hillside Rd. Sample #: See page 25 **(Attach Sample Map)**

Project Name: Ron's Discount Energy

Sampled By: Brian Shedd

Date Sampled: 5/13-5/14/09 Time: See page 25

**General Site Conditions:**

Atmospheric Data:

| | |
|---|---|
| weatherundergroundcom | Source of Data |
| 0 inches | Precipitation during sampling |
| 3.23 inches | Amount of Precipitation |
| 30.37 inches | Barometric Pressure |
| 57°F | Temperature (Ave) |
| 9 mph | Wind Speed |
| SSE | Wind Direction |

**Sampling System (check one)**

( ) Whole-Air active approach

( ) Whole-Air passive approach

( ) Sorbed contaminants-active approach

( ) Sorbed contaminants-passive approach

( ) Headspace or extraction approach

( ) soil pore liquid headspace approach

**Sample Type**

( X ) Direct Field Sample

( ) Field Blank

( ) Travel Blank

( ) Sample Container Blank

( ) Sample Probe Blank

( ) Sample Replicate of _____

Spiked _____ with _____ cc

Potential reaction products due to spiking: _____

System Purge Volume: NA Volumes Purged: _____ Sample Volume: _____

Sorbent Device: Installed: _____ Date/time

Recovered _____ Date/time

Sample Container Type: SUMMA Sample Container #: _____

Analytical Method: TO-15 (Chain of Custody Attached)

Integral _____ Detector: ppbRAE **(attach equipment calibration, detections** (see map for basement and 1st floor screening results)

10 Hillside

Analyzer: _____ _____ **to this form)**

Analyzer Result: _____

Surface cover: _____

Sample Depth: _____ Sampling rate _____

Sample Horizon data visual estimates:

Vadose Zone Make-up: NA Native soil+rock _____ fill _____ rock

Soil Composition:

| | | |
|---|---|---|
| Clay | _____ | % |
| Soil Organic matter | _____ | % |
| Fine Granular Material | _____ | % |
| Coarse Granular Material | _____ | % |

Moisture Content: NA

Other characteristics:

| | | | |
|---|---|---|---|
| _____ | free water present | _____ | indurated |
| _____ | Free product | _____ | soil discoloration |
| _____ | contaminant odors | _____ | probable connnection to surface macropores |
| _____ | poor perm. To vapor | | |
| _____ | near slope or vent | | |

10 Hillside

*STATE OF DELAWARE*
*DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL*

**INDOOR AIR BUILDING SURVEY & SAMPLING FORM**

Survey Completed by: Brian Shedd – Kleinfelder Date: 5/11/09

Site Name: Ron's Discount Energy – 10 Hillside Rd
DE#:

***Part I - Occupants***

Building Address:
10 Hillside Rd, Claymont, DE

Property Contact: Toby Conrad
Owner/Renter/Other: Owner

Contact's Phone: home ( ) work ( )
cell ( )

Contact's Email:

Building occupants: Children under age 13 2 Children age 13-18 0 Adults 3

Special Health Conditions (respiratory, cardiovascular; partially able or homebound?)
None mentioned

Allergies Other (describe)

***Part II – Building Characteristics***

10 ft. inside

Building type: single-family residential / trailer or mobile / multi-family residential (duplex, row, apartment?) / office / strip mall / commercial / industrial

Describe building:
1) age Built in 1938
2) construction frame / masonry / steel / other; vinyl siding
3) type of insulation; Plaster walls
4) type of roof Gable, asphalt
5) general condition and air tightness
6) fireplace or chimney (serviced recently?)

Number of floors - below grade: 1 (full basement / crawl space / slab) at or above grade:
unfinished basement

Number of rooms _____ Do windows open? _____

Basement size: 1077 ft$^2$ Basement floor: concrete / dirt / floating / other (specify): ____

Foundation type: poured concrete / cinder blocks (hollow?) / stone / other (specify):

Type of ground cover around outside of building: grass / concrete / asphalt / other (specify):

If vegetation, does it appear stressed? No French drain?_____ Flooding experienced?_____

Floor drains present? yes If yes, trap present? no Water in trap? water observed in drain

Connected to a: a) sanitary sewer b) storm sewer c) septic system
unknown

10 Hillside

d) surface discharge e) unknown

Basement sump present? *Yes* / *No* Sump pump? *Yes* / *No*

Type of heating system (circle all that apply):

hot air circulation hot air radiation wood steam radiation
hot water radiation
kerosene heater electric baseboard heat pump
other (specify): natural gas
solar/air solar/glycol or other heat transfer fluid
solar/water

If air, when were filters changed last?

Type of ventilation system (circle all that apply):
central air conditioning mechanical fans
bathroom ventilation fans individual air conditioning units kitchen
range hood fan other (specify): _____

Type of fuel utilized (circle all that apply):

Natural gas / electric / fuel oil / wood-wood pellets / coal / solar / kerosene / waste oil/ outside (fresh) air intake

Septic system? *Yes* / *Yes (but not used)* / *No* Irrigation/private well? *Yes* / *Yes (but not used)* / *No* Old system possibly still in place but not in use

Public or private well *Yes* / *No* If public, name of company _____

Existing subsurface depressurization (radon) system in place? *Yes* / *No* and running? *Yes* / *No*

***Part III - Outside Contaminant Sources***

DNREC DEN/Marplot/Brownfields lists (1000-ft. radius):

Previous land use in area: Residential, former Rons Discount Energy service station 300' away

Other stationary sources nearby:

Gas stations Emission stacks Refineries/chemical plants

10 Hillside

Waste disposal facilities (LFS & WWTPs) Hot-mix plants Fuel oil tanks
Dry cleaners Beauty shops Auto repair/body shops Road or roof repair w/hot tar

Wetlands nearby? (distance and direction)

No, NWI web mapper checked, closest is 0.25 miles SE along river boundary

Heavy vehicular traffic nearby (or other mobile sources):

I-495 and I95 located 0.20 mi SE and 1 mi N/NW, respectively

Known groundwater or soil contamination within 1000 feet

yes, on going investigation @ Ron's Discount Energy

Physical parameters of unsaturated zone (summarize or attach)

Primarily silty clay and clayey silt

Sinkholes or Debris Pits

None Observed

***Part IV – Indoor Contaminant Sources***

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor & room), and whether the item was removed from the building 48 hours prior to indoor air sampling event.

| ***Potential Sources*** | **Location(s)** | **Removed Prior to Sampling? (Yes / No / NA)** |
|---|---|---|
| Gasoline storage cans | None Observed | NA |
| Gas-powered equipment | None Observed | NA |

16 Hillside

| | | |
|---|---|---|
| Kerosene storage cans | None Observed | NA |
| Paints / thinners / strippers / glues / caulks | See attached listing | no |
| Cleaning solvents | See attached listing | no |
| Oven cleaners | None Observed | NA |
| Carpet / upholstery cleaners | | |
| Other house cleaning products/laundry products | See attached listing | no |
| Moth balls | None Observed | NA |
| Polishes / waxes | See attached listing | no |
| Insecticides | See attached listing | no |
| Furniture / floor polish | see attached listing | no |
| Nail polish / polish remover | see attached listing | no |
| Hairspray | None observed | NA |
| Cologne / perfume / after-shave, etc. | None observed | NA |
| Air fresheners | Yes, unbranded scent sticks | no |
| Fuel tank (inside building) (outside) | None observed | NA |
| Wood stove or fireplace | Yes, fireplace observed | NA |
| New furniture / upholstery | None observed | no |
| New carpeting / flooring /paneling | Yes, new carpeting installed 4 yrs ago on 1st floor | NA |
| Recent painting in building? Roof repair? | Yes, painted backroom on 1st floor on day of inspection, coated the roof approx. 2 yrs ago | NA |
| Hobbies - glues, paints, etc. | See attached listing | no |
| Toilet or septic additives | See attached listing | no |
| Dry drain traps, plugged drains, toilets won't flush | No | NA |
| Garbage/spoiled food | No | NA |
| Standing water/tire piles/recent flooding | No | NA |
| Sewage/septage | No | NA |
| Dead animals (including unusual numbers of insects)? | No | NA |
| Mold/mildew | No | NA |
| Wet sheetrock/paneling/flooring | No | NA |
| Neighbors making drugs/Explosives | No | NA |
| Mercury-containing switches or instruments | Possibly, 1 old thermometer located on 2nd floor | no |
| Alcohol/bleach/disinfectants | See attached listing | no |
| Recent concrete/masonry work | Supports for deck (exterior of home) | no |
| Flowers | In kitchen on 1st floor and outside | no |
| Pets (specify); scented kitty litter | 2 cats, scented kitty litter obs. | no |
| Compost/manure | No | NA |

***Part V – Miscellaneous Items***

10 Hillside

Do any occupants of the building smoke? *Yes* / *No* How often? _____

Any chronic health problems? *Yes* / *No*

Has anyone smoked within the building within the last 48 hours? *Yes* / *No*

Does the building have an attached garage? *Yes* / *No*
If yes, does garage have heat/ventilation? No
Connected to house or separate? connected Windows? *Yes* / *No*

If so, is a car usually parked in the garage? *Yes* / *No*

Do the occupants of the building have their clothes dry-cleaned? *Yes* / *No*
If yes, name of dry cleaner _____

When were dry-cleaned clothes last brought into the building?

January 2009

Have the occupants ever noticed any unusual odors in the building? *Yes* / *No*

Describe (with location): Date last observed a few weeks ago Amount _____ Petroleum type odors noted by resident which are more noticable after rain events

Any known spills of a chemical, fuel or sewage immediately outside or inside the building?
*Yes* / *No* Fires? *Yes* / *No*

Describe (with location): _____

Have any pesticides/herbicides been applied around the building foundation or in the yard/gardens? *Yes* / No Pesticides professionally applied approx. every 3 months

Have any pesticides been applied regionally, e.g. by Mosquito Control or DSWC? *Yes* / *No*

10Hillside

If so, when and which chemicals?
Unknown

Are odors more noticeable under certain weather conditions? Describe (wind direction/ speed/precipitation/temperature/humidity):
yes, during precipitation (Rain) events

***Part VI – Sampling Information***

Sample Technician: Brian Shedd Phone number: (410) 850 - 0404

Sampler Type: Tedlar / Sorbent / Canister
Analytical Method: TO-15 / TO-17 / other:

Laboratory: Lancaster Laboratories NJ Certified Lab? Yes / No

| Sample # | Floor | Room | Canister / Tube # | Pump ID # (if applicable) | Sample Start Date / Time | Sample End Date / Time |
|---|---|---|---|---|---|---|
| 1 | Basement | NA | 160 | 11829 | 5/13/09 - 1759 | 5/14/09 - 1707 |
| 2 | 1st floor | Living room | 006 | 329159 | 5/13/09 - 1757 | 5/14/09 - 1703 |
| 3 | Outdoor | NA | 074 | 339184 | 5/13/09 - 1640 | 5/14/09 - 1714 |

18 Hillside

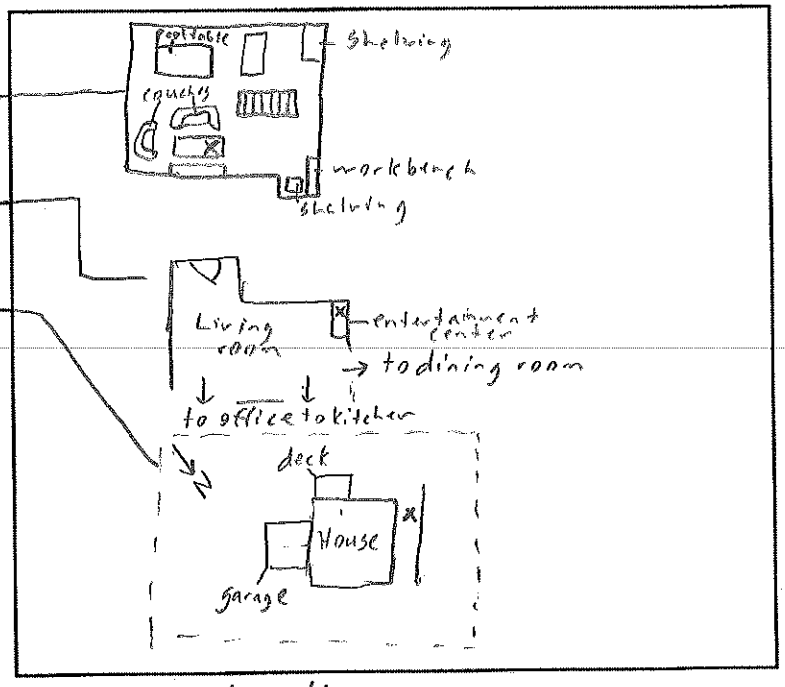
Sample location(s):
Location(s) in Building

Provide Drawing of Sample

Sample # 1 - Basement

Sample # 2 - 1st floor

Sample # 3 - Outdoor




X = sample location

Did the occupants **not** follow any of the "Instructions for Residents" directions? *Yes* / *No*

If so, describe modifications: No VOC containing items removed

***Part VII - Weather Conditions***

Outside temperature at time of sampling: 57 °F

Expected high temperature: 71 °F Expected low temperature: 43 °F

Humidity: 58 Barometric pressure: 30.37 Ozone: Red/Orange alert?

Was there significant precipitation within 12 hours of (or during) the sampling event? *Yes* / *No*

10 Hillside

Wind direction and speed
9 mph / SSE

Describe the general weather conditions:
Cool and clear with slight wind; strong wind gusting overnight to a maximum of 29 mph

***Fill out and attach DNREC SIRB Vapor Intrusion Guidance Document Field Sampling Form 1 to this form.***

***Part VIII – General Observations***

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.
See attached map and product inventory sheet; product screening results depicted on map in parts per billion (ppb)

10 Hillside Road Product Inventory Sheet

Basement –

- Shout (4) – Laundry Stain Remover
- Hot Shot (2) – Pesticide Fogger
- OxyClean (1) – Stain Remover spray
- Febreeze (1) – Deodorizer
- Good Off (1) – Paint Remover
- MinWax (1) - Sanding Sealer
- MinWax (2) – Wood Sealant and Stain
- MinWax (1) – Polyurethane
- American Traditions and Behr (17) – Interior Latex Paint
- Sheetrock (3) – Joint Compound Paste
- Spackling (2) - Paste
- Simple Green (1) - Cleaner
- Liquid Plumber (1) – Unclogging Gel
- All (2) – Laundry Detergent
- Miracle-Gro (1) – Plant Food
- Downy (2) – Laundry Detergent
- Shout (1) – Laundry Detergent
- Bleach (1) – Clorox
- Caulk (6) – Adhesive sealant
- Rustoleum (1) – Primer
- WD-40 (1) – Spray lubricant
- STP (1) – Gas treatment
- Pipe Joint Compound (1) – White
- Liquid Sandpaper (1) – Paint Remover
- Parks (1) – Turpentine
- Gunk (1) – Silicone Spray lubricant
- Paper cement (1) – Best Test White Rubber cement
- Elmers (2) – Interior Wood Filler
- DAP (1) – Wood Glazing
- Refined Linseed Oil – Winsor and Newton
- Rustoleum (1) – Writable chalk board latex paint
- RADC (1) - Windshield and lock de-icing spray
- Valspar (1) – Metal and Patina Glaze
- DATY (1) – PVC cement
- OxyClean (1) – Stain remover powder
- ZEP (1) – Heavy duty Hand Cleaner
- Resolve (1) – Stain Remover Spray
- Spray 'n Wash (1) – Stain Remover Spray
- Dawn (1) – Special Care Stain Treatment
- Ortho (3) – Bug B Gon pesticide

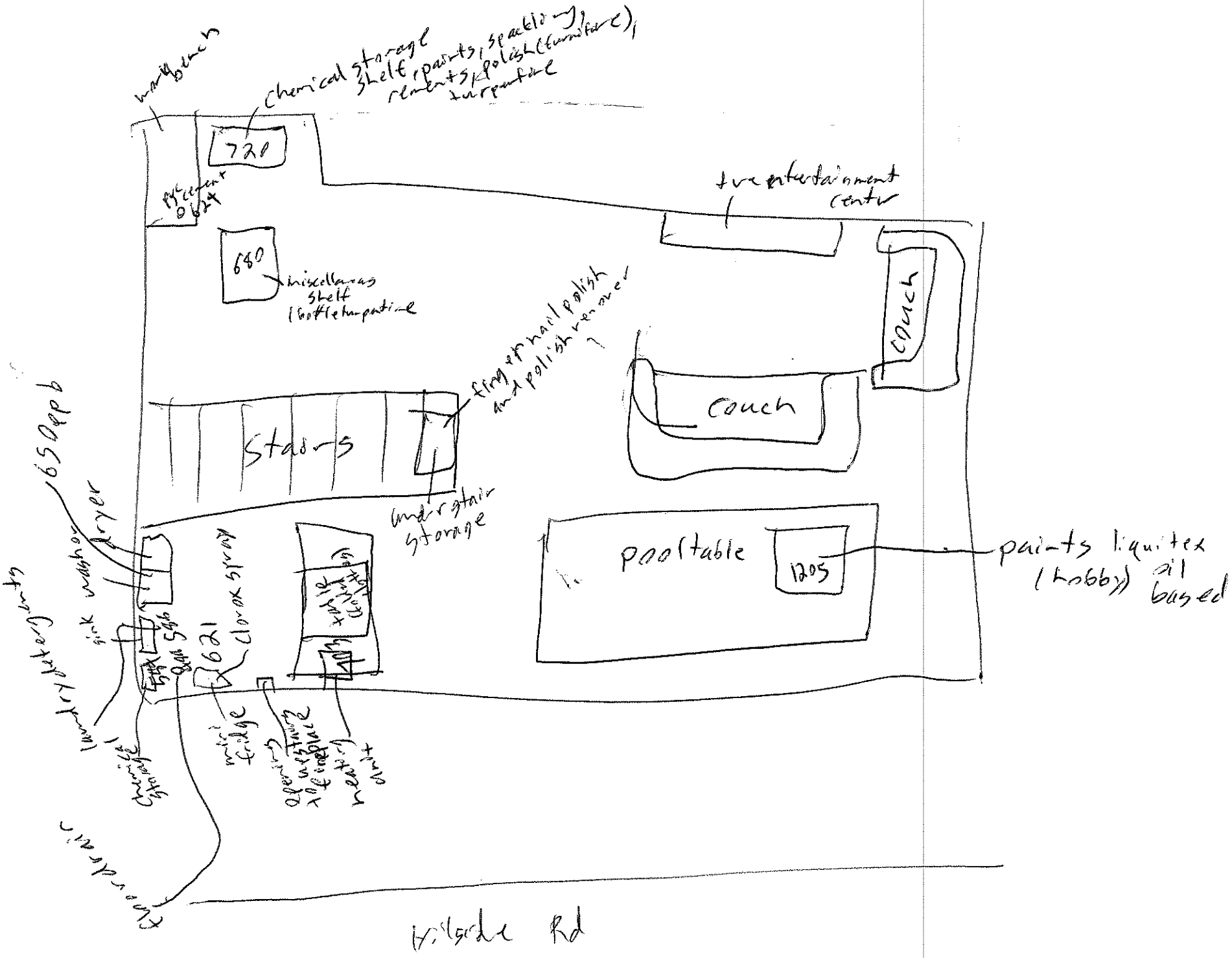
10 Hillside

- Calgon (1) – Water Softener liquid
- Niagra (2) – Spray Starch
- Clorox (1) – Spray cleaner w/ bleach
- Liquitex (11) – Oil Based Paint
- Raid (3) – Insecticide Spray

1st Floor –

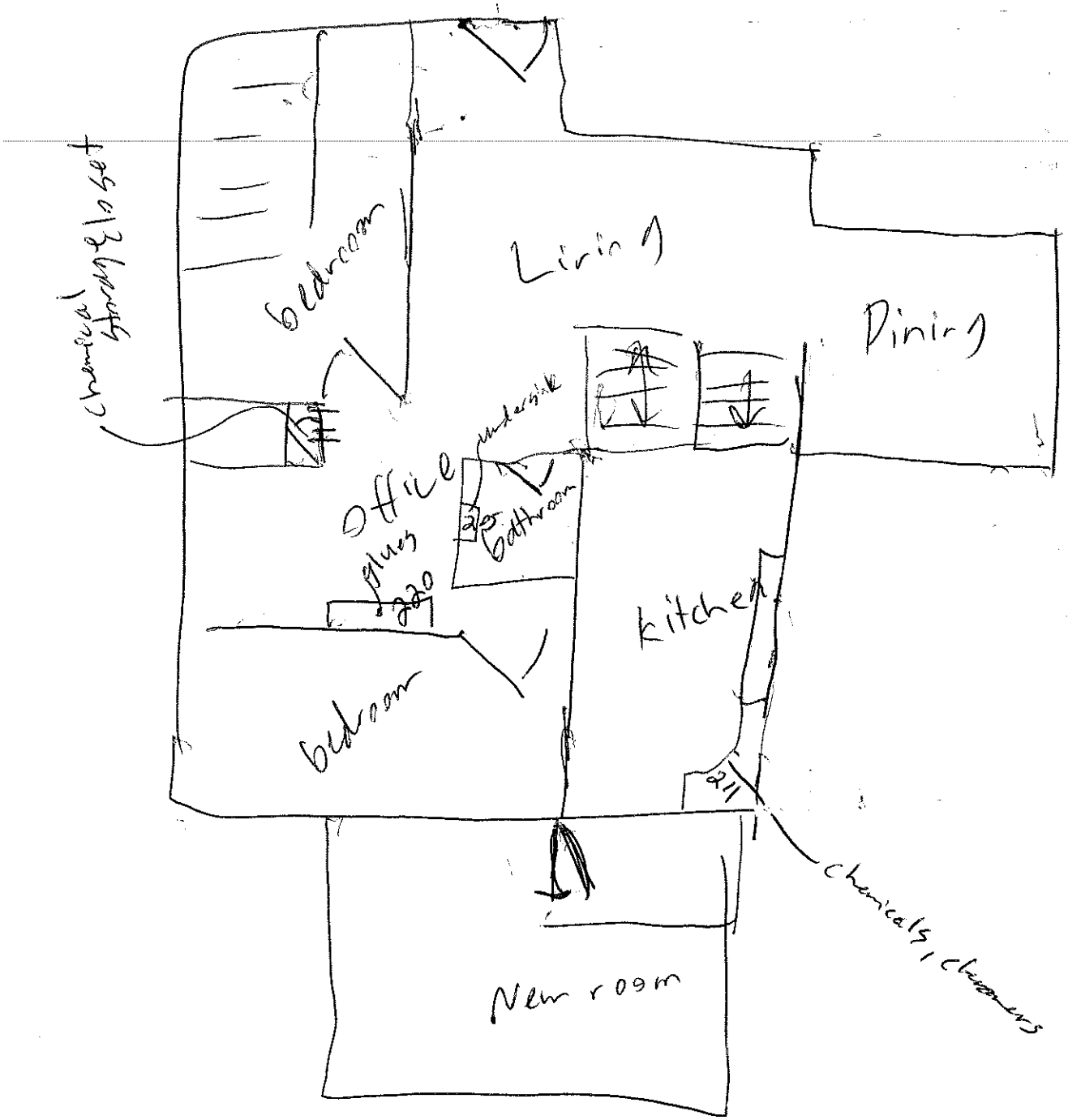
- Windex (1) – Glass cleaner
- Clorox (2) – Spray Cleaner w/ Bleach
- Dish Soap (1) – Palmolive antibacterial
- Dish Detergent (1) – Palmolive Lemon
- Spot Shot (1) – Carpet Stain Remover
- Lysol (1) – Antibacterial Spary
- Swifter Wetjet (1) – Floor Cleaner
- Fantastik (1) – Spray Cleaner
- Body Wash (2) – Target
- Coppertone (3) - Sunscreen

10 Hillside Basement



10 Hillside 1st floor

1st floor - ambient 170



**DNREC SIRB Vapor Intrusion Policy**

**Field Sampling Form**

Project #: 11 Hillside Rd. Sample #: See page 25 **(Attach Sample Map)**

Project Name: Ron's Discount Energy

Sampled By: Brian Shedd

Date Sampled: 5/13-5/14/09 Time: See page 25

**General Site Conditions:**

Atmospheric Data:

| | |
|---|---|
| weatherunderground.com | Source of Data |
| 0 inches | Precipitation during sampling |
| 3.03 inches | Amount of Precipitation |
| 30.37 inches | Barometric Pressure |
| 57 °F | Temperature |
| 9 mph | Wind Speed |
| SSE | Wind Direction |

**Sampling System (check one)**

( ) Whole-Air active approach

( ) Whole-Air passive approach

( ) Sorbed contaminants-active approach

( ) Sorbed contaminants-passive approach

( ) Headspace or extraction approach

( ) soil pore liquid headspace approach

**Sample Type**

( X ) Direct Field Sample

( ) Field Blank

( ) Travel Blank

( ) Sample Container Blank

( ) Sample Probe Blank

( ) Sample Replicate of _____

Spiked _____ with _____ cc

Potential reaction products due to spiking: _____

System Purge Volume: NA Volumes Purged: _____ Sample Volume: _____

Sorbent Device: Installed: _____ Date/time

Recovered _____ Date/time

Sample Container Type: SUMMA Sample Container #: _____

Analytical Method: TO-15 (Chain of Custody Attached)

Integral _____ Detector: ppbRAE **(attach equipment calibration, detections** (see map for basement screening results)

N Hillside

Analyzer: _____ _____ **to this form)**

Analyzer Result: _____

Surface cover: _____

Sample Depth: _____ Sampling rate _____

Sample Horizon data visual estimates:

Vadose Zone Make-up: N A Native soil+rock _____ fill _____ rock

Soil Composition:

| | | |
|---|---|---|
| Clay | _____ | % |
| Soil Organic matter | _____ | % |
| Fine Granular Material | _____ | % |
| Coarse Granular Material | _____ | % |

Moisture Content: N A

Other characteristics:

| | | | |
|---|---|---|---|
| _____ | free water present | _____ | indurated |
| _____ | Free product | _____ | soil discoloration |
| _____ | contaminant odors | _____ | probable connnection to surface macropores |
| _____ | poor perm. To vapor | | |
| _____ | near slope or vent | | |

***STATE OF DELAWARE***
***DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL***

**INDOOR AIR BUILDING SURVEY & SAMPLING FORM**

Survey Completed by: Brian Shedd Date: 5/11/09

Site Name: Ron's Discount Energy - 11 Hillside Rd
DE#:

***Part I - Occupants***

Building Address:
11 Hillside Rd, Claymont, DE

Property Contact: Paul Kubon
Owner/Renter/Other: Owner

Contact's Phone: home ( ) work ( )
cell ( )

Contact's Email:

Building occupants: Children under age 13 Children age 13-18 Adults
1

Special Health Conditions (respiratory, cardiovascular; partially able or homebound?)
None mentioned

Allergies Other (describe)

***Part II – Building Characteristics***

11 Hillside

Building type: single-family residential / trailer or mobile / multi-family residential (duplex, row, apartment?) / office / strip mall / commercial / industrial

Describe building:
1) age Built in 1938
2) construction frame / masonry / steel / other;
3) type of insulation; plaster walls
4) type of roof Asphalt, gable
5) general condition and air tightness good
6) fireplace or chimney (serviced recently?)

Number of floors - below grade: 1 (full basement / crawl space / slab) at or above grade:
basement is unfinished

Number of rooms 1 room in basement Do windows open? yes

Basement size: ~1000 ft$^2$ Basement floor: concrete / dirt / floating / other (specify): ____

Foundation type: poured concrete / cinder blocks (hollow?) / stone / other (specify):

Type of ground cover around outside of building: grass / concrete / asphalt / other (specify):

If vegetation, does it appear stressed? No French drain?_____ Flooding experienced?_____

Floor drains present? yes If yes, trap present? yes Water in trap? yes

Connected to a: a) sanitary sewer b) storm sewer c) septic system

11 Hillside

d) surface discharge e) unknown

Basement sump present? *Yes* / *(No)* Sump pump? *Yes* / *(No)*

Type of heating system (circle all that apply):

hot air circulation hot air radiation wood steam radiation
hot water radiation
kerosene heater electric baseboard heat pump
other (specify): oil heat
solar/air solar/glycol or other heat transfer fluid
solar/water

If air, when were filters changed last?

