146273

BENCH SCALE VAPOR EXTRACTION TREATABILITY STUDY AT AMERICAN CHEMICAL SERVICES NPL SITE GRIFFITH, INDIANA

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EXECUTIVE SUMMARY

A total of three soil vapor extraction (SVE) bench scale column tests were conducted using composite soil samples obtained from the American Chemical Services (ACS) site in Griffith, Indiana. Soils from the Treatment Lagoon/Still Bottom Pond Area (TL/SBPA) sample were used for the Column 1 and 2 tests. Soils from the Off-Site Containment Area (OSCA) sample were used for the Column 3 test.

The results of pre and post-test soil sample analyses indicated that volatile organic compound (VOC) remediation levels had been achieved for all of the target VOCs in the Column 1 and 2 soils, and for at least 16 of the 23 target VOCs in the Column 3 soils. It was not confirmed that remediation levels had been achieved for seven of the target VOCs in the Column 3 soils because the minimum detection limit (0.78 ppm) for that column was above the remediation levels for these seven target VOCs (the minimum detection limit was higher for the Column 3 sample analysis due to relatively high concentrations of xylene in the soil sample). However, based on the results of the Column 3 exhaust sample analyses in which these seven compounds were either not detected or at relatively low concentrations, it is likely that remediation levels had been achieved for these seven target VOCs within the Column 3 soils.

A total of 17 target VOCs were detected in soil vapor discharge samples obtained during each test. The VOCs detected in the soil vapor discharge samples included aromatic hydrocarbons, chlorinated VOCs (111-TCA, PCE, TCE and others) and ketones (MIBK, MEK and acetone).

The predominant VOCs detected in the soil and soil gas sample analyses were total xylenes, ethylbenzene, toluene, tetrachloroethene (PCE), and 1,1,1-trichloroethane (111-TCA).

A total of nine (Column 1), eight (Column 2), and eleven (Column 3) VOCs which were not detected in the soil sample analyses were detected in at least one of the column exhaust sample analyses during the SVE tests. The relative concentrations detected in the column exhaust sample analyses were indicative of initial soil

suggest that SVE alone would be less effective with respect to meeting the SVOC remediation goals for the site soils.

The results of the bench scale tests indicate that a full scale SVE design well spacing that utilizes an exchange rate of approximately 7,000 effective pore volumes over the desired cleanup period would be sufficient to achieve the required remediation levels for the target VOCs at the site. This assumption is based on the representativeness of the bench scale test soils to *in-situ* soil conditions.

1.0 INTRODUCTION

The following report summarizes the results of the bench scale soil vapor extraction (SVE) column studies performed under the supervision of Vapex Environmental Technologies, Inc. (*VAPEX*) on soil samples collected from the former American Chemical Services (ACS) site in Griffith, Indiana (site). Soil samples for bench scale testing were collected by Warzyn, Inc. (Warzyn) from two areas of the site, the Off-Site Containment Area (OSCA), and the Treatment Lagoon/Still Bottoms Pond Area (TL/SBPA).

The work was conducted in accordance with *VAPEX's* original proposal to Warzyn dated December 17, 1992 and subsequent amendments to the proposal as discussed between Warzyn and *VAPEX*. The objectives of this work were to: 1) evaluate the appropriateness of utilizing *in-situ* SVE for the remediation of the unsaturated and presently saturated zone soils at the site which are contaminated with volatile organic compound (VOCs) and semi-volatile organic compounds (SVOCs) including polynuclear aromatic hydrocarbons (PAHs), and 2) identify preliminary design parameters for a future SVE feasibility study and full scale system design, if appropriate.

In addition to the evaluation of SVE, an additional objective was to evaluate the feasibility of utilizing bioventing to remediate site soils with elevated VOC and SVOC concentrations. In accordance with this objective, bioventing column treatability studies were performed under *VAPEX* supervision by Envirogen, Inc. of Princeton, New Jersey, on soil subsamples collected from the Off-Site Containment Area. The results of the bioventing treatability studies are presented in a separate report.

This report includes a presentation of the experimental design and procedures, the results of the bench scale tests, the results of air flow (physical) and chemical transport modeling, an interpretation of the results and a discussion regarding the feasibility of SVE for remediation of the site soils.

density achieved was approximately 100 pounds per cubic foot (pcf). Figure 1 presents a schematic of the test set-up. Details on the equipment and materials utilized are presented in Section 3.4.

Soil from the TL/SBPA was utilized in Test Columns 1 and 2. Soil from the OSCA were utilized in Test Column 3.

3.0 TEST PROCEDURES

Air was supplied to the columns using compressed cylinders of zero air, purified with a charcoal trap. Prior to entering the columns, the air was saturated with water vapor by bubbling the air through distilled water using a fritter-glass air stone. Generally greater than 80% relative humidity was achieved. The gas flow rate was measured with a rotameter and a digital in-line air flow meter. The air temperature was continuously monitored with an in-line thermocouple with digital readout. The pressure differential across the column was monitored with Magnehelic pressure differential gauges.

Each test consisted of the simulation of the vapor extraction process through the injection of humidified, purified air at a constant flow rate into the test column. Physical test conditions (temperature, flow rate, and pressure drop) were monitored regularly and exhaust samples were collected for VOC analysis throughout the duration of the tests. Air flow rates, sampling frequency and overall test duration varied depending upon the results of the analysis of the exhaust vapor from each column.

A problem with the differential pressure gauge was identified during the testing, this allowed only one accurate pressure drop measurement for the Column 2 test to be recorded.

3.1 Sampling Schedule

In general, the exhaust vapor sampling and analysis with gas chromatography/mass spectrometry (GC/MS) was conducted on an hourly basis for the first 6 hours, twice a day for the next two days, and once every one to four days for the remainder of the test.

3. A two stage regulator and a needle valve to provide flow control to the column.

4. A charcoal filter for air purification.

5. Water-vapor saturator apparatus consisting of an enclosed glass vessel and fritted glass air stone.

6. Gasmet air flow meter with a range of 0-500 ml/minute and/or a Hewlett Packard Soap Film flow meter (0-100 ml/minute).

7. One in-line thermocouple with digital readout.

8. A Magnehelic differential pressure gauge with a range of 0-150 inches of water.

9. A Teflon three way valve and syringe sample port for gas sampling.

10. A carbon treatment column. 3 inch I.D., ABS plastic.

11. Hewlett Packard 5890 gas chromatograph.

12. A stainless steel splitter with a 0.32 inch I.D. transfer line.

3.5 Sampling and Analysis

Prior to each column test, composite samples of the soil used to pack the column were collected for chemical laboratory analyses.

3.5.1 Pre- and Post-Test Soil Sampling and Method 8240/8270 Analysis

Prior to and following each test, one composite 50 g sample was obtained from the soils for each column and sent to National Environmental Testing, Inc., Cambridge Division (NET; Bedford, Massachusetts) for EPA Method 8240 analyses. Also, a 500 g sample was obtained from the Column 2 soils and sent to NET for EPA Method 8270 analysis. Results of these analyses are presented in Section 4.0.

The soil vapor analysis method was chosen to reflect the uniqueness of the test and to develop data to demonstrate the changes in the effluent vapor composition, which is indicative of the soil vapor extraction process. The analysis method was also chosen in an effort to provide an understanding of the behavior of the individual chemical components in the site soils, which is expected to provide an insight into the performance of a field SVE application. A certain degree of flexibility was maintained in the sampling schedule to allow adjustments to the program based on the data collected and analyzed during a test run.

4.0 COLUMN TEST RESULTS

The Column 1 test (TL/SBPA composite sample, low flow rate) was conducted from January 12 to February 22, 1993 for a total duration of 41 days. A total of 27 exhaust vapor samples were collected from Column 1 over this period. During the first 22 days of the test, the average flow rate was 11.9 milliliters per minute (ml/min). On February 3, the flowrate was increased to an average flow rate of 119.2 ml/min for the remainder of the test (19 days).

The Column 2 test (TL/SBPA composite sample, high flow rate) was conducted from January 13 to February 22, 1993 for a total duration of 40 days. A total of 25 exhaust vapor samples were collected from Column 2 over this period. During the first 20 days of the test, the average flow rate was 104.0 ml/min. On February 3, the flowrate was increased to an average flow rate of 222.1 ml/min for the remainder of the test (20 days).

The Column 3 test (OSCA composite sample) was conducted from January 14 to February 22, 1993 for a total duration of 39 days. A total of 22 exhaust vapor samples were collected from Column 3 over this period. During the first 21 days of the test, the average flow rate was 106.6 ml/min. On February 4, the flowrate was increased to an average flow rate of 213.3 ml/min for the remainder of the test (17 days).

The change in concentrations of the five predominant VOCs over the test duration are presented graphically in Figure 1-1. The exponential decline in VOC concentrations observed in Figure 1-2 is typical of the SVE process with respect to the rapid initial decline followed by a leveling off (asymptotic level) at relatively low to non-detectable concentrations.

The cumulative VOC discharge mass over time for the predominant VOCs during the Column 1 test are presented in Table 1-2 and graphically in Figure 1-2. Figure 1-2 shows the effects of the increase in flow rate on the removal rate of the VOCs; the effect is pronounced due to the relatively large increase (approximately one order of magnitude) in flow rate. The total cumulative mass of the target constituents removed during the Column 1 test, based on the results of the discharge vapor sample analyses and test air flow rates, was 1,339 mg.

The results of the pre-test Column 1 soil sample (Method 8240) analyses conducted by NET indicated detectable levels of acetone, 2-butanone (MEK), 111-TCA, TCE, MIBK, toluene, PCE, ethylbenzene and total xylenes at concentrations ranging from 18 mg/kg (ppm) of 111-TCA and PCE to 262 ppm of total xylenes. The concentration of one target VOC, PCE at 18 ppm, was in excess of the site remediation levels. The remaining fifteen target VOCs were not detected (less than 8.0 ppm) in the pre-test soil sample.

Nine of the VOCs which were not detected in the pre-test soil sample analysis were detected in at least one of the soil vapor exhaust sample analyses conducted during the test. These VOCs included 1,1-dichloroethene, methylene chloride, chloroform, benzene, 1,2-dichloroethane, TCE, 1,2-dichloropropane, chlorobenzene, and styrene. The relative concentrations at which these nine VOCs were detected was generally consistent with the soil sample analytical results (i.e., the calculated initial soil VOC concentration based on the VOC mass removed in the column exhaust was less than the analytical minimum detection limit of 8 ppm).

In addition to the Method 8240 evaluation of the initial soil VOC concentration, Column 1 soil initial VOC concentrations were calculated based on: 1) the results of discharge sample GC/MS analyses, 2) the test flow rate, and 3) a column soil mass of 3,894 grams (g). The calculated pre-test soil VOC concentrations are

exchanges are typically required to achieve 90 percent VOC mass reduction in SVE bench scale column testing.

Based on the results of the Column 1 soil and discharge sample analyses and the number of pore volumes required to achieve 90 percent VOC mass removal, SVE is considered an applicable and potentially cost effective technology for VOC removal from the TL/SBPA soils.

4.2 Results of Column 2 Test

A summary of the testing conditions and soil analytical results (8240 analyses) for Column 2 are presented in Table 2. Results of the soil vapor discharge sample analyses conducted with Column 2 are presented in Table 2-1. A total of 17 of the target VOCs were detected in Column 2 discharge samples during the course of the test. The five predominant VOCs detected in the Column 2 discharge samples included total xylenes, toluene, 1 1 1-TCA, ethylbenzene and PCE at maximum concentrations of 76, 88, 68, 27, and 11 ppmv, respectively.

The relatively lower initial VOC concentrations detected in the Column 2 discharge samples (as compared to the VOC concentrations detected in the Column 1 discharge samples) are likely because the first sampling event during the Column 2 test occurred after approximately 56 pore volume exchanges. The delay in the sample analysis was due to the presence of excessive moisture in the column vapor discharge stream during the start of the Column 2 test, which prevented the accurate analysis of the discharge. It is likely that significantly higher VOC concentrations (similar to those detected in the initial Column 1 discharge samples) occurred in the initial Column 2 discharge samples.

The change in concentrations of the five predominant VOCs over the test duration are presented graphically in Figure 2-1. The exponential decline in VOC concentrations observed in Figure 2-1 are typical of the SVE process with respect to the rapid initial decline followed by a leveling off at relatively low (asymptotic levels) to non-detectable concentrations. As expected, the relative VOC concentrations for most of the target VOCs declined more rapidly with the Column 2 test than with the Column 1 test. This is reflective of the higher flow rate utilized during the Column 2 test.

The calculated pre-test soil concentrations of VOCs which are considered most readily biodegraded (including total xylenes, ethylbenzene, toluene, MEK and MIBK) were generally less than the analytically determined pre-test soil concentrations, while the VOCs which are considered less readily biodegraded (including PCE, TCE, 111-TCA and methylene chloride) were generally equal to or greater than the analytically determined pre-test soil concentrations. This result suggests that biodegradation may have been a significant component in the removal of several VOCs which exist within the site soils.

The results of the post-test soil sample Method 8240 analyses conducted by NET indicated non-detectable levels of all target compounds (less than 0.006 ppm). These results suggest that remediation levels had been achieved for all of the target VOC compounds. Copies of the NET analytical results are presented in Appendices A and B.

Based on the pre and post-test 8240 analyses (using 0.006 ppm as the final soil VOC concentrations), greater than 99.98 percent reduction in total VOCs was achieved during the Column 2 test.

The calculated pore-volume exchange data for the Column 2 test is presented in Table 2-3. A total of 19,752 effective pore volumes are estimated to have passed through Column 2 over the 41 day test period. The percentage of VOC-mass removed per pore-volumes exchanged is presented graphically in Figure 2-3.

As presented in Figure 2-3, 90 percent of the total VOCs were removed within approximately 5,500 pore volumes. For the five primary constituents, 90 percent removal occurred within approximately 2,000 (1,1,1-TCA) to 7,100 (total xylenes) pore volumes exchanged. As described previously, based on *VAPEX's* past experience 3,000 to 6,000 pore volume exchanges are typically required to achieve 90 percent VOC mass reduction in SVE bench scale column testing. The number of pore volumes to achieve similar removal rates were slightly higher with the Column 2 tests than with the Column 1 test. This is potentially due to multiple factors including: 1) a demonstration of the degree of the kinetic limitations to mass transfer at the higher air loading rates, 2) variability associated with soil samples, 3) variability in the column preparation, specifically with regard to the column packing

remediation level of five of the target SVOCs, including bis (2-chloroethyl) ether (with a remediation level of 0.027 ppm), 2,6-dinitrotoluene (0.044 ppm), 2,4-dinitrotoluene (0.044 ppm), hexachlorobenzene (0.018 ppm), and the cPAHs (0.0026 ppm).

An evaluation of the relative SVOC concentrations detected in the pre and post-test Column 2 soil samples indicates a removal efficiency of approximately 52 percent during the Column 2 test. The detection of pentachlorophenol in the post-test sample (and not in the pre-test sample) is likely due to variability associated with grab sample procedures.

An evaluation of the effect of the SVE process on the concentration of the carcinogenic polyaromatic hydrocarbons (cPAHs) was not possible due to the relatively high SVOC concentrations in the soil samples (maximums of 35.0 to 76.0 ppm) combined with the relatively low (0.0026 ppm) remediation levels for the cPAHs. The minimum detection limit for the standard Method 8270 analysis is 0.040 ppm. The actual minimum detection limit is dependent on the relative concentrations and identities of the chemical constituents within the soil sample. The detection limits for the Method 8270 analyses conducted on the Column 2 soil samples were limited due to the relatively high concentrations of bis (2-ethylhexyl) phthalate, isophorone and naphthalene.

These results indicate that the application of SVE technology will provide reductions in the concentrations of several target SVOCs. The mechanisms in which the reductions likely occurred are: 1) limited amounts of physical stripping (i.e., removal of SVOCs from the soil and soil moisture in the advective air phase), and 2) enhanced biodegradation resulting from the introduction of oxygen (air) into the soil matrix. Although significant reductions in concentrations were achieved for most of the SVOCs, the test results indicate that the effectiveness of SVE to remove SVOCs from the column soils was limited as compared to the removal efficiencies achieved with the VOCs. Furthermore, these results indicate that if SVE is utilized as a remediation technology for the site soils, enhancements such as bioventing and/or soil heating may be required to increase the effectiveness of the remediation process so as to result in meeting the SVOC remediation levels. The bioventing

chloride, MEK, chloroform, benzene, 1,2-dichloroethane, TCE, 1,2-dichloropropane, chlorobenzene, and styrene. The relative concentrations at which these eleven VOCs were detected was generally consistent with the soil sample analytical results (i.e., the calculated initial soil VOC concentration based on the VOC mass removed in the column exhaust was less than the analytical minimum detection limit of 39 ppm).

In addition to the soils analysis, the initial Column 3 soil VOC concentrations were calculated based on: 1) the results of discharge sample GC/MS analyses, 2) the test flow rate, and 3) a column soil mass of 2,125 g. The calculated initial soil VOC concentrations are presented in Table 3, along with the results of the pre-test and post-test Method 8240 soil analyses.

These results indicate calculated initial soil VOC concentrations which were generally within the order of magnitude or less than the pre-test soil analytical results. The calculated initial soil VOC concentrations of MIBK, toluene and total xylenes were significantly lower than the pre-test soil sample 8240 analytical results. This may be attributed to enhanced removal of MIBK, toluene and total xylenes via biodegradation, however, because the calculated initial soil VOC concentrations of less readily biodegraded VOCs (including 111-TCA and PCE) were also significantly less (but not as dramatic as with MIBK, toluene and total xylenes) than the pre-test analytical results, it is likely that the variability associated with soil sampling may have resulted in some of the discrepancies.

The results of the post-test soil sample Method 8240 analyses conducted by NET indicated detectable concentrations of toluene, ethylbenzene and total xylenes at concentrations of 1.60 ppm, 3.4 ppm and 26.0 ppm, respectively. All other target VOCs were at non-detectable levels (less than 0.78 ppm). These results suggest that remediation levels had been achieved for all of the target VOCs with remediation levels greater than 0.78 ppm. There are seven target VOCs which have remediation levels below the post-test analytical detection limit, including: vinyl chloride (0.031 ppm), 1,1-dichloroethene (0.098 ppm), 1,2-dichloroethane (0.64 ppm), carbon tetrachloride (0.38 ppm), 1,2-dichloropropane (0.42 ppm), 1,1,2-trichloroethane (0.51 ppm) and 1,1,2,2-tetrachloroethane (0.28 ppm).

These results are indicative of soils which would not be considered to contain an excessively high organic matter content. This suggests that considerations with respect to reduced SVE effectiveness due to soil organic matter in the TL/SBPA and OSCA samples are not necessary.

4.5 Results of Grain Size Distribution Analyses

The results of the grain size analyses are presented in Appendix D. These results indicate that the TL/SBPA and OSCA soils consisted of fine to medium sands with traces of silt and clay.

5.0 AIR FLOW AND CHEMICAL TRANSPORT MODELING

The following sections describe the modeling analyses conducted based on the bench scale test data. The modeling consists of two components: a) air flow modeling and b) contaminant transport modeling.

5.1 Air Flow Modeling Results

The air flow rates, column dimensions, and pressure drops across the soil sample were input into a one-dimensional solution to the air flow equation in order to calculate a value for the relative intrinsic air permeability of the soil. Since the soil in the columns is in a disturbed state, the evaluation of the permeability is mainly utilized to identify any significant air flow short-circuiting within the columns. The permeabilities calculated for the soil column should generally be within an order of magnitude of the in-situ soil permeabilities.

VAPEX does not recommend that the permeability values calculated from the bench scale test data be utilized in a final in-situ vapor extraction system design. The performance of an in-situ vapor extraction system is highly sensitive not only to the relative intrinsic permeability tensor of the soil but also to the permeabilities of any overlying or underlying air flow boundary conditions.

The results of the Column 1, 2, and 3 permeability determinations are presented in Tables 1, 2, 3, respectively. The results of the air flow modeling for Column 1 and 2 indicated intrinsic permeability values of 4.1×10^{-9} cm^2 to 1.4×10^{-8} cm^2 for the

Results of Pre and Post-Test Soil Sample Analyses

The results of Method 8240 (VOC) analyses of pre-test soil samples from Columns 1, 2, and 3 indicated detectable levels of six (Column 3) to nine (Column 2) target VOCs. The total detectable VOC concentrations were 537 mg/kg, 828 mg/kg and 4,469 mg/kg for Columns 1, 2, and 3, respectively. The predominant VOCs identified in all three pre-test soil samples were total xylenes, toluene, ethylbenzene, MIBK (4-methyl-2-pentanone), 111-TCA (1,1,1-trichloroethane), PCE (tetrachloroethene), and trichloroethene at concentrations ranging from 18 ppm to 2,490 ppm. The minimum detection limits for pre-test sample analyses ranged from 7.7 ppm (Column 2) to 39.0 ppm (Column 3).