Type of ventilation system (circle all that apply):
central air conditioning (mechanical fans)
bathroom ventilation fans (individual air conditioning units) kitchen
range hood fan other (specify): _____

Type of fuel utilized (circle all that apply):

Natural gas / electric / (fuel oil) / wood-wood pellets / coal / solar / kerosene / waste oil/ outside (fresh) air intake

Septic system? *Yes* / *Yes (but not used)* / *(No)* Irrigation/private well? *Yes* / *Yes (but not used)* / *(No)*

Public or private well *Yes* / *(No)* If public, name of company _____

Existing subsurface depressurization (radon) system in place? *Yes* / *(No)*
and running? *Yes* / *(No)*

***Part III - Outside Contaminant Sources***

DNREC DEN/Marplot/Brownfields lists (1000-ft. radius):

Previous land use in area:
Residential, Former Ron's Discount Energy located ~300' up Hillside Rd

Other stationary sources nearby:

(Former Gas stations) Emission stacks Refineries/chemical plants

11 Hillside

Waste disposal facilities (LFS & WWTPs) Hot-mix plants Fuel oil tanks
Dry cleaners Beauty shops Auto repair/body shops Road or roof repair w/hot tar

Wetlands nearby? (distance and direction)

No, NWI web mapper checked, closest is .0025 miles to the southeast along river boundary

Heavy vehicular traffic nearby (or other mobile sources):

I-495 and I-95 located .20 miles SE and 1 mile N/NW respectively

Known groundwater or soil contamination within 1000 feet

yes, ongoing investigation @ Rons Discount energy

Physical parameters of unsaturated zone (summarize or attach)

primarily silty clay and clayey silt

Sinkholes or Debris Pits

None observed

***Part IV – Indoor Contaminant Sources***

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor & room), and whether the item was removed from the building 48 hours prior to indoor air sampling event.

| ***Potential Sources*** | **Location(s)** | **Removed Prior to Sampling? (Yes / No / NA)** |
|---|---|---|
| Gasoline storage cans | None observed | NA |
| Gas-powered equipment | None observed | NA |

11 Hillside

| | | |
|---|---|---|
| Kerosene storage cans | None Observed | NA |
| Paints / thinners / strippers / glues / caulks | See Attached Listing | no |
| Cleaning solvents | See Attached Listing | no |
| Oven cleaners | None Observed | NA |
| Carpet / upholstery cleaners | None observed | NA |
| Other house cleaning products/laundry products | See Attached Listing | no |
| Moth balls | None observed | NA |
| Polishes / waxes | See Attached Listing | no |
| Insecticides | None Observed | NA |
| Furniture / floor polish | See Attached Listing | no |
| Nail polish / polish remover | None Observed | NA |
| Hairspray | None Observed | NA |
| Cologne / perfume / after-shave, etc. | | |
| Air fresheners | | |
| Fuel tank (inside building) (outside) | yes, 1 tank in basement | NA |
| Wood stove or fireplace | yes, 1st floor, living room | NA |
| New furniture / upholstery | None observed | no |
| New carpeting / flooring /paneling | None observed | NA |
| Recent painting in building? Roof repair? | Painting completed by fireplace, approx. 3 months ago | NA |
| Hobbies - glues, paints, etc. | See attached listing | no |
| Toilet or septic additives | None observed | NA |
| Dry drain traps, plugged drains, toilets won't flush | None observed | NA |
| Garbage/spoiled food | None observed | NA |
| Standing water/tire piles/recent flooding | None observed | NA |
| Sewage/septage | None observed | NA |
| Dead animals (including unusual numbers of insects)? | None observed | NA |
| Mold/mildew | None observed | NA |
| Wet sheetrock/paneling/flooring | None observed | NA |
| Neighbors making drugs/Explosives | None observed | NA |
| Mercury-containing switches or instruments | None observed | NA |
| Alcohol/bleach/disinfectants | See Attached Listing | no |
| Recent concrete/masonry work | Recent concrete work in basement | NA |
| Flowers | None observed | no |
| Pets (specify); scented kitty litter | Dog | NA |
| Compost/manure | None observed | no |

***Part V – Miscellaneous Items***

11 Hillside

Do any occupants of the building smoke? *Yes* / *No* How often? _____

Any chronic health problems? *Yes* / *No*

Has anyone smoked within the building within the last 48 hours? *Yes* / *No*

Does the building have an attached garage? *Yes* / *No*
If yes, does garage have heat/ventilation?
_____

Connected to house or separate?_____ Windows? *Yes* / *No*

If so, is a car usually parked in the garage? *Yes* / *No*

Do the occupants of the building have their clothes dry-cleaned? *Yes* / *No*
If yes, name of dry cleaner
_____

When were dry-cleaned clothes last brought into the building?

_____

Have the occupants ever noticed any unusual odors in the building? *Yes* / *No*

Describe (with location): Date Unknown Amount Especially during rain events
_____

Any known spills of a chemical, fuel or sewage immediately outside or inside the building?
*Yes* / *No* Fires? *Yes* / *No*

Describe (with location):_____
_____

Have any pesticides/herbicides been applied around the building foundation or in the yard/gardens? *Yes* / No

Have any pesticides been applied regionally, e.g. by Mosquito Control or DSWC? *Yes* / *No*

11 Hillside

If so, when and which chemicals?

Unknown

Are odors more noticeable under certain weather conditions? Describe (wind direction/ speed/precipitation/temperature/humidity):

yes, during rain events

***Part VI – Sampling Information***

Sample Technician: Brian Shedd Phone number: (410) 850 - 0404

Sampler Type: Tedlar / Sorbent / Canister

Analytical Method: TO-15 / TO-17 / other:

Laboratory: Lancaster Laboratories NJ Certified Lab? Yes / No

| Sample # | Floor | Room | Canister / Tube # | Pump ID # (if applicable) | Sample Start Date / Time | Sample End Date / Time |
|---|---|---|---|---|---|---|
| 1 | Basement | NA | 899 | 11563 | 5/13/09 - 1640 | 5/14/09 - 1629 |
| 2 | 1st floor | Dining room | 063 | 337461 | 5/13/09 - 1634 | 5/14/09 - 1630 |
| 3 | Outdoor | NA | 412 | 239241 | 5/13/09 - 1703 | 5/14/09 - 1638 |

11 Hillside

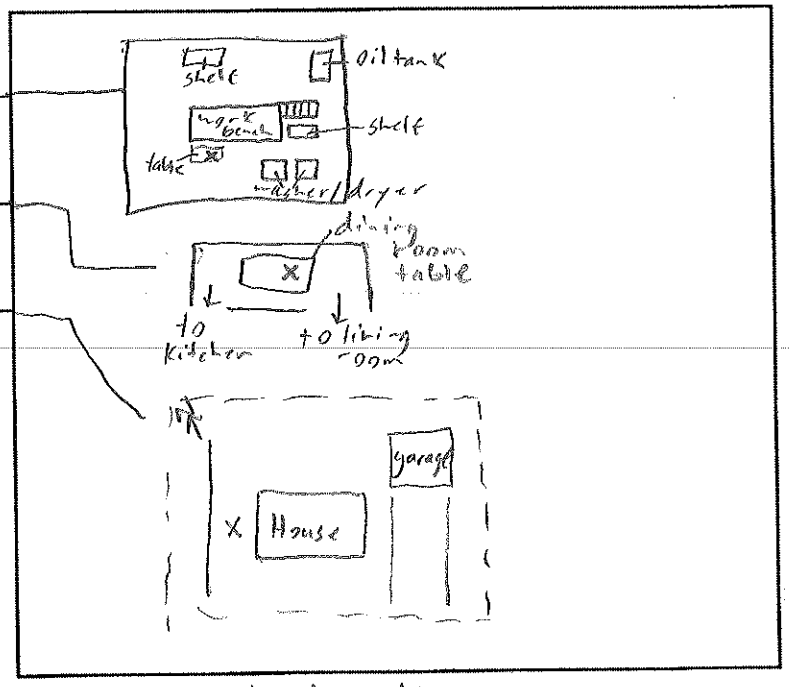
Sample location(s):
Location(s) in Building

Provide Drawing of Sample

Sample # 1 - Basement

Sample # 2 - 1st floor

Sample # 3 - Outdoor




X = sample location

Did the occupants **not** follow any of the "Instructions for Residents" directions? *Yes / No*

If so, describe modifications: Majority VOC items removed

***Part VII - Weather Conditions***

Outside temperature at time of sampling: 57 °F

Expected high temperature: 71 °F Expected low temperature: 43 °F

Humidity: 58 Barometric pressure: 30.37 Ozone: Red/Orange alert?

Was there significant precipitation within 12 hours of (or during) the sampling event? *Yes / No*

Wind direction and speed 11 Hillside

9 mph / SSE

Describe the general weather conditions:

Cool and clear with slight wind, w/ strong winds gusting overnight to max of 29 mph

***Fill out and attach DNREC SIRB Vapor Intrusion Guidance Document Field Sampling Form 1 to this form.***

***Part VIII – General Observations***

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.

See attached map and product inventory sheet; product screening results depicted on map

11 Hillside Road Product Inventory Sheet

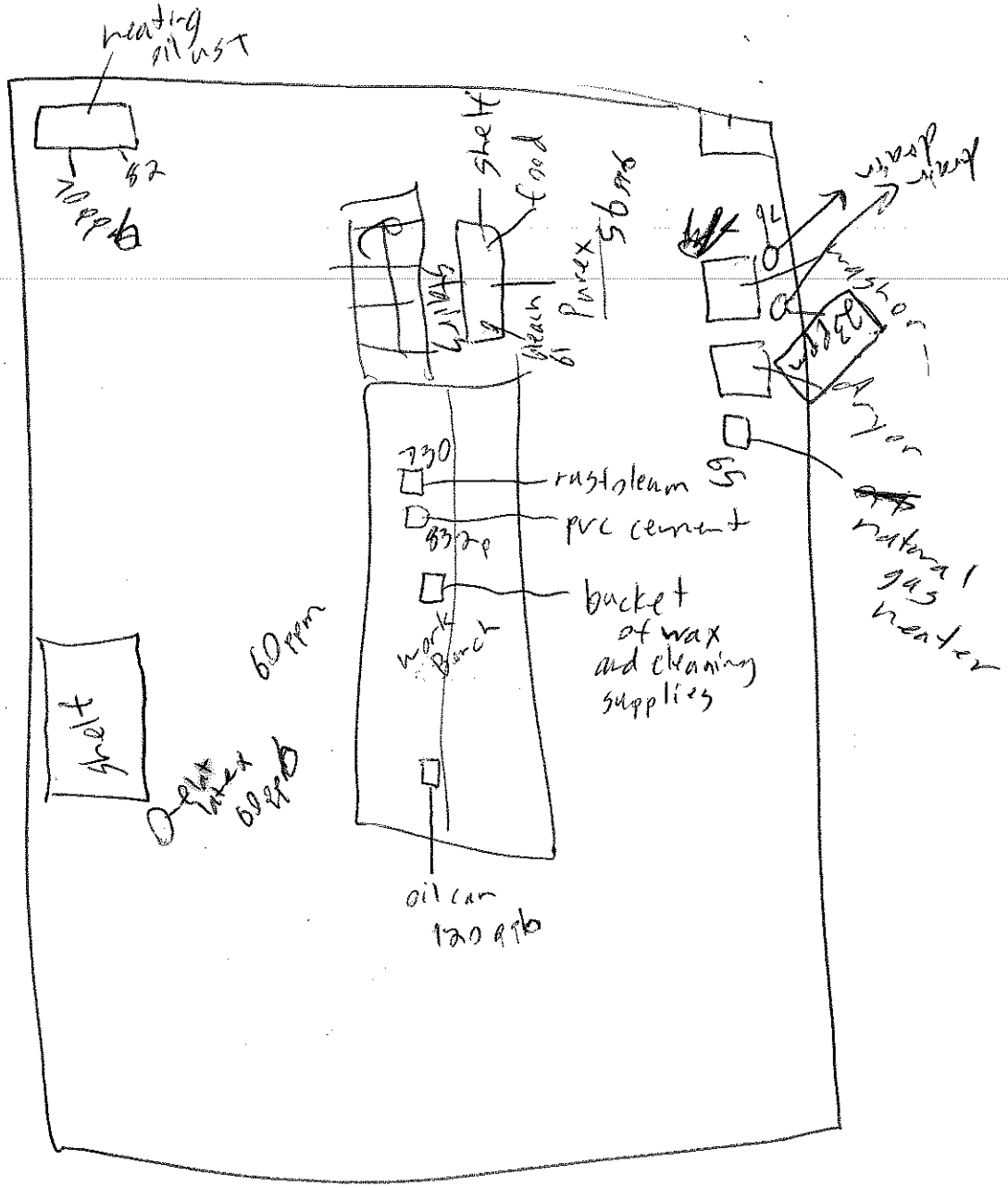
Basement –

- Purex (4) – Laundry Detergent
- Bleach (2) – 1 gallon containers, household
- Electrosol (2) – Dishwashing Detergent
- Americas Choice (1) - Dishwashing Detergent
- Rustoleum (1) – Spray Paint
- PVC Cement (1) – Gold
- Pledge (1) – Cleaning Spray
- Polish (1) – Can of Oil Based Polish
- Glass Plus (1) – Glass Cleaner
- Heavy Duty Motor Oil (1) – Wolfs Head, can

1st Floor –

- Pledge (1) – Cleaning Spray
- Americas Choice (1) - Dishwashing Detergent
- ZEP (1) – Shower, Tub, and Tile Cleaner
- Americas Choice (1) – Cleanser powder w/ bleach
- Fabuloso (1) – Multipurpose Cleaner
- Glass Plus (1) – Glass Cleaner

11 Hillside Rd Basement



**DNREC SIRB Vapor Intrusion Policy**

**Field Sampling Form**

Project #: 12 Hillside Rd Sample #: See page 25 **(Attach Sample Map)**

Project Name: Ron's Discount + Energy

Sampled By: Brian Sledd

Date Sampled: 5/13-5/14/09 Time: See page 25

**General Site Conditions:**

Atmospheric Data:

| | |
|---|---|
| weather underground.com | Source of Data |
| 0 inches | Precipitation during sampling |
| 3.03 inches | Amount of Precipitation |
| 30.37 inches | Barometric Pressure |
| 57°F | Temperature |
| 9 mph | Wind Speed |
| SSE | Wind Direction |

**Sampling System (check one)**

( ) Whole-Air active approach

( ) Whole-Air passive approach

( ) Sorbed contaminants-active approach

( ) Sorbed contaminants-passive approach

( ) Headspace or extraction approach

( ) soil pore liquid headspace approach

**Sample Type**

( X ) Direct Field Sample

( ) Field Blank

( ) Travel Blank

( ) Sample Container Blank

( ) Sample Probe Blank

( ) Sample Replicate of _____

Spiked _____ with _____ cc

Potential reaction products due to spiking: _____

System Purge Volume: NA Volumes Purged: _____ Sample Volume: _____

Sorbent Device: Installed: _____ Date/time

Recovered _____ Date/time

Sample Container Type: SUMMA Sample Container #: _____

Analytical Method: _____ (Chain of Custody Attached)

Integral _____ Detector: ppbRAE **(attach equipment calibration, detections**

12 Hillside

Analyzer: _____ _____ **to this form)**

Analyzer Result: _____

Surface cover: _____

Sample Depth: _____ Sampling rate _____

Sample Horizon data visual estimates:

Vadose Zone Make-up: N A Native soil+rock _____ fill _____ rock

Soil Composition:

| | | |
|---|---|---|
| Clay | _____ | % |
| Soil Organic matter | _____ | % |
| Fine Granular Material | _____ | % |
| Coarse Granular Material | _____ | % |

Moisture Content: N A

Other characteristics:

| | | | |
|---|---|---|---|
| _____ | free water present | _____ | indurated |
| _____ | Free product | _____ | soil discoloration |
| _____ | contaminant odors | _____ | probable connnection to surface macropores |
| _____ | poor perm. To vapor | | |
| _____ | near slope or vent | | |

***STATE OF DELAWARE***
***DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENTAL CONTROL***

**INDOOR AIR BUILDING SURVEY & SAMPLING FORM**

Survey Completed by: Brian Shedd-Kleinfelder Date: 5/11/09

Site Name: Ron's Discount Energy - 12 Hillside Rd
DE#:_____

***Part I - Occupants***

Building Address:
12 Hillside Rd, Claymont, DE

Property Contact: Dennis McCole
Owner/Renter/Other: owner

Contact's Phone: home ( )_____ work ( )_____
cell ( )_____

Contact's Email: _____

Building occupants: Children under age 13 1 Children age 13-18 _____ Adults 2

Special Health Conditions (respiratory, cardiovascular; partially able or homebound?)
Wife has occasional asthma

Allergies_____Other (describe)

***Part II – Building Characteristics***

12 Hillside

Building type: single-family residential / trailer or mobile / multi-family residential (duplex, row, apartment?) / office / strip mall / commercial / industrial

Describe building:
1) age Built in 1934
2) construction frame / masonry / steel / other; Aluminum siding
3) type of insulation; plaster walls
4) type of roof Asphalt, gable
5) general condition and air tightness ok
6) fireplace or chimney (serviced recently?)

Number of floors - below grade: 1 (full basement / crawl space / slab) at or above grade:

Number of rooms 3 in basement Do windows open? yes, 1 door to exterior

Basement size: ~1000 ft$^2$ Basement floor: concrete / dirt / floating / other (specify): ____

Foundation type: poured concrete / cinder blocks (hollow?) / stone / other (specify):

Type of ground cover around outside of building: grass / concrete / asphalt / other (specify):

If vegetation, does it appear stressed? No French drain?_____ Flooding experienced?_____

Floor drains present? yes If yes, trap present? yes Water in trap? unknown, covered, unable to inspect

Connected to a: a) sanitary sewer b) storm sewer c) septic system

12 Hillside

d) surface discharge e) unknown

Basement sump present? *Yes* / *No* Sump pump? *Yes* / *No*

Type of heating system (circle all that apply):

hot air circulation hot air radiation wood steam radiation
hot water radiation
kerosene heater electric baseboard heat pump
other (specify): _____
solar/air solar/glycol or other heat transfer fluid
solar/water

If air, when were filters changed last?

Type of ventilation system (circle all that apply):
central air conditioning mechanical fans
bathroom ventilation fans individual air conditioning units kitchen
range hood fan other (specify): _____

Type of fuel utilized (circle all that apply):

Natural gas / electric / fuel oil / wood-wood pellets / coal / solar / kerosene / waste oil/ outside (fresh) air intake

Septic system? *Yes* / *Yes (but not used)* / *No* Irrigation/private well? *Yes* / *Yes (but not used)* / *No*

Public or private well *Yes* / *No* If public, name of company
_____

Existing subsurface depressurization (radon) system in place? *Yes* / *No*
and running? *Yes* / *No*

***Part III - Outside Contaminant Sources***

DNREC DEN/Marplot/Brownfields lists (1000-ft. radius):

Previous land use in area:
Farms Dairy Discount Energy Mart 300'
_____

Other stationary sources nearby:

Gas stations Emission stacks Refineries/chemical plants

Waste disposal facilities (LFS & WWTPs) Hot-mix plants Fuel oil tanks
Dry cleaners Beauty shops Auto repair/body shops Road or roof repair w/hot tar

Wetlands nearby? (distance and direction)

No, NWI web mapper checked, closest is .025 miles to the southeast along river boundary

Heavy vehicular traffic nearby (or other mobile sources):

I-495 and I-95 located .20 miles SE and 1 mile N/NW respectively

Known groundwater or soil contamination within 1000 feet

yes, ongoing investigation @ Rons Discount energy

Physical parameters of unsaturated zone (summarize or attach)

primarily silty clay and clayey silt

Sinkholes or Debris Pits

None observed

***Part IV – Indoor Contaminant Sources***

Identify all potential indoor sources found in the building (including attached garages), the location of the source (floor & room), and whether the item was removed from the building 48 hours prior to indoor air sampling event.

| ***Potential Sources*** | **Location(s)** | **Removed Prior to Sampling? (Yes / No / NA)** |
|---|---|---|
| Gasoline storage cans | None observed | NA |
| Gas-powered equipment | None observed | NA |

| | | |
|---|---|---|
| Kerosene storage cans | None Observed | NA |
| Paints / thinners / strippers / glues / caulks | See Attached Listing | no |
| Cleaning solvents | None observed | NA |
| Oven cleaners | None observed | NA |
| Carpet / upholstery cleaners | See Attached Listing | no |
| Other house cleaning products/laundry products | See Attached Listing | no |
| Moth balls | None observed | NA |
| Polishes / waxes | See Attached Listing | no |
| Insecticides | See Attached Listing | no |
| Furniture / floor polish | See Attached Listing | no |
| Nail polish / polish remover | None observed | NA |
| Hairspray | Stored on 2nd floor, not inspected | NA |
| Cologne / perfume / after-shave, etc. | None observed | no |
| Air fresheners | In bathroom on 1st floor, spray type | no |
| Fuel tank (inside building) (outside) | None observed | NA |
| Wood stove or fireplace | yes, not currently in use | NA |
| New furniture / upholstery | None observed | NA |
| New carpeting / flooring /paneling | New matress, 2nd floor, Feb. 09 | NA |
| Recent painting in building? Roof repair? | None observed | NA |
| Hobbies - glues, paints, etc. | None observed | NA |
| Toilet or septic additives | None Observed | NA |
| Dry drain traps, plugged drains, toilets won't flush | None observed | NA |
| Garbage/spoiled food | None observed | NA |
| Standing water/tire piles/recent flooding | None Observed | NA |
| Sewage/septage | None observed | NA |
| Dead animals (including unusual numbers of insects)? | None observed | NA |
| Mold/mildew | None observed | NA |
| Wet sheetrock/paneling/flooring | None observed | NA |
| Neighbors making drugs/Explosives | None observed | NA |
| Mercury-containing switches or instruments | None observed | NA |
| Alcohol/bleach/disinfectants | See Attached Listing | no |
| Recent concrete/masonry work | None observed | NA |
| Flowers | None observed | NA |
| Pets (specify); scented kitty litter | Cats, scented kitty litter | no |
| Compost/manure | None observed | NA |

***Part V – Miscellaneous Items***

Do any occupants of the building smoke? *Yes* / *No* How often? Everyday

Any chronic health problems? *Yes* / *No* Unknown

Has anyone smoked within the building within the last 48 hours? *Yes* / *No*

Does the building have an attached garage? *Yes* / *No*
If yes, does garage have heat/ventilation? No

Connected to house or separate? separate Windows? *Yes* / *No*

If so, is a car usually parked in the garage? *Yes* / *No*

Do the occupants of the building have their clothes dry-cleaned? *Yes* / *No*
If yes, name of dry cleaner Occasionally

When were dry-cleaned clothes last brought into the building?

several months ago

Have the occupants ever noticed any unusual odors in the building? *Yes* / *No*

Describe (with location): Date _____ Amount Occasionally residents have noted petroleum type odors in the driveway, however has been a long time since last smelled.

Any known spills of a chemical, fuel or sewage immediately outside or inside the building?
*Yes* / *No* Fires? *Yes* / *No*

Describe (with location): _____

Have any pesticides/herbicides been applied around the building foundation or in the yard/gardens? *Yes* / *No* Occasionally used for ants, not yet this year

Have any pesticides been applied regionally, e.g. by Mosquito Control or DSWC? *Yes* / *No*

If so, when and which chemicals?
unknown

Are odors more noticeable under certain weather conditions? Describe (wind direction/ speed/precipitation/temperature/humidity):
NA

***Part VI – Sampling Information***

Sample Technician: Brian Shedd Phone number: (410) 850 - 0404

Sampler Type: Tedlar / Sorbent / Canister
Analytical Method: TO-15 / TO-17 / other:

Laboratory: Lancaster Laboratories NJ Certified Lab? Yes / No

| Sample # | Floor | Room | Canister / Tube # | Pump ID # (if applicable) | Sample Start Date / Time | Sample End Date / Time |
|---|---|---|---|---|---|---|
| 1 | Basement | Main area | 538 | 339181 | 5/13/09 – 1710 | 5/14/09 – 1652 |
| 2 | 1st floor | living room | 819 | 338064 | 5/13/09 – 1713 | 5/14/09 – 1653 |
| 3 | Outdoor | NA | 832 | 303925 | 5/13/09 – 1729 | 5/14/09 – 1655 |

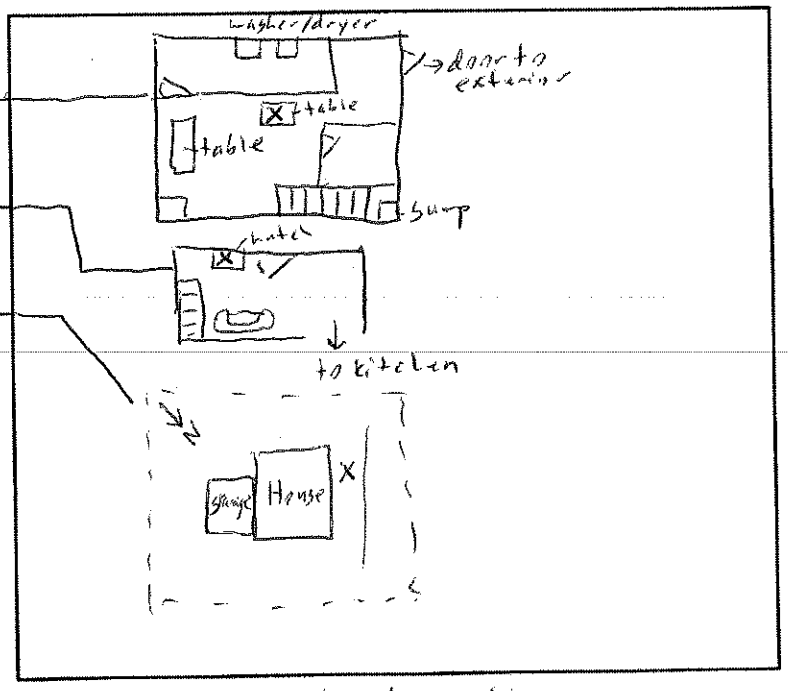
Sample location(s):
Location(s) in Building

Provide Drawing of Sample

Sample # 1 - Basement

Sample # 2 - 1st floor

Sample # 3 - Outdoor




X = sample location

Did the occupants **not** follow any of the "Instructions for Residents" directions? *Yes / No*

If so, describe modifications: No VOC containing items removed

***Part VII - Weather Conditions***

Outside temperature at time of sampling: 57 °F

Expected high temperature: 71 °F Expected low temperature: 43 °F

Humidity: 56 Barometric pressure: 30.37 Ozone: Red/Orange alert?

Was there significant precipitation within 12 hours of (or during) the sampling event? *Yes / No*

Wind direction and speed
9 mph / SSE

Describe the general weather conditions:
Cool and clear with slight wind, w/ strong winds gusting overnight to max of 29 mph

***Fill out and attach DNREC SIRB Vapor Intrusion Guidance Document Field Sampling Form 1 to this form.***

***Part VIII – General Observations***

Provide any information that may be pertinent to the sampling event and may assist in the data interpretation process.
See attached map and product inventory sheet; product screening results depicted on map

12 Hillside Road Product Inventory Sheet

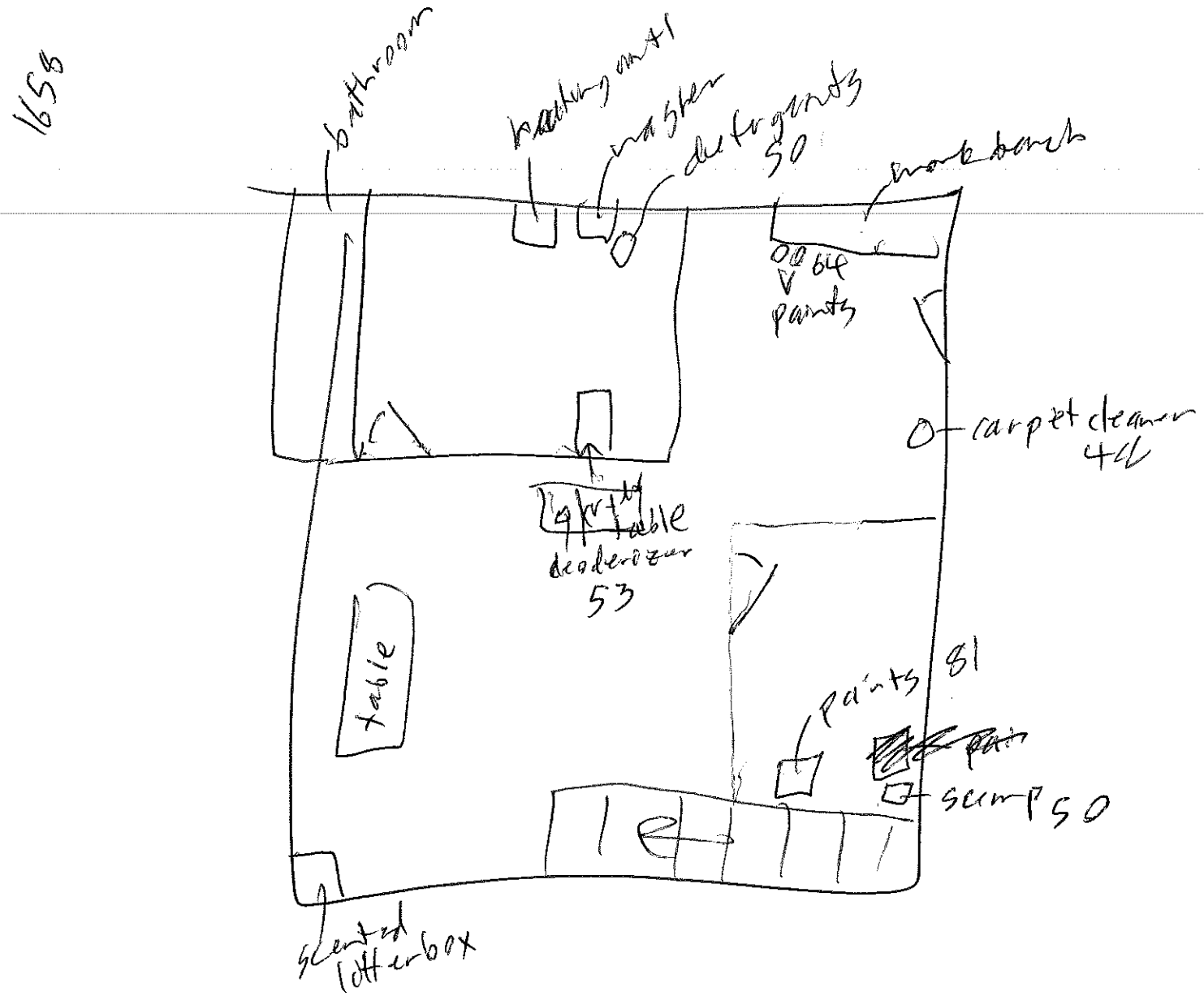
Basement –

- Tide (1) – Laundry Detergent w/ Bleach
- Tide (1) – Stain Treatment
- UGL (1) – Tidelok Waterproofer
- Behr (1) – Basement and Masonary Waterproofing
- MAB (1) – Wal-Shield Wall Finish Acrylic Latex

1st Floor –

- Pledge (2) – Floor Cleaner
- Windex (1) – Glass cleaner
- Dish Detergent (1)
- Floor Deoderizer (1)
- Raid (1) – Insecticide spray
- Raid (1) – Insecticide Box