The lower detection limit was limited due to the relatively high concentrations of specific VOCs, including total xylenes for Columns 1 and 2; total xylenes and toluene for Column 3.

The results of the Method 8240 (VOC) post-test sample analyses indicated detectable concentrations of ethylbenzene (0.044 ppm) and total xylenes (0.430) in the Column 1 sample; non-detectable concentrations for all target VOCs in the Column 2 sample; detectable concentrations of toluene (1.6 ppm), ethylbenzene (3.4 ppm), and total xylenes (26.0) in the Column 3 sample. The lower detection limits for the post-test sample analyses were 0.028 ppm, 0.006 ppm and 0.780 ppm for the Column 1, 2, and 3 soil sample analyses, respectively.

The results of the pre- and post-test soil sample analyses indicate that the required remediation levels were met for all target VOCs in the Column 1 and 2 tests. The results of the Column 3 post-test sample analysis indicates that remediation levels were definitively achieved for 16 of the 23 target VOCs. The detection limit of 0.78 ppm was greater than the remediation levels for the remaining seven target VOCs. However, the high VOC removal efficiencies achieved and the relatively low to non-detectable concentrations of these seven target VOCs in the Column 3 discharge sample analyses suggest that remediation levels were likely met for all of the target VOCs.

Results of Soil Vapor Discharge Sample and Pore Volume Exchange Analyses

A total of 17 target VOCs were detected in soil vapor discharge samples obtained during each test. The predominant compounds detected in the soil vapor discharge samples included total xylenes, toluene, ethylbenzene, 111-TCA and PCE. The VOCs detected in the soil vapor discharge samples included aromatic hydrocarbons, chlorinated VOCs (111-TCA, PCE. TCE and others) and ketones (MIBK, MEK and acetone).

An evaluation of the results of the discharge sample analyses indicated that approximately 1,000 to 7,100 soil pore volume exchanges were required to remove 90 percent of the mass for the most abundant target VOCs in the soil columns. As expected, the most volatile VOCs (i.e., 111-TCA) required the least number of pore volume exchanges to achieve 90 percent removal. while the less volatile VOCs (i.e, xylenes) required the largest number of pore volume exchanges to achieve 90 percent mass removal. Based on *VAPEX*'s past experience, 3,000 to 6,000 pore volume exchanges are typically required to achieve 90 percent VOC mass removal. The results of the column tests generally fall within the expected pore volume exchange requirements.

A comparison of the results of the relative VOC concentrations and removal rates during the Column 1 and 2 tests indicates that the VOC concentrations declined at a slightly higher rate (relative to the pore volumes exchanged) in Column 1 samples than in the Column 2 samples. However, the observed variation in the percent VOC mass removed as a function of pore volumes exchanged is likely less than the variation which would occur as a result of soil heterogeneities typical with the application of a full scale SVE system.

Feasibility of Utilizing SVE for VOC Remediation at the ACS Site

The results of the chemical and physical analyses conducted on the soil samples obtained from the site indicate that SVE is likely an effective technology to achieve the required VOC remediation levels in the TL/SBPA and OSCA soils at the site.

The results of the soil sample analyses (conducted on Column 2 soil samples) suggest that SVE would be less effective with respect to meeting the SVOC site

TABLES

TABLE 1

SUMMARY OF SVE BENCH SCALE TEST

COLUMN 1 / TREATMENT LAGOON – STILL BOTTOM POND AREA SAMPLE

ACS / GRIFFITH, INDIANA

SOIL SAMPLE

MASS (g)	HEIGHT (in)	DIAMETER (in)	CROSS SECTIONAL AREA (in^2)
3,894	26.00	3.0	7.1

TEST EVENTS

1/11/93 Column preparation and pre–test sample collection.
1/12/93 Initiate test at 10 – 20 ml/min.
2/3/93 Increase test flow rate to 115 ml/min.
2/22/93 Terminate test, take post test sample.

TEST CONDITIONS

AIR FLOW RATE (ml/min)	AIR LOADING RATE (ml/cm^2–min)	PRESSURE DIFFERENCE (cm H20)	PERMEABILITY (cm^2)
10 – 120	0.22 – 2.63	28.9 – 152.4	4.1e–9

Temperature of inlet air = 22 degrees C
Test duration in hours = 990
Number of sample points = 27
Total pore volume through put = 4,682

TEST RESULTS

COMPOUND	INITIAL CONCENTRATION (mg/kg)*	INITIAL CONCENTRATION (mg/kg)@	FINAL CONCENTRATION (mg/kg)@	REMOVAL EFFICIENCY (%)
1,1–Dichloroethene	0.11	<8.000	<0.028	–
Acetone	5.62	37.000	<0.028	>99.92
Methylene chloride	15.29	<8.000	<0.028	–
2–Butanone	5.43	20.000	<0.028	>99.86
Chloroform	9.91	<8.000	<0.028	–
1,1,1–Trichloroethane	35.89	18.000	<0.028	>99.84
Carbon tetrachloride	ND	<8.000	<0.028	–
Benzene	1.72	<8.000	<0.028	–
1,2–Dichloroethane	0.95	<8.000	<0.028	–
Trichloroethene	16.14	<8.000	<0.028	–
1,2–Dichloropropane	1.20	<8.000	<0.028	–
4–Methyl–2–pentanone	12.46	40.000	<0.028	>99.93
Toluene	42.08	86.000	<0.028	>99.97
Tetrachloroethene	29.31	18.000	<0.028	>99.84
Chlorobenzene	0.70	<8.000	<0.028	–
Ethylbenzene	29.71	56.000	0.044	99.92
Total Xylene	137.44	262.000	0.430	99.84
Styrene	0.55	<8.000	<0.028	–
Total VOCs (detectable)	344.52	537.000	0.474	99.91

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* Based on mass balance of soil vapor discharge.

@ Based on Method 8240 analyses of soil samples by NET (Bedford, MA).

The following compounds were not detected in vapor or soil sample analyses: chloroethane, vinyl chloride, cis–1,2–dichloroethene, 1,1,2–trichloroethane, and 1,1,2,2–tetrachloroethane.

TABLE 1 – 1

SVE BENCH TEST RESULTS – COLUMN 1 / TLSBPA SAMPLE**

RESULTS OF EXHAUST SAMPLE ANALYSES – VOC CONCENTRATION

ACS – GRIFFITH, INDIANA

Date:	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/13/93	01/13/93	01/14/93	01/14/93	01/15/93	01/18/93	01/19/93	01/20/93
Time:	13:00	14:20	15:35	16:40	17:45	18:50	19:45	13:50	19:00	14:20	20:00	15:15	15:30	16:10	17:30
Run time (days)	0	0.06	0.11	0.15	0.20	0.24	0.28	1.03	1.25	2.06	2.29	3.09	6.10	7.13	8.19
Flow rate (ml/min)	15	15	12	13	15	12	11	15	15	10	11	10	10	10	17
Cumulative PVs	0	2	3	4	5	6	7	25	31	49	53	69	123	142	168
COMPOUND	**VOC CONCENTRATION (ppmv)***														
1,1-Dichloroethene	–	0.46	0.45	0.34	0.31	ND	0.40	0.45	0.34	0.58	0.24	ND	0.11	ND	ND
Acetone	–	4.10	5.10	3.90	4.80	4.20	3.50	ND	ND	6.10	2.20	82.80	2.10	3.56	3.56
Methylene chloride	–	135.14	115.75	106.95	78.81	54.10	81.61	119.10	218.72	93.37	37.77	84.27	25.34	26.95	27.31
2-Butanone (MEK)	–	34.20	34.80	38.20	35.50	33.20	43.70	10.60	6.10	69.90	26.50	50.60	33.70	1.70	1.39
Chloroform	–	57.79	46.85	47.68	37.02	24.37	33.20	46.93	30.57	30.31	6.18	25.53	10.41	12.39	10.82
1,1,1-Trichloroethane	–	105.59	105.17	98.68	88.96	63.69	79.89	104.36	73.68	88.54	48.75	74.12	29.68	30.67	29.69
Carbon tetrachloride	–	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	–	18.57	13.35	15.44	11.37	7.12	8.64	13.21	8.96	3.73	5.34	4.28	2.70	2.68	2.20
1,2-Dichloroethane	–	8.97	5.68	7.33	5.13	3.33	4.29	5.66	3.95	2.50	0.95	2.20	1.51	1.61	1.31
Trichloroethene	–	54.21	39.76	47.68	40.83	30.03	31.46	39.53	31.83	8.93	9.14	9.41	12.96	10.32	8.20
1,2-Dichloropropane	–	7.50	4.73	6.08	4.38	2.83	3.28	4.40	3.09	1.46	0.33	1.29	1.17	1.14	0.95
4-Methyl-2-pentanone	–	61.20	63.40	63.70	59.60	55.70	55.10	34.90	36.90	54.60	11.70	29.40	26.20	22.10	20.38
Toluene	–	55.67	109.53	110.50	107.13	97.85	94.42	83.40	72.33	33.24	72.44	51.93	44.80	33.23	29.19
Tetrachloroethene	–	44.40	40.85	37.37	37.31	27.72	27.30	14.98	18.63	1.82	6.72	3.90	7.42	3.61	2.12
Chlorobenzene	–	0.43	0.14	ND	ND	ND	ND	0.23	ND	ND	ND	ND	18.98	ND	ND
Ethylbenzene	–	82.65	89.17	69.89	75.38	61.24	58.63	27.47	34.27	3.94	7.03	4.39	31.65	6.69	3.81
Total Xylenes	–	143.25	227.49	169.81	195.05	154.76	149.07	90.92	89.93	11.27	20.54	13.12	86.00	16.13	8.58
Styrene	–	0.77	0.69	0.46	0.62	0.38	0.34	0.13	ND	ND	ND	ND	0.31	0.31	0.86
Total VOCs	–	814.90	902.91	824.01	782.20	620.52	674.83	596.27	629.30	410.29	255.83	437.24	335.04	173.09	150.37

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

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ND Non-detectable

* Samples analyzed for VOCs using EPA Method T014 (modified) by ERI (Storrs, Ct).

ppmv Parts- per-million by volume.

– Sample not taken at this time.