12 Hillside Rd Basement



## Appendix F  Lancaster Laboratories Analysis Report-Soil Vapor Data

Lancaster Laboratories
2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

# Analysis Report

ANALYTICAL RESULTS

Prepared for:

Kleinfelder
30 Porter Road
Littleton MA 01460

978-486-0060

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

June 04, 2009

## SAMPLE GROUP

The sample group for this submittal is 1146082. Samples arrived at the laboratory on Friday, May 22, 2009. The PO# for this group is 08531-74709.

| Client Description | Lancaster Labs Number |
|---|---|
| SVMP-1 Air Summa Canister #525 | 5680735 |
| SVMP-2 Air Summa Canister #854 | 5680736 |
| SVMP-3 Air Summa Canister #129 | 5680737 |
| SVMP-4 Air Summa Canister #831 | 5680738 |
| SVMP-5 Air Summa Canister #870 | 5680739 |
| SVMP-6 Air Summa Canister #325 | 5680740 |
| SVMP-7 Air Summa Canister #539 | 5680741 |
| SVMP-8 Air Summa Canister #200 | 5680742 |
| Ambient (2509 Phila. Pk) Air Summa Canister #803 | 5680743 |
| SVMP-9 Air Summa Canister #537 | 5680744 |
| SVMP-10 Air Summa Canister #205 | 5680745 |
| SVMP-11 Air Summa Canister #322 | 5680746 |
| SVMP-12 Air Summa Canister #813 | 5680747 |
| SVMP-13 Air Summa Canister #031 | 5680748 |
| SVMP-14 Air Summa Canister #1037 | 5680749 |
| SVMP-15 Air Summa Canister #850 | 5680750 |
| SVMP-16 Air Summa Canister #067 | 5680751 |
| Ambient (Hillside Rd) Air Summa Canister #146 | 5680752 |

## METHODOLOGY

Lancaster Laboratories

# Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Chronicle.

| | | |
|---|---|---|
| ELECTRONIC COPY TO | Kleinfelder | Attn: Angela Vogt |
| ELECTRONIC COPY TO | Kleinfelder | Attn: Mark Steele |

Questions? Contact your Client Services Representative
Jessica A Oknefski at (717) 656-2300

Respectfully Submitted,

Chad A. Moline
Group Leader

# Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com



**Lancaster Laboratories Sample No. AQ 5680735**

**Group No. 1146082**
**DE**

**SVMP-1 Air Summa Canister #525**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 11:06 by BS
through 05/19/2009 11:51
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | 300 | 6.6 | 460 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | < 4.8 | 4.8 | < 2.0 | 2.0 | 1000 |
| 05298 | Acetonitrile | 75-05-8 | < 3.4 | 3.4 | < 2.0 | 2.0 | 1000 |
| 05298 | Acrolein | 107-02-8 | < 4.6 | 4.6 | < 2.0 | 2.0 | 1000 |
| 05298 | Acrylonitrile | 107-13-1 | < 4.3 | 4.3 | < 2.0 | 2.0 | 1000 |
| 05298 | Benzene | 71-43-2 | < 3.2 | 3.2 | < 1.0 | 1.0 | 1000 |
| 05298 | Bromobenzene | 108-86-1 | < 6.4 | 6.4 | < 1.0 | 1.0 | 1000 |
| 05298 | Bromodichloromethane | 75-27-4 | < 6.7 | 6.7 | < 1.0 | 1.0 | 1000 |
| 05298 | Bromoform | 75-25-2 | < 10 | 10 | < 1.0 | 1.0 | 1000 |
| 05298 | Bromomethane | 74-83-9 | < 3.9 | 3.9 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 4.4 | 4.4 | < 2.0 | 2.0 | 1000 |
| 05298 | 2-Butanone | 78-93-3 | < 5.9 | 5.9 | < 2.0 | 2.0 | 1000 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 3.0 | 3.0 | < 1.0 | 1.0 | 1000 |
| 05298 | Carbon Disulfide | 75-15-0 | < 3.1 | 3.1 | < 1.0 | 1.0 | 1000 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 6.3 | 6.3 | < 1.0 | 1.0 | 1000 |
| 05298 | Chlorobenzene | 108-90-7 | < 4.6 | 4.6 | < 1.0 | 1.0 | 1000 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 3.5 | 3.5 | < 1.0 | 1.0 | 1000 |
| 05298 | Chloroethane | 75-00-3 | < 2.6 | 2.6 | < 1.0 | 1.0 | 1000 |
| 05298 | Chloroform | 67-66-3 | < 4.9 | 4.9 | < 1.0 | 1.0 | 1000 |
| 05298 | Chloromethane | 74-87-3 | < 2.1 | 2.1 | < 1.0 | 1.0 | 1000 |
| 05298 | 3-Chloropropene | 107-05-1 | < 3.1 | 3.1 | < 1.0 | 1.0 | 1000 |
| 05298 | Cumene | 98-82-8 | < 4.9 | 4.9 | < 1.0 | 1.0 | 1000 |
| 05298 | Dibromochloromethane | 124-48-1 | < 8.5 | 8.5 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 7.7 | 7.7 | < 1.0 | 1.0 | 1000 |
| 05298 | Dibromomethane | 74-95-3 | < 7.1 | 7.1 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 6.0 | 6.0 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 6.0 | 6.0 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 6.0 | 6.0 | < 1.0 | 1.0 | 1000 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 4.9 | 4.9 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 4.0 | 4.0 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 4.0 | 4.0 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 4.0 | 4.0 | < 1.0 | 1.0 | 1000 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 4.0 | 4.0 | < 1.0 | 1.0 | 1000 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 4.0 | 4.0 | < 1.0 | 1.0 | 1000 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 4.2 | 4.2 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 4.6 | 4.6 | < 1.0 | 1.0 | 1000 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 4.5 | 4.5 | < 1.0 | 1.0 | 1000 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 4.5 | 4.5 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 3.6 | 3.6 | < 1.0 | 1.0 | 1000 |
| 05298 | Ethyl Acetate | 141-78-6 | < 3.6 | 3.6 | < 1.0 | 1.0 | 1000 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 4.1 | 4.1 | < 1.0 | 1.0 | 1000 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 4.7 | 4.7 | < 1.0 | 1.0 | 1000 |
| 05298 | Ethylbenzene | 100-41-4 | < 4.3 | 4.3 | < 1.0 | 1.0 | 1000 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 4.9 | 4.9 | < 1.0 | 1.0 | 1000 |
| 05298 | Freon 113 | 76-13-1 | < 15 | 15 | < 2.0 | 2.0 | 1000 |
| 05298 | Freon 114 | 76-14-2 | < 7.0 | 7.0 | < 1.0 | 1.0 | 1000 |
| 05298 | Heptane | 142-82-5 | 4.1 | 4.1 | 1.0 | 1.0 | 1000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680735**

**Group No. 1146082**
**DE**

**SVMP-1 Air Summa Canister #525**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 11:06 by BS
through 05/19/2009 11:51
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 21 | 21 | < 2.0 | 2.0 | 1000 |
| 05298 | Hexachloroethane | 67-72-1 | < 9.7 | 9.7 | < 1.0 | 1.0 | 1000 |
| 05298 | Hexane | 110-54-3 | 8.3 | 3.5 | 2.4 | 1.0 | 1000 |
| 05298 | 2-Hexanone | 591-78-6 | < 8.2 | 8.2 | < 2.0 | 2.0 | 1000 |
| 05298 | Isooctane | 540-84-1 | 360 | 23 | 76 | 5.0 | 5000 |
| 05298 | Methyl Acrylate | 96-33-3 | < 3.5 | 3.5 | < 1.0 | 1.0 | 1000 |
| 05298 | Methyl Iodide | 74-88-4 | < 5.8 | 5.8 | < 1.0 | 1.0 | 1000 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 4.1 | 4.1 | < 1.0 | 1.0 | 1000 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 4.8 | 4.8 | < 1.0 | 1.0 | 1000 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 3.6 | 3.6 | < 1.0 | 1.0 | 1000 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 8.2 | 8.2 | < 2.0 | 2.0 | 1000 |
| 05298 | Methylene Chloride | 75-09-2 | < 3.5 | 3.5 | < 1.0 | 1.0 | 1000 |
| 05298 | Octane | 111-65-9 | < 4.7 | 4.7 | < 1.0 | 1.0 | 1000 |
| 05298 | Pentane | 109-66-0 | 10 | 3.0 | 3.5 | 1.0 | 1000 |
| 05298 | Propene | 115-07-1 | < 1.7 | 1.7 | < 1.0 | 1.0 | 1000 |
| 05298 | Styrene | 100-42-5 | < 4.3 | 4.3 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 6.9 | 6.9 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 6.9 | 6.9 | < 1.0 | 1.0 | 1000 |
| 05298 | Tetrachloroethene | 127-18-4 | < 6.8 | 6.8 | < 1.0 | 1.0 | 1000 |
| 05298 | Toluene | 108-88-3 | < 3.8 | 3.8 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 15 | 15 | < 2.0 | 2.0 | 1000 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 5.5 | 5.5 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 5.5 | 5.5 | < 1.0 | 1.0 | 1000 |
| 05298 | Trichloroethene | 79-01-6 | < 5.4 | 5.4 | < 1.0 | 1.0 | 1000 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 5.6 | 5.6 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 6.0 | 6.0 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 4.9 | 4.9 | < 1.0 | 1.0 | 1000 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 4.9 | 4.9 | < 1.0 | 1.0 | 1000 |
| 05298 | Vinyl Acetate | 108-05-4 | < 3.5 | 3.5 | < 1.0 | 1.0 | 1000 |
| 05298 | Vinyl Chloride | 75-01-4 | < 2.6 | 2.6 | < 1.0 | 1.0 | 1000 |
| 05298 | m/p-Xylene | 179601-23-1 | < 4.3 | 4.3 | < 1.0 | 1.0 | 1000 |
| 05298 | o-Xylene | 95-47-6 | < 4.3 | 4.3 | < 1.0 | 1.0 | 1000 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091471ZA | 05/26/2009 23:34 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 03:29 | Jonathan K Nardelli | 1000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680735**

**Group No. 1146082**
**DE**

**SVMP-1 Air Summa Canister #525**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 11:06 by BS
through 05/19/2009 11:51
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 20:25 | Jonathan K Nardelli | 5000 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680736**

**Group No. 1146082**
**DE**

**SVMP-2 Air Summa Canister #854**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 12:14 by BS
through 05/19/2009 13:23
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | 3,900 | 33 | 5,900 | 50 | 10 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 160 | 48 | 68 | 20 | 10000 |
| 05298 | Acetonitrile | 75-05-8 | < 34 | 34 | < 20 | 20 | 10000 |
| 05298 | Acrolein | 107-02-8 | < 46 | 46 | < 20 | 20 | 10000 |
| 05298 | Acrylonitrile | 107-13-1 | < 43 | 43 | < 20 | 20 | 10000 |
| 05298 | Benzene | 71-43-2 | < 32 | 32 | < 10 | 10 | 10000 |
| 05298 | Bromobenzene | 108-86-1 | < 64 | 64 | < 10 | 10 | 10000 |
| 05298 | Bromodichloromethane | 75-27-4 | < 67 | 67 | < 10 | 10 | 10000 |
| 05298 | Bromoform | 75-25-2 | < 100 | 100 | < 10 | 10 | 10000 |
| 05298 | Bromomethane | 74-83-9 | < 39 | 39 | < 10 | 10 | 10000 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 44 | 44 | < 20 | 20 | 10000 |
| 05298 | 2-Butanone | 78-93-3 | < 59 | 59 | < 20 | 20 | 10000 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 30 | 30 | < 10 | 10 | 10000 |
| 05298 | Carbon Disulfide | 75-15-0 | 82 | 31 | 26 | 10 | 10000 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 63 | 63 | < 10 | 10 | 10000 |
| 05298 | Chlorobenzene | 108-90-7 | < 46 | 46 | < 10 | 10 | 10000 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Chloroethane | 75-00-3 | < 26 | 26 | < 10 | 10 | 10000 |
| 05298 | Chloroform | 67-66-3 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Chloromethane | 74-87-3 | < 21 | 21 | < 10 | 10 | 10000 |
| 05298 | 3-Chloropropene | 107-05-1 | < 31 | 31 | < 10 | 10 | 10000 |
| 05298 | Cumene | 98-82-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Dibromochloromethane | 124-48-1 | < 85 | 85 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 77 | 77 | < 10 | 10 | 10000 |
| 05298 | Dibromomethane | 74-95-3 | < 71 | 71 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 42 | 42 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 46 | 46 | < 10 | 10 | 10000 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 45 | 45 | < 10 | 10 | 10000 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 45 | 45 | < 10 | 10 | 10000 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | Ethyl Acetate | 141-78-6 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 41 | 41 | < 10 | 10 | 10000 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 47 | 47 | < 10 | 10 | 10000 |
| 05298 | Ethylbenzene | 100-41-4 | < 43 | 43 | < 10 | 10 | 10000 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Freon 113 | 76-13-1 | < 150 | 150 | < 20 | 20 | 10000 |
| 05298 | Freon 114 | 76-14-2 | < 70 | 70 | < 10 | 10 | 10000 |
| 05298 | Heptane | 142-82-5 | 320 | 41 | 78 | 10 | 10000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680736**

**Group No. 1146082**
**DE**

**SVMP-2 Air Summa Canister #854**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 12:14 by BS
through 05/19/2009 13:23
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 210 | 210 | < 20 | 20 | 10000 |
| 05298 | Hexachloroethane | 67-72-1 | < 97 | 97 | < 10 | 10 | 10000 |
| 05298 | Hexane | 110-54-3 | 1,100 | 350 | 330 | 100 | 100000 |
| 05298 | 2-Hexanone | 591-78-6 | < 82 | 82 | < 20 | 20 | 10000 |
| 05298 | Isooctane | 540-84-1 | 2,100 | 470 | 450 | 100 | 100000 |
| 05298 | Methyl Acrylate | 96-33-3 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Methyl Iodide | 74-88-4 | < 58 | 58 | < 10 | 10 | 10000 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 41 | 41 | < 10 | 10 | 10000 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 48 | 48 | < 10 | 10 | 10000 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 82 | 82 | < 20 | 20 | 10000 |
| 05298 | Methylene Chloride | 75-09-2 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Octane | 111-65-9 | 55 | 47 | 12 | 10 | 10000 |
| 05298 | Pentane | 109-66-0 | 890 | 300 | 300 | 100 | 100000 |
| 05298 | Propene | 115-07-1 | < 17 | 17 | < 10 | 10 | 10000 |
| 05298 | Styrene | 100-42-5 | < 43 | 43 | < 10 | 10 | 10000 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 69 | 69 | < 10 | 10 | 10000 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 69 | 69 | < 10 | 10 | 10000 |
| 05298 | Tetrachloroethene | 127-18-4 | < 68 | 68 | < 10 | 10 | 10000 |
| 05298 | Toluene | 108-88-3 | < 38 | 38 | < 10 | 10 | 10000 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 150 | 150 | < 20 | 20 | 10000 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 55 | 55 | < 10 | 10 | 10000 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 55 | 55 | < 10 | 10 | 10000 |
| 05298 | Trichloroethene | 79-01-6 | < 54 | 54 | < 10 | 10 | 10000 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 56 | 56 | < 10 | 10 | 10000 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Vinyl Acetate | 108-05-4 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Vinyl Chloride | 75-01-4 | < 26 | 26 | < 10 | 10 | 10000 |
| 05298 | m/p-Xylene | 179601-23-1 | 73 | 43 | 17 | 10 | 10000 |
| 05298 | o-Xylene | 95-47-6 | < 43 | 43 | < 10 | 10 | 10000 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091491ZA | 05/28/2009 13:50 | David I Ressler | 10 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 04:15 | Jonathan K Nardelli | 10000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680736**

**Group No. 1146082**
**DE**

**SVMP-2 Air Summa Canister #854**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 12:14 by BS
through 05/19/2009 13:23
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 04:59 | Jonathan K Nardelli | 100000 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680737**

**Group No. 1146082**
**DE**

**SVMP-3 Air Summa Canister #129**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 13:16 by BS
through 05/19/2009 14:10
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | 1,400 | 33 | 2,200 | 50 | 10 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | < 48 | 48 | < 20 | 20 | 10000 |
| 05298 | Acetonitrile | 75-05-8 | < 34 | 34 | < 20 | 20 | 10000 |
| 05298 | Acrolein | 107-02-8 | < 46 | 46 | < 20 | 20 | 10000 |
| 05298 | Acrylonitrile | 107-13-1 | < 43 | 43 | < 20 | 20 | 10000 |
| 05298 | Benzene | 71-43-2 | 160 | 32 | 51 | 10 | 10000 |
| 05298 | Bromobenzene | 108-86-1 | < 64 | 64 | < 10 | 10 | 10000 |
| 05298 | Bromodichloromethane | 75-27-4 | < 67 | 67 | < 10 | 10 | 10000 |
| 05298 | Bromoform | 75-25-2 | < 100 | 100 | < 10 | 10 | 10000 |
| 05298 | Bromomethane | 74-83-9 | < 39 | 39 | < 10 | 10 | 10000 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 44 | 44 | < 20 | 20 | 10000 |
| 05298 | 2-Butanone | 78-93-3 | < 59 | 59 | < 20 | 20 | 10000 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 30 | 30 | < 10 | 10 | 10000 |
| 05298 | Carbon Disulfide | 75-15-0 | 110 | 31 | 34 | 10 | 10000 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 63 | 63 | < 10 | 10 | 10000 |
| 05298 | Chlorobenzene | 108-90-7 | < 46 | 46 | < 10 | 10 | 10000 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Chloroethane | 75-00-3 | < 26 | 26 | < 10 | 10 | 10000 |
| 05298 | Chloroform | 67-66-3 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Chloromethane | 74-87-3 | < 21 | 21 | < 10 | 10 | 10000 |
| 05298 | 3-Chloropropene | 107-05-1 | < 31 | 31 | < 10 | 10 | 10000 |
| 05298 | Cumene | 98-82-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Dibromochloromethane | 124-48-1 | < 85 | 85 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 77 | 77 | < 10 | 10 | 10000 |
| 05298 | Dibromomethane | 74-95-3 | < 71 | 71 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 42 | 42 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 46 | 46 | < 10 | 10 | 10000 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 45 | 45 | < 10 | 10 | 10000 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 45 | 45 | < 10 | 10 | 10000 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | Ethyl Acetate | 141-78-6 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 41 | 41 | < 10 | 10 | 10000 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 47 | 47 | < 10 | 10 | 10000 |
| 05298 | Ethylbenzene | 100-41-4 | 68 | 43 | 16 | 10 | 10000 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Freon 113 | 76-13-1 | < 150 | 150 | < 20 | 20 | 10000 |
| 05298 | Freon 114 | 76-14-2 | < 70 | 70 | < 10 | 10 | 10000 |
| 05298 | Heptane | 142-82-5 | 690 | 41 | 170 | 10 | 10000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680737**

**Group No. 1146082**
**DE**

**SVMP-3 Air Summa Canister #129**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 13:16 by BS
through 05/19/2009 14:10
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 210 | 210 | < 20 | 20 | 10000 |
| 05298 | Hexachloroethane | 67-72-1 | < 97 | 97 | < 10 | 10 | 10000 |
| 05298 | Hexane | 110-54-3 | 3,100 | 350 | 880 | 100 | 100000 |
| 05298 | 2-Hexanone | 591-78-6 | < 82 | 82 | < 20 | 20 | 10000 |
| 05298 | Isooctane | 540-84-1 | 4,400 | 470 | 940 | 100 | 100000 |
| 05298 | Methyl Acrylate | 96-33-3 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Methyl Iodide | 74-88-4 | < 58 | 58 | < 10 | 10 | 10000 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 41 | 41 | < 10 | 10 | 10000 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 48 | 48 | < 10 | 10 | 10000 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 82 | 82 | < 20 | 20 | 10000 |
| 05298 | Methylene Chloride | 75-09-2 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Octane | 111-65-9 | 110 | 47 | 24 | 10 | 10000 |
| 05298 | Pentane | 109-66-0 | 2,700 | 300 | 910 | 100 | 100000 |
| 05298 | Propene | 115-07-1 | < 17 | 17 | < 10 | 10 | 10000 |
| 05298 | Styrene | 100-42-5 | < 43 | 43 | < 10 | 10 | 10000 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 69 | 69 | < 10 | 10 | 10000 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 69 | 69 | < 10 | 10 | 10000 |
| 05298 | Tetrachloroethene | 127-18-4 | < 68 | 68 | < 10 | 10 | 10000 |
| 05298 | Toluene | 108-88-3 | < 38 | 38 | < 10 | 10 | 10000 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 150 | 150 | < 20 | 20 | 10000 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 55 | 55 | < 10 | 10 | 10000 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 55 | 55 | < 10 | 10 | 10000 |
| 05298 | Trichloroethene | 79-01-6 | < 54 | 54 | < 10 | 10 | 10000 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 56 | 56 | < 10 | 10 | 10000 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Vinyl Acetate | 108-05-4 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Vinyl Chloride | 75-01-4 | < 26 | 26 | < 10 | 10 | 10000 |
| 05298 | m/p-Xylene | 179601-23-1 | 110 | 43 | 24 | 10 | 10000 |
| 05298 | o-Xylene | 95-47-6 | < 43 | 43 | < 10 | 10 | 10000 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091491ZA | 05/28/2009 14:19 | David I Ressler | 10 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 05:45 | Jonathan K Nardelli | 10000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680737**

**Group No. 1146082**
**DE**

**SVMP-3 Air Summa Canister #129**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 13:16 by BS
through 05/19/2009 14:10
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 06:29 | Jonathan K Nardelli | 100000 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680738**

**Group No. 1146082**
**DE**

**SVMP-4 Air Summa Canister #831**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 14:08 by BS
through 05/19/2009 14:52
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | 2,600 | 6.6 | 4,000 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 180 | 48 | 75 | 20 | 10000 |
| 05298 | Acetonitrile | 75-05-8 | < 34 | 34 | < 20 | 20 | 10000 |
| 05298 | Acrolein | 107-02-8 | < 46 | 46 | < 20 | 20 | 10000 |
| 05298 | Acrylonitrile | 107-13-1 | < 43 | 43 | < 20 | 20 | 10000 |
| 05298 | Benzene | 71-43-2 | 41 | 32 | 13 | 10 | 10000 |
| 05298 | Bromobenzene | 108-86-1 | < 64 | 64 | < 10 | 10 | 10000 |
| 05298 | Bromodichloromethane | 75-27-4 | < 67 | 67 | < 10 | 10 | 10000 |
| 05298 | Bromoform | 75-25-2 | < 100 | 100 | < 10 | 10 | 10000 |
| 05298 | Bromomethane | 74-83-9 | < 39 | 39 | < 10 | 10 | 10000 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 44 | 44 | < 20 | 20 | 10000 |
| 05298 | 2-Butanone | 78-93-3 | < 59 | 59 | < 20 | 20 | 10000 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 30 | 30 | < 10 | 10 | 10000 |
| 05298 | Carbon Disulfide | 75-15-0 | 90 | 31 | 29 | 10 | 10000 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 63 | 63 | < 10 | 10 | 10000 |
| 05298 | Chlorobenzene | 108-90-7 | < 46 | 46 | < 10 | 10 | 10000 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Chloroethane | 75-00-3 | < 26 | 26 | < 10 | 10 | 10000 |
| 05298 | Chloroform | 67-66-3 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Chloromethane | 74-87-3 | < 21 | 21 | < 10 | 10 | 10000 |
| 05298 | 3-Chloropropene | 107-05-1 | < 31 | 31 | < 10 | 10 | 10000 |
| 05298 | Cumene | 98-82-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Dibromochloromethane | 124-48-1 | < 85 | 85 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 77 | 77 | < 10 | 10 | 10000 |
| 05298 | Dibromomethane | 74-95-3 | < 71 | 71 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 40 | 40 | < 10 | 10 | 10000 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 42 | 42 | < 10 | 10 | 10000 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 46 | 46 | < 10 | 10 | 10000 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 45 | 45 | < 10 | 10 | 10000 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 45 | 45 | < 10 | 10 | 10000 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | Ethyl Acetate | 141-78-6 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 41 | 41 | < 10 | 10 | 10000 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 47 | 47 | < 10 | 10 | 10000 |
| 05298 | Ethylbenzene | 100-41-4 | < 43 | 43 | < 10 | 10 | 10000 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Freon 113 | 76-13-1 | < 150 | 150 | < 20 | 20 | 10000 |
| 05298 | Freon 114 | 76-14-2 | < 70 | 70 | < 10 | 10 | 10000 |
| 05298 | Heptane | 142-82-5 | 350 | 41 | 86 | 10 | 10000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680738**

**Group No. 1146082**
**DE**

**SVMP-4 Air Summa Canister #831**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 14:08 by BS
through 05/19/2009 14:52
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 210 | 210 | < 20 | 20 | 10000 |
| 05298 | Hexachloroethane | 67-72-1 | < 97 | 97 | < 10 | 10 | 10000 |
| 05298 | Hexane | 110-54-3 | 1,300 | 350 | 360 | 100 | 100000 |
| 05298 | 2-Hexanone | 591-78-6 | < 82 | 82 | < 20 | 20 | 10000 |
| 05298 | Isooctane | 540-84-1 | 3,000 | 470 | 630 | 100 | 100000 |
| 05298 | Methyl Acrylate | 96-33-3 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Methyl Iodide | 74-88-4 | < 58 | 58 | < 10 | 10 | 10000 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 41 | 41 | < 10 | 10 | 10000 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 48 | 48 | < 10 | 10 | 10000 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 36 | 36 | < 10 | 10 | 10000 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 82 | 82 | < 20 | 20 | 10000 |
| 05298 | Methylene Chloride | 75-09-2 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Octane | 111-65-9 | < 47 | 47 | < 10 | 10 | 10000 |
| 05298 | Pentane | 109-66-0 | 1,400 | 300 | 490 | 100 | 100000 |
| 05298 | Propene | 115-07-1 | < 17 | 17 | < 10 | 10 | 10000 |
| 05298 | Styrene | 100-42-5 | < 43 | 43 | < 10 | 10 | 10000 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 69 | 69 | < 10 | 10 | 10000 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 69 | 69 | < 10 | 10 | 10000 |
| 05298 | Tetrachloroethene | 127-18-4 | < 68 | 68 | < 10 | 10 | 10000 |
| 05298 | Toluene | 108-88-3 | < 38 | 38 | < 10 | 10 | 10000 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 150 | 150 | < 20 | 20 | 10000 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 55 | 55 | < 10 | 10 | 10000 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 55 | 55 | < 10 | 10 | 10000 |
| 05298 | Trichloroethene | 79-01-6 | < 54 | 54 | < 10 | 10 | 10000 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 56 | 56 | < 10 | 10 | 10000 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 60 | 60 | < 10 | 10 | 10000 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 49 | 49 | < 10 | 10 | 10000 |
| 05298 | Vinyl Acetate | 108-05-4 | < 35 | 35 | < 10 | 10 | 10000 |
| 05298 | Vinyl Chloride | 75-01-4 | < 26 | 26 | < 10 | 10 | 10000 |
| 05298 | m/p-Xylene | 179601-23-1 | < 43 | 43 | < 10 | 10 | 10000 |
| 05298 | o-Xylene | 95-47-6 | < 43 | 43 | < 10 | 10 | 10000 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091471ZA | 05/27/2009 00:59 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 07:15 | Jonathan K Nardelli | 10000 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680738**

**Group No. 1146082**
**DE**

**SVMP-4 Air Summa Canister #831**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 14:08 by BS
through 05/19/2009 14:52
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 07:59 | Jonathan K Nardelli | 100000 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680739**

**Group No. 1146082**
**DE**

**SVMP-5 Air Summa Canister #870**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 15:56 by BS
through 05/19/2009 16:18
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.46 | 0.095 | 0.20 | 0.040 | 20 |
| 05298 | Acetonitrile | 75-05-8 | < 0.067 | 0.067 | < 0.040 | 0.040 | 20 |
| 05298 | Acrolein | 107-02-8 | < 0.092 | 0.092 | < 0.040 | 0.040 | 20 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.087 | 0.087 | < 0.040 | 0.040 | 20 |
| 05298 | Benzene | 71-43-2 | 0.63 | 0.064 | 0.20 | 0.020 | 20 |
| 05298 | Bromobenzene | 108-86-1 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Bromoform | 75-25-2 | < 0.21 | 0.21 | < 0.020 | 0.020 | 20 |
| 05298 | Bromomethane | 74-83-9 | < 0.078 | 0.078 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.088 | 0.088 | < 0.040 | 0.040 | 20 |
| 05298 | 2-Butanone | 78-93-3 | < 0.12 | 0.12 | < 0.040 | 0.040 | 20 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.061 | 0.061 | < 0.020 | 0.020 | 20 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.30 | 0.062 | 0.097 | 0.020 | 20 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.092 | 0.092 | < 0.020 | 0.020 | 20 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.071 | 0.071 | < 0.020 | 0.020 | 20 |
| 05298 | Chloroethane | 75-00-3 | < 0.053 | 0.053 | < 0.020 | 0.020 | 20 |
| 05298 | Chloroform | 67-66-3 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | Chloromethane | 74-87-3 | < 0.041 | 0.041 | < 0.020 | 0.020 | 20 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.063 | 0.063 | < 0.020 | 0.020 | 20 |
| 05298 | Cumene | 98-82-8 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.17 | 0.17 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.15 | 0.15 | < 0.020 | 0.020 | 20 |
| 05298 | Dibromomethane | 74-95-3 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.099 | 0.099 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.081 | 0.081 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.081 | 0.081 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.084 | 0.084 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.092 | 0.092 | < 0.020 | 0.020 | 20 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.091 | 0.091 | < 0.020 | 0.020 | 20 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.091 | 0.091 | < 0.020 | 0.020 | 20 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.082 | 0.082 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.093 | 0.093 | < 0.020 | 0.020 | 20 |
| 05298 | Ethylbenzene | 100-41-4 | 1.3 | 0.087 | 0.29 | 0.020 | 20 |
| 05298 | 4-Ethyltoluene | 622-96-8 | 0.17 | 0.098 | 0.034 | 0.020 | 20 |
| 05298 | Freon 113 | 76-13-1 | < 0.31 | 0.31 | < 0.040 | 0.040 | 20 |
| 05298 | Freon 114 | 76-14-2 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Heptane | 142-82-5 | 1.6 | 0.082 | 0.40 | 0.020 | 20 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680739**

**Group No. 1146082**
**DE**

**SVMP-5 Air Summa Canister #870**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 15:56 by BS
through 05/19/2009 16:18
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.43 | 0.43 | < 0.040 | 0.040 | 20 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.19 | 0.19 | < 0.020 | 0.020 | 20 |
| 05298 | Hexane | 110-54-3 | 2.8 | 0.70 | 0.80 | 0.20 | 200 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.16 | 0.16 | < 0.040 | 0.040 | 20 |
| 05298 | Isooctane | 540-84-1 | 5.4 | 0.93 | 1.2 | 0.20 | 200 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.070 | 0.070 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 20 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.097 | 0.097 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.16 | 0.16 | < 0.040 | 0.040 | 20 |
| 05298 | Methylene Chloride | 75-09-2 | 0.18 | 0.069 | 0.053 | 0.020 | 20 |
| 05298 | Octane | 111-65-9 | 0.64 | 0.093 | 0.14 | 0.020 | 20 |
| 05298 | Pentane | 109-66-0 | 1.2 | 0.059 | 0.40 | 0.020 | 20 |
| 05298 | Propene | 115-07-1 | < 0.034 | 0.034 | < 0.020 | 0.020 | 20 |
| 05298 | Styrene | 100-42-5 | < 0.085 | 0.085 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Toluene | 108-88-3 | 0.17 | 0.075 | 0.046 | 0.020 | 20 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.30 | 0.30 | < 0.040 | 0.040 | 20 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | Trichloroethene | 79-01-6 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.51 | 0.098 | 0.10 | 0.020 | 20 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.33 | 0.098 | 0.068 | 0.020 | 20 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.070 | 0.070 | < 0.020 | 0.020 | 20 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.051 | 0.051 | < 0.020 | 0.020 | 20 |
| 05298 | m/p-Xylene | 179601-23-1 | 1.5 | 0.087 | 0.34 | 0.020 | 20 |
| 05298 | o-Xylene | 95-47-6 | < 0.087 | 0.087 | < 0.020 | 0.020 | 20 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091471ZA | 05/27/2009 01:27 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 08:45 | Jonathan K Nardelli | 20 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680739**

**Group No. 1146082**
**DE**

**SVMP-5 Air Summa Canister #870**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 15:56 by BS
through 05/19/2009 16:18
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 09:29 | Jonathan K Nardelli | 200 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680740**

**Group No. 1146082**
**DE**

**SVMP-6 Air Summa Canister #325**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 16:29 by BS
through 05/19/2009 17:25
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.42 | 0.095 | 0.18 | 0.040 | 20 |
| 05298 | Acetonitrile | 75-05-8 | < 0.067 | 0.067 | < 0.040 | 0.040 | 20 |
| 05298 | Acrolein | 107-02-8 | < 0.092 | 0.092 | < 0.040 | 0.040 | 20 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.087 | 0.087 | < 0.040 | 0.040 | 20 |
| 05298 | Benzene | 71-43-2 | 0.37 | 0.064 | 0.12 | 0.020 | 20 |
| 05298 | Bromobenzene | 108-86-1 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Bromoform | 75-25-2 | < 0.21 | 0.21 | < 0.020 | 0.020 | 20 |
| 05298 | Bromomethane | 74-83-9 | < 0.078 | 0.078 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.088 | 0.088 | < 0.040 | 0.040 | 20 |
| 05298 | 2-Butanone | 78-93-3 | < 0.12 | 0.12 | < 0.040 | 0.040 | 20 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.061 | 0.061 | < 0.020 | 0.020 | 20 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.25 | 0.062 | 0.079 | 0.020 | 20 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.092 | 0.092 | < 0.020 | 0.020 | 20 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.071 | 0.071 | < 0.020 | 0.020 | 20 |
| 05298 | Chloroethane | 75-00-3 | < 0.053 | 0.053 | < 0.020 | 0.020 | 20 |
| 05298 | Chloroform | 67-66-3 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | Chloromethane | 74-87-3 | < 0.041 | 0.041 | < 0.020 | 0.020 | 20 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.063 | 0.063 | < 0.020 | 0.020 | 20 |
| 05298 | Cumene | 98-82-8 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.17 | 0.17 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.15 | 0.15 | < 0.020 | 0.020 | 20 |
| 05298 | Dibromomethane | 74-95-3 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.099 | 0.099 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.081 | 0.081 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.081 | 0.081 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.084 | 0.084 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.092 | 0.092 | < 0.020 | 0.020 | 20 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.091 | 0.091 | < 0.020 | 0.020 | 20 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.091 | 0.091 | < 0.020 | 0.020 | 20 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.082 | 0.082 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.093 | 0.093 | < 0.020 | 0.020 | 20 |
| 05298 | Ethylbenzene | 100-41-4 | 0.74 | 0.087 | 0.17 | 0.020 | 20 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | Freon 113 | 76-13-1 | < 0.31 | 0.31 | < 0.040 | 0.040 | 20 |
| 05298 | Freon 114 | 76-14-2 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Heptane | 142-82-5 | 1.9 | 0.082 | 0.46 | 0.020 | 20 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680740**

**Group No. 1146082**
**DE**

**SVMP-6 Air Summa Canister #325**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 16:29 by BS
through 05/19/2009 17:25
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.43 | 0.43 | < 0.040 | 0.040 | 20 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.19 | 0.19 | < 0.020 | 0.020 | 20 |
| 05298 | Hexane | 110-54-3 | 2.3 | 0.70 | 0.64 | 0.20 | 200 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.16 | 0.16 | < 0.040 | 0.040 | 20 |
| 05298 | Isooctane | 540-84-1 | 5.9 | 0.93 | 1.3 | 0.20 | 200 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.070 | 0.070 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 20 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.097 | 0.097 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.16 | 0.16 | < 0.040 | 0.040 | 20 |
| 05298 | Methylene Chloride | 75-09-2 | 0.18 | 0.069 | 0.053 | 0.020 | 20 |
| 05298 | Octane | 111-65-9 | 0.57 | 0.093 | 0.12 | 0.020 | 20 |
| 05298 | Pentane | 109-66-0 | 0.83 | 0.59 | 0.28 | 0.20 | 200 |
| 05298 | Propene | 115-07-1 | < 0.034 | 0.034 | < 0.020 | 0.020 | 20 |
| 05298 | Styrene | 100-42-5 | < 0.085 | 0.085 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Toluene | 108-88-3 | 0.086 | 0.075 | 0.023 | 0.020 | 20 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.30 | 0.30 | < 0.040 | 0.040 | 20 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | Trichloroethene | 79-01-6 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.11 | 0.098 | 0.022 | 0.020 | 20 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.070 | 0.070 | < 0.020 | 0.020 | 20 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.051 | 0.051 | < 0.020 | 0.020 | 20 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.35 | 0.087 | 0.082 | 0.020 | 20 |
| 05298 | o-Xylene | 95-47-6 | < 0.087 | 0.087 | < 0.020 | 0.020 | 20 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091471ZA | 05/27/2009 01:55 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 10:15 | Jonathan K Nardelli | 20 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680740**

**Group No. 1146082**
**DE**

**SVMP-6 Air Summa Canister #325**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 16:29 by BS
through 05/19/2009 17:25
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 06/01/2009 16:46 | Jonathan K Nardelli | 200 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 16:46 | Jonathan K Nardelli | 200 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680741**

**Group No. 1146082**
**DE**

**SVMP-7 Air Summa Canister #539**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 17:20 by BS
through 05/19/2009 18:16
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | < 0.048 | 0.048 | < 0.020 | 0.020 | 10 |
| 05298 | Acetonitrile | 75-05-8 | < 0.034 | 0.034 | < 0.020 | 0.020 | 10 |
| 05298 | Acrolein | 107-02-8 | < 0.046 | 0.046 | < 0.020 | 0.020 | 10 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.043 | 0.043 | < 0.020 | 0.020 | 10 |
| 05298 | Benzene | 71-43-2 | 0.10 | 0.032 | 0.032 | 0.010 | 10 |
| 05298 | Bromobenzene | 108-86-1 | < 0.064 | 0.064 | < 0.010 | 0.010 | 10 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.067 | 0.067 | < 0.010 | 0.010 | 10 |
| 05298 | Bromoform | 75-25-2 | < 0.10 | 0.10 | < 0.010 | 0.010 | 10 |
| 05298 | Bromomethane | 74-83-9 | < 0.039 | 0.039 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.044 | 0.044 | < 0.020 | 0.020 | 10 |
| 05298 | 2-Butanone | 78-93-3 | < 0.059 | 0.059 | < 0.020 | 0.020 | 10 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.030 | 0.030 | < 0.010 | 0.010 | 10 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.031 | 0.031 | < 0.010 | 0.010 | 10 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.063 | 0.063 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroethane | 75-00-3 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroform | 67-66-3 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Chloromethane | 74-87-3 | < 0.021 | 0.021 | < 0.010 | 0.010 | 10 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.031 | 0.031 | < 0.010 | 0.010 | 10 |
| 05298 | Cumene | 98-82-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.085 | 0.085 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.077 | 0.077 | < 0.010 | 0.010 | 10 |
| 05298 | Dibromomethane | 74-95-3 | < 0.071 | 0.071 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.042 | 0.042 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.047 | 0.047 | < 0.010 | 0.010 | 10 |
| 05298 | Ethylbenzene | 100-41-4 | 0.22 | 0.043 | 0.051 | 0.010 | 10 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Freon 113 | 76-13-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | Freon 114 | 76-14-2 | < 0.070 | 0.070 | < 0.010 | 0.010 | 10 |
| 05298 | Heptane | 142-82-5 | 0.25 | 0.041 | 0.062 | 0.010 | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680741**

**Group No. 1146082**
**DE**

**SVMP-7 Air Summa Canister #539**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 17:20 by BS
through 05/19/2009 18:16
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.21 | 0.21 | < 0.020 | 0.020 | 10 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.097 | 0.097 | < 0.010 | 0.010 | 10 |
| 05298 | Hexane | 110-54-3 | 0.59 | 0.035 | 0.17 | 0.010 | 10 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Isooctane | 540-84-1 | 0.96 | 0.047 | 0.21 | 0.010 | 10 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.058 | 0.058 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.048 | 0.048 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Octane | 111-65-9 | 0.095 | 0.047 | 0.020 | 0.010 | 10 |
| 05298 | Pentane | 109-66-0 | 0.20 | 0.030 | 0.066 | 0.010 | 10 |
| 05298 | Propene | 115-07-1 | < 0.017 | 0.017 | < 0.010 | 0.010 | 10 |
| 05298 | Styrene | 100-42-5 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.068 | 0.068 | < 0.010 | 0.010 | 10 |
| 05298 | Toluene | 108-88-3 | < 0.038 | 0.038 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | Trichloroethene | 79-01-6 | < 0.054 | 0.054 | < 0.010 | 0.010 | 10 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.056 | 0.056 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.13 | 0.049 | 0.027 | 0.010 | 10 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.071 | 0.049 | 0.014 | 0.010 | 10 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.27 | 0.043 | 0.062 | 0.010 | 10 |
| 05298 | o-Xylene | 95-47-6 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091471ZA | 05/27/2009 02:23 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/29/2009 20:44 | Jonathan K Nardelli | 10 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680742**

**Group No. 1146082**
**DE**

**SVMP-8 Air Summa Canister #200**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 18:00 by BS
through 05/19/2009 19:12
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.25 | 0.095 | 0.11 | 0.040 | 20 |
| 05298 | Acetonitrile | 75-05-8 | < 0.067 | 0.067 | < 0.040 | 0.040 | 20 |
| 05298 | Acrolein | 107-02-8 | < 0.092 | 0.092 | < 0.040 | 0.040 | 20 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.087 | 0.087 | < 0.040 | 0.040 | 20 |
| 05298 | Benzene | 71-43-2 | 0.52 | 0.064 | 0.16 | 0.020 | 20 |
| 05298 | Bromobenzene | 108-86-1 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Bromoform | 75-25-2 | < 0.21 | 0.21 | < 0.020 | 0.020 | 20 |
| 05298 | Bromomethane | 74-83-9 | < 0.078 | 0.078 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.088 | 0.088 | < 0.040 | 0.040 | 20 |
| 05298 | 2-Butanone | 78-93-3 | < 0.12 | 0.12 | < 0.040 | 0.040 | 20 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.061 | 0.061 | < 0.020 | 0.020 | 20 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.080 | 0.062 | 0.026 | 0.020 | 20 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.13 | 0.13 | < 0.020 | 0.020 | 20 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.092 | 0.092 | < 0.020 | 0.020 | 20 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.071 | 0.071 | < 0.020 | 0.020 | 20 |
| 05298 | Chloroethane | 75-00-3 | < 0.053 | 0.053 | < 0.020 | 0.020 | 20 |
| 05298 | Chloroform | 67-66-3 | < 0.098 | 0.098 | < 0.020 | 0.020 | 20 |
| 05298 | Chloromethane | 74-87-3 | < 0.041 | 0.041 | < 0.020 | 0.020 | 20 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.063 | 0.063 | < 0.020 | 0.020 | 20 |
| 05298 | Cumene | 98-82-8 | 0.18 | 0.098 | 0.037 | 0.020 | 20 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.17 | 0.17 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.15 | 0.15 | < 0.020 | 0.020 | 20 |
| 05298 | Dibromomethane | 74-95-3 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.099 | 0.099 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.081 | 0.081 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.081 | 0.081 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.079 | 0.079 | < 0.020 | 0.020 | 20 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.084 | 0.084 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.092 | 0.092 | < 0.020 | 0.020 | 20 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.091 | 0.091 | < 0.020 | 0.020 | 20 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.091 | 0.091 | < 0.020 | 0.020 | 20 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.082 | 0.082 | < 0.020 | 0.020 | 20 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.093 | 0.093 | < 0.020 | 0.020 | 20 |
| 05298 | Ethylbenzene | 100-41-4 | 1.4 | 0.087 | 0.33 | 0.020 | 20 |
| 05298 | 4-Ethyltoluene | 622-96-8 | 0.11 | 0.098 | 0.023 | 0.020 | 20 |
| 05298 | Freon 113 | 76-13-1 | < 0.31 | 0.31 | < 0.040 | 0.040 | 20 |
| 05298 | Freon 114 | 76-14-2 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Heptane | 142-82-5 | 1.2 | 0.82 | 0.30 | 0.20 | 200 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680742**

**Group No. 1146082**
**DE**

**SVMP-8 Air Summa Canister #200**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 18:00 by BS
through 05/19/2009 19:12
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.43 | 0.43 | < 0.040 | 0.040 | 20 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.19 | 0.19 | < 0.020 | 0.020 | 20 |
| 05298 | Hexane | 110-54-3 | 2.6 | 0.70 | 0.73 | 0.20 | 200 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.16 | 0.16 | < 0.040 | 0.040 | 20 |
| 05298 | Isooctane | 540-84-1 | 6.2 | 0.93 | 1.3 | 0.20 | 200 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.070 | 0.070 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 20 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.097 | 0.097 | < 0.020 | 0.020 | 20 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.072 | 0.072 | < 0.020 | 0.020 | 20 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.16 | 0.16 | < 0.040 | 0.040 | 20 |
| 05298 | Methylene Chloride | 75-09-2 | 0.34 | 0.069 | 0.099 | 0.020 | 20 |
| 05298 | Octane | 111-65-9 | 0.85 | 0.093 | 0.18 | 0.020 | 20 |
| 05298 | Pentane | 109-66-0 | 1.4 | 0.059 | 0.49 | 0.020 | 20 |
| 05298 | Propene | 115-07-1 | < 0.034 | 0.034 | < 0.020 | 0.020 | 20 |
| 05298 | Styrene | 100-42-5 | < 0.085 | 0.085 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.14 | 0.14 | < 0.020 | 0.020 | 20 |
| 05298 | Toluene | 108-88-3 | 0.093 | 0.075 | 0.025 | 0.020 | 20 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.30 | 0.30 | < 0.040 | 0.040 | 20 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | Trichloroethene | 79-01-6 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.11 | 0.11 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.12 | 0.12 | < 0.020 | 0.020 | 20 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.12 | 0.098 | 0.024 | 0.020 | 20 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.26 | 0.098 | 0.053 | 0.020 | 20 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.070 | 0.070 | < 0.020 | 0.020 | 20 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.051 | 0.051 | < 0.020 | 0.020 | 20 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.51 | 0.087 | 0.12 | 0.020 | 20 |
| 05298 | o-Xylene | 95-47-6 | < 0.087 | 0.087 | < 0.020 | 0.020 | 20 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091471ZA | 05/27/2009 02:52 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 17:32 | Jonathan K Nardelli | 20 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680742**

**Group No. 1146082**
**DE**

**SVMP-8 Air Summa Canister #200**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 18:00 by BS
through 05/19/2009 19:12
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 18:16 | Jonathan K Nardelli | 200 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680743**

**Group No. 1146082**
**DE**

**Ambient (2509 Phila. Pk) Air Summa Canister #803**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 12:17 by BS
through 05/19/2009 13:08
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.016 | 0.0048 | 0.0067 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680743**

**Group No. 1146082**
**DE**

**Ambient (2509 Phila. Pk) Air Summa Canister #803**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/19/2009 12:17 by BS
through 05/19/2009 13:08
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.0037 | 0.0030 | 0.0013 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | 0.0056 | 0.0038 | 0.0015 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 16:59 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/29/2009 21:30 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680744**

**Group No. 1146082**
**DE**

**SVMP-9 Air Summa Canister #537**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:31 by BS
through 05/20/2009 13:15
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.14 | 0.048 | 0.060 | 0.020 | 10 |
| 05298 | Acetonitrile | 75-05-8 | < 0.034 | 0.034 | < 0.020 | 0.020 | 10 |
| 05298 | Acrolein | 107-02-8 | < 0.046 | 0.046 | < 0.020 | 0.020 | 10 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.043 | 0.043 | < 0.020 | 0.020 | 10 |
| 05298 | Benzene | 71-43-2 | 0.28 | 0.032 | 0.086 | 0.010 | 10 |
| 05298 | Bromobenzene | 108-86-1 | < 0.064 | 0.064 | < 0.010 | 0.010 | 10 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.067 | 0.067 | < 0.010 | 0.010 | 10 |
| 05298 | Bromoform | 75-25-2 | < 0.10 | 0.10 | < 0.010 | 0.010 | 10 |
| 05298 | Bromomethane | 74-83-9 | < 0.039 | 0.039 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.044 | 0.044 | < 0.020 | 0.020 | 10 |
| 05298 | 2-Butanone | 78-93-3 | < 0.059 | 0.059 | < 0.020 | 0.020 | 10 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.030 | 0.030 | < 0.010 | 0.010 | 10 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.061 | 0.031 | 0.020 | 0.010 | 10 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.063 | 0.063 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.041 | 0.035 | 0.012 | 0.010 | 10 |
| 05298 | Chloroethane | 75-00-3 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroform | 67-66-3 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Chloromethane | 74-87-3 | < 0.021 | 0.021 | < 0.010 | 0.010 | 10 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.031 | 0.031 | < 0.010 | 0.010 | 10 |
| 05298 | Cumene | 98-82-8 | 0.060 | 0.049 | 0.012 | 0.010 | 10 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.085 | 0.085 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.077 | 0.077 | < 0.010 | 0.010 | 10 |
| 05298 | Dibromomethane | 74-95-3 | < 0.071 | 0.071 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.042 | 0.042 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.047 | 0.047 | < 0.010 | 0.010 | 10 |
| 05298 | Ethylbenzene | 100-41-4 | 0.77 | 0.043 | 0.18 | 0.010 | 10 |
| 05298 | 4-Ethyltoluene | 622-96-8 | 0.16 | 0.049 | 0.033 | 0.010 | 10 |
| 05298 | Freon 113 | 76-13-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | Freon 114 | 76-14-2 | < 0.070 | 0.070 | < 0.010 | 0.010 | 10 |
| 05298 | Heptane | 142-82-5 | 0.61 | 0.041 | 0.15 | 0.010 | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680744**

**Group No. 1146082**
**DE**

**SVMP-9 Air Summa Canister #537**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:31 by BS
through 05/20/2009 13:15
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.21 | 0.21 | < 0.020 | 0.020 | 10 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.097 | 0.097 | < 0.010 | 0.010 | 10 |
| 05298 | Hexane | 110-54-3 | 0.91 | 0.035 | 0.26 | 0.010 | 10 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Isooctane | 540-84-1 | 1.0 | 0.23 | 0.22 | 0.050 | 50 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.058 | 0.058 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.048 | 0.048 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Methylene Chloride | 75-09-2 | 0.31 | 0.035 | 0.090 | 0.010 | 10 |
| 05298 | Octane | 111-65-9 | 0.30 | 0.047 | 0.064 | 0.010 | 10 |
| 05298 | Pentane | 109-66-0 | 0.25 | 0.030 | 0.084 | 0.010 | 10 |
| 05298 | Propene | 115-07-1 | 0.27 | 0.017 | 0.16 | 0.010 | 10 |
| 05298 | Styrene | 100-42-5 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.068 | 0.068 | < 0.010 | 0.010 | 10 |
| 05298 | Toluene | 108-88-3 | 0.097 | 0.038 | 0.026 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | Trichloroethene | 79-01-6 | < 0.054 | 0.054 | < 0.010 | 0.010 | 10 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.056 | 0.056 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.60 | 0.049 | 0.12 | 0.010 | 10 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.31 | 0.049 | 0.063 | 0.010 | 10 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.97 | 0.043 | 0.22 | 0.010 | 10 |
| 05298 | o-Xylene | 95-47-6 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 17:28 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 19:02 | Jonathan K Nardelli | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680744**

**Group No. 1146082**
**DE**

**SVMP-9 Air Summa Canister #537**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:31 by BS
through 05/20/2009 13:15
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 19:46 | Jonathan K Nardelli | 50 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680745**

**Group No. 1146082**
**DE**

**SVMP-10 Air Summa Canister #205**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 13:14 by BS
through 05/20/2009 13:44
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.012 | 0.0048 | 0.0049 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.022 | 0.0031 | 0.0071 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680745**

**Group No. 1146082**
**DE**

**SVMP-10 Air Summa Canister #205**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 13:14 by BS
through 05/20/2009 13:44
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.0048 | 0.0030 | 0.0016 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 17:57 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/29/2009 23:00 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680746**

**Group No. 1146082**
**DE**

**SVMP-11 Air Summa Canister #322**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 14:00 by BS
through 05/20/2009 14:57
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.048 | 0.0048 | 0.020 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | 0.0040 | 0.0034 | 0.0024 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | 0.0088 | 0.0049 | 0.0018 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | 0.0026 | 0.0021 | 0.0013 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | 0.0059 | 0.0049 | 0.0012 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680746**

**Group No. 1146082**
**DE**

**SVMP-11 Air Summa Canister #322**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 14:00 by BS
through 05/20/2009 14:57
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | 0.042 | 0.0035 | 0.012 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | 0.010 | 0.0056 | 0.0019 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 18:26 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/29/2009 23:46 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680747**

**Group No. 1146082**
**DE**

**SVMP-12 Air Summa Canister #813**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 14:20 by BS
through 05/20/2009 15:30
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.021 | 0.0048 | 0.0087 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | 0.0072 | 0.0049 | 0.0015 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | 0.0075 | 0.0043 | 0.0017 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | 0.0074 | 0.0041 | 0.0018 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680747**

**Group No. 1146082**
**DE**

**SVMP-12 Air Summa Canister #813**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 14:20 by BS
through 05/20/2009 15:30
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | 0.011 | 0.0035 | 0.0032 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | 0.030 | 0.0047 | 0.0064 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | 0.027 | 0.0035 | 0.0078 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.0035 | 0.0030 | 0.0012 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 18:54 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 00:32 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680748**

**Group No. 1146082**
**DE**

**SVMP-13 Air Summa Canister #031**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 10:47 by BS
through 05/20/2009 11:22
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.47 | 0.048 | 0.20 | 0.020 | 10 |
| 05298 | Acetonitrile | 75-05-8 | < 0.034 | 0.034 | < 0.020 | 0.020 | 10 |
| 05298 | Acrolein | 107-02-8 | < 0.046 | 0.046 | < 0.020 | 0.020 | 10 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.043 | 0.043 | < 0.020 | 0.020 | 10 |
| 05298 | Benzene | 71-43-2 | 0.20 | 0.032 | 0.064 | 0.010 | 10 |
| 05298 | Bromobenzene | 108-86-1 | < 0.064 | 0.064 | < 0.010 | 0.010 | 10 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.067 | 0.067 | < 0.010 | 0.010 | 10 |
| 05298 | Bromoform | 75-25-2 | < 0.10 | 0.10 | < 0.010 | 0.010 | 10 |
| 05298 | Bromomethane | 74-83-9 | < 0.039 | 0.039 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.044 | 0.044 | < 0.020 | 0.020 | 10 |
| 05298 | 2-Butanone | 78-93-3 | < 0.059 | 0.059 | < 0.020 | 0.020 | 10 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.030 | 0.030 | < 0.010 | 0.010 | 10 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.42 | 0.031 | 0.14 | 0.010 | 10 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.063 | 0.063 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroethane | 75-00-3 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroform | 67-66-3 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Chloromethane | 74-87-3 | < 0.021 | 0.021 | < 0.010 | 0.010 | 10 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.031 | 0.031 | < 0.010 | 0.010 | 10 |
| 05298 | Cumene | 98-82-8 | 0.070 | 0.049 | 0.014 | 0.010 | 10 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.085 | 0.085 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.077 | 0.077 | < 0.010 | 0.010 | 10 |
| 05298 | Dibromomethane | 74-95-3 | < 0.071 | 0.071 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.042 | 0.042 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.047 | 0.047 | < 0.010 | 0.010 | 10 |
| 05298 | Ethylbenzene | 100-41-4 | 0.58 | 0.043 | 0.13 | 0.010 | 10 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Freon 113 | 76-13-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | Freon 114 | 76-14-2 | < 0.070 | 0.070 | < 0.010 | 0.010 | 10 |
| 05298 | Heptane | 142-82-5 | 0.99 | 0.041 | 0.24 | 0.010 | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680748**

**Group No. 1146082**
**DE**

**SVMP-13 Air Summa Canister #031**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 10:47 by BS
through 05/20/2009 11:22
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.21 | 0.21 | < 0.020 | 0.020 | 10 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.097 | 0.097 | < 0.010 | 0.010 | 10 |
| 05298 | Hexane | 110-54-3 | 1.3 | 0.35 | 0.38 | 0.10 | 100 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Isooctane | 540-84-1 | 4.1 | 0.47 | 0.88 | 0.10 | 100 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.058 | 0.058 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.048 | 0.048 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Methylene Chloride | 75-09-2 | 0.22 | 0.035 | 0.063 | 0.010 | 10 |
| 05298 | Octane | 111-65-9 | 0.41 | 0.047 | 0.089 | 0.010 | 10 |
| 05298 | Pentane | 109-66-0 | 0.40 | 0.030 | 0.13 | 0.010 | 10 |
| 05298 | Propene | 115-07-1 | 0.045 | 0.017 | 0.026 | 0.010 | 10 |
| 05298 | Styrene | 100-42-5 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.068 | 0.068 | < 0.010 | 0.010 | 10 |
| 05298 | Toluene | 108-88-3 | 0.12 | 0.038 | 0.032 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | Trichloroethene | 79-01-6 | < 0.054 | 0.054 | < 0.010 | 0.010 | 10 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.056 | 0.056 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.088 | 0.049 | 0.018 | 0.010 | 10 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.40 | 0.043 | 0.092 | 0.010 | 10 |
| 05298 | o-Xylene | 95-47-6 | 0.14 | 0.043 | 0.031 | 0.010 | 10 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 19:23 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 01:16 | Jonathan K Nardelli | 100 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680748**

**Group No. 1146082**
**DE**

**SVMP-13 Air Summa Canister #031**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 10:47 by BS
through 05/20/2009 11:22
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 05/30/2009 01:16 | Jonathan K Nardelli | 100 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 22:01 | Jonathan K Nardelli | 10 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680749**

**Group No. 1146082**
**DE**

**SVMP-14 Air Summa Canister #1037**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 11:21 by BS
through 05/20/2009 12:07
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.18 | 0.048 | 0.076 | 0.020 | 10 |
| 05298 | Acetonitrile | 75-05-8 | < 0.034 | 0.034 | < 0.020 | 0.020 | 10 |
| 05298 | Acrolein | 107-02-8 | < 0.046 | 0.046 | < 0.020 | 0.020 | 10 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.043 | 0.043 | < 0.020 | 0.020 | 10 |
| 05298 | Benzene | 71-43-2 | 0.43 | 0.032 | 0.14 | 0.010 | 10 |
| 05298 | Bromobenzene | 108-86-1 | < 0.064 | 0.064 | < 0.010 | 0.010 | 10 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.067 | 0.067 | < 0.010 | 0.010 | 10 |
| 05298 | Bromoform | 75-25-2 | < 0.10 | 0.10 | < 0.010 | 0.010 | 10 |
| 05298 | Bromomethane | 74-83-9 | < 0.039 | 0.039 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.044 | 0.044 | < 0.020 | 0.020 | 10 |
| 05298 | 2-Butanone | 78-93-3 | < 0.059 | 0.059 | < 0.020 | 0.020 | 10 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.030 | 0.030 | < 0.010 | 0.010 | 10 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.094 | 0.031 | 0.030 | 0.010 | 10 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.063 | 0.063 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroethane | 75-00-3 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroform | 67-66-3 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Chloromethane | 74-87-3 | < 0.021 | 0.021 | < 0.010 | 0.010 | 10 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.031 | 0.031 | < 0.010 | 0.010 | 10 |
| 05298 | Cumene | 98-82-8 | 0.10 | 0.049 | 0.020 | 0.010 | 10 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.085 | 0.085 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.077 | 0.077 | < 0.010 | 0.010 | 10 |
| 05298 | Dibromomethane | 74-95-3 | < 0.071 | 0.071 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.042 | 0.042 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.047 | 0.047 | < 0.010 | 0.010 | 10 |
| 05298 | Ethylbenzene | 100-41-4 | 1.0 | 0.43 | 0.24 | 0.10 | 100 |
| 05298 | 4-Ethyltoluene | 622-96-8 | 0.25 | 0.049 | 0.052 | 0.010 | 10 |
| 05298 | Freon 113 | 76-13-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | Freon 114 | 76-14-2 | < 0.070 | 0.070 | < 0.010 | 0.010 | 10 |
| 05298 | Heptane | 142-82-5 | 0.89 | 0.041 | 0.22 | 0.010 | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680749**