Note: The following compounds were not detected during the exhaust sample analyses:

chloroethane
vinyl chloride
cis-1,2-dichloroethene
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane

TABLE 1-1

SVE BENCH TEST RESULTS – COLUMN 1 / TLSBPA SAMPLE**

RESULTS OF EXHAUST SAMPLE ANALYSES – VOC CONCENTRATION

ACS – GRIFFITH, INDIANA

Date:	01/21/93	01/22/93	01/25/93	01/28/93	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	18:25	15:50	15:25	12:00	17:30	17:25	15:35	22:45	20:15	22:15	22:00	20:15	18:50
Run time (days)	9.23	10.12	13.10	15.96	17.19	21.18	22.11	23.41	27.30	28.39	30.38	36.30	41.24
Flow rate (ml/min)	9.5	9.5	9.5	9.5	10	11	115	120	120	120	120	120	120
Cumulative PVs	193	208	260	309	331	407	513	791	1,641	1,877	2,311	3,604	4,682
COMPOUND	**VOC CONCENTRATION (ppmv)***												
1,1-Dichloroethene	ND	ND	0.12	0.42	0.28	0.14	ND	0.09	ND	0.03	ND	ND	ND
Acetone	2.57	61.43	49.05	50.24	1.20	2.03	6.87	ND	0.13	ND	ND	0.02	0.01
Methylene chloride	22.92	29.95	29.95	67.43	34.71	7.50	3.05	0.58	0.57	0.10	0.09	0.04	0.05
2-Butanone (MEK)	1.15	31.75	25.85	19.22	9.28	ND	3.35	ND	ND	ND	ND	ND	ND
Chloroform	10.28	11.24	10.44	35.06	25.38	9.12	7.07	0.72	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	27.19	30.38	26.32	72.29	59.95	33.47	31.12	7.25	0.50	0.29	0.12	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	2.17	2.53	1.98	10.83	7.09	1.89	2.33	0.18	ND	ND	ND	ND	ND
1,2-Dichloroethane	1.27	1.38	1.37	3.55	3.08	1.07	1.00	0.07	ND	ND	ND	ND	ND
Trichloroethene	9.07	10.41	8.86	29.45	25.47	11.43	20.03	4.40	0.70	0.46	0.17	ND	ND
1,2-Dichloropropane	0.95	1.08	1.01	3.42	3.09	1.32	1.73	0.21	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	20.69	21.30	20.85	20.10	20.27	0.56	21.81	0.99	ND	ND	ND	ND	ND
Toluene	29.19	36.27	31.47	44.84	46.03	33.98	23.12	33.52	11.23	6.67	3.27	0.01	0.01
Tetrachloroethene	4.20	5.68	3.25	8.49	10.90	4.03	30.30	10.60	3.45	3.05	2.25	0.02	0.02
Chlorobenzene	ND	ND	ND	0.09	ND	ND	0.14	ND	ND	ND	ND	ND	ND
Ethylbenzene	8.82	12.61	5.87	10.70	17.82	5.91	49.38	3.11	11.45	8.41	6.21	0.07	ND
Total Xylenes	20.33	31.88	13.18	29.50	52.34	18.86	88.98	101.17	48.46	31.02	25.42	0.44	0.44
Styrene	ND	ND	ND	ND	0.08	ND	0.51	0.34	0.34	0.07	0.05	ND	ND
Total VOCs	160.80	287.89	229.57	405.63	316.97	131.31	290.79	163.23	76.83	50.10	37.58	0.60	0.53

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

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ND Non-detectable

* Samples analyzed for VOCs using EPA Method T014 (modified) by ERI (Storrs, Ct).

ppmv Parts-per-million by volume.

– Sample not taken at this time.

Note: The following compounds were not detected during the exhaust sample analyses:

chloroethane
vinyl chloride
cis-1,2-dichloroethene
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane

TABLE 1-2

SVE BENCH TEST RESULTS – COLUMN 1 / TLSBPA SAMPLE**

CUMULATIVE VOC MASS REMOVED

ACS – GRIFFITH, INDIANA

Date:	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/13/93	01/13/93	01/14/93	01/14/93	01/15/93	01/18/93	01/19/93	01/20/93
Time:	13:00	14:20	15:35	16:40	17:45	18:50	19:45	13:50	19:00	14:20	20:00	15:15	15:30	16:10	17:30
Run time (days)	0.00	0.06	0.11	0.15	0.20	0.24	0.28	1.03	1.25	2.06	2.29	3.09	6.10	7.13	8.19
Flow rate (ml/min)	15	15	12	13	15	12	11	15	15	10	11	10	10	10	17
Cumulative PVs	0	2	3	4	5	6	7	25	31	49	53	69	123	142	168
COMPOUND	**CUMULATIVE VOC MASS REMOVED (mg)**														
1,1-Dichloroethene	–	0.00	0.00	0.01	0.01	0.01	0.01	0.03	0.04	0.06	0.07	0.08	0.09	0.09	0.09
Acetone	–	0.01	0.02	0.03	0.04	0.05	0.06	0.11	0.11	0.19	0.23	1.41	5.85	5.95	6.13
Methylene chloride	–	0.57	1.02	1.34	1.64	1.85	2.00	7.14	9.91	18.54	19.35	21.92	30.30	31.67	33.64
2-Butanone (MEK)	–	0.12	0.22	0.31	0.41	0.50	0.57	1.59	1.70	3.05	3.55	4.90	10.27	11.04	11.13
Chloroform	–	0.34	0.61	0.80	0.99	1.13	1.22	4.09	4.99	7.18	7.49	8.42	12.28	13.12	14.28
1,1,1-Trichloroethane	–	0.70	1.29	1.75	2.22	2.60	2.85	10.20	12.49	18.89	20.23	24.31	36.78	39.25	42.67
Carbon tetrachloride	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	–	0.07	0.13	0.16	0.20	0.23	0.25	0.77	0.93	1.26	1.31	1.50	2.00	2.13	2.28
1,2-Dichloroethane	–	0.04	0.07	0.09	0.12	0.13	0.14	0.43	0.51	0.71	0.73	0.81	1.13	1.22	1.33
Trichloroethene	–	0.36	0.62	0.81	1.03	1.21	1.31	4.09	5.00	6.79	6.97	7.58	10.23	11.17	12.18
1,2-Dichloropropane	–	0.04	0.07	0.09	0.11	0.13	0.14	0.39	0.47	0.64	0.65	0.69	0.94	1.02	1.12
4-Methyl-2-pentanone	–	0.30	0.56	0.77	1.00	1.21	1.35	3.86	4.55	7.16	7.63	8.63	13.58	15.04	16.81
Toluene	–	0.26	0.57	0.91	1.29	1.64	1.87	6.65	8.04	11.20	11.94	14.87	22.93	25.15	27.57
Tetrachloroethene	–	0.37	0.67	0.88	1.12	1.32	1.44	3.40	3.94	5.13	5.24	5.69	7.38	7.94	8.32
Chlorobenzene	–	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.02	0.02	0.02	1.94	2.60	2.60
Ethylbenzene	–	0.43	0.81	1.09	1.38	1.64	1.81	4.30	4.92	6.32	6.41	6.71	10.11	11.34	11.78
Total Xylenes	–	0.76	1.56	2.27	3.01	3.69	4.12	11.30	13.16	16.90	17.15	18.06	27.53	30.87	31.90
Styrene	–	0.00	0.01	0.01	0.01	0.01	0.01	0.03	0.03	0.03	0.03	0.03	0.06	0.08	0.14
Total VOCs	–	4.38	8.24	11.34	14.57	17.33	19.13	58.37	70.79	104.04	108.96	125.59	193.33	209.59	223.81

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

– Samples not taken at this time.

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TABLE 1-2

SVE BENCH TEST RESULTS - COLUMN 1 / TLSBPA SAMPLE**

CUMULATIVE VOC MASS REMOVED

ACS - GRIFFITH, INDIANA

Date:	01/21/93	01/22/93	01/25/93	01/28/93	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	18:25	15:50	15:25	12:00	17:30	17:25	15:35	22:45	20:15	22:15	22:00	20:15	18:50
Run time (days)	9.23	10.12	13.10	15.96	17.19	21.18	22.11	23.41	27.30	28.39	30.38	36.30	41.24
Flow rate (ml/min)	10	10	10	10	10	11	115	120	120	120	120	120	120
Cumulative PVs	193	208	260	309	331	407	513	791	1,641	1,877	2,311	3,604	4,682
COMPOUND	**CUMULATIVE VOC MASS REMOVED (mg)**												
1,1-Dichloroethene	0.09	0.09	0.10	0.14	0.16	0.21	0.22	0.26	0.38	0.39	0.41	0.41	0.41
Acetone	6.28	7.22	12.66	17.34	18.38	18.62	19.92	21.70	21.81	21.84	21.84	21.86	21.89
Methylene chloride	35.44	36.57	40.89	47.61	50.69	55.06	56.07	57.46	58.83	59.05	59.16	59.40	59.54
2-Butanone (MEK)	11.21	11.80	15.25	17.84	18.56	19.35	20.10	21.16	21.16	21.16	21.16	21.16	21.16
Chloroform	15.32	15.97	18.17	22.58	25.15	30.21	33.22	37.39	38.59	38.59	38.59	38.59	38.59
1,1,1-Trichloroethane	45.83	47.77	54.18	64.86	71.17	86.59	101.13	124.18	138.63	139.04	139.43	139.77	139.77
Carbon tetrachloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	2.43	2.52	2.82	3.64	4.14	5.00	5.62	6.51	6.70	6.70	6.70	6.70	6.70
1,2-Dichloroethane	1.43	1.50	1.72	2.10	2.33	2.82	3.15	3.61	3.70	3.70	3.70	3.70	3.70
Trichloroethene	13.10	13.75	15.89	19.98	22.57	28.54	37.36	51.82	61.19	61.78	62.37	62.85	62.85
1,2-Dichloropropane	1.20	1.26	1.46	1.86	2.12	2.72	3.38	4.35	4.67	4.67	4.67	4.67	4.67
4-Methyl-2-pentanone	18.47	19.52	23.05	26.33	27.76	30.22	37.08	47.15	48.52	48.52	48.52	48.52	48.52
Toluene	29.80	31.33	36.65	42.39	45.40	54.63	62.39	86.42	144.35	150.79	157.37	163.83	163.86
Tetrachloroethene	8.71	9.12	10.38	11.96	13.12	16.16	32.32	62.97	95.55	99.74	106.02	114.03	114.15
Chlorobenzene	2.60	2.60	2.60	2.61	2.61	2.61	2.66	2.73	2.73	2.73	2.73	2.73	2.73
Ethylbenzene	12.26	12.83	14.47	15.88	16.96	20.00	36.62	61.23	82.55	90.64	101.57	115.56	115.69
Total Xylenes	33.01	34.42	38.47	42.15	45.29	54.56	85.18	177.43	399.54	432.35	475.14	533.54	535.20
Styrene	0.18	0.18	0.18	0.18	0.19	0.20	0.37	0.77	1.76	1.93	2.01	2.13	2.13
Total VOCs	237.18	248.29	288.76	339.26	366.40	427.30	536.43	766.35	1,128.91	1,181.70	1,249.38	1,337.32	1,339.42

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

-- Samples not taken at this time.