**Group No. 1146082**
**DE**

**SVMP-14 Air Summa Canister #1037**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 11:21 by BS
through 05/20/2009 12:07
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.21 | 0.21 | < 0.020 | 0.020 | 10 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.097 | 0.097 | < 0.010 | 0.010 | 10 |
| 05298 | Hexane | 110-54-3 | 1.1 | 0.35 | 0.30 | 0.10 | 100 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Isooctane | 540-84-1 | 2.3 | 0.47 | 0.48 | 0.10 | 100 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.058 | 0.058 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.048 | 0.048 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Methylene Chloride | 75-09-2 | 0.089 | 0.035 | 0.026 | 0.010 | 10 |
| 05298 | Octane | 111-65-9 | 0.44 | 0.047 | 0.095 | 0.010 | 10 |
| 05298 | Pentane | 109-66-0 | 0.26 | 0.030 | 0.088 | 0.010 | 10 |
| 05298 | Propene | 115-07-1 | 0.035 | 0.017 | 0.021 | 0.010 | 10 |
| 05298 | Styrene | 100-42-5 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.068 | 0.068 | < 0.010 | 0.010 | 10 |
| 05298 | Toluene | 108-88-3 | 0.12 | 0.038 | 0.031 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | Trichloroethene | 79-01-6 | < 0.054 | 0.054 | < 0.010 | 0.010 | 10 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.056 | 0.056 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.92 | 0.049 | 0.19 | 0.010 | 10 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.50 | 0.049 | 0.10 | 0.010 | 10 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | m/p-Xylene | 179601-23-1 | 1.3 | 0.43 | 0.29 | 0.10 | 100 |
| 05298 | o-Xylene | 95-47-6 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 19:51 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 20:31 | Jonathan K Nardelli | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680749**

**Group No. 1146082**
**DE**

**SVMP-14 Air Summa Canister #1037**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 11:21 by BS
through 05/20/2009 12:07
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 21:15 | Jonathan K Nardelli | 100 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680750**

**Group No. 1146082**
**DE**

**SVMP-15 Air Summa Canister #850**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 11:44 by BS
through 05/20/2009 12:27
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.44 | 0.048 | 0.18 | 0.020 | 10 |
| 05298 | Acetonitrile | 75-05-8 | < 0.034 | 0.034 | < 0.020 | 0.020 | 10 |
| 05298 | Acrolein | 107-02-8 | < 0.046 | 0.046 | < 0.020 | 0.020 | 10 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.043 | 0.043 | < 0.020 | 0.020 | 10 |
| 05298 | Benzene | 71-43-2 | 0.14 | 0.032 | 0.045 | 0.010 | 10 |
| 05298 | Bromobenzene | 108-86-1 | < 0.064 | 0.064 | < 0.010 | 0.010 | 10 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.067 | 0.067 | < 0.010 | 0.010 | 10 |
| 05298 | Bromoform | 75-25-2 | < 0.10 | 0.10 | < 0.010 | 0.010 | 10 |
| 05298 | Bromomethane | 74-83-9 | < 0.039 | 0.039 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.044 | 0.044 | < 0.020 | 0.020 | 10 |
| 05298 | 2-Butanone | 78-93-3 | < 0.059 | 0.059 | < 0.020 | 0.020 | 10 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.030 | 0.030 | < 0.010 | 0.010 | 10 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.37 | 0.031 | 0.12 | 0.010 | 10 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.063 | 0.063 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroethane | 75-00-3 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | Chloroform | 67-66-3 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Chloromethane | 74-87-3 | < 0.021 | 0.021 | < 0.010 | 0.010 | 10 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.031 | 0.031 | < 0.010 | 0.010 | 10 |
| 05298 | Cumene | 98-82-8 | 0.068 | 0.049 | 0.014 | 0.010 | 10 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.085 | 0.085 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.077 | 0.077 | < 0.010 | 0.010 | 10 |
| 05298 | Dibromomethane | 74-95-3 | < 0.071 | 0.071 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.040 | 0.040 | < 0.010 | 0.010 | 10 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.042 | 0.042 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.046 | 0.046 | < 0.010 | 0.010 | 10 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.045 | 0.045 | < 0.010 | 0.010 | 10 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.047 | 0.047 | < 0.010 | 0.010 | 10 |
| 05298 | Ethylbenzene | 100-41-4 | 0.48 | 0.043 | 0.11 | 0.010 | 10 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.049 | 0.049 | < 0.010 | 0.010 | 10 |
| 05298 | Freon 113 | 76-13-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | Freon 114 | 76-14-2 | < 0.070 | 0.070 | < 0.010 | 0.010 | 10 |
| 05298 | Heptane | 142-82-5 | 0.65 | 0.041 | 0.16 | 0.010 | 10 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680750**

**Group No. 1146082**
**DE**

**SVMP-15 Air Summa Canister #850**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 11:44 by BS
through 05/20/2009 12:27
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.21 | 0.21 | < 0.020 | 0.020 | 10 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.097 | 0.097 | < 0.010 | 0.010 | 10 |
| 05298 | Hexane | 110-54-3 | 0.79 | 0.35 | 0.22 | 0.10 | 100 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Isooctane | 540-84-1 | 2.5 | 0.47 | 0.54 | 0.10 | 100 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.058 | 0.058 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.041 | 0.041 | < 0.010 | 0.010 | 10 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.048 | 0.048 | < 0.010 | 0.010 | 10 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.036 | 0.036 | < 0.010 | 0.010 | 10 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.082 | 0.082 | < 0.020 | 0.020 | 10 |
| 05298 | Methylene Chloride | 75-09-2 | 0.26 | 0.035 | 0.075 | 0.010 | 10 |
| 05298 | Octane | 111-65-9 | 0.29 | 0.047 | 0.063 | 0.010 | 10 |
| 05298 | Pentane | 109-66-0 | 0.25 | 0.030 | 0.086 | 0.010 | 10 |
| 05298 | Propene | 115-07-1 | 0.017 | 0.017 | 0.010 | 0.010 | 10 |
| 05298 | Styrene | 100-42-5 | < 0.043 | 0.043 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.069 | 0.069 | < 0.010 | 0.010 | 10 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.068 | 0.068 | < 0.010 | 0.010 | 10 |
| 05298 | Toluene | 108-88-3 | 0.092 | 0.038 | 0.024 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.15 | 0.15 | < 0.020 | 0.020 | 10 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.055 | 0.055 | < 0.010 | 0.010 | 10 |
| 05298 | Trichloroethene | 79-01-6 | < 0.054 | 0.054 | < 0.010 | 0.010 | 10 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.056 | 0.056 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.060 | 0.060 | < 0.010 | 0.010 | 10 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.050 | 0.049 | 0.010 | 0.010 | 10 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.10 | 0.049 | 0.020 | 0.010 | 10 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.035 | 0.035 | < 0.010 | 0.010 | 10 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.026 | 0.026 | < 0.010 | 0.010 | 10 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.30 | 0.043 | 0.069 | 0.010 | 10 |
| 05298 | o-Xylene | 95-47-6 | 0.085 | 0.043 | 0.020 | 0.010 | 10 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 20:20 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AB | 05/30/2009 01:59 | Jonathan K Nardelli | 100 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680750**

**Group No. 1146082**
**DE**

**SVMP-15 Air Summa Canister #850**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 11:44 by BS
through 05/20/2009 12:27
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AC | 06/01/2009 22:47 | Jonathan K Nardelli | 10 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680751**

**Group No. 1146082**
**DE**

**SVMP-16 Air Summa Canister #067**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:03 by BS
through 05/20/2009 12:35
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.017 | 0.0048 | 0.0072 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | 0.0055 | 0.0034 | 0.0033 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.0032 | 0.0031 | 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680751**

**Group No. 1146082**
**DE**

**SVMP-16 Air Summa Canister #067**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:03 by BS
through 05/20/2009 12:35
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | 0.060 | 0.0035 | 0.017 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 20:48 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AA | 05/29/2009 12:47 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5680752**

**Group No. 1146082**
**DE**

**Ambient (Hillside Rd) Air Summa Canister #146**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:14 by BS
through 05/20/2009 13:15
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 6.6 | 6.6 | < 10 | 10 | 2 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.011 | 0.0048 | 0.0047 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5680752**

**Group No. 1146082**
**DE**

**Ambient (Hillside Rd) Air Summa Canister #146**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/20/2009 12:14 by BS
through 05/20/2009 13:15
Submitted: 05/22/2009 16:30
Reported: 06/04/2009 at 13:53
Discard: 07/05/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091481ZA | 05/27/2009 21:17 | David I Ressler | 2 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914830AA | 05/29/2009 14:49 | Jonathan K Nardelli | 1 |

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# Analysis Report



## Quality Control Summary

Client Name: Kleinfelder Group Number: 1146082
Reported: 06/04/09 at 01:53 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

### Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Batch number: C0914830AA | Sample number(s): 5680751-5680752 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 115 | 123 | 70-130 | 7 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | | | | | |
| Bromoform | < 0.010 | 0.010 | mg/m3 | | | | | |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 97 | 99 | 70-130 | 2 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | | | | | |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | | | | | |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 103 | 102 | 70-130 | 1 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 99 | 106 | 70-130 | 7 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 115 | 119 | 57-131 | 3 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 104 | 105 | 70-130 | 0 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 127 | 129* | 50-127 | 2 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | | | | | |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 89 | 97 | 53-158 | 8 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 78 | 85 | 46-171 | 9 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 82 | 89 | 46-170 | 8 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 78 | 84 | 39-169 | 7 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 114 | 116 | 54-122 | 1 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 110 | 111 | 56-128 | 1 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 119 | 127 | 70-130 | 6 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 107 | 110 | 56-127 | 3 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 108 | 109 | 52-125 | 1 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | | | | | |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 111 | 119 | 70-130 | 7 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 122 | 131 | 48-132 | 7 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 94 | 103 | 53-147 | 9 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 111 | 120 | 70-130 | 8 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 109 | 110 | 61-135 | 1 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 116 | 120 | 58-125 | 3 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1146082
Reported: 06/04/09 at 01:53 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 65 | 70 | 32-200 | 7 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 102 | 102 | 70-130 | 0 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | | | | | |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 110 | 118 | 58-169 | 8 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 81 | 87 | 43-171 | 8 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 101 | 108 | 70-130 | 7 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 106 | 116 | 70-130 | 9 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 62 | 67 | 32-200 | 8 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 111 | 112 | 70-130 | 0 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 100 | 108 | 54-132 | 8 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 117 | 122 | 70-130 | 5 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 112 | 114 | 70-130 | 1 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 89 | 97 | 44-164 | 8 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 92 | 100 | 49-157 | 8 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 121 | 127 | 70-130 | 5 | 25 |
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 123 | 133* | 70-130 | 8 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 117 | 127 | 70-130 | 8 | 25 |
| Batch number: C0914830AB | Sample number(s): 5680735-5680741,5680743,5680745-5680748,5680750 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 115 | 123 | 70-130 | 7 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | | | | | |
| Bromoform | < 0.010 | 0.010 | mg/m3 | | | | | |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 97 | 99 | 70-130 | 2 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | | | | | |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | | | | | |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 103 | 102 | 70-130 | 1 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 99 | 106 | 70-130 | 7 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 115 | 119 | 57-131 | 3 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 104 | 105 | 70-130 | 0 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 127 | 129* | 50-127 | 2 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1146082
Reported: 06/04/09 at 01:53 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | | | | | |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 89 | 97 | 53-158 | 8 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 78 | 85 | 46-171 | 9 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 82 | 89 | 46-170 | 8 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 78 | 84 | 39-169 | 7 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 114 | 116 | 54-122 | 1 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 110 | 111 | 56-128 | 1 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 119 | 127 | 70-130 | 6 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 107 | 110 | 56-127 | 3 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 108 | 109 | 52-125 | 1 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | | | | | |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 111 | 119 | 70-130 | 7 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 122 | 131 | 48-132 | 7 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 94 | 103 | 53-147 | 9 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 111 | 120 | 70-130 | 8 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 109 | 110 | 61-135 | 1 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 116 | 120 | 58-125 | 3 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 65 | 70 | 32-200 | 7 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 102 | 102 | 70-130 | 0 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | | | | | |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 110 | 118 | 58-169 | 8 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 81 | 87 | 43-171 | 8 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 101 | 108 | 70-130 | 7 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 106 | 116 | 70-130 | 9 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 62 | 67 | 32-200 | 8 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 111 | 112 | 70-130 | 0 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 100 | 108 | 54-132 | 8 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 117 | 122 | 70-130 | 5 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 112 | 114 | 70-130 | 1 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 89 | 97 | 44-164 | 8 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 92 | 100 | 49-157 | 8 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 121 | 127 | 70-130 | 5 | 25 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1146082
Reported: 06/04/09 at 01:53 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 123 | 133* | 70-130 | 8 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 117 | 127 | 70-130 | 8 | 25 |
| Batch number: C0914830AC | Sample number(s): 5680735,5680740,5680742,5680744,5680748-5680750 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 115 | 123 | 70-130 | 7 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | | | | | |
| Bromoform | < 0.010 | 0.010 | mg/m3 | | | | | |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 97 | 99 | 70-130 | 2 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | | | | | |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | | | | | |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 103 | 102 | 70-130 | 1 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 99 | 106 | 70-130 | 7 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 115 | 119 | 57-131 | 3 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 104 | 105 | 70-130 | 0 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 127 | 129* | 50-127 | 2 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | | | | | |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 89 | 97 | 53-158 | 8 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 78 | 85 | 46-171 | 9 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 82 | 89 | 46-170 | 8 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 78 | 84 | 39-169 | 7 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 114 | 116 | 54-122 | 1 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 110 | 111 | 56-128 | 1 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 119 | 127 | 70-130 | 6 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 107 | 110 | 56-127 | 3 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 108 | 109 | 52-125 | 1 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | | | | | |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 111 | 119 | 70-130 | 7 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 122 | 131 | 48-132 | 7 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 94 | 103 | 53-147 | 9 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 111 | 120 | 70-130 | 8 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 109 | 110 | 61-135 | 1 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 116 | 120 | 58-125 | 3 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 65 | 70 | 32-200 | 7 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1146082
Reported: 06/04/09 at 01:53 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 102 | 102 | 70-130 | 0 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | | | | | |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 110 | 118 | 58-169 | 8 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 81 | 87 | 43-171 | 8 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 101 | 108 | 70-130 | 7 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 106 | 116 | 70-130 | 9 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 62 | 67 | 32-200 | 8 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 111 | 112 | 70-130 | 0 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 100 | 108 | 54-132 | 8 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 117 | 122 | 70-130 | 5 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 112 | 114 | 70-130 | 1 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 89 | 97 | 44-164 | 8 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 92 | 100 | 49-157 | 8 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 121 | 127 | 70-130 | 5 | 25 |
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 123 | 133* | 70-130 | 8 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 117 | 127 | 70-130 | 8 | 25 |

Batch number: M091471ZA Sample number(s): 5680735,5680738-5680742
Methane < 3.3 3.3 mg/m3

Batch number: M091481ZA Sample number(s): 5680743-5680752
Methane < 3.3 3.3 mg/m3

Batch number: M091491ZA Sample number(s): 5680736-5680737
Methane < 3.3 3.3 mg/m3

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 12152 Group# 1146082 Sample # 5680735-52 **COC #** 209176

Please print. Instructions on reverse side correspond with circled numbers.

**For Lab Use Only**
FSC: _____
SCR#: _____

**Preservation Codes**
H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ O=Other

(1)
Client: DNREC-TMB Acct. #: _____
Project Name/#: Ron's Discount Energy-Claymont PWSID #: _____
Project Manager: Mark C. Steele P.O.#: 08531-74709
Sampler: Brian Shedd Quote #: _____
Name of state where samples were collected: DE

(2) (3) (4) (5) (6)

| Sample Identification | Date Collected | Time Collected | Grab | Composite | Soil | Water (Potable / NPDES) | Other - Air | Total # of Containers | Full List VOCs by TO-15 | Methane by 3C | Remarks - FC # |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SVMP-1 [525] | 5/19/09 | 1106-1151 | | | | | X | | X | X | 337691 |
| SVMP-2 [854] | 5/19/09 | 1214-1323 | | | | | X | | X | X | 259683 |
| SVMP-3 [129] | 5/19/09 | 1316-1410 | | | | | X | | X | X | 234834 |
| SVMP-4 [831] | 5/19/09 | 1408-1452 | | | | | X | | X | X | 246077 |
| SVMP-5 [870] | 5/19/09 | 1556-1618 | | | | | X | | X | X | 316963 |
| SVMP-6 [325] | 5/19/09 | 1629-1725 | | | | | X | | X | X | 336746 |
| SVMP-7 [539] | 5/19/09 | 1720-1816 | | | | | X | | X | X | 303421 |
| SVMP-8 [200] | 5/19/09 | 1800-1912 | | | | | X | | X | X | 249911 |
| Ambient (2509 Philadelphia Pike) [803] | 5/19/09 | 1217-1308 | | | | | X | | X | X | 329349 |

(7) **Turnaround Time Requested** (TAT) (please circle): ~~Normal~~ Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: _____
Rush results requested by (please circle): Phone Fax E-mail
Phone #: _____ Fax #: _____
E-mail address: _____

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No _____

(9)

| Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|
| B. P. Shedd | 5/19/09 | 2120 | Sampleroom | 5/19/09 | 2120 |
| Sampler Room | 5-22-09 | 1400 | [signature] | 5-22-09 | 1400 |
| [signature] | 5-22-09 | 1630 | | | |
| | | | | | |
| | | | [signature] | 5/22/09 | 16:30 |

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2102.03

# Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 12152 Group# 1146082 Sample # 5680735-52

**COC #** 209175

Please print. Instructions on reverse side correspond with circled numbers.

**For Lab Use Only**
FSC: _____
SCR#: _____

**Preservation Codes**
H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ O=Other

(1)
Client: DNREC-TMB Acct. #: _____
Project Name/#: Ron's Discount Energy-Claymont PWSID #: _____
Project Manager: Mark C. Steele P.O.#: 08531-74709
Sampler: Brian Shedd Quote #: _____
Name of state where samples were collected: DE

(2) (3) (4) (5) (6)

| Sample Identification | Date Collected | Time Collected | Grab | Composite | Soil | Water (Potable / NPDES) | Other - Air | Total # of Containers | Full List VOCs by TO-15 | metane by 3C | Remarks - FC# |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SVMP-9 [537] | 5/20/09 | 1231-1315 | | | | | X | | X | X | 338047 |
| SVMP-10 [205] | 5/20/09 | 1314-1344 | | | | | X | | X | X | 236795 |
| SVMP-11 [322] | 5/20/09 | 1400-1457 | | | | | X | | X | X | 316846 |
| SVMP-12 [813] | 5/20/09 | 1420-1530 | | | | | X | | X | X | 336709 |
| SVMP-13 [031] | 5/20/09 | 1047-1122 | | | | | X | | X | X | 338028 |
| SVMP-14 [1037] | 5/20/09 | 1121-1207 | | | | | X | | X | X | 322104 |
| SVMP-15 [850] | 5/20/09 | 1144-1227 | | | | | X | | X | X | 252094 |
| SVMP-16 [067] | 5/20/09 | 1203-1235 | | | | | X | | X | X | 329355 |
| Ambient (Hillside Rd.) [146] | 5/20/09 | 1214-1315 | | | | | X | | X | X | 420 |

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: _____
Rush results requested by (please circle): Phone Fax E-mail
Phone #: _____ Fax #: _____
E-mail address: _____

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No _____

(9)

| Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|
| [signature] | 5/20/09 | 2130 | Sample Room | 5/20/09 | 2130 |
| Sample Room | 5-22-09 | 1400 | [signature] | 5-22-09 | 1400 |
| [signature] | 5-22-09 | 1630 | | | |
| | | | | | |
| | | | [signature] | 5/22/09 | 16:30 |

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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

# Lancaster Laboratories
# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **N.D.** | none detected | **BMQL** | Below Minimum Quantitation Level |
| **TNTC** | Too Numerous To Count | **MPN** | Most Probable Number |
| **IU** | International Units | **CP Units** | cobalt-chloroplatinate units |
| **umhos/cm** | micromhos/cm | **NTU** | nephelometric turbidity units |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **Cal** | (diet) calories | **lb.** | pound(s) |
| **meq** | milliequivalents | **kg** | kilogram(s) |
| **g** | gram(s) | **mg** | milligram(s) |
| **ug** | microgram(s) | **l** | liter(s) |
| **ml** | milliliter(s) | **ul** | microliter(s) |
| **m3** | cubic meter(s) | **fib >5 um/ml** | fibers greater than 5 microns in length per ml |

**<** less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

*U.S. EPA data qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quatitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **J** | Estimated value |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike amount not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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**Appendix G Lancaster Laboratories Analysis Report-Indoor Air Data**

**(May 13 & 14, 2009)**

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# Analysis Report

ANALYTICAL RESULTS

Prepared for:

Kleinfelder
30 Porter Road
Littleton MA 01460

978-486-0060

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

May 26, 2009

## SAMPLE GROUP

The sample group for this submittal is 1145263. Samples arrived at the laboratory on Monday, May 18, 2009. The PO# for this group is 08531-74156.

| Client Description | Lancaster Labs Number |
|---|---|
| 11 Hillside Rd (Basement) Air Summa Can #899 | 5675697 |
| 11 Hillside Rd (1st Floor) Air Summa Can #083 | 5675698 |
| 11 Hillside Rd (Outdoor) Air Summa Can #412 | 5675699 |
| 12 Hillside Rd (Basement) Air Summa Can #538 | 5675700 |
| 12 Hillside Rd (1st Floor) Air Summa Can #819 | 5675701 |
| 12 Hillside Rd (Outdoor) Air Summa Can #832 | 5675702 |
| 10 Hillside Rd (Basement) Air Summa Can #160 | 5675703 |
| 10 Hillside Rd (1st Floor) Air Summa Can #006 | 5675704 |
| 10 Hillside Rd (Outdoor) Air Summa Can #074 | 5675705 |
| 9 Hillside Rd (Basement) Air Summa Can #529 | 5675706 |
| 9 Hillside Rd (1st Floor) Air Summa Can #170 | 5675707 |
| 9 Hillside Rd (Outdoor) Air Summa Can #190 | 5675708 |

## METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Chronicle.

ELECTRONIC COPY TO Kleinfelder Attn: Angela Vogt

Lancaster Laboratories

# Analysis Report

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ELECTRONIC COPY TO Kleinfelder Attn: Mark Steele

Questions? Contact your Client Services Representative
Jessica A Oknefski at (717) 656-2300

Respectfully Submitted,

Chad A. Moline
Group Leader

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675697**

**Group No. 1145263**
**DE**

**11 Hillside Rd (Basement) Air Summa Can #899**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 16:40 by BS
through 05/14/2009 16:29
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.018 | 0.0048 | 0.0075 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | 0.024 | 0.0059 | 0.0082 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675697**

**Group No. 1145263**
**DE**

**11 Hillside Rd (Basement) Air Summa Can #899**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 16:40 by BS
through 05/14/2009 16:29
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | mg/m3 | mg/m3 | ppm(v) | ppm(v) | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | 0.0047 | 0.0017 | 0.0027 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.0050 | 0.0043 | 0.0012 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 19:27 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AB | 05/20/2009 17:53 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675698**

**Group No. 1145263**
**DE**

**11 Hillside Rd (1st Floor) Air Summa Can #083**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 16:38 by BS
through 05/14/2009 16:30
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.023 | 0.0048 | 0.0095 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | 0.0084 | 0.0059 | 0.0028 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675698**

**Group No. 1145263**
**DE**

**11 Hillside Rd (1st Floor) Air Summa Can #083**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 16:38 by BS
through 05/14/2009 16:30
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 20:36 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AB | 05/20/2009 18:39 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675699**

**Group No. 1145263**
**DE**

**11 Hillside Rd (Outdoor) Air Summa Can #412**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:03 by BS
through 05/14/2009 16:38
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.012 | 0.0048 | 0.0052 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675699**

**Group No. 1145263**
**DE**

**11 Hillside Rd (Outdoor) Air Summa Can #412**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:03 by BS
through 05/14/2009 16:38
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 21:04 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AB | 05/20/2009 19:25 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675700**

**Group No. 1145263**
**DE**

**12 Hillside Rd (Basement) Air Summa Can #538**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:10 by BS
through 05/14/2009 16:52
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.020 | 0.0048 | 0.0084 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675700**

**Group No. 1145263**
**DE**

**12 Hillside Rd (Basement) Air Summa Can #538**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:10 by BS
through 05/14/2009 16:52
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.0047 | 0.0030 | 0.0016 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | 0.0062 | 0.0017 | 0.0036 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 21:33 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AB | 05/20/2009 20:11 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675701**

**Group No. 1145263**
**DE**

**12 Hillside Rd (1st Floor) Air Summa Can #819**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:13 by BS
through 05/14/2009 16:53
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.011 | 0.0048 | 0.0046 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675701**

**Group No. 1145263**
**DE**

**12 Hillside Rd (1st Floor) Air Summa Can #819**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:13 by BS
through 05/14/2009 16:53
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.0033 | 0.0030 | 0.0011 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 22:01 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AB | 05/20/2009 20:57 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675702**

**Group No. 1145263**
**DE**

**12 Hillside Rd (Outdoor) Air Summa Can #832**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:29 by BS
through 05/14/2009 16:55
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.012 | 0.0048 | 0.0052 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675702**

**Group No. 1145263**
**DE**

**12 Hillside Rd (Outdoor) Air Summa Can #832**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:29 by BS
through 05/14/2009 16:55
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 22:30 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AB | 05/20/2009 21:43 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675703**

**Group No. 1145263**
**DE**

**10 Hillside Rd (Basement) Air Summa Can #160**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:59 by BS
through 05/14/2009 17:07
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.031 | 0.0048 | 0.013 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | 0.055 | 0.0032 | 0.017 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | 0.0074 | 0.0059 | 0.0025 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | 0.023 | 0.0043 | 0.0052 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | 0.11 | 0.0041 | 0.026 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675703**

**Group No. 1145263**
**DE**

**10 Hillside Rd (Basement) Air Summa Can #160**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:59 by BS
through 05/14/2009 17:07
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | 0.21 | 0.035 | 0.059 | 0.010 | 10 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | 0.12 | 0.0047 | 0.025 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | 0.038 | 0.0035 | 0.011 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | 0.013 | 0.0047 | 0.0029 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.080 | 0.030 | 0.027 | 0.010 | 10 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | 0.23 | 0.038 | 0.060 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.013 | 0.0049 | 0.0026 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.081 | 0.0043 | 0.019 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | 0.024 | 0.0043 | 0.0056 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 22:58 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 13:57 | Jonathan K Nardelli | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675703**

**Group No. 1145263**
**DE**

**10 Hillside Rd (Basement) Air Summa Can #160**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:59 by BS
through 05/14/2009 17:07
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 18:10 | Jonathan K Nardelli | 10 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675704**

**Group No. 1145263**
**DE**

**10 Hillside Rd (1st Floor) Air Summa Can #006**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:57 by BS
through 05/14/2009 17:03
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.032 | 0.0048 | 0.014 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | 0.019 | 0.0032 | 0.0060 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | 0.0071 | 0.0059 | 0.0024 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | 0.0047 | 0.0040 | 0.0012 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | 0.0065 | 0.0036 | 0.0018 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | 0.0071 | 0.0043 | 0.0016 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | 0.030 | 0.0041 | 0.0074 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675704**

**Group No. 1145263**
**DE**

**10 Hillside Rd (1st Floor) Air Summa Can #006**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:57 by BS
through 05/14/2009 17:03
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | 0.074 | 0.0035 | 0.021 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | 0.043 | 0.0047 | 0.0092 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | 0.0097 | 0.0035 | 0.0028 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | 0.0061 | 0.0047 | 0.0013 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.029 | 0.0030 | 0.0098 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | 0.083 | 0.038 | 0.022 | 0.010 | 10 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.028 | 0.0043 | 0.0065 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | 0.0077 | 0.0043 | 0.0018 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 23:27 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 14:43 | Jonathan K Nardelli | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675704**

**Group No. 1145263**
**DE**

**10 Hillside Rd (1st Floor) Air Summa Can #006**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:57 by BS
through 05/14/2009 17:03
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 18:54 | Jonathan K Nardelli | 10 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675705**

**Group No. 1145263**
**DE**

**10 Hillside Rd (Outdoor) Air Summa Can #074**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 18:40 by BS
through 05/14/2009 17:14
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.012 | 0.0048 | 0.0050 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675705**

**Group No. 1145263**
**DE**

**10 Hillside Rd (Outdoor) Air Summa Can #074**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 18:40 by BS
through 05/14/2009 17:14
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/19/2009 23:56 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 15:28 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675706**