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TABLE 1-3

SVE BENCH TEST RESULTS – COLUMN 1 / TLSBPA SAMPLE**

PERCENT MASS REMOVED vs. PORE VOLUMES EXCHANGED

ACS – GRIFFITH, INDIANA

Date:	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/12/93	01/13/93	01/13/93	01/14/93	01/14/93	01/15/93	01/18/93	01/19/93	01/20/93
Time:	13:00	14:20	15:35	16:40	17:45	18:50	19:45	13:50	19:00	14:20	20:00	15:15	15:30	16:10	17:30
Run time (days)	0	0.06	0.11	0.15	0.20	0.24	0.28	1.03	1.25	2.06	2.29	3.09	6.10	7.13	8.19
Flow rate (ml/min)	15	15	12	13	15	12	11	15	15	10	11	10	10	10	17
Cumulative PVs	0	2	3	4	5	6	7	25	31	49	53	69	123	142	168
COMPOUND	**PERCENT MASS REMOVED vs. PORE VOLUMES**														
1,1-Dichloroethene	–	0.56	0.98	1.29	1.58	1.72	1.84	7.71	9.49	15.62	17.01	18.48	20.80	21.59	21.59
Acetone	–	0.05	0.10	0.14	0.19	0.23	0.26	0.49	0.49	0.88	1.04	6.46	26.73	27.19	27.99
Methylene chloride	–	0.96	1.72	2.26	2.75	3.11	3.36	11.99	16.65	31.14	32.50	36.81	50.90	53.19	56.50
2-Butanone (MEK)	–	0.57	1.06	1.47	1.93	2.35	2.69	7.51	8.05	14.42	16.76	23.16	48.55	52.19	52.62
Chloroform	–	0.89	1.58	2.07	2.56	2.92	3.15	10.61	12.92	18.60	19.41	21.81	31.82	33.99	36.99
1,1,1-Trichloroethane	–	0.50	0.93	1.25	1.59	1.86	2.04	7.30	8.94	13.51	14.47	17.39	26.31	28.08	30.53
Carbon tetrachloride	–	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	–	1.08	1.88	2.45	3.04	3.45	3.69	11.42	13.93	18.77	19.57	22.42	29.78	31.71	34.08
1,2-Dichloroethane	–	1.15	1.97	2.54	3.14	3.55	3.80	11.49	13.88	19.12	19.77	21.78	30.40	32.87	36.00
Trichloroethene	–	0.57	0.99	1.30	1.64	1.92	2.09	6.51	7.95	10.81	11.09	12.07	16.28	17.77	19.38
1,2-Dichloropropane	–	0.89	1.52	1.95	2.42	2.74	2.93	8.41	10.13	13.62	13.93	14.87	20.15	21.84	23.91
4-Methyl-2-pentanone	–	0.62	1.15	1.59	2.06	2.49	2.79	7.97	9.38	14.77	15.74	17.80	27.98	31.00	34.65
Toluene	–	0.16	0.35	0.56	0.79	1.00	1.14	4.06	4.91	6.84	7.29	9.07	13.99	15.35	16.83
Tetrachloroethene	–	0.32	0.58	0.77	0.98	1.15	1.26	2.98	3.45	4.49	4.59	4.98	6.46	6.95	7.29
Chlorobenzene	–	0.09	0.14	0.15	0.15	0.15	0.15	0.47	0.56	0.56	0.56	0.56	71.08	95.15	95.15
Ethylbenzene	–	0.37	0.70	0.94	1.19	1.42	1.56	3.72	4.26	5.46	5.54	5.80	8.74	9.81	10.18
Total Xylenes	–	0.14	0.29	0.42	0.56	0.69	0.77	2.11	2.46	3.16	3.20	3.37	5.14	5.77	5.96
Styrene	–	0.19	0.34	0.43	0.54	0.63	0.67	1.30	1.36	1.36	1.36	1.36	2.73	3.67	6.41
Total VOCs		0.33	0.61	0.85	1.09	1.29	1.43	4.36	5.28	7.77	8.13	9.38	14.43	15.65	16.71

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

– Samples not taken at this time.

NA Not applicable.

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TABLE 1-3

SVE BENCH TEST RESULTS – COLUMN 1 / TLSBPA SAMPLE**

PERCENT MASS REMOVED vs. PORE VOLUMES EXCHANGED

ACS – GRIFFITH, INDIANA

Date:	01/21/93	01/22/93	01/25/93	01/28/93	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	18:25	15:50	15:25	12:00	17:30	17:25	15:35	22:45	20:15	22:15	22:00	20:15	18:50
Run time (days)	9.23	10.12	13.10	15.96	17.19	21.18	22.11	23.41	27.30	28.39	30.38	36.30	41.24
Flow rate (ml/min)	9.5	9.5	9.5	9.5	10	11	115	120	120	120	120	120	120
Cumulative PVs	193	208	260	309	331	407	513	791	1641	1877	2311	3604	4682
COMPOUND	**PERCENT MASS REMOVED vs. PORE VOLUMES**												
1,1-Dichloroethene	21.59	21.59	23.96	34.19	40.02	52.13	53.12	62.91	92.28	95.00	100.00	100.00	100.00
Acetone	28.69	32.99	57.81	79.19	83.96	85.05	90.99	99.13	99.61	99.75	99.75	99.86	100.00
Methylene chloride	59.52	61.43	68.68	79.97	85.15	92.48	94.19	96.52	98.81	99.18	99.38	99.77	100.00
2-Butanone (MEK)	52.98	55.77	72.10	84.34	87.72	91.43	94.99	100.00	100.00	100.00	100.00	100.00	100.00
Chloroform	39.70	41.39	47.07	58.50	65.18	78.27	86.08	96.89	100.00	100.00	100.00	100.00	100.00
1,1,1-Trichloroethane	32.79	34.18	38.76	46.40	50.92	61.95	72.36	88.84	99.18	99.48	99.76	100.00	100.00
Carbon tetrachloride	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Benzene	36.19	37.59	42.06	54.24	61.72	74.55	83.89	97.05	100.00	100.00	100.00	100.00	100.00
1,2-Dichloroethane	38.75	40.48	46.50	56.81	62.93	76.07	85.10	97.47	100.00	100.00	100.00	100.00	100.00
Trichloroethene	20.84	21.87	25.29	31.79	35.90	45.41	59.45	82.45	97.36	98.30	99.24	100.00	100.00
1,2-Dichloropropane	25.77	26.99	31.21	39.77	45.32	58.25	72.28	93.01	100.00	100.00	100.00	100.00	100.00
4-Methyl-2-pentanone	38.08	40.24	47.51	54.27	57.22	62.30	76.43	97.18	100.00	100.00	100.00	100.00	100.00
Toluene	18.18	19.12	22.37	25.87	27.71	33.34	38.08	52.74	88.09	92.03	96.04	99.98	100.00
Tetrachloroethene	7.63	7.99	9.09	10.48	11.49	14.15	28.32	55.16	83.71	87.38	92.88	99.90	100.00
Chlorobenzene	95.15	95.15	95.15	95.45	95.58	95.58	97.42	100.00	100.00	100.00	100.00	100.00	100.00
Ethylbenzene	10.60	11.09	12.51	13.73	14.66	17.29	31.65	52.93	71.36	78.35	87.80	99.89	100.00
Total Xylenes	6.17	6.43	7.19	7.88	8.46	10.20	15.92	33.15	74.65	80.78	88.78	99.69	100.00
Styrene	8.64	8.64	8.64	8.64	8.78	9.25	17.20	36.14	82.76	90.58	94.78	100.00	100.00
Total VOCs	17.71	18.54	21.56	25.33	27.36	31.90	40.05	57.22	84.28	88.22	93.28	99.84	100.00

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

– Samples not taken at this time.

NA Not applicable.

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TABLE 2

SUMMARY OF SVE BENCH SCALE TEST

COLUMN 2 / TREATMENT LAGOON – STILL BOTTOM POND AREA SAMPLE

ACS / GRIFFITH, INDIANA

SOIL SAMPLE

MASS (g)	HEIGHT (in)	DIAMETER (in)	CROSS SECTIONAL AREA (in^2)
3,119	19.00	3.0	7.1

TEST EVENTS

1/12/93 Column preparation and sample collection.
1/13/93 Initiate test at 100 ml/min.
2/3/93 Increase test flow rate to 220 ml/min.
2/22/93 Terminate test, collect post test sample.

TEST CONDITIONS

AIR FLOW RATE (ml/min)	AIR LOADING RATE (ml/cm^2–min)	PRESSURE DIFFERENCE (cm H20)	PERMEABILITY (cm^2)
95 – 225	2.08 – 4.93	25.0	1.4e–8

Temperature of inlet air = 22 degrees C
Test duration in hours = 964
Number of sample points = 25
Total pore volume through put = 19,752

TEST RESULTS

COMPOUND	INITIAL CONCENTRATION (mg/kg)*	INITIAL CONCENTRATION (mg/kg)@	FINAL CONCENTRATION (mg/kg)@	REMOVAL EFFICIENCY (%)
1,1–Dichloroethene	0.13	<7.700	<0.006	–
Acetone	5.63	27.000	<0.006	>99.98
Methylene chloride	13.98	<7.700	<0.006	–
2–Butanone	12.42	23.000	<0.006	>99.97
Chloroform	7.59	<7.700	<0.006	–
1,1,1–Trichloroethane	40.77	40.000	<0.006	>99.99
Carbon tetrachloride	0.00	<7.700	<0.006	–
Benzene	2.03	<7.700	<0.006	–
1,2–Dichloroethane	0.93	<7.700	<0.006	–
Trichloroethene	14.96	14.000	<0.006	>99.96
1,2–dichloropropane	1.30	<7.700	<0.006	–
4–Methyl–2–pentanone	18.06	48.000	<0.006	>99.99
Toluene	84.09	140.000	<0.006	>99.99
Tetrachloroethene	31.26	30.000	<0.006	>99.98
Chlorobenzene	3.14	<7.700	<0.006	–
Ethylbenzene	50.87	86.000	<0.006	>99.99
Total Xylene	181.53	420.000	<0.006	>99.99
Styrene	0.10	<7.700	<0.006	–
Total VOCs	468.80	828.000	<0.140	>99.98

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* Based on mass balance of soil vapor discharge.