**Group No. 1145263**
**DE**

**9 Hillside Rd (Basement) Air Summa Can #529**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:46 by BS
through 05/14/2009 17:33
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | 4.6 | 3.3 | 7.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.036 | 0.0048 | 0.015 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | 0.0074 | 0.0059 | 0.0025 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | 0.017 | 0.0043 | 0.0039 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675706**

**Group No. 1145263**
**DE**

**9 Hillside Rd (Basement) Air Summa Can #529**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 17:46 by BS
through 05/14/2009 17:33
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | 0.0037 | 0.0035 | 0.0011 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | 0.0070 | 0.0030 | 0.0024 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | 0.024 | 0.0017 | 0.014 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | 0.0053 | 0.0038 | 0.0014 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.015 | 0.0049 | 0.0030 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.020 | 0.0043 | 0.0045 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | 0.0062 | 0.0043 | 0.0014 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/20/2009 00:24 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 16:15 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675707**

**Group No. 1145263**
**DE**

**9 Hillside Rd (1st Floor) Air Summa Can #170**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 18:07 by BS
through 05/14/2009 17:35
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | < 3.3 | 3.3 | < 5.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.015 | 0.0048 | 0.0063 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0059 | 0.0059 | < 0.0020 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | 0.0054 | 0.0031 | 0.0017 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | 0.0074 | 0.0036 | 0.0021 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

Lancaster Laboratories

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675707**

**Group No. 1145263**
**DE**

**9 Hillside Rd (1st Floor) Air Summa Can #170**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 18:07 by BS
through 05/14/2009 17:35
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | 0.011 | 0.0017 | 0.0065 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | 0.0045 | 0.0038 | 0.0012 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/20/2009 00:53 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0913930AC | 05/21/2009 17:01 | Jonathan K Nardelli | 1 |

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# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5675708**

**Group No. 1145263**
**DE**

**9 Hillside Rd (Outdoor) Air Summa Can #190**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 18:16 by BS
through 05/14/2009 17:41
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA 18 modified** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 07056 | Methane | 74-82-8 | 5.2 | 3.3 | 8.0 | 5.0 | 1 |
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.016 | 0.0048 | 0.0067 | 0.0020 | 1 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0034 | 0.0034 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrolein | 107-02-8 | < 0.0046 | 0.0046 | < 0.0020 | 0.0020 | 1 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0043 | 0.0043 | < 0.0020 | 0.0020 | 1 |
| 05298 | Benzene | 71-43-2 | < 0.0032 | 0.0032 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0064 | 0.0064 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0067 | 0.0067 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromoform | 75-25-2 | < 0.010 | 0.010 | < 0.0010 | 0.0010 | 1 |
| 05298 | Bromomethane | 74-83-9 | < 0.0039 | 0.0039 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0044 | 0.0044 | < 0.0020 | 0.0020 | 1 |
| 05298 | 2-Butanone | 78-93-3 | 0.0064 | 0.0059 | 0.0022 | 0.0020 | 1 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0063 | 0.0063 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chlorodifluoromethane | 75-45-6 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroethane | 75-00-3 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloroform | 67-66-3 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Chloromethane | 74-87-3 | < 0.0021 | 0.0021 | < 0.0010 | 0.0010 | 1 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0031 | 0.0031 | < 0.0010 | 0.0010 | 1 |
| 05298 | Cumene | 98-82-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0085 | 0.0085 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0077 | 0.0077 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0071 | 0.0071 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0040 | 0.0040 | < 0.0010 | 0.0010 | 1 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0042 | 0.0042 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0046 | 0.0046 | < 0.0010 | 0.0010 | 1 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0045 | 0.0045 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Freon 113 | 76-13-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | Freon 114 | 76-14-2 | < 0.0070 | 0.0070 | < 0.0010 | 0.0010 | 1 |
| 05298 | Heptane | 142-82-5 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5675708**

**Group No. 1145263**
**DE**

**9 Hillside Rd (Outdoor) Air Summa Can #190**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 05/13/2009 18:16 by BS
through 05/14/2009 17:41
Submitted: 05/18/2009 15:20
Reported: 05/26/2009 at 16:30
Discard: 06/26/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.021 | 0.021 | < 0.0020 | 0.0020 | 1 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0097 | 0.0097 | < 0.0010 | 0.0010 | 1 |
| 05298 | Hexane | 110-54-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Isooctane | 540-84-1 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0058 | 0.0058 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0041 | 0.0041 | < 0.0010 | 0.0010 | 1 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0048 | 0.0048 | < 0.0010 | 0.0010 | 1 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0036 | 0.0036 | < 0.0010 | 0.0010 | 1 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0082 | 0.0082 | < 0.0020 | 0.0020 | 1 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Octane | 111-65-9 | < 0.0047 | 0.0047 | < 0.0010 | 0.0010 | 1 |
| 05298 | Pentane | 109-66-0 | < 0.0030 | 0.0030 | < 0.0010 | 0.0010 | 1 |
| 05298 | Propene | 115-07-1 | < 0.0017 | 0.0017 | < 0.0010 | 0.0010 | 1 |
| 05298 | Styrene | 100-42-5 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0069 | 0.0069 | < 0.0010 | 0.0010 | 1 |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0068 | 0.0068 | < 0.0010 | 0.0010 | 1 |
| 05298 | Toluene | 108-88-3 | < 0.0038 | 0.0038 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.015 | 0.015 | < 0.0020 | 0.0020 | 1 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0055 | 0.0055 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0054 | 0.0054 | < 0.0010 | 0.0010 | 1 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0056 | 0.0056 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0060 | 0.0060 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0049 | 0.0049 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0035 | 0.0035 | < 0.0010 | 0.0010 | 1 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0026 | 0.0026 | < 0.0010 | 0.0010 | 1 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |
| 05298 | o-Xylene | 95-47-6 | < 0.0043 | 0.0043 | < 0.0010 | 0.0010 | 1 |

LOQ = Limit of Quantitation

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Chronicle

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 07056 | Methane | EPA 18 modified | 1 | M091402ZA | 05/20/2009 01:21 | David I Ressler | 1 |
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0914130AA | 05/22/2009 02:16 | Jonathan K Nardelli | 1 |

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# Analysis Report



## Quality Control Summary

Client Name: Kleinfelder Group Number: 1145263
Reported: 05/26/09 at 04:30 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

### Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Batch number: C0913930AB | Sample number(s): 5675697-5675702 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 119 | 112 | 70-130 | 6 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | | | | | |
| Bromoform | < 0.010 | 0.010 | mg/m3 | | | | | |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 95 | 91 | 70-130 | 4 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | | | | | |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | | | | | |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 101 | 98 | 70-130 | 3 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 105 | 102 | 70-130 | 3 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 114 | 108 | 57-131 | 5 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 106 | 102 | 70-130 | 3 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 124 | 120 | 50-127 | 3 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | | | | | |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 96 | 92 | 53-158 | 4 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 82 | 79 | 46-171 | 4 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 87 | 83 | 46-170 | 4 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 81 | 78 | 39-169 | 4 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 108 | 104 | 54-122 | 3 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 109 | 104 | 56-128 | 4 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 121 | 115 | 70-130 | 5 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 106 | 99 | 56-127 | 6 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 109 | 104 | 52-125 | 5 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | | | | | |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 113 | 108 | 70-130 | 5 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 126 | 119 | 48-132 | 5 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 101 | 96 | 53-147 | 4 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 116 | 112 | 70-130 | 4 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 109 | 104 | 61-135 | 5 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 113 | 109 | 58-125 | 4 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1145263
Reported: 05/26/09 at 04:30 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 69 | 61 | 32-200 | 12 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 102 | 100 | 70-130 | 3 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | | | | | |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 111 | 107 | 58-169 | 4 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 84 | 79 | 43-171 | 6 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 108 | 104 | 70-130 | 4 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 113 | 110 | 70-130 | 3 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 65 | 60 | 32-200 | 9 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 109 | 106 | 70-130 | 3 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 105 | 102 | 54-132 | 3 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 118 | 117 | 70-130 | 1 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 110 | 106 | 70-130 | 4 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 93 | 89 | 44-164 | 5 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 96 | 92 | 49-157 | 4 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 119 | 112 | 70-130 | 5 | 25 |
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 123 | 119 | 70-130 | 4 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 121 | 116 | 70-130 | 4 | 25 |
| Batch number: C0913930AC | Sample number(s): 5675703-5675707 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 119 | 112 | 70-130 | 6 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | | | | | |
| Bromoform | < 0.010 | 0.010 | mg/m3 | | | | | |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 95 | 91 | 70-130 | 4 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | | | | | |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | | | | | |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 101 | 98 | 70-130 | 3 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 105 | 102 | 70-130 | 3 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 114 | 108 | 57-131 | 5 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 106 | 102 | 70-130 | 3 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 124 | 120 | 50-127 | 3 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1145263
Reported: 05/26/09 at 04:30 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | | | | | |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 96 | 92 | 53-158 | 4 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 82 | 79 | 46-171 | 4 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 87 | 83 | 46-170 | 4 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 81 | 78 | 39-169 | 4 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 108 | 104 | 54-122 | 3 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 109 | 104 | 56-128 | 4 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 121 | 115 | 70-130 | 5 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 106 | 99 | 56-127 | 6 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 109 | 104 | 52-125 | 5 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | | | | | |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 113 | 108 | 70-130 | 5 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 126 | 119 | 48-132 | 5 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 101 | 96 | 53-147 | 4 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 116 | 112 | 70-130 | 4 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 109 | 104 | 61-135 | 5 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 113 | 109 | 58-125 | 4 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 69 | 61 | 32-200 | 12 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 102 | 100 | 70-130 | 3 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | | | | | |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 111 | 107 | 58-169 | 4 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 84 | 79 | 43-171 | 6 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 108 | 104 | 70-130 | 4 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 113 | 110 | 70-130 | 3 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 65 | 60 | 32-200 | 9 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 109 | 106 | 70-130 | 3 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 105 | 102 | 54-132 | 3 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 118 | 117 | 70-130 | 1 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 110 | 106 | 70-130 | 4 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 93 | 89 | 44-164 | 5 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 96 | 92 | 49-157 | 4 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 119 | 112 | 70-130 | 5 | 25 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Quality Control Summary

Client Name: Kleinfelder Group Number: 1145263
Reported: 05/26/09 at 04:30 PM

## Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 123 | 119 | 70-130 | 4 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 121 | 116 | 70-130 | 4 | 25 |
| Batch number: C0914130AA | Sample number(s): 5675708 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 112 | 115 | 70-130 | 3 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | | | | | |
| Bromoform | < 0.010 | 0.010 | mg/m3 | | | | | |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 86 | 88 | 70-130 | 3 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | | | | | |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | | | | | |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 86 | 89 | 70-130 | 4 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 98 | 100 | 70-130 | 2 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 108 | 112 | 57-131 | 4 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 96 | 99 | 70-130 | 3 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 123 | 126 | 50-127 | 3 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | | | | | |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 88 | 90 | 53-158 | 2 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 69 | 73 | 46-171 | 5 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 75 | 77 | 46-170 | 3 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 70 | 72 | 39-169 | 3 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 99 | 103 | 54-122 | 3 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 105 | 108 | 56-128 | 3 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 106 | 111 | 70-130 | 4 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 98 | 102 | 56-127 | 4 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 104 | 107 | 52-125 | 3 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | | | | | |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 112 | 116 | 70-130 | 3 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 115 | 118 | 48-132 | 3 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 92 | 94 | 53-147 | 2 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 105 | 108 | 70-130 | 2 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 99 | 104 | 61-135 | 5 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 103 | 108 | 58-125 | 4 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 59 | 61 | 32-200 | 2 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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# Analysis Report



## Quality Control Summary

Client Name: Kleinfelder Group Number: 1145263
Reported: 05/26/09 at 04:30 PM

### Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | | | | | |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | | | | | |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 98 | 102 | 70-130 | 4 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | | | | | |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 101 | 103 | 58-169 | 2 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 78 | 80 | 43-171 | 3 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 97 | 99 | 70-130 | 2 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 106 | 108 | 70-130 | 2 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 59 | 61 | 32-200 | 4 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 94 | 98 | 70-130 | 3 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 100 | 102 | 54-132 | 2 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 109 | 113 | 70-130 | 3 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 92 | 96 | 70-130 | 4 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 80 | 81 | 44-164 | 2 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 83 | 84 | 49-157 | 1 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 112 | 117 | 70-130 | 4 | 25 |
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 110 | 113 | 70-130 | 2 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 109 | 111 | 70-130 | 2 | 25 |

Batch number: M091402ZA Sample number(s): 5675697-5675708

| | | | |
|---|---|---|---|
| Methane | < 3.3 | 3.3 | mg/m3 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 12152 Group# 1145263 Sample # 5675697-708

**COC # 0153932**

Please print. Instructions on reverse side correspond with circled numbers.

**For Lab Use Only**
FSC: _____
SCR#: _____

(1)
Client: DNREC-TMB Acct. #: _____
Project Name/#: Ron's Discount Energy Cleaners PWSID #: _____
Project Manager: Mark C. Steele P.O.#: 08531-74156
Sampler: Brian Shedd Quote #: _____
Name of state where samples were collected: DE

(5) Analyses Requested — Preservation Codes

**Preservation Codes**
H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ O=Other

(6) Temperature of samples upon receipt (if requested)

| (2) Sample Identification | Date Collected | Time Collected | (3) Grab | Composite | Matrix: Soil | Water (☐ Potable ☐ NPDES) | Other – Air | (4) Total # of Containers | Full List VOCs by TO-15 | Methane by 3C | | | | | | | Remarks – FC# |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 Hillside Rd (Basement) [899] | 5/13-5/14/09 | 1640-1629 | | | | | X | 1 | X | X | | | | | | | 11863 |
| 11 Hillside Rd (1st Floor) [083] | 5/13-5/14/09 | 1638-1630 | | | | | X | 1 | X | X | | | | | | | 337461 |
| 11 Hillside Rd (Outdoor) [412] | 5/13-5/14/09 | 1703-1634 | | | | | X | 1 | X | X | | | | | | | 239241 |
| 12 Hillside Rd (Basement) [538] | 5/13-5/14/09 | 1710-1652 | | | | | X | 1 | X | X | | | | | | | 339181 |
| 12 Hillside Rd (1st Floor) [819] | 5/13-5/14/09 | 1713-1653 | | | | | X | 1 | X | X | | | | | | | 334064 |
| 12 Hillside Rd (Outdoor) [832] | 5/13-5/14/09 | 1724-1655 | | | | | X | 1 | X | X | | | | | | | 303925 |
| 10 Hillside Rd (Basement) [160] | 5/13-5/14/09 | 1757-1707 | | | | | X | 1 | X | X | | | | | | | 11829 |
| 10 Hillside Rd (1st Floor) [006] | 5/13-5/14/09 | 1757-1703 | | | | | X | 1 | X | X | | | | | | | 329159 |
| 10 Hillside Rd (Outdoor) [074] | 5/13-5/14/09 | 1810-1714 | | | | | X | 1 | X | X | | | | | | | 339184 |

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed: _____
Rush results requested by (please circle): Phone Fax E-mail
Phone #: _____ Fax #: _____
E-mail address: _____

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes No
Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No _____

(9)

| Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|
| Brian P. Shedd | 5/14/09 | 2030 | Sample Room | 5/14/09 | 2030 |
| [signature] | 5/18/09 | 1330 | Bill DeLong | 5-18-09 | 13:30 |
| Bill DeLong | 5-18-09 | | | | |
| | | | | | |
| | | | Mary Beth Reed | 5/18/09 | 1520 |

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Copies: White and yellow should accompany samples to Lancaster Laboratories. The pink copy should be retained by the client.

2102.03

# Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 12152 Group# 1145263 Sample # 5675697-708

**COC # 0153934**

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: DNREC-TMB Acct. #:
Project Name/#: Ron's Discount Energy - Claymont PWSID #:
Project Manager: Mark C. Steele P.O.#: 09531-74156
Sampler: Brian Shedd Quote #:
Name of state where samples were collected: DE

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ O=Other

(2) Sample Identification | Date Collected | Time Collected | (3) Grab | Composite | (4) Matrix: Soil | Water | Other - Air | Total # of Containers | (5) Analyses Requested / Preservation Codes: Full List VOCs by TO-15 | Methane by 3C | | | | | | | | Remarks - FC # (6)

| Sample Identification | Date Collected | Time Collected | Grab | Composite | Soil | Water | Other - Air | Total # of Containers | Full List VOCs by TO-15 | Methane by 3C | | | | | | | | Remarks - FC # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9 Hillside Rd (Basement) [529] | 5/13-5/14/09 | 1746-1733 | | | | | X | 1 | X | X | | | | | | | | 338066 |
| 9 Hillside Rd (1st Floor) [170] | 5/13-5/14/09 | 1807-1735 | | | | | X | 1 | X | X | | | | | | | | 303485 |
| 9 Hillside Rd (Outdoor) [190] | 5/13-5/14/09 | 1816-1741 | | | | | X | 1 | X | X | | | | | | | | 236822 |

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes No

Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

(9)

| Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|
| Brian P. Shedd | 5/14/09 | 2030 | Sample Room | 5/14/09 | 2030 |
| [illegible] | 5/18/09 | 1330 | Bill DeLong | 5-18-09 | 13:30 |
| Bill DeLong | 5-18-09 | 15:20 | | | |
| | | | | | |
| | | | Mary Beth Reed | 5/18/09 | 1520 |

# Lancaster Laboratories
# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **N.D.** | none detected | **BMQL** | Below Minimum Quantitation Level |
| **TNTC** | Too Numerous To Count | **MPN** | Most Probable Number |
| **IU** | International Units | **CP Units** | cobalt-chloroplatinate units |
| **umhos/cm** | micromhos/cm | **NTU** | nephelometric turbidity units |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **Cal** | (diet) calories | **lb.** | pound(s) |
| **meq** | milliequivalents | **kg** | kilogram(s) |
| **g** | gram(s) | **mg** | milligram(s) |
| **ug** | microgram(s) | **l** | liter(s) |
| **ml** | milliliter(s) | **ul** | microliter(s) |
| **m3** | cubic meter(s) | **fib >5 um/ml** | fibers greater than 5 microns in length per ml |

**<** less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

*U.S. EPA data qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quatitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **J** | Estimated value |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike amount not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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**Appendix H Lancaster Laboratories Analysis Report-Indoor Air Data**

**(July 7 and 8, 2009)**

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# Analysis Report

ANALYTICAL RESULTS

Prepared for:

Kleinfelder
30 Porter Road
Littleton MA 01460

978-486-0060

Prepared by:

Lancaster Laboratories
2425 New Holland Pike
Lancaster, PA 17605-2425

July 14, 2009

## SAMPLE GROUP

The sample group for this submittal is 1152831. Samples arrived at the laboratory on Thursday, July 09, 2009. The PO# for this group is 08531-77728.

| Client Description | Lancaster Labs Number |
|---|---|
| 10 Hillside Rd (Basement) Air Sample | 5719830 |
| 10 Hillside Rd (1st Floor) Air Sample | 5719831 |
| 10 Hillside Rd (Outdoor) Air Sample | 5719832 |
| 11 Hillside Rd (Basement) Air Sample | 5719833 |
| 11 Hillside Rd (1st Floor) Air Sample | 5719834 |
| 11 Hillside Rd (Outdoor) Air Sample | 5719835 |

## METHODOLOGY

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

| | | |
|---|---|---|
| ELECTRONIC COPY TO | Kleinfelder | Attn: Mark Steele |
| ELECTRONIC COPY TO | Kleinfelder | Attn: Angela Vogt |
| ELECTRONIC COPY TO | Kleinfelder | Attn: Brian Shedd |

Lancaster Laboratories

# Analysis Report

2425 New Holland Pike, PO Box 12425, Lancaster, PA 17605-2425 • 717-656-2300 Fax: 717-656-2681 • www.lancasterlabs.com

Questions? Contact your Client Services Representative
Jessica A Oknefski at (717) 656-2300

Respectfully Submitted,

Chad A. Moline
Group Leader

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5719830**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Basement) Air Sample**
**Summa Canister #147**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:26 by BS
through 07/08/2009 18:15
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.024 | 0.0043 | 0.010 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0031 | 0.0031 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrolein | 107-02-8 | < 0.0042 | 0.0042 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0039 | 0.0039 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Benzene | 71-43-2 | 0.012 | 0.0029 | 0.0037 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0058 | 0.0058 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0061 | 0.0061 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromoform | 75-25-2 | < 0.0094 | 0.0094 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromomethane | 74-83-9 | < 0.0035 | 0.0035 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0040 | 0.0040 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0054 | 0.0054 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0057 | 0.0057 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.011 | 0.0032 | 0.0032 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719830**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Basement) Air Sample**
**Summa Canister #147**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:26 by BS
through 07/08/2009 18:15
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Chloroethane | 75-00-3 | < 0.0024 | 0.0024 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloroform | 67-66-3 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloromethane | 74-87-3 | < 0.0019 | 0.0019 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Cumene | 98-82-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0077 | 0.0077 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0070 | 0.0070 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0065 | 0.0065 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719830**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Basement) Air Sample**
**Summa Canister #147**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:26 by BS
through 07/08/2009 18:15
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0038 | 0.0038 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethylbenzene | 100-41-4 | 0.028 | 0.0039 | 0.0065 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Freon 113 | 76-13-1 | < 0.014 | 0.014 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Freon 114 | 76-14-2 | < 0.0064 | 0.0064 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Heptane | 142-82-5 | 0.011 | 0.0037 | 0.0028 | 0.00091 | 0.9090909090909090909 |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.019 | 0.019 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0088 | 0.0088 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719830**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Basement) Air Sample**
**Summa Canister #147**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:26 by BS
through 07/08/2009 18:15
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexane | 110-54-3 | 0.019 | 0.0032 | 0.0054 | 0.00091 | 0.9090909090909090909 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Isooctane | 540-84-1 | 0.024 | 0.0042 | 0.0052 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0053 | 0.0053 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | 0.0089 | 0.0033 | 0.0025 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Methylene Chloride | 75-09-2 | 0.027 | 0.0032 | 0.0079 | 0.00091 | 0.9090909090909090909 |
| 05298 | Octane | 111-65-9 | 0.0095 | 0.0042 | 0.0020 | 0.00091 | 0.9090909090909090909 |
| 05298 | Pentane | 109-66-0 | 0.019 | 0.0027 | 0.0063 | 0.00091 | 0.9090909090909090909 |
| 05298 | Propene | 115-07-1 | 0.012 | 0.0016 | 0.0073 | 0.00091 | 0.9090909090909090909 |
| 05298 | Styrene | 100-42-5 | 0.0040 | 0.0039 | 0.00093 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719830**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Basement) Air Sample**
**Summa Canister #147**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:26 by BS
through 07/08/2009 18:15
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Toluene | 108-88-3 | 0.083 | 0.0034 | 0.022 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.013 | 0.013 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0049 | 0.0049 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0051 | 0.0051 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | 0.015 | 0.0045 | 0.0030 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | 0.0049 | 0.0045 | 0.00099 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0023 | 0.0023 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.10 | 0.0039 | 0.024 | 0.00091 | 0.9090909090909090909 |
| 05298 | o-Xylene | 95-47-6 | 0.043 | 0.0039 | 0.0098 | 0.00091 | 0.9090909090909090909 |

LOQ = Limit of Quantitation

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719830**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Basement) Air Sample**
**Summa Canister #147**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:26 by BS
through 07/08/2009 18:15
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0918930AC | 07/10/2009 21:22 | Jonathan K Nardelli | 0.909090909090909 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5719831**

**Group No. 1152831**
**DE**

**10 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #116**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:22 by BS
through 07/08/2009 18:12
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.024 | 0.0043 | 0.010 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0031 | 0.0031 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrolein | 107-02-8 | < 0.0042 | 0.0042 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0039 | 0.0039 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Benzene | 71-43-2 | < 0.0029 | 0.0029 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0058 | 0.0058 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0061 | 0.0061 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromoform | 75-25-2 | < 0.0094 | 0.0094 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromomethane | 74-83-9 | < 0.0035 | 0.0035 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0040 | 0.0040 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0054 | 0.0054 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0057 | 0.0057 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.011 | 0.0032 | 0.0031 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719831**

**Group No. 1152831**
**DE**

**10 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #116**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:22 by BS
through 07/08/2009 18:12
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Chloroethane | 75-00-3 | < 0.0024 | 0.0024 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | Chloroform | 67-66-3 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | Chloromethane | 74-87-3 | < 0.0019 | 0.0019 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | Cumene | 98-82-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0077 | 0.0077 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0070 | 0.0070 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0065 | 0.0065 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719831**

**Group No. 1152831**
**DE**

**10 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #116**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:22 by BS
through 07/08/2009 18:12
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0038 | 0.0038 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Freon 113 | 76-13-1 | < 0.014 | 0.014 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Freon 114 | 76-14-2 | < 0.0064 | 0.0064 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Heptane | 142-82-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.019 | 0.019 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0088 | 0.0088 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719831**

**Group No. 1152831**
**DE**

**10 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #116**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:22 by BS
through 07/08/2009 18:12
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexane | 110-54-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Isooctane | 540-84-1 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0053 | 0.0053 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Methylene Chloride | 75-09-2 | 0.0048 | 0.0032 | 0.0014 | 0.00091 | 0.9090909090909090909 |
| 05298 | Octane | 111-65-9 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Pentane | 109-66-0 | < 0.0027 | 0.0027 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Propene | 115-07-1 | 0.0030 | 0.0016 | 0.0018 | 0.00091 | 0.9090909090909090909 |
| 05298 | Styrene | 100-42-5 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719831**

**Group No. 1152831**
**DE**

**10 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #116**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:22 by BS
through 07/08/2009 18:12
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Toluene | 108-88-3 | 0.0055 | 0.0034 | 0.0015 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.013 | 0.013 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0049 | 0.0049 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0051 | 0.0051 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0023 | 0.0023 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.0043 | 0.0039 | 0.0010 | 0.00091 | 0.9090909090909090909 |
| 05298 | o-Xylene | 95-47-6 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

LOQ = Limit of Quantitation

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719831**

**Group No. 1152831**
**DE**

**10 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #116**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:22 by BS
through 07/08/2009 18:12
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0918930AC | 07/10/2009 22:08 | Jonathan K Nardelli | 0.909090909090909 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5719832**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #019**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:35 by BS
through 07/08/2009 18:13
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.0058 | 0.0043 | 0.0024 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0031 | 0.0031 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrolein | 107-02-8 | < 0.0042 | 0.0042 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0039 | 0.0039 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Benzene | 71-43-2 | < 0.0029 | 0.0029 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0058 | 0.0058 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0061 | 0.0061 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromoform | 75-25-2 | < 0.0094 | 0.0094 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromomethane | 74-83-9 | < 0.0035 | 0.0035 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0040 | 0.0040 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0054 | 0.0054 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0057 | 0.0057 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.013 | 0.0032 | 0.0035 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719832**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #019**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:35 by BS
through 07/08/2009 18:13
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Chloroethane | 75-00-3 | < 0.0024 | 0.0024 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloroform | 67-66-3 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloromethane | 74-87-3 | < 0.0019 | 0.0019 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Cumene | 98-82-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0077 | 0.0077 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0070 | 0.0070 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0065 | 0.0065 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719832**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #019**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:35 by BS
through 07/08/2009 18:13
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0038 | 0.0038 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Freon 113 | 76-13-1 | < 0.014 | 0.014 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Freon 114 | 76-14-2 | < 0.0064 | 0.0064 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Heptane | 142-82-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.019 | 0.019 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0088 | 0.0088 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719832**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #019**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:35 by BS
through 07/08/2009 18:13
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexane | 110-54-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Isooctane | 540-84-1 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0053 | 0.0053 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Octane | 111-65-9 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Pentane | 109-66-0 | < 0.0027 | 0.0027 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Propene | 115-07-1 | < 0.0016 | 0.0016 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Styrene | 100-42-5 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719832**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #019**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:35 by BS
through 07/08/2009 18:13
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Toluene | 108-88-3 | < 0.0034 | 0.0034 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.013 | 0.013 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0049 | 0.0049 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0051 | 0.0051 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0023 | 0.0023 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | o-Xylene | 95-47-6 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

LOQ = Limit of Quantitation

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719832**

**Group No. 1152831**
**DE**

**10 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #019**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:35 by BS
through 07/08/2009 18:13
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0918930AC | 07/10/2009 22:54 | Jonathan K Nardelli | 0.909090909090909 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5719833**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Basement) Air Sample**
**Summa Canister #513**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:48 by BS
through 07/08/2009 18:23
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.031 | 0.0043 | 0.013 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0031 | 0.0031 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrolein | 107-02-8 | < 0.0042 | 0.0042 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0039 | 0.0039 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Benzene | 71-43-2 | < 0.0029 | 0.0029 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0058 | 0.0058 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0061 | 0.0061 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromoform | 75-25-2 | < 0.0094 | 0.0094 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromomethane | 74-83-9 | < 0.0035 | 0.0035 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0040 | 0.0040 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 2-Butanone | 78-93-3 | 0.019 | 0.0054 | 0.0065 | 0.0018 | 0.9090909090909090909 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0057 | 0.0057 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.018 | 0.0032 | 0.0050 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719833**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Basement) Air Sample**
**Summa Canister #513**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:48 by BS
through 07/08/2009 18:23
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Chloroethane | 75-00-3 | < 0.0024 | 0.0024 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloroform | 67-66-3 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloromethane | 74-87-3 | < 0.0019 | 0.0019 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Cumene | 98-82-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0077 | 0.0077 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0070 | 0.0070 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0065 | 0.0065 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719833**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Basement) Air Sample**
**Summa Canister #513**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:48 by BS
through 07/08/2009 18:23
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0038 | 0.0038 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethylbenzene | 100-41-4 | 0.0080 | 0.0039 | 0.0019 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Freon 113 | 76-13-1 | < 0.014 | 0.014 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Freon 114 | 76-14-2 | < 0.0064 | 0.0064 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Heptane | 142-82-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.019 | 0.019 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0088 | 0.0088 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719833**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Basement) Air Sample**
**Summa Canister #513**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:48 by BS
through 07/08/2009 18:23
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexane | 110-54-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Isooctane | 540-84-1 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0053 | 0.0053 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Octane | 111-65-9 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Pentane | 109-66-0 | < 0.0027 | 0.0027 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Propene | 115-07-1 | 0.0066 | 0.0016 | 0.0038 | 0.00091 | 0.9090909090909090909 |
| 05298 | Styrene | 100-42-5 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719833**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Basement) Air Sample**
**Summa Canister #513**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:48 by BS
through 07/08/2009 18:23
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Toluene | 108-88-3 | 0.027 | 0.0034 | 0.0071 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.013 | 0.013 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0049 | 0.0049 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0051 | 0.0051 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0023 | 0.0023 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.021 | 0.0039 | 0.0048 | 0.00091 | 0.9090909090909090909 |
| 05298 | o-Xylene | 95-47-6 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

LOQ = Limit of Quantitation

Lancaster Laboratories

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719833**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Basement) Air Sample**
**Summa Canister #513**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:48 by BS
through 07/08/2009 18:23
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0918930AC | 07/10/2009 23:39 | Jonathan K Nardelli | 0.909090909090909 |

# Analysis Report

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**Lancaster Laboratories Sample No. AQ 5719834**

**Group No. 1152831**
**DE**

**11 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #138**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:55 by BS
through 07/08/2009 18:21
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.0095 | 0.0043 | 0.0040 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0031 | 0.0031 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrolein | 107-02-8 | < 0.0042 | 0.0042 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0039 | 0.0039 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Benzene | 71-43-2 | < 0.0029 | 0.0029 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0058 | 0.0058 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0061 | 0.0061 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromoform | 75-25-2 | < 0.0094 | 0.0094 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromomethane | 74-83-9 | < 0.0035 | 0.0035 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0040 | 0.0040 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0054 | 0.0054 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0057 | 0.0057 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.022 | 0.0032 | 0.0062 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719834**

**Group No. 1152831**
**DE**

**11 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #138**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:55 by BS
through 07/08/2009 18:21
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Chloroethane | 75-00-3 | < 0.0024 | 0.0024 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloroform | 67-66-3 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloromethane | 74-87-3 | < 0.0019 | 0.0019 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Cumene | 98-82-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0077 | 0.0077 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0070 | 0.0070 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0065 | 0.0065 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719834**

**Group No. 1152831**
**DE**

**11 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #138**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:55 by BS
through 07/08/2009 18:21
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0038 | 0.0038 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Freon 113 | 76-13-1 | < 0.014 | 0.014 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Freon 114 | 76-14-2 | < 0.0064 | 0.0064 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Heptane | 142-82-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.019 | 0.019 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0088 | 0.0088 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719834**

**Group No. 1152831**
**DE**

**11 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #138**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:55 by BS
through 07/08/2009 18:21
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexane | 110-54-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Isooctane | 540-84-1 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0053 | 0.0053 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Octane | 111-65-9 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Pentane | 109-66-0 | < 0.0027 | 0.0027 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Propene | 115-07-1 | < 0.0016 | 0.0016 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Styrene | 100-42-5 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719834**

**Group No. 1152831**
**DE**

**11 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #138**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:55 by BS
through 07/08/2009 18:21
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Toluene | 108-88-3 | < 0.0034 | 0.0034 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.013 | 0.013 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0049 | 0.0049 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0051 | 0.0051 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0023 | 0.0023 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | m/p-Xylene | 179601-23-1 | 0.0041 | 0.0039 | 0.00095 | 0.00091 | 0.9090909090909090909 |
| 05298 | o-Xylene | 95-47-6 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

LOQ = Limit of Quantitation

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719834**

**Group No. 1152831**
**DE**

**11 Hillside Rd (1st Floor) Air Sample**
**Summa Canister #138**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 17:55 by BS
through 07/08/2009 18:21
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0918930AC | 07/11/2009 00:25 | Jonathan K Nardelli | 0.909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719835**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #015**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:07 by BS
through 07/08/2009 18:20
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Acetone | 67-64-1 | 0.0068 | 0.0043 | 0.0029 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acetonitrile | 75-05-8 | < 0.0031 | 0.0031 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrolein | 107-02-8 | < 0.0042 | 0.0042 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Acrylonitrile | 107-13-1 | < 0.0039 | 0.0039 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Benzene | 71-43-2 | < 0.0029 | 0.0029 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromobenzene | 108-86-1 | < 0.0058 | 0.0058 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromodichloromethane | 75-27-4 | < 0.0061 | 0.0061 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromoform | 75-25-2 | < 0.0094 | 0.0094 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Bromomethane | 74-83-9 | < 0.0035 | 0.0035 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Butadiene | 106-99-0 | < 0.0040 | 0.0040 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 2-Butanone | 78-93-3 | < 0.0054 | 0.0054 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | tert-Butyl Alcohol | 75-65-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Disulfide | 75-15-0 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Carbon Tetrachloride | 56-23-5 | < 0.0057 | 0.0057 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorobenzene | 108-90-7 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chlorodifluoromethane | 75-45-6 | 0.020 | 0.0032 | 0.0057 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719835**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #015**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:07 by BS
through 07/08/2009 18:20
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Chloroethane | 75-00-3 | < 0.0024 | 0.0024 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloroform | 67-66-3 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Chloromethane | 74-87-3 | < 0.0019 | 0.0019 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 3-Chloropropene | 107-05-1 | < 0.0028 | 0.0028 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Cumene | 98-82-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromochloromethane | 124-48-1 | < 0.0077 | 0.0077 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dibromoethane | 106-93-4 | < 0.0070 | 0.0070 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dibromomethane | 74-95-3 | < 0.0065 | 0.0065 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichlorobenzene | 95-50-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3-Dichlorobenzene | 541-73-1 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dichlorobenzene | 106-46-7 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorodifluoromethane | 75-71-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethane | 75-34-3 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloroethane | 107-06-2 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1-Dichloroethene | 75-35-4 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,2-Dichloroethene | 156-59-2 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719835**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #015**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:07 by BS
through 07/08/2009 18:20
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | trans-1,2-Dichloroethene | 156-60-5 | < 0.0036 | 0.0036 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Dichlorofluoromethane | 75-43-4 | < 0.0038 | 0.0038 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2-Dichloropropane | 78-87-5 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | cis-1,3-Dichloropropene | 10061-01-5 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | trans-1,3-Dichloropropene | 10061-02-6 | < 0.0041 | 0.0041 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,4-Dioxane | 123-91-1 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acetate | 141-78-6 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Acrylate | 140-88-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethyl Methacrylate | 97-63-2 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Ethylbenzene | 100-41-4 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Ethyltoluene | 622-96-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Freon 113 | 76-13-1 | < 0.014 | 0.014 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Freon 114 | 76-14-2 | < 0.0064 | 0.0064 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Heptane | 142-82-5 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Hexachlorobutadiene | 87-68-3 | < 0.019 | 0.019 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Hexachloroethane | 67-72-1 | < 0.0088 | 0.0088 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719835**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #015**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:07 by BS
through 07/08/2009 18:20
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Hexane | 110-54-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 2-Hexanone | 591-78-6 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Isooctane | 540-84-1 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Acrylate | 96-33-3 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Iodide | 74-88-4 | < 0.0053 | 0.0053 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl Methacrylate | 80-62-6 | < 0.0037 | 0.0037 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Alpha Methyl Styrene | 98-83-9 | < 0.0044 | 0.0044 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Methyl t-Butyl Ether | 1634-04-4 | < 0.0033 | 0.0033 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 4-Methyl-2-Pentanone | 108-10-1 | < 0.0074 | 0.0074 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | Methylene Chloride | 75-09-2 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Octane | 111-65-9 | < 0.0042 | 0.0042 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Pentane | 109-66-0 | < 0.0027 | 0.0027 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Propene | 115-07-1 | < 0.0016 | 0.0016 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Styrene | 100-42-5 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,1,2-Tetrachloroethane | 630-20-6 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2,2-Tetrachloroethane | 79-34-5 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719835**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #015**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:07 by BS
through 07/08/2009 18:20
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

| CAT No. | Analysis Name | CAS Number | As Received Final Result | LOQ | As Received Final Result | LOQ | DF |
|---|---|---|---|---|---|---|---|
| **EPA TO-15** | **Volatiles in Air** | | **mg/m3** | **mg/m3** | **ppm(v)** | **ppm(v)** | |
| 05298 | Tetrachloroethene | 127-18-4 | < 0.0062 | 0.0062 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Toluene | 108-88-3 | < 0.0034 | 0.0034 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trichlorobenzene | 120-82-1 | < 0.013 | 0.013 | < 0.0018 | 0.0018 | 0.9090909090909090909 |
| 05298 | 1,1,1-Trichloroethane | 71-55-6 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,1,2-Trichloroethane | 79-00-5 | < 0.0050 | 0.0050 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichloroethene | 79-01-6 | < 0.0049 | 0.0049 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Trichlorofluoromethane | 75-69-4 | < 0.0051 | 0.0051 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,3-Trichloropropane | 96-18-4 | < 0.0055 | 0.0055 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,2,4-Trimethylbenzene | 95-63-6 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | 1,3,5-Trimethylbenzene | 108-67-8 | < 0.0045 | 0.0045 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Acetate | 108-05-4 | < 0.0032 | 0.0032 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | Vinyl Chloride | 75-01-4 | < 0.0023 | 0.0023 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | m/p-Xylene | 179601-23-1 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |
| 05298 | o-Xylene | 95-47-6 | < 0.0039 | 0.0039 | < 0.00091 | 0.00091 | 0.9090909090909090909 |

LOQ = Limit of Quantitation

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# Analysis Report



**Lancaster Laboratories Sample No. AQ 5719835**

**Group No. 1152831**
**DE**

**11 Hillside Rd (Outdoor) Air Sample**
**Summa Canister #015**
**Ron's Discount Energy Mart - Claymont, DE**

Collected: 07/07/2009 18:07 by BS
through 07/08/2009 18:20
Submitted: 07/09/2009 15:15
Reported: 07/14/2009 at 16:23
Discard: 08/14/2009

Account Number: 12152

Kleinfelder
30 Porter Road
Littleton MA 01460

## General Sample Comments

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

## Laboratory Sample Analysis Record

| CAT No. | Analysis Name | Method | Trial# | Batch# | Analysis Date and Time | Analyst | Dilution Factor |
|---|---|---|---|---|---|---|---|
| 05298 | TO 15 VOA Ext. List | EPA TO-15 | 1 | C0918930AC | 07/11/2009 01:11 | Jonathan K Nardelli | 0.909090909090909 |

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# Analysis Report



## Quality Control Summary

Client Name: Kleinfelder Group Number: 1152831
Reported: 07/14/09 at 04:23 PM

Matrix QC may not be reported if site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

### Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Batch number: C0918930AC | Sample number(s): 5719830-5719835 | | | | | | | |
| Acetone | < 0.0048 | 0.0048 | mg/m3 | 124 | 132* | 70-130 | 6 | 25 |
| Acetonitrile | < 0.0034 | 0.0034 | mg/m3 | | | | | |
| Acrolein | < 0.0046 | 0.0046 | mg/m3 | | | | | |
| Acrylonitrile | < 0.0043 | 0.0043 | mg/m3 | | | | | |
| Benzene | < 0.0032 | 0.0032 | mg/m3 | 89 | 94 | 70-130 | 6 | 25 |
| Bromobenzene | < 0.0064 | 0.0064 | mg/m3 | | | | | |
| Bromodichloromethane | < 0.0067 | 0.0067 | mg/m3 | 81 | 84 | 70-130 | 4 | 25 |
| Bromoform | < 0.010 | 0.010 | mg/m3 | 65* | 69* | 70-130 | 7 | 25 |
| Bromomethane | < 0.0039 | 0.0039 | mg/m3 | 96 | 103 | 70-130 | 7 | 25 |
| 1,3-Butadiene | < 0.0044 | 0.0044 | mg/m3 | 91 | 101 | 70-130 | 11 | 25 |
| 2-Butanone | < 0.0059 | 0.0059 | mg/m3 | 87 | 94 | 70-130 | 8 | 25 |
| tert-Butyl Alcohol | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Carbon Disulfide | < 0.0031 | 0.0031 | mg/m3 | 65* | 69* | 70-130 | 5 | 25 |
| Carbon Tetrachloride | < 0.0063 | 0.0063 | mg/m3 | 83 | 88 | 70-130 | 5 | 25 |
| Chlorobenzene | < 0.0046 | 0.0046 | mg/m3 | 84 | 89 | 70-130 | 6 | 25 |
| Chlorodifluoromethane | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Chloroethane | < 0.0026 | 0.0026 | mg/m3 | 91 | 98 | 57-131 | 8 | 25 |
| Chloroform | < 0.0049 | 0.0049 | mg/m3 | 92 | 97 | 70-130 | 6 | 25 |
| Chloromethane | < 0.0021 | 0.0021 | mg/m3 | 88 | 92 | 50-127 | 5 | 25 |
| 3-Chloropropene | < 0.0031 | 0.0031 | mg/m3 | | | | | |
| Cumene | < 0.0049 | 0.0049 | mg/m3 | | | | | |
| Dibromochloromethane | < 0.0085 | 0.0085 | mg/m3 | 76 | 80 | 70-130 | 5 | 25 |
| 1,2-Dibromoethane | < 0.0077 | 0.0077 | mg/m3 | 87 | 91 | 53-158 | 5 | 25 |
| Dibromomethane | < 0.0071 | 0.0071 | mg/m3 | | | | | |
| 1,2-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 84 | 91 | 46-171 | 9 | 25 |
| 1,3-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 79 | 87 | 46-170 | 9 | 25 |
| 1,4-Dichlorobenzene | < 0.0060 | 0.0060 | mg/m3 | 81 | 87 | 39-169 | 8 | 25 |
| Dichlorodifluoromethane | < 0.0049 | 0.0049 | mg/m3 | 93 | 99 | 54-122 | 7 | 25 |
| 1,1-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 83 | 87 | 56-128 | 5 | 25 |
| 1,2-Dichloroethane | < 0.0040 | 0.0040 | mg/m3 | 85 | 89 | 70-130 | 5 | 25 |
| 1,1-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 80 | 86 | 56-127 | 8 | 25 |
| cis-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 79 | 85 | 52-125 | 7 | 25 |
| trans-1,2-Dichloroethene | < 0.0040 | 0.0040 | mg/m3 | 78 | 84 | 70-130 | 7 | 25 |
| Dichlorofluoromethane | < 0.0042 | 0.0042 | mg/m3 | | | | | |
| 1,2-Dichloropropane | < 0.0046 | 0.0046 | mg/m3 | 78 | 84 | 70-130 | 7 | 25 |
| cis-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 78 | 86 | 48-132 | 9 | 25 |
| trans-1,3-Dichloropropene | < 0.0045 | 0.0045 | mg/m3 | 80 | 86 | 53-147 | 8 | 25 |
| 1,4-Dioxane | < 0.0036 | 0.0036 | mg/m3 | 93 | 98 | 70-130 | 4 | 25 |
| Ethyl Acetate | < 0.0036 | 0.0036 | mg/m3 | 68* | 74 | 70-130 | 8 | 25 |
| Ethyl Acrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Ethyl Methacrylate | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Ethylbenzene | < 0.0043 | 0.0043 | mg/m3 | 100 | 107 | 70-130 | 8 | 25 |
| 4-Ethyltoluene | < 0.0049 | 0.0049 | mg/m3 | 79 | 87 | 70-130 | 9 | 25 |
| Freon 113 | < 0.015 | 0.015 | mg/m3 | 82 | 86 | 61-135 | 6 | 25 |
| Freon 114 | < 0.0070 | 0.0070 | mg/m3 | 98 | 106 | 58-125 | 7 | 25 |
| Heptane | < 0.0041 | 0.0041 | mg/m3 | 84 | 91 | 70-130 | 8 | 25 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

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# Analysis Report



## Quality Control Summary

Client Name: Kleinfelder Group Number: 1152831
Reported: 07/14/09 at 04:23 PM

### Laboratory Compliance Quality Control

| Analysis Name | Blank Result | Blank LOQ | Report Units | LCS %REC | LCSD %REC | LCS/LCSD Limits | RPD | RPD Max |
|---|---|---|---|---|---|---|---|---|
| Hexachlorobutadiene | < 0.021 | 0.021 | mg/m3 | 80 | 86 | 32-200 | 7 | 25 |
| Hexachloroethane | < 0.0097 | 0.0097 | mg/m3 | | | | | |
| Hexane | < 0.0035 | 0.0035 | mg/m3 | 84 | 91 | 70-130 | 7 | 25 |
| 2-Hexanone | < 0.0082 | 0.0082 | mg/m3 | 71 | 77 | 70-130 | 8 | 25 |
| Isooctane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Methyl Acrylate | < 0.0035 | 0.0035 | mg/m3 | | | | | |
| Methyl Iodide | < 0.0058 | 0.0058 | mg/m3 | | | | | |
| Methyl Methacrylate | < 0.0041 | 0.0041 | mg/m3 | | | | | |
| Alpha Methyl Styrene | < 0.0048 | 0.0048 | mg/m3 | | | | | |
| Methyl t-Butyl Ether | < 0.0036 | 0.0036 | mg/m3 | 82 | 89 | 70-130 | 8 | 25 |
| 4-Methyl-2-Pentanone | < 0.0082 | 0.0082 | mg/m3 | 82 | 89 | 70-130 | 8 | 25 |
| Methylene Chloride | < 0.0035 | 0.0035 | mg/m3 | 84 | 88 | 70-130 | 5 | 25 |
| Octane | < 0.0047 | 0.0047 | mg/m3 | | | | | |
| Pentane | < 0.0030 | 0.0030 | mg/m3 | | | | | |
| Propene | < 0.0017 | 0.0017 | mg/m3 | 65* | 72 | 70-130 | 11 | 25 |
| Styrene | < 0.0043 | 0.0043 | mg/m3 | 74 | 79 | 58-169 | 6 | 25 |
| 1,1,1,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | | | | | |
| 1,1,2,2-Tetrachloroethane | < 0.0069 | 0.0069 | mg/m3 | 87 | 93 | 43-171 | 7 | 25 |
| Tetrachloroethene | < 0.0068 | 0.0068 | mg/m3 | 83 | 89 | 70-130 | 7 | 25 |
| Toluene | < 0.0038 | 0.0038 | mg/m3 | 95 | 101 | 70-130 | 6 | 25 |
| 1,2,4-Trichlorobenzene | < 0.015 | 0.015 | mg/m3 | 77 | 85 | 32-200 | 9 | 25 |
| 1,1,1-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 83 | 88 | 70-130 | 5 | 25 |
| 1,1,2-Trichloroethane | < 0.0055 | 0.0055 | mg/m3 | 82 | 86 | 54-132 | 5 | 25 |
| Trichloroethene | < 0.0054 | 0.0054 | mg/m3 | 83 | 88 | 70-130 | 7 | 25 |
| Trichlorofluoromethane | < 0.0056 | 0.0056 | mg/m3 | 89 | 95 | 70-130 | 6 | 25 |
| 1,2,3-Trichloropropane | < 0.0060 | 0.0060 | mg/m3 | | | | | |
| 1,2,4-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 88 | 97 | 44-164 | 10 | 25 |
| 1,3,5-Trimethylbenzene | < 0.0049 | 0.0049 | mg/m3 | 88 | 95 | 49-157 | 8 | 25 |
| Vinyl Acetate | < 0.0035 | 0.0035 | mg/m3 | 46* | 51* | 70-130 | 10 | 25 |
| Vinyl Chloride | < 0.0026 | 0.0026 | mg/m3 | 92 | 101 | 70-130 | 10 | 25 |
| m/p-Xylene | < 0.0043 | 0.0043 | mg/m3 | 112 | 120 | 70-130 | 7 | 25 |
| o-Xylene | < 0.0043 | 0.0043 | mg/m3 | 107 | 117 | 70-130 | 8 | 25 |

*- Outside of specification
(1) The result for one or both determinations was less than five times the LOQ.
(2) The unspiked result was more than four times the spike added.

# Analysis Request/ Environmental Services Chain of Custody

Lancaster Laboratories

For Lancaster Laboratories use only

Acct. # 12152 Group# 1152831 Sample # 5719830-35

**COC #** 209157

Please print. Instructions on reverse side correspond with circled numbers.

(1)
Client: DNREC-TMB Acct. #:
Project Name/#: Ron's Discount Energy - Clayton PWSID #:
Project Manager: Mark Steele P.O.#: 045531-77728
Sampler: Brian Shedd Quote #:
Name of state where samples were collected: DE

For Lab Use Only
FSC:
SCR#:

Preservation Codes
H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ O=Other

3 day TAT per B.S. 7/10/09

| (2) Sample Identification | Date Collected | Time Collected | (3) Grab | Composite | Matrix: Soil | Water (☐ Potable ☐ NPDES Check if Applicable) | Other - Air | (4) Total # of Containers | (5) Analyses Requested / Preservation Codes: Full List VOCs by TAGS | | | | | | | | Remarks - FC# (6) Temperature of samples upon receipt (if requested) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 Hillside Rd (Basement) [147] | 7/7-7/8/09 | 1426-1415 | | | | | X | 1 | X | | | | | | | | 316942 |
| 10 Hillside Rd (1st Floor) [116] | 7/7-7/8/09 | 1622-1612 | | | | | X | 1 | X | | | | | | | | 236822 |
| 10 Hillside Rd (Outdoor) [019] | 7/7/09-7/8/09 | 1435-1613 | | | | | X | 1 | X | | | | | | | | 339184 |
| 11 Hillside Rd (Basement) [513] | 7/7-7/8/09 | 1746-1423 | | | | | X | 1 | X | | | | | | | | 338064 |
| 11 Hillside Rd (1st floor) [138] | 7/7-7/8/09 | 1755-1521 | | | | | X | 1 | X | | | | | | | | 338968 |
| 11 Hillside Rd (Outdoor) [015] | 7/7-7/8/09 | 1607-1520 | | | | | X | 1 | X | | | | | | | | 337854 |

(7) **Turnaround Time Requested** (TAT) (please circle): Normal Rush
(Rush TAT is subject to Lancaster Laboratories approval and surcharge.)
Date results are needed:
Rush results requested by (please circle): Phone Fax E-mail
Phone #: Fax #:
E-mail address:

(8) **Data Package Options** (please circle if required)
Type I (validation/NJ Reg) TX TRRP-13
Type II (Tier II) MA MCP CT RCP
Type III (Reduced NJ)
Type IV (CLP SOW)
Type VI (Raw Data Only)

SDG Complete? Yes No

Site-specific QC (MS/MSD/Dup)? Yes No
(If yes, indicate QC sample and submit triplicate volume.)
Internal COC Required? Yes / No

(9)

| Relinquished by: | Date | Time | Received by: | Date | Time |
|---|---|---|---|---|---|
| [signature] | 7/9/09 | 0400 | Sample room | | |
| [signature] | 7/9/09 | 1255 | [signature] | 7/9/09 | 12:55 |
| [signature] | 7/9/09 | 15:15 | | | |
| | | | | | |
| | | | Katie Kautlare | 7/9/09 | 15:15 |

# Lancaster Laboratories
# Explanation of Symbols and Abbreviations

*The following defines common symbols and abbreviations used in reporting technical data:*

| | | | |
|---|---|---|---|
| **N.D.** | none detected | **BMQL** | Below Minimum Quantitation Level |
| **TNTC** | Too Numerous To Count | **MPN** | Most Probable Number |
| **IU** | International Units | **CP Units** | cobalt-chloroplatinate units |
| **umhos/cm** | micromhos/cm | **NTU** | nephelometric turbidity units |
| **C** | degrees Celsius | **F** | degrees Fahrenheit |
| **Cal** | (diet) calories | **lb.** | pound(s) |
| **meq** | milliequivalents | **kg** | kilogram(s) |
| **g** | gram(s) | **mg** | milligram(s) |
| **ug** | microgram(s) | **l** | liter(s) |
| **ml** | milliliter(s) | **ul** | microliter(s) |
| **m3** | cubic meter(s) | **fib >5 um/ml** | fibers greater than 5 microns in length per ml |

**<** less than – The number following the sign is the limit of quantitation, the smallest amount of analyte which can be reliably determined using this specific test.

**>** greater than

**ppm** parts per million – One ppm is equivalent to one milligram per kilogram (mg/kg), or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter of gas per liter of gas.

**ppb** parts per billion

**Dry weight basis** Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture.

*U.S. EPA data qualifiers:*

**Organic Qualifiers**

| | |
|---|---|
| **A** | TIC is a possible aldol-condensation product |
| **B** | Analyte was also detected in the blank |
| **C** | Pesticide result confirmed by GC/MS |
| **D** | Compound quatitated on a diluted sample |
| **E** | Concentration exceeds the calibration range of the instrument |
| **J** | Estimated value |
| **N** | Presumptive evidence of a compound (TICs only) |
| **P** | Concentration difference between primary and confirmation columns >25% |
| **U** | Compound was not detected |
| **X,Y,Z** | Defined in case narrative |

**Inorganic Qualifiers**

| | |
|---|---|
| **B** | Value is <CRDL, but ≥IDL |
| **E** | Estimated due to interference |
| **M** | Duplicate injection precision not met |
| **N** | Spike amount not within control limits |
| **S** | Method of standard additions (MSA) used for calculation |
| **U** | Compound was not detected |
| **W** | Post digestion spike out of control limits |
| ***** | Duplicate analysis not within control limits |
| **+** | Correlation coefficient for MSA <0.995 |

Analytical test results for methods listed on the laboratories' accreditation scope meet all requirements of NELAC unless otherwise noted under the individual analysis.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. This report shall not be reproduced except in full, without the written approval of the laboratory.