@ Based on Method 8240 analyses of soil samples by NET (Bedford, MA).
The following compounds were not detected in vapor or soil sample analyses:
chloroethane, vinyl chloride, cis–1,2–dichloroethene, 1,1,2–trichloroethane, and 1,1,2,2–tetrachloroethane.

TABLE 2-1

SVE BENCH TEST RESULTS – COLUMN 2 / TLSBPA SAMPLE**

RESULTS OF EXHAUST SAMPLE ANALYSES – VOC CONCENTRATION

ACS – GRIFFITH, INDIANA

Date:	01/13/93	01/13/93	01/13/93	01/13/93	01/13/93	01/14/93	01/14/93	01/15/93	01/15/93	01/17/93	01/18/93	01/19/93	01/20/93	01/21/93	01/22/93
Time:	11:00	15:20	16:30	17:30	18:30	13:20	21:00	13:00	17:15	19:30	13:00	17:25	16:30	15:40	14:00
Run time (days)	0	0.18	0.23	0.27	0.31	1.10	1.42	2.08	2.26	4.35	5.08	6.27	7.23	8.19	9.13
Flow rate (ml/min)	100	105	100	110	98	100	98	100	100	100	104	105	105	95	105
Cumulative PVs	0	56	71	84	98	333	429	629	682	1,316	1,542	1,916	2,222	2,515	2,797
COMPOUND	**VOC CONCENTRATION (ppmv)***														
1,1-Dichloroethene	–	0.27	0.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.11	0.11	0.07
Acetone	–	29.10	30.10	30.00	32.00	3.00	2.00	2.00	4.00	9.00	3.00	ND	0.16	0.14	0.18
Methylene chloride	–	58.56	41.58	36.00	33.00	12.00	14.00	10.00	12.00	3.00	1.00	1.00	0.72	0.92	0.74
2-Butanone (MEK)	–	40.40	33.30	33.00	35.00	19.00	29.00	17.00	28.00	1.00	ND	ND	ND	ND	ND
Chloroform	–	19.77	14.05	13.00	12.00	5.00	6.00	5.00	5.00	3.00	2.00	1.00	0.46	0.31	0.22
1,1,1-Trichloroethane	–	68.30	47.73	43.00	42.00	22.00	38.00	26.00	30.00	9.00	13.00	6.00	3.85	2.95	2.28
Carbon tetrachloride	–	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	–	4.60	3.45	3.00	3.00	1.00	4.00	1.00	2.00	2.00	1.00	1.00	0.14	0.10	0.08
1,2-Dichloroethane	–	2.37	1.72	2.00	2.00	1.00	1.00	ND	1.00	1.00	ND	ND	ND	ND	ND
Trichloroethene	–	17.46	12.95	12.00	14.00	5.00	12.00	8.00	8.00	5.00	6.00	3.00	2.17	1.79	1.50
1,2-Dichloropropane	–	1.74	1.28	1.00	1.00	ND	1.00	1.00	1.00	2.00	ND	ND	0.11	0.09	0.08
4-Methyl-2-pentanone	–	46.40	37.60	37.00	39.00	21.00	31.00	18.00	21.00	3.00	2.00	1.00	0.30	0.22	0.18
Toluene	–	68.17	51.64	51.00	60.00	31.00	88.00	52.00	64.00	35.00	34.00	29.00	24.82	22.83	20.77
Tetrachloroethene (PCE)	–	6.81	4.49	5.00	9.00	3.00	11.00	7.00	6.00	10.00	9.00	6.00	4.87	4.59	4.49
Chlorobenzene	–	ND	ND	ND	ND	1.00	ND	ND	ND	7.00	ND	ND	ND	0.14	1.41
Ethylbenzene	–	13.60	9.32	10.00	22.00	5.00	15.00	19.00	8.00	18.00	27.00	23.00	19.38	17.84	16.36
Total Xylenes	–	36.55	23.47	28.00	60.00	11.00	43.00	64.00	22.00	47.00	76.00	72.00	60.70	59.69	53.95
Styrene	–	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.14	0.15	0.12
Total VOCs	–	414.10	312.98	304.00	364.00	140.00	295.00	230.00	212.00	155.00	174.00	143.00	117.93	111.87	102.43

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

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ND Non-detectable

* Samples analyzed for VOCs using EPA Method T014 (modified) by ERI (Storrs, Ct).

ppmv Parts- per-million by volume.

– Sample not taken at this time.

Note: The following compounds were not detected during the exhaust sample analyses:

chloroethane
vinyl chloride
cis-1,2-dichloroethene
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane

TABLE 2-1

SVE BENCH TEST RESULTS – COLUMN 2 / TLSBPA SAMPLE**

RESULTS OF EXHAUST SAMPLE ANALYSES – VOC CONCENTRATION

ACS – GRIFFITH, INDIANA

Date:	01/25/93	01/28/93	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	13:30	15:40	16:00	16:10	19:50	08:45	14:30	16:55	20:40	13:30	15:05
Run time (days)	12.10	15.19	16.21	20.22	21.37	21.91	26.15	27.25	29.40	35.10	40.17
Flow rate (ml/min)	106	115	115	115	220	220	230	225	220	220	220
Cumulative PVs	3,749	4,783	5,136	6,532	7,117	7,475	10,365	11,123	12,577	16,376	19,752
COMPOUND	**VOC CONCENTRATION (ppmv)***										
1,1-Dichloroethene	0.09	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Acetone	0.14	0.21	0.14	0.16	1.10	ND	ND	0.05	ND	0.020	ND
Methylene chloride	0.93	0.73	0.50	0.60	0.39	0.40	0.52	0.15	0.06	0.050	0.001
2-Butanone (MEK)	ND	ND	ND	ND	0.33	ND	ND	ND	ND	0.010	ND
Chloroform	0.07	ND	ND	ND	ND	ND	ND	ND	ND	0.050	ND
1,1,1-Trichloroethane	0.66	0.27	0.23	0.11	ND	ND	ND	0.02	ND	0.050	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.040	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.65	0.28	0.22	0.09	0.06	ND	ND	ND	ND	0.060	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.002	ND
Toluene	11.49	5.51	4.37	1.06	1.00	0.42	0.09	0.05	0.01	0.070	0.003
Tetrachloroethene (PCE)	2.32	1.66	1.53	1.02	0.92	0.69	0.33	0.26	0.01	0.060	ND
Chlorobenzene	0.12	ND	ND	ND	ND	ND	ND	ND	ND	0.060	ND
Ethylbenzene	8.30	4.89	4.36	1.74	1.43	0.81	0.26	0.19	ND	0.070	0.002
Total Xylenes	31.17	20.53	18.83	9.72	10.44	7.45	4.11	3.29	0.06	0.080	0.005
Styrene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total VOCs	55.94	34.08	30.18	14.50	15.67	9.77	5.31	4.01	0.14	0.62	0.01

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas G:\DATA\PROJECT\92-332\RSLT-2.WK1

ND Non-detectable

* Samples analyzed for VOCs using EPA Method T014 (modified) by ERI (Storrs, Ct).

ppmv Parts-per-million by volume.

– Sample not taken at this time.

Note: The following compounds were not detected during the exhaust sample analyses:

chloroethane
vinyl chloride
cis-1,2-dichloroethene
1,1,2-trichloroethane
1,1,2,2-tetrachloroethane

TABLE 2-2

SVE BENCH TEST RESULTS – COLUMN 2 / TLSBPA SAMPLE**

CUMULATIVE VOC MASS REMOVED

ACS – GRIFFITH, INDIANA

Date:	01/13/93	01/13/93	01/13/93	01/13/93	01/13/93	01/14/93	01/14/93	01/15/93	01/15/93	01/17/93	01/18/93	01/19/93	01/20/93	01/21/93	01/22/93
Time:	11:00	15:20	16:30	17:30	18:30	13:20	21:00	13:00	17:15	19:30	13:00	17:25	16:30	15:40	14:00
Run time (days)	0.00	0.18	0.23	0.27	0.31	1.10	1.42	2.08	2.26	4.35	5.08	6.27	7.23	8.19	9.13
Flow rate (ml/min)	100	105	100	110	98	100	98	100	100	100	104	105	105	95	105
Cumulative PVs	0	56	71	84	98	333	429	629	682	1,316	1,542	1,916	2,222	2,515	2,797
COMPOUND	**CUMULATIVE VOC MASS REMOVED (mg)**														
1,1-Dichloroethene	–	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.07	0.13	0.18
Acetone	–	1.92	2.43	2.88	3.35	8.03	8.30	8.76	8.95	13.67	15.21	15.85	15.88	15.93	15.98
Methylene chloride	–	5.64	6.92	7.78	8.54	17.38	19.47	23.49	24.48	32.46	33.21	33.84	34.28	34.68	35.07
2-Butanone (MEK)	–	3.24	4.02	4.64	5.26	14.11	17.32	23.73	25.42	38.27	38.42	38.42	38.42	38.42	38.42
Chloroform	–	2.68	3.28	3.70	4.09	8.79	10.03	12.62	13.25	19.23	20.56	21.88	22.41	22.67	22.85
1,1,1-Trichloroethane	–	10.33	12.65	14.23	15.70	35.47	43.01	59.83	63.79	96.36	102.91	112.27	116.24	118.87	120.80
Carbon tetrachloride	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	–	0.41	0.50	0.57	0.63	1.36	1.73	2.50	2.62	4.59	5.11	5.69	5.96	6.01	6.05
1,2-Dichloroethane	–	0.26	0.32	0.36	0.41	1.08	1.26	1.44	1.49	2.69	2.90	2.90	2.90	2.90	2.90
Trichloroethene	–	2.60	3.20	3.63	4.07	9.84	11.95	17.13	18.24	28.94	32.16	36.53	38.59	40.10	41.30
1,2-Dichloropropane	–	0.22	0.27	0.30	0.33	0.59	0.69	1.13	1.25	3.34	3.82	3.82	3.86	3.92	3.98
4-Methyl-2-pentanone	–	5.19	6.43	7.40	8.37	22.08	26.93	36.45	38.49	53.32	54.42	55.51	55.90	56.05	56.16
Toluene	–	7.16	8.82	10.06	11.39	30.90	41.27	66.79	72.48	129.88	144.09	165.67	180.72	193.48	204.69
Tetrachloroethene (PCE)	–	1.28	1.56	1.77	2.06	6.67	8.85	14.73	15.87	32.49	39.49	48.69	54.14	58.67	62.86
Chlorobenzene	–	0.00	0.00	0.00	0.00	0.26	0.37	0.37	0.37	5.31	7.03	7.03	7.03	7.07	7.58
Ethylbenzene	–	1.62	1.97	2.24	2.66	9.19	11.16	18.20	19.70	36.75	47.27	66.64	80.04	91.32	101.27
Total Xylenes	–	4.40	5.35	6.07	7.26	24.65	30.04	52.51	57.34	103.22	132.40	190.53	233.09	270.00	303.49
Styrene	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.13	0.21
Total VOCs	–	46.97	57.76	65.66	74.16	190.44	232.42	339.72	363.78	600.55	679.03	805.31	889.51	960.24	1,023.57

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas

– Sample not taken at this time.