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# Appendix I Zone 1 EPA Vapor to Indoor Air Model Output

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 95636 | 1.30E+05 | | | 1,2,4-Trimethylbenzene |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 6.06E-02 | 7.92E-06 | 6.14E-03 | 25 | 9.369 | 442.30 | 649.17 | 0.0E+00 | 6.0E-03 | 120.20 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.30E+05 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 11,651 | 2.75E-03 | 1.17E-01 | 1.76E-04 | 3.15E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.30E+05 | 0.10 | 1.26E+00 | 3.15E-03 | 4.00E+02 | 2.18E+04 | 6.80E-05 | 8.84E+00 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 6.0E-03 |

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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 107062 | 2.30E+04 | | | 1,2-Dichloroethane |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.04E-01 | 9.90E-06 | 9.77E-04 | 25 | 7,643 | 356.65 | 561.00 | 2.6E-05 | 0.0E+00 | 98.96 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 2.30E+04 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 8,486 | 5.44E-04 | 2.31E-02 | 1.76E-04 | 5.41E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 2.30E+04 | 0.10 | 1.26E+00 | 5.41E-03 | 4.00E+02 | 3.34E+02 | 7.06E-05 | 1.62E+00 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| 2.6E-05 | NA |

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) |
|---|---|
| 1.0E-05 | NA |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 108678 | 1.30E+05 | | | 1,3,5-Trimethylbenzene |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 6.02E-02 | 8.67E-06 | 5.87E-03 | 25 | 9.321 | 437.89 | 637.25 | 0.0E+00 | 6.0E-03 | 120.20 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 1.30E+05 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 11,636 | 2.63E-03 | 1.12E-01 | 1.76E-04 | 3.13E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.30E+05 | 0.10 | 1.26E+00 | 3.13E-03 | 4.00E+02 | 2.32E+04 | 6.79E-05 | 8.83E+00 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 6.0E-03 |

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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 78933 | 1.10E+08 | | | Methylethylketone (2-butanone) |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 8.08E-02 | 9.80E-06 | 5.58E-05 | 25 | 7,481 | 352.50 | 536.78 | 0.0E+00 | 5.0E+00 | 72.11 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.10E+08 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 8,378 | 3.13E-05 | 1.33E-03 | 1.76E-04 | 4.39E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.10E+08 | 0.10 | 1.26E+00 | 4.39E-03 | 4.00E+02 | 1.29E+03 | 6.97E-05 | 7.66E+03 |

| Unit risk factor, URF ($\mu g/m^3$)$^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 5.0E+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) |
|---|---|
| NA | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 67641 | 7.20E+06 | | | Acetone |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ ($^oC$) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ ($^oK$) | Critical temperature, $T_C$ ($^oK$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.24E-01 | 1.14E-05 | 3.87E-05 | 25 | 6.955 | 329.20 | 508.10 | 0.0E+00 | 3.5E-01 | 58.08 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 7.20E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 7.518 | 2.30E-05 | 9.81E-04 | 1.76E-04 | 6.74E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 7.20E+06 | 0.10 | 1.26E+00 | 6.74E-03 | 4.00E+02 | 1.06E+02 | 7.18E-05 | 5.17E+02 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 3.5E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75058 | 1.25E+06 | | | Acetonitrile |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.461 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.28E-01 | 1.66E-05 | 3.45E-05 | 25 | 7,110 | 354.60 | 545.50 | 0.0E+00 | 6.0E-02 | 41.05 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.25E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 7.948 | 2.00E-05 | 8.49E-04 | 1.76E-04 | 7.16E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.25E+06 | 0.10 | 1.26E+00 | 7.16E-03 | 4.00E+02 | 8.08E+01 | 7.22E-05 | 9.02E+01 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 6.0E-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) |
|---|---|
| NA | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 | 7.70E+04 | | | 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 | 243.84 | 10 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 8.80E-02 | 9.80E-06 | 5.54E-03 | 25 | 7,342 | 353.24 | 562.16 | 7.8E-06 | 3.0E-02 | 78.11 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.48E-09 | 0.844 | 1.25E-09 | 4,000 | 7.70E+04 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 8,122 | 2.68E-03 | 1.15E-01 | 1.75E-04 | 4.57E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 7.70E+04 | 0.10 | 1.26E+00 | 4.57E-03 | 4.00E+02 | 9.71E+02 | 6.99E-05 | 5.38E+00 |

| Unit risk factor, URF ($\mu g/m^3$)$^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| 7.8E-06 | 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) |
|---|---|
| 1.0E-05 | 1.2E-01 |

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75150 | 1.50E+07 | | | Carbon disulfide |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.04E-01 | 1.00E-05 | 3.02E-02 | 25 | 6,391 | 319.00 | 552.00 | 0.0E+00 | 7.0E-01 | 76.13 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.50E+07 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 6,657 | 1.91E-02 | 8.13E-01 | 1.76E-04 | 5.40E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.50E+07 | 0.10 | 1.26E+00 | 5.40E-03 | 4.00E+02 | 3.38E+02 | 7.06E-05 | 1.06E+03 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 7.0E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75456 | 1.05E+09 | | | Chlorodifluoromethane |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.01E-01 | 1.28E-05 | 2.70E-02 | 25 | 4,836 | 232.40 | 369.30 | 0.0E+00 | 5.0E+01 | 86.47 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.05E+09 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_v$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 4.057 | 2.04E-02 | 8.67E-01 | 1.76E-04 | 5.26E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.05E+09 | 0.10 | 1.26E+00 | 5.26E-03 | 4.00E+02 | 3.95E+02 | 7.05E-05 | 7.40E+04 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 5.0E+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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 67663 | 2.60E+04 | | | Chloroform |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | 536.40 | 2.3E-05 | 0.0E+00 | 119.38 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 2.60E+04 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 7,520 | 2.18E-03 | 9.27E-02 | 1.76E-04 | 5.40E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 2.60E+04 | 0.10 | 1.26E+00 | 5.40E-03 | 4.00E+02 | 3.37E+02 | 7.06E-05 | 1.84E+00 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| 2.3E-05 | NA |

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) |
|---|---|
| 1.0E-05 | NA |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 74873 | 5.80E+05 | | | Methyl chloride (chloromethane) |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.26E-01 | 6.50E-06 | 8.80E-03 | 25 | 5,115 | 249.00 | 416.25 | 1.0E-06 | 9.0E-02 | 50.49 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 5.80E+05 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 4,708 | 6.36E-03 | 2.71E-01 | 1.76E-04 | 6.54E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 5.80E+05 | 0.10 | 1.26E+00 | 6.54E-03 | 4.00E+02 | 1.22E+02 | 7.16E-05 | 4.15E+01 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| 1.0E-06 | 9.0E-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) |
|---|---|
| 1.0E-05 | 3.2E-01 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 98828 | 8.70E+06 | | | Cumene |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ ($^oC$) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ ($^oK$) | Critical temperature, $T_C$ ($^oK$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 6.50E-02 | 7.10E-06 | 1.46E-02 | 25 | 10,335 | 425.56 | 631.10 | 0.0E+00 | 4.0E-01 | 120.19 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 8.70E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 12.598 | 6.13E-03 | 2.61E-01 | 1.76E-04 | 3.37E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 8.70E+06 | 0.10 | 1.26E+00 | 3.37E-03 | 4.00E+02 | 1.11E+04 | 6.84E-05 | 5.95E+02 |

| Unit risk factor, URF ($\mu g/m^3$)$^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 4.0E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75718 | 4.40E+06 | | | Dichlorodifluoromethane |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H (atm-$m^3$/mol) | Henry's law constant reference temperature, $T_R$ ($^oC$) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ ($^oK$) | Critical temperature, $T_C$ ($^oK$) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 6.65E-02 | 9.92E-06 | 3.42E-01 | 25 | 9.421 | 243.20 | 384.95 | 0.0E+00 | 2.0E-01 | 120.92 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 4.40E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 8,290 | 1.93E-01 | 8.22E+00 | 1.76E-04 | 3.45E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 4.40E+06 | 0.10 | 1.26E+00 | 3.45E-03 | 4.00E+02 | 9.01E+03 | 6.85E-05 | 3.01E+02 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 2.0E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75092 | 1.25E+06 | | | Methylene chloride |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.01E-01 | 1.17E-05 | 2.18E-03 | 25 | 6,706 | 313.00 | 510.00 | 4.7E-07 | 3.0E+00 | 84.93 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.25E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 6,999 | 1.35E-03 | 5.74E-02 | 1.76E-04 | 5.25E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.25E+06 | 0.10 | 1.26E+00 | 5.25E-03 | 4.00E+02 | 3.99E+02 | 7.05E-05 | 8.81E+01 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| 4.7E-07 | 3.0E+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) |
|---|---|
| 1.0E-05 | 2.0E-02 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 | 2.20E+07 | | | 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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H (atm-$m^3$/mol) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 7.50E-02 | 7.80E-06 | 7.86E-03 | 25 | 8,501 | 409.34 | 617.20 | 0.0E+00 | 1.0E+00 | 106.17 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 2.20E+07 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 10.118 | 3.91E-03 | 1.66E-01 | 1.76E-04 | 3.89E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 2.20E+07 | 0.10 | 1.26E+00 | 3.89E-03 | 4.00E+02 | 3.20E+03 | 6.91E-05 | 1.52E+03 |

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

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 110543 | 4.00E+06 | | | Hexane |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 2.00E-01 | 7.77E-06 | 1.66E+00 | 25 | 6,895 | 341.70 | 508.00 | 0.0E+00 | 2.0E-01 | 86.18 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 4.00E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 7,693 | 9.78E-01 | 4.16E+01 | 1.76E-04 | 1.04E-02 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 4.00E+06 | 0.10 | 1.26E+00 | 1.04E-02 | 4.00E+02 | 2.07E+01 | 7.58E-05 | 3.03E+02 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 2.0E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 1634044 | 6.50E+07 | | | MTBE |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H (atm-$m^3$/mol) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 1.02E-01 | 1.05E-05 | 6.23E-04 | 25 | 6.678 | 328.30 | 497.10 | 0.0E+00 | 3.0E+00 | 88.15 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 6.50E+07 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 7,252 | 3.78E-04 | 1.61E-02 | 1.76E-04 | 5.33E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 6.50E+07 | 0.10 | 1.26E+00 | 5.33E-03 | 4.00E+02 | 3.63E+02 | 7.06E-05 | 4.59E+03 |

| Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 3.0E+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) |
|---|---|
| NA | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 | 8.50E+06 | | | 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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 8.70E-02 | 8.60E-06 | 6.62E-03 | 25 | 7,930 | 383.78 | 591.79 | 0.0E+00 | 4.0E-01 | 92.14 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4.000 | 8.50E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 9.119 | 3.53E-03 | 1.50E-01 | 1.76E-04 | 4.52E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 8.50E+06 | 0.10 | 1.26E+00 | 4.52E-03 | 4.00E+02 | 1.05E+03 | 6.98E-05 | 5.93E+02 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 4.0E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75694 | 1.50E+07 | | | Trichlorofluoromethane |

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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 8.70E-02 | 9.70E-06 | 9.68E-02 | 25 | 5.999 | 296.70 | 471.00 | 0.0E+00 | 7.0E-01 | 137.36 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 1.50E+07 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 6,120 | 6.35E-02 | 2.70E+00 | 1.76E-04 | 4.51E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 1.50E+07 | 0.10 | 1.26E+00 | 4.51E-03 | 4.00E+02 | 1.05E+03 | 6.98E-05 | 1.05E+03 |

| Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|
| NA | 7.0E-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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

DATA ENTRY SHEET

SG-SCREEN
Version 3.1; 02/04

Reset to Defaults

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 | 2.10E+06 | | | 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 | 243.84 | 13.3 | SIC | | |

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) |
|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | |

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 | 25 | 25 | 250 |

END

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) | Molecular weight, MW (g/mol) |
|---|---|---|---|---|---|---|---|---|---|
| 8.70E-02 | 1.00E-05 | 5.18E-03 | 25 | 8,661 | 417.60 | 630.30 | 0.0E+00 | 1.0E-01 | 106.17 |

END

INTERMEDIATE CALCULATIONS SHEET

| Source-building separation, $L_T$ (cm) | Vadose zone soil air-filled porosity, $\theta_a^V$ ($cm^3/cm^3$) | 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|
| 228.84 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 4,000 | 2.10E+06 | 1.69E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Vadose zone effective diffusion coefficient, $D^{eff}_V$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|
| 1.00E+06 | 4.00E-04 | 15 | 10,367 | 2.53E-03 | 1.08E-01 | 1.76E-04 | 4.52E-03 | 228.84 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) |
|---|---|---|---|---|---|---|---|---|
| 15 | 2.10E+06 | 0.10 | 1.26E+00 | 4.52E-03 | 4.00E+02 | 1.05E+03 | 6.98E-05 | 1.47E+02 |

| 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 | 1.0E+00 |

MESSAGE SUMMARY BELOW:

END

# Appendix J  Zone 2 EPA Vapor to Indoor Air Model Output

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Soil gas conc., $C_g$ (µg/m$^3$) | OR | ENTER Soil gas conc., $C_g$ (ppmv) | Chemical |
|---|---|---|---|---|
| 107062 | 1.55E+04 | | | 1,2-Dichloroethane |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ (cm$^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ (g/cm$^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ (cm$^3$/cm$^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ (g/cm$^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ (cm$^3$/cm$^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ (g/cm$^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ (cm$^3$/cm$^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-s$^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.04E-01 | 9.90E-06 | 9.77E-04 | 25 | 7.643 | 356.65 | 561.00 | 98.96 | 2.6E-05 | 0.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.55E+04 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 8,486 | 5.44E-04 | 2.31E-02 | 1.76E-04 | 5.41E-03 | 0.00E+00 | 0.00E+00 | 5.41E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.55E+04 | 0.10 | 7.28E-01 | 5.41E-03 | 3.36E+02 | 5.80E+01 | 6.16E-05 | 9.54E-01 | 2.6E-05 | NA |

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) |
|---|---|
| 1.0E-05 | NA |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 95636 | 1.05E+05 | | | 1,2,4-Trimethylbenzene |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 6.06E-02 | 7.92E-06 | 6.14E-03 | 25 | 9,369 | 442.30 | 649.17 | 120.20 | 0.0E+00 | 6.0E-03 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.05E+05 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 11,651 | 2.75E-03 | 1.17E-01 | 1.76E-04 | 3.15E-03 | 0.00E+00 | 0.00E+00 | 3.15E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.05E+05 | 0.10 | 7.26E-01 | 3.15E-03 | 3.36E+02 | 1.07E+03 | 6.04E-05 | 6.34E+00 | NA | 6.0E-03 |

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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Soil gas conc., $C_g$ (µg/m³) | OR | ENTER Soil gas conc., $C_s$ (ppmv) | Chemical |
|---|---|---|---|---|
| 108678 | 1.05E+05 | | | 1,3,5-Trimethylbenzene |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ (cm²) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ (g/cm³) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ (cm³/cm³) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_s^B$ (g/cm³) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ (cm³/cm³) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ (g/cm³) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ (cm³/cm³) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-s²) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 6.02E-02 | 8.67E-06 | 5.87E-03 | 25 | 9,321 | 437.89 | 637.25 | 120.20 | 0.0E+00 | 6.0E-03 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.05E+05 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 11,636 | 2.63E-03 | 1.12E-01 | 1.76E-04 | 3.13E-03 | 0.00E+00 | 0.00E+00 | 3.13E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.05E+05 | 0.10 | 7.26E-01 | 3.13E-03 | 3.36E+02 | 1.12E+03 | 6.04E-05 | 6.34E+00 | NA | 6.0E-03 |

**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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 78933 | 8.80E+07 | | | Methylethylketone (2-butanone) |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 8.08E-02 | 9.80E-06 | 5.58E-05 | 25 | 7.481 | 352.50 | 536.78 | 72.11 | 0.0E+00 | 5.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_\tau$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 8.80E+07 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 8,378 | 3.13E-05 | 1.33E-03 | 1.76E-04 | 4.39E-03 | 0.00E+00 | 0.00E+00 | 4.39E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 8.80E+07 | 0.10 | 7.26E-01 | 4.39E-03 | 3.36E+02 | 1.49E+02 | 6.09E-05 | 5.36E+03 | NA | 5.0E+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) |
|---|---|
| NA | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Soil gas conc., $C_g$ (µg/m³) | OR | ENTER Soil gas conc., $C_g$ (ppmv) | Chemical |
|---|---|---|---|---|
| 67641 | 5.90E+06 | | | Acetone |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ (cm²) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ (g/cm³) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ (cm³/cm³) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ (g/cm³) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ (cm³/cm³) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ (g/cm³) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ (cm³/cm³) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, ΔP (g/cm-s²) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.24E-01 | 1.14E-05 | 3.87E-05 | 25 | 6,955 | 329.20 | 508.10 | 58.08 | 0.0E+00 | 3.5E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 5.90E+06 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 7,518 | 2.30E-05 | 9.81E-04 | 1.76E-04 | 6.74E-03 | 0.00E+00 | 0.00E+00 | 6.74E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 5.90E+06 | 0.10 | 7.26E-01 | 6.74E-03 | 3.36E+02 | 2.60E+01 | 6.30E-05 | 3.72E+02 | NA | 3.5E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

MESSAGE: Risk/HQ or risk-based soil concentration is based on a route-to-route extrapolation.

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75058 | 8.80E+07 | | | Acetonitrile |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.28E-01 | 1.66E-05 | 3.45E-05 | 25 | 7,110 | 354.60 | 545.50 | 41.05 | 0.0E+00 | 6.0E-02 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.28E-09 | 3,360 | 8.80E+07 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 7,948 | 2.00E-05 | 8.49E-04 | 1.76E-04 | 7.16E-03 | 0.00E+00 | 0.00E+00 | 7.16E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 8.80E+07 | 0.10 | 7.26E-01 | 7.16E-03 | 3.36E+02 | 2.15E+01 | 6.35E-05 | 5.59E+03 | NA | 6.0E-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) |
|---|---|
| NA | 8.9E+01 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 | 5.10E+04 | | | Benzene |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^a$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 8.80E-02 | 9.80E-06 | 5.54E-03 | 25 | 7,342 | 353.24 | 562.16 | 78.11 | 7.8E-06 | 3.0E-02 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 5.10E+04 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 8,088 | 3.17E-03 | 1.35E-01 | 1.76E-04 | 4.57E-03 | 0.00E+00 | 0.00E+00 | 4.57E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 5.10E+04 | 0.10 | 7.26E-01 | 4.57E-03 | 3.36E+02 | 1.22E+02 | 6.10E-05 | 3.11E+00 | 7.8E-06 | 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) |
|---|---|
| 1.0E-05 | 9.9E-02 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75150 | 1.20E+07 | | | Carbon disulfide |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.04E-01 | 1.00E-05 | 3.02E-02 | 25 | 6,391 | 319.00 | 552.00 | 76.13 | 0.0E+00 | 7.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.20E+07 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 6,657 | 1.91E-02 | 8.13E-01 | 1.76E-04 | 5.40E-03 | 0.00E+00 | 0.00E+00 | 5.40E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.20E+07 | 0.10 | 7.26E-01 | 5.40E-03 | 3.36E+02 | 5.85E+01 | 6.16E-05 | 7.39E+02 | NA | 7.0E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75456 | 8.70E+08 | | | Chlorodifluoromethane |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.01E-01 | 1.28E-05 | 2.70E-02 | 25 | 4,836 | 232.40 | 369.30 | 86.47 | 0.0E+00 | 5.0E+01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 8.70E+08 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 4,057 | 2.04E-02 | 8.67E-01 | 1.76E-04 | 5.26E-03 | 0.00E+00 | 0.00E+00 | 5.26E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 8.70E+08 | 0.10 | 7.26E-01 | 5.26E-03 | 3.36E+02 | 6.51E+01 | 6.15E-05 | 5.35E+04 | NA | 5.0E+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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Soil gas conc., $C_g$ (µg/m$^3$) | OR | ENTER Soil gas conc., $C_g$ (ppmv) | Chemical |
|---|---|---|---|---|
| 67663 | 1.80E+04 | | | Chloroform |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ (cm$^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of $L_s$ (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ (g/cm$^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ (cm$^3$/cm$^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ (g/cm$^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ (cm$^3$/cm$^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ (g/cm$^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ (cm$^3$/cm$^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-s$^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.04E-01 | 1.00E-05 | 3.66E-03 | 25 | 6,988 | 334.32 | 536.40 | 119.38 | 2.3E-05 | 0.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.80E+04 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 7,520 | 2.18E-03 | 9.27E-02 | 1.76E-04 | 5.40E-03 | 0.00E+00 | 0.00E+00 | 5.40E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.80E+04 | 0.10 | 7.26E-01 | 5.40E-03 | 3.36E+02 | 5.83E+01 | 6.16E-05 | 1.11E+00 | 2.3E-05 | NA |

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) |
|---|---|
| 1.0E-05 | NA |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 74873 | 4.00E+05 | | | Methyl chloride (chloromethane) |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.26E-01 | 6.50E-06 | 8.80E-03 | 25 | 5.115 | 249.00 | 416.25 | 50.49 | 1.0E-06 | 9.0E-02 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3.360 | 4.00E+05 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 4,708 | 6.36E-03 | 2.71E-01 | 1.76E-04 | 6.54E-03 | 0.00E+00 | 0.00E+00 | 6.54E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 4.00E+05 | 0.10 | 7.26E-01 | 6.54E-03 | 3.36E+02 | 2.87E+01 | 6.27E-05 | 2.51E+01 | 1.0E-06 | 9.0E-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) |
|---|---|
| 1.0E-05 | 2.7E-01 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75718 | 3.50E+06 | | | Dichlorodifluoromethane |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_g$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 6.65E-02 | 9.92E-06 | 3.42E-01 | 25 | 9.421 | 243.20 | 384.95 | 120.92 | 0.0E+00 | 2.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3.360 | 3.50E+06 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 8,290 | 1.93E-01 | 8.22E+00 | 1.76E-04 | 3.45E-03 | 0.00E+00 | 0.00E+00 | 3.45E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 3.50E+06 | 0.10 | 7.26E-01 | 3.45E-03 | 3.36E+02 | 5.80E+02 | 6.05E-05 | 2.12E+02 | NA | 2.0E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 | 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) |
|---|---|---|---|---|---|---|---|---|
| 100414 | 1.80E+07 | | | Ethylbenzene | 100414 | 1.80E+07 | | |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER 1.80E+03 Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 7.50E-02 | 7.80E-06 | 7.86E-03 | 25 | 8,501 | 409.34 | 617.20 | 106.17 | 0.0E+00 | 1.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.80E+07 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 10,118 | 3.91E-03 | 1.66E-01 | 1.76E-04 | 3.89E-03 | 0.00E+00 | 0.00E+00 | 3.89E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.80E+07 | 0.10 | 7.26E-01 | 3.89E-03 | 3.36E+02 | 2.81E+02 | 6.06E-05 | 1.09E+03 | NA | 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) |
|---|---|
| NA | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 110543 | 3.10E+06 | | | Hexane |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_g$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ (g/cm-s$^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H (atm-$m^3$/mol) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 2.00E-01 | 7.77E-06 | 1.66E+00 | 25 | 6,895 | 341.70 | 508.00 | 86.18 | 0.0E+00 | 2.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 3.10E+06 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 7,693 | 9.78E-01 | 4.16E+01 | 1.76E-04 | 1.04E-02 | 0.00E+00 | 0.00E+00 | 1.04E-02 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 3.10E+06 | 0.10 | 7.26E-01 | 1.04E-02 | 3.36E+02 | 8.29E+00 | 6.89E-05 | 2.14E+02 | NA | 2.0E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 98828 | 7.20E+06 | | | Cumene |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_g$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 6.50E-02 | 7.10E-06 | 1.46E-02 | 25 | 10,335 | 425.56 | 631.10 | 120.19 | 0.0E+00 | 4.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 7.20E+06 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 12,598 | 6.13E-03 | 2.61E-01 | 1.76E-04 | 3.37E-03 | 0.00E+00 | 0.00E+00 | 3.37E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 7.20E+06 | 0.10 | 7.26E-01 | 3.37E-03 | 3.36E+02 | 6.71E+02 | 6.05E-05 | 4.35E+02 | NA | 4.0E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

Soil Gas Concentration Data

| ENTER Chemical CAS No. (numbers only, no dashes) | ENTER Soil gas conc., $C_s$ ($\mu g/m^3$) | OR | ENTER Soil gas conc., $C_g$ (ppmv) | Chemical |
|---|---|---|---|---|
| 75092 | 8.50E+05 | | | Methylene chloride |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.01E-01 | 1.17E-05 | 2.18E-03 | 25 | 6.706 | 313.00 | 510.00 | 84.93 | 4.7E-07 | 3.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 8.50E+05 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 6,999 | 1.35E-03 | 5.74E-02 | 1.76E-04 | 5.25E-03 | 0.00E+00 | 0.00E+00 | 5.25E-03 | 43 |

| 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') (unitless) | Infinite source indoor attenuation coefficient, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 8.50E+05 | 0.10 | 7.26E-01 | 5.25E-03 | 3.36E+02 | 6.57E+01 | 6.14E-05 | 5.22E+01 | 4.7E-07 | 3.0E+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) |
|---|---|
| 1.0E-05 | 1.7E-02 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 | 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) |
|---|---|---|---|---|---|---|---|---|
| 1634044 | 5.20E+07 | | | MTBE | 1634044 | 1.80E+06 | | |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER 1.80E+03 Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H (atm-$m^3$/mol) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 1.02E-01 | 1.05E-05 | 6.23E-04 | 25 | 6,678 | 328.30 | 497.10 | 88.15 | 0.0E+00 | 3.0E+00 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 5.20E+07 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 7,252 | 3.78E-04 | 1.61E-02 | 1.76E-04 | 5.33E-03 | 0.00E+00 | 0.00E+00 | 5.33E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 5.20E+07 | 0.10 | 7.26E-01 | 5.33E-03 | 3.36E+02 | 6.15E+01 | 6.15E-05 | 3.20E+03 | NA | 3.0E+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) |
|---|---|
| NA | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 | 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) |
|---|---|---|---|---|---|---|---|---|
| 108883 | 7.00E+06 | | | Toluene | 108883 | 2.40E+05 | | |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ ($^oC$) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ ($^oK$) | Critical temperature, $T_C$ ($^oK$) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 8.70E-02 | 8.60E-06 | 6.62E-03 | 25 | 7,930 | 383.78 | 591.79 | 92.14 | 0.0E+00 | 4.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 7.00E+06 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 9,119 | 3.53E-03 | 1.50E-01 | 1.76E-04 | 4.52E-03 | 0.00E+00 | 0.00E+00 | 4.52E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 7.00E+06 | 0.10 | 7.26E-01 | 4.52E-03 | 3.36E+02 | 1.29E+02 | 6.09E-05 | 4.27E+02 | NA | 4.0E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 |
|---|---|---|---|---|
| 75694 | 1.20E+07 | | | Trichlorofluoromethane |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER Average soil temperature, $T_S$ (°C) | ENTER Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| | | | Totals must add up to value of Ls (cell F24) | | | | | |
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 | SIC | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H ($atm\text{-}m^3/mol$) | Henry's law constant reference temperature, $T_R$ ($^oC$) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ ($^oK$) | Critical temperature, $T_C$ ($^oK$) | Molecular weight, MW (g/mol) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 8.70E-02 | 9.70E-06 | 9.68E-02 | 25 | 5.999 | 296.70 | 471.00 | 137.36 | 0.0E+00 | 7.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.20E+07 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 6,120 | 6.35E-02 | 2.70E+00 | 1.76E-04 | 4.51E-03 | 0.00E+00 | 0.00E+00 | 4.51E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.20E+07 | 0.10 | 7.26E-01 | 4.51E-03 | 3.36E+02 | 1.29E+02 | 6.09E-05 | 7.31E+02 | NA | 7.0E-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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END

DATA ENTRY SHEET

SG-ADV
Version 3.1; 02/04

Reset to Defaults

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 | 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) |
|---|---|---|---|---|---|---|---|---|
| 95476 | 1.75E+06 | | | o-Xylene | 95476 | 6.00E+04 | | |

MORE ↓

| ENTER Depth below grade to bottom of enclosed space floor, $L_F$ (cm) | ENTER Soil gas sampling depth below grade, $L_s$ (cm) | ENTER 1.80E+03 Average soil temperature, $T_S$ (°C) | ENTER Totals must add up to value of Ls (cell F24) Thickness of soil stratum A, $h_A$ (cm) | ENTER Thickness of soil stratum B, (Enter value or 0) $h_B$ (cm) | ENTER Thickness of soil stratum C, (Enter value or 0) $h_C$ (cm) | ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) | OR | ENTER User-defined stratum A soil vapor permeability, $k_v$ ($cm^2$) |
|---|---|---|---|---|---|---|---|---|
| 200 | 243 | 13.3 | 243 | 0 | 0 | SIC | | |

MORE ↓

| ENTER Stratum A SCS soil type (Lookup Soil Parameters) | ENTER Stratum A soil dry bulk density, $\rho_b^A$ ($g/cm^3$) | ENTER Stratum A soil total porosity, $n^A$ (unitless) | ENTER Stratum A soil water-filled porosity, $\theta_w^A$ ($cm^3/cm^3$) | ENTER Stratum B SCS soil type (Lookup Soil Parameters) | ENTER Stratum B soil dry bulk density, $\rho_b^B$ ($g/cm^3$) | ENTER Stratum B soil total porosity, $n^B$ (unitless) | ENTER Stratum B soil water-filled porosity, $\theta_w^B$ ($cm^3/cm^3$) | ENTER Stratum C SCS soil type (Lookup Soil Parameters) | ENTER Stratum C soil dry bulk density, $\rho_b^C$ ($g/cm^3$) | ENTER Stratum C soil total porosity, $n^C$ (unitless) | ENTER Stratum C soil water-filled porosity, $\theta_w^C$ ($cm^3/cm^3$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 | sic | 1.38 | 0.481 | 0.216 |

MORE ↓

| ENTER Enclosed space floor thickness, $L_{crack}$ (cm) | ENTER Soil-bldg. pressure differential, $\Delta P$ ($g/cm\text{-}s^2$) | ENTER Enclosed space floor length, $L_B$ (cm) | ENTER Enclosed space floor width, $W_B$ (cm) | ENTER Enclosed space height, $H_B$ (cm) | ENTER Floor-wall seam crack width, w (cm) | ENTER Indoor air exchange rate, ER (1/h) | ENTER Average vapor flow rate into bldg. OR Leave blank to calculate $Q_{soil}$ (L/m) |
|---|---|---|---|---|---|---|---|
| 10.16 | 40 | 840 | 840 | 243.84 | 0.1 | 0.25 | |

| 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

CHEMICAL PROPERTIES SHEET

| Diffusivity in air, $D_a$ ($cm^2/s$) | Diffusivity in water, $D_w$ ($cm^2/s$) | Henry's law constant at reference temperature, H (atm-$m^3$/mol) | Henry's law constant reference temperature, $T_R$ (°C) | Enthalpy of vaporization at the normal boiling point, $\Delta H_{v,b}$ (cal/mol) | Normal boiling point, $T_B$ (°K) | Critical temperature, $T_C$ (°K) | Molecular weight, MW (g/mol) | Unit risk factor, URF ($\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|
| 8.70E-02 | 1.00E-05 | 5.18E-03 | 25 | 8,661 | 417.60 | 630.30 | 106.17 | 0.0E+00 | 1.0E-01 |

INTERMEDIATE CALCULATIONS SHEET

| Exposure duration, $\tau$ (sec) | Source-building separation, $L_T$ (cm) | Stratum A soil air-filled porosity, $\theta_a^A$ ($cm^3/cm^3$) | Stratum B soil air-filled porosity, $\theta_a^B$ ($cm^3/cm^3$) | Stratum C soil air-filled porosity, $\theta_a^C$ ($cm^3/cm^3$) | Stratum A effective total fluid saturation, $S_{te}$ ($cm^3/cm^3$) | Stratum A soil intrinsic permeability, $k_i$ ($cm^2$) | Stratum A soil relative air permeability, $k_{rg}$ ($cm^2$) | Stratum A 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, $Q_{building}$ ($cm^3/s$) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 9.46E+08 | 43 | 0.265 | 0.265 | 0.265 | 0.284 | 1.49E-09 | 0.844 | 1.26E-09 | 3,360 | 1.75E+06 | 1.19E+04 |

| Area of enclosed space below grade, $A_B$ ($cm^2$) | Crack-to-total area ratio, $\eta$ (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, $\mu_{TS}$ (g/cm-s) | Stratum A effective diffusion coefficient, $D^{eff}_A$ ($cm^2/s$) | Stratum B effective diffusion coefficient, $D^{eff}_B$ ($cm^2/s$) | Stratum C effective diffusion coefficient, $D^{eff}_C$ ($cm^2/s$) | Total overall effective diffusion coefficient, $D^{eff}_T$ ($cm^2/s$) | Diffusion path length, $L_d$ (cm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.38E+06 | 2.44E-04 | 200 | 10,367 | 2.53E-03 | 1.08E-01 | 1.76E-04 | 4.52E-03 | 0.00E+00 | 0.00E+00 | 4.52E-03 | 43 |

| 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, $\alpha$ (unitless) | Infinite source bldg. conc., $C_{building}$ ($\mu g/m^3$) | Unit risk factor, URF $(\mu g/m^3)^{-1}$ | Reference conc., RfC ($mg/m^3$) |
|---|---|---|---|---|---|---|---|---|---|---|
| 200 | 1.75E+06 | 0.10 | 7.26E-01 | 4.52E-03 | 3.36E+02 | 1.29E+02 | 6.09E-05 | 1.07E+02 | 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 | 1.0E+00 |

MESSAGE AND ERROR SUMMARY BELOW: (DO NOT USE RESULTS IF ERRORS ARE PRESENT)

SCROLL DOWN TO "END"

END