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TABLE 2-2

SVE BENCH TEST RESULTS – COLUMN 2 / TLSBPA SAMPLE**

CUMULATIVE VOC MASS REMOVED

ACS – GRIFFITH, INDIANA

Date:	01/25/93	01/28/93	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	13:30	15:40	16:00	16:10	19:50	08:45	14:30	16:55	20:40	13:30	15:05
Run time (days)	12.10	15.19	16.21	20.22	21.37	21.91	26.15	27.25	29.40	35.10	40.17
Flow rate (ml/min)	106	115	115	115	220	220	230	225	220	220	220
Cumulative PVs	3,749	4,783	5,136	6,532	7,117	7,475	10,365	11,123	12,577	16,376	19,752
COMPOUND	**CUMULATIVE VOC MASS REMOVED (mg)**										
1,1-Dichloroethene	0.32	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
Acetone	16.15	16.36	16.43	16.67	17.19	17.42	17.42	17.44	17.48	17.53	17.57
Methylene chloride	36.41	37.84	38.20	39.49	39.95	40.18	42.42	42.85	43.11	43.46	43.60
2-Butanone (MEK)	38.42	38.42	38.42	38.42	38.60	38.68	38.68	38.68	38.68	38.71	38.73
Chloroform	23.17	23.26	23.26	23.26	23.26	23.26	23.26	23.26	23.26	23.48	23.68
1,1,1-Trichloroethane	124.48	125.72	125.95	126.58	126.64	126.64	126.64	126.66	126.70	126.95	127.17
Carbon tetrachloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.11	6.23	6.33
1,2-Dichloroethane	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90	2.90
Trichloroethene	43.95	45.18	45.40	45.97	46.07	46.10	46.10	46.10	46.10	46.40	46.66
1,2-Dichloropropane	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06	4.06
4-Methyl-2-pentanone	56.32	56.32	56.32	56.32	56.32	56.32	56.32	56.32	56.32	56.33	56.34
Toluene	232.73	248.58	251.77	258.70	259.79	260.25	261.58	261.68	261.76	262.04	262.26
Tetrachloroethene (PCE)	73.47	80.16	82.01	87.84	89.66	90.61	95.40	96.13	96.77	97.17	97.51
Chlorobenzene	9.19	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.32	9.58	9.80
Ethylbenzene	125.50	139.46	142.84	151.64	153.50	154.33	157.49	157.85	158.13	158.41	158.66
Total Xylenes	388.33	443.92	458.49	500.26	512.76	519.49	554.28	560.17	565.33	565.88	566.18
Styrene	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33	0.33
Total VOCs	1,181.52	1,278.02	1,301.90	1,367.95	1,386.54	1,396.08	1,442.39	1,449.93	1,456.44	1,459.52	1,461.86

** TLSBPA = Treatment Lagoon/Still Bottoms Pond Areas G:\DATA\PROJECT\92-332\RSLT-2.WK1

– Sample not taken at this time.

TABLE 2-3

SVE BENCH TEST RESULTS – COLUMN 2 / TREATMENT LAGOON SAMPLE

PERCENT MASS REMOVED vs. PORE VOLUMES EXCHANGED

ACS – GRIFFITH, INDIANA

Date:	01/13/93	01/13/93	01/13/93	01/13/93	01/13/93	01/14/93	01/14/93	01/15/93	01/15/93	01/17/93	01/18/93	01/19/93	01/20/93	01/21/93	01/22/93
Time:	11:00	15:20	16:30	17:30	18:30	13:20	21:00	13:00	17:15	19:30	13:00	17:25	16:30	15:40	14:00
Run time (days)	0	0.18	0.23	0.27	0.31	1.10	1.42	2.08	2.26	4.35	5.08	6.27	7.23	8.19	9.13
Flow rate (ml/min)	100	105	100	110	98	100	98	100	100	100	104	105	105	95	105
Cumulative PVs	0	56	71	84	98	333	429	629	682	1,316	1,542	1,916	2,222	2,515	2,797
COMPOUND	**PERCENT MASS REMOVED vs. PORE VOLUMES**														
1,1-Dichloroethene	–	7.16	9.14	10.01	10.01	10.01	10.01	10.01	10.01	10.01	10.01	10.01	17.78	32.63	44.21
Acetone	–	10.90	13.82	16.42	19.07	45.71	47.28	49.89	50.94	77.84	86.57	90.22	90.38	90.67	90.96
Methylene chloride	–	12.94	15.86	17.84	19.58	39.86	44.65	53.87	56.14	74.45	76.17	77.61	78.62	79.54	80.43
2-Butanone (MEK)	–	8.37	10.38	11.97	13.58	36.43	44.71	61.26	65.62	98.80	99.20	99.20	99.20	99.20	99.20
Chloroform	–	11.31	13.86	15.64	17.28	37.11	42.35	53.29	55.96	81.23	86.81	92.40	94.63	95.76	96.50
1,1,1-Trichloroethane	–	8.12	9.94	11.19	12.34	27.89	33.82	47.05	50.16	75.77	80.92	88.28	91.40	93.48	94.99
Carbon tetrachloride	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	–	6.47	7.96	9.00	9.96	21.42	27.25	39.41	41.38	72.42	80.64	89.81	94.08	94.94	95.56
1,2-Dichloroethane	–	8.86	10.88	12.49	14.20	37.10	43.34	49.78	51.52	92.81	100.00	100.00	100.00	100.00	100.00
Trichloroethene	–	5.58	6.86	7.78	8.72	21.10	25.61	36.71	39.10	62.03	68.93	78.30	82.70	85.94	88.50
1,2-Dichloropropane	–	5.41	6.64	7.46	8.17	14.47	17.03	27.85	30.75	82.21	94.16	94.16	95.07	96.66	97.95
4-Methyl-2-pentanone	–	9.22	11.42	13.13	14.85	39.20	47.80	64.70	68.32	94.65	96.59	98.53	99.22	99.49	99.68
Toluene	–	2.73	3.36	3.84	4.34	11.78	15.74	25.47	27.64	49.52	54.94	63.17	68.91	73.77	78.05
Tetrachloroethene (PCE)	–	1.31	1.60	1.81	2.12	6.84	9.08	15.11	16.28	33.32	40.50	49.94	55.52	60.17	64.47
Chlorobenzene	–	0.00	0.00	0.00	0.00	2.70	3.79	3.79	3.79	54.16	71.70	71.70	71.70	72.14	77.30
Ethylbenzene	–	1.02	1.24	1.41	1.68	5.79	7.04	11.47	12.41	23.16	29.79	42.00	50.45	57.56	63.83
Total Xylenes	–	0.78	0.95	1.07	1.28	4.35	5.31	9.27	10.13	18.23	23.38	33.65	41.17	47.69	53.60
Styrene	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total VOCs		3.21	3.95	4.49	5.07	13.03	15.90	23.24	24.88	41.08	46.45	55.09	60.85	65.69	70.02

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TABLE 2-3

SVE BENCH TEST RESULTS – COLUMN 2 / TREATMENT LAGOON SAMPLE

PERCENT MASS REMOVED vs. PORE VOLUMES EXCHANGED

ACS – GRIFFITH, INDIANA

Date:	01/25/93	01/28/93	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	13:30	15:40	16:00	16:10	19:50	08:45	14:30	16:55	20:40	13:30	15:05
Run time (days)	12.10	15.19	16.21	20.22	21.37	21.91	26.15	27.25	29.40	35.10	40.17
Flow rate (ml/min)	106	115	115	115	220	220	230	225	220	220	220
Cumulative PVs	3,749	4,783	5,136	6,532	7,117	7,475	10,365	11,123	12,577	16,376	19,752
COMPOUND	**PERCENT MASS REMOVED vs. PORE VOLUMES**										
1,1-Dichloroethene	79.39	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Acetone	91.96	93.15	93.55	94.92	97.88	99.17	99.17	99.29	99.53	99.78	100.00
Methylene chloride	83.50	86.78	87.62	90.57	91.61	92.16	97.29	98.27	98.86	99.67	100.00
2-Butanone (MEK)	99.20	99.20	99.20	99.20	99.66	99.87	99.87	99.87	99.87	99.94	100.00
Chloroform	97.87	98.21	98.21	98.21	98.21	98.21	98.21	98.21	98.21	99.16	100.00
1,1,1-Trichloroethane	97.88	98.86	99.05	99.54	99.58	99.58	99.58	99.60	99.63	99.83	100.00
Carbon tetrachloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	96.49	96.49	96.49	96.49	96.49	96.49	96.49	96.49	96.49	98.35	100.00
1,2-Dichloroethane	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Trichloroethene	94.19	96.82	97.31	98.51	98.74	98.80	98.80	98.80	98.80	99.44	100.00
1,2-Dichloropropane	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
4-Methyl-2-pentanone	99.98	99.98	99.98	99.98	99.98	99.98	99.98	99.98	99.98	99.99	100.00
Toluene	88.74	94.78	96.00	98.64	99.06	99.23	99.74	99.78	99.81	99.91	100.00
Tetrachloroethene (PCE)	75.34	82.21	84.10	90.08	91.96	92.93	97.84	98.59	99.24	99.66	100.00
Chlorobenzene	93.76	95.12	95.12	95.12	95.12	95.12	95.12	95.12	95.12	97.70	100.00
Ethylbenzene	79.10	87.90	90.03	95.58	96.75	97.27	99.26	99.49	99.67	99.84	100.00
Total Xylenes	68.59	78.41	80.98	88.36	90.56	91.75	97.90	98.94	99.85	99.95	100.00
Styrene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total VOCs	80.82	87.42	89.06	93.58	94.85	95.50	98.67	99.18	99.63	99.84	100.00

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TABLE 2 – 4

SVE BENCH TEST – COLUMN 2/TLSBPA SAMPLE**

RESULTS OF SOIL METHOD 8270 ANALYSES

ACS / GRIFFITH, INDIANA

COMPOUND	INITIAL CONCENTRATION (mg/kg)@	FINAL CONCENTRATION (mg/kg)@	REMOVAL EFFICIENCY (%)
bis (2–chloroethyl) ether	2.00	<0.40	>80.0
1,4–Dichlorobenzene	<0.90	<0.40	–
Isophorone	23.00	9.60	58.3
1,2,4–Trichlorobenzene	<0.90	<0.40	–
Napthalene	10.00	0.60	94.0
Hexachlorobutadiene	2.00	2.00	0.0
2,6–Dinitrotolune	<0.90	<0.40	–
2,4–Dinitrotolune	<0.90	<0.40	–
n–Nitrosodiphenylamine	<0.90	<0.40	–
Hexachlorobenzene	<0.90	<0.40	–
Pentachlorophenol	<0.90	5.40	NA
bis (2–ethylhexyl) Phthalate	76.00	35.00	53.9
di–n–butylphthalate	15.00	8.80	41.3
cPAHs ***	<6.30	<2.80	–
Total SVOCs (detectable)	128.00	61.40	52.0

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** TLSBPA = Treatment Lagoon – Still Bottom Pond Area

@ Based on Method 8270 analyses of soil samples by NET (Bedford, MA).

*** cPAHs = Benzo(a)anthracene, Chrysene, Benzo(b)fluoranthene, Benzo(k)fluoranthene
Benzo(a)pyrene, Indeno(1,2,3–cd)pyrene, Dibenz(a,h)anthracene

TABLE 3

SUMMARY OF SVE BENCH SCALE TEST

COLUMN 3 / OFF SITE CONTAINMENT AREA SAMPLE

ACS / GRIFFITH, INDIANA

SOIL SAMPLE

MASS (g)	HEIGHT (in)	DIAMETER (in)	CROSS SECTIONAL AREA (in^2)
2,125	18.5	3.0	7.1

TEST EVENTS

1/14/93 Column preparation and sample collection.
1/14/93 Initiate test at 100 ml/min.
2/4/93 Increase test flow rate to 220 ml/min.
2/22/93 Terminate test, collect post test sample.

TEST CONDITIONS

AIR FLOW RATE (ml/min)	AIR LOADING RATE (ml/cm^2-min)	PRESSURE DIFFERENCE (cm H20)	PERMEABILITY (cm^2)
98 – 220	2.15 – 4.82	6.3 – 75.0	1.5e-8

Temperature of inlet air = 22 degrees C
Test duration in hours = 934
Number of sample points = 22
Total pore volume through put = 11,013

TEST RESULTS

COMPOUND	INITIAL CONCENTRATION (mg/kg)*	INITIAL CONCENTRATION (mg/kg)@	FINAL CONCENTRATION (mg/kg)@	REMOVAL EFFICIENCY (%)
1,1-Dichloroethene	0.28	<39.00	<0.78	–
Acetone	1.34	<39.00	<0.78	–
Methylene chloride	18.93	<39.00	<0.78	–
2-Butanone	12.36	<39.00	<0.78	–
Chloroform	1.10	<39.00	<0.78	–
1,1,1-Trichloroethane	33.54	57.00	<0.78	>98.63
Carbon tetrachloride	0.00	<39.00	<0.78	–
Benzene	4.35	<39.00	<0.78	–
1,2-Dichloroethane	1.05	<39.00	<0.78	–
Trichloroethene	14.99	<39.00	<0.78	–
1,2-dichloropropane	0.42	<39.00	<0.78	–
4-Methyl-2-pentanone	10.14	62.00	<0.78	>98.74
Toluene	95.26	1,200.00	1.60	99.87
Tetrachloroethene	101.89	220.00	<0.78	>99.65
Chlorobenzene	0.63	<39.00	<0.78	–
Ethylbenzene	166.45	440.00	3.40	99.23
Total Xylene	481.08	2,490.00	26.00	98.96
Styrene	3.50	<39.00	<0.78	–
Total VOCs (detectable)	947.31	4,469.00	31.00	99.31

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* Based on mass balance of soil vapor discharge.
@ Based on Method 8240 analyses of soil samples by NET (Bedford, MA).
The following compounds were not detected in vapor or soil sample analyses:
chloroethane, vinyl chloride, cis-1,2-dichloroethene, 1,1,2-trichloroethane, and 1,1,2,2-tetrachloroethane.

TABLE 3-1

SVE BENCH TEST RESULTS – COLUMN 3 / OFF-SITE CONTAINMENT AREA SAMPLE

RESULTS OF EXHAUST SAMPLE ANALYSES – VOC CONCENTRATION

ACS – GRIFFITH, INDIANA

Date:	01/14/93	01/14/93	01/14/93	01/14/93	01/14/93	01/15/93	01/15/93	01/18/93	01/19/93	01/20/93	01/21/93	01/23/93	01/25/93	01/28/93
Time:	15:30	15:45	17:00	18:00	19:00	12:00	18:35	14:05	19:20	22:10	19:40	12:00	18:30	13:40
Run time (days)	0.00	0.01	0.06	0.10	0.15	0.85	1.13	3.94	5.16	6.28	7.17	8.85	11.13	13.92
Flow rate (ml/min)	100	100	98	105	98	105	100	105	105	105	105	105	112	115
Cumulative PVs	0	2	11	19	26	154	204	728	956	1,166	1,333	1,648	2,087	2,653
COMPOUND	**VOC CONCENTRATION (ppmv)***													
1,1-Dichloroethene	–	0.500	0.410	0.270	0.320	0.110	0.090	ND	ND	ND	ND	0.11	0.09	ND
Acetone	–	16.200	15.000	0.900	0.800	0.800	0.700	2.84	ND	ND	ND	0.45	0.21	0.18
Methylene chloride	–	63.140	56.180	47.310	52.990	13.590	7.760	2.72	ND	ND	1.92	3.07	2.27	2.42
2-Butanone (MEK)	–	33.900	34.000	28.200	34.600	36.800	33.100	0.00	0.22	0.10	ND	0.11	0.11	0.40
Chloroform	–	2.940	2.920	2.380	2.960	1.800	1.280	0.09	0.07	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	–	78.200	76.970	62.330	74.010	45.120	29.620	4.00	2.71	1.65	1.34	0.89	0.47	0.25
Carbon tetrachloride	–	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	–	20.300	21.310	16.510	20.380	12.300	5.590	0.62	0.34	0.19	0.14	0.08	ND	ND
1,2-Dichloroethane	–	3.140	3.290	2.590	3.300	2.390	1.320	0.23	0.13	0.08	ND	ND	ND	ND
Trichloroethene	–	25.040	28.370	21.180	25.690	19.790	10.000	4.96	3.01	1.84	1.33	0.84	ND	0.19
1,2-Dichloropropane	–	0.860	0.950	0.670	0.920	0.760	0.440	0.17	0.10	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	–	11.000	23.900	19.100	23.100	20.600	14.600	1.39	0.10	0.94	0.75	0.71	0.30	0.21
Toluene	–	40.110	40.110	31.530	38.130	30.350	44.910	28.56	28.57	46.71	44.54	36.58	18.64	5.15
Tetrachloroethene (PCE)	–	21.820	28.030	16.740	21.490	16.050	6.210	33.34	31.23	25.82	22.67	17.16	10.87	6.31
Chlorobenzene	–	ND	ND	ND	ND	ND	ND	0.07	0.06	ND	ND	ND	ND	ND
Ethylbenzene	–	23.410	33.820	18.110	23.800	16.300	5.840	24.62	50.42	46.18	45.79	40.56	36.10	28.37
Total Xylenes	–	63.060	90.420	48.620	64.700	42.490	16.130	93.80	95.30	89.45	54.81	81.35	96.77	72.08
Styrene	–	0.100	0.260	0.080	0.140	0.060	ND	0.86	0.95	0.86	0.92	0.81	0.82	0.56
Total VOCs	–	404	456	317	387	259	178	198.27	213.21	213.82	174.21	182.72	166.65	116.12

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ND Non-detectable
* Samples analyzed for VOCs using EPA Method T014 (modified) by ERI (Storrs, Ct).
ppmv Parts-per-million by volume.
– Sample not taken at this time.
Note: The following compounds were not detected during the exhaust sample analyses:
chloroethane
vinyl chloride
cis-1,2-dichlorethene
1,1,2-trichloroethene
1,1,2,2-tetrachloroethane

TABLE 3-1

SVE BENCH TEST RESULTS – COLUMN 3 / OFF-SITE CONTAINMENT AREA SAMPLE

RESULTS OF EXHAUST SAMPLE ANALYSES – VOC CONCENTRATION

ACS – GRIFFITH, INDIANA

Date:	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	14:35	14:30	13:00	17:45	13:00	12:20	16:30	18:40	13:40
Run time (days)	14.96	18.96	19.90	21.09	24.90	25.87	28.04	34.13	38.92
Flow rate (ml/min)	115	120	120	220	210	210	210	210	220
Cumulative PVs	2,865	3,702	3,902	4,265	5,722	6,086	6,899	9,178	11,013
COMPOUND	**VOC CONCENTRATION (ppmv)***								
1,1-Dichloroethene	0.11	ND	0.03	ND	ND	ND	ND	0.01	ND
Acetone	0.16	0.25	0.07	ND	0.13	0.06	ND	0.04	0.01
Methylene chloride	1.95	1.66	1.33	1.12	1.02	0.75	0.62	0.09	0.04
2-Butanone (MEK)	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,1,1-Trichloroethane	0.20	0.12	0.09	0.05	ND	0.04	0.03	ND	ND
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene	0.14	0.11	0.07	0.06	ND	0.03	ND	ND	ND
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-pentanone	0.07	ND	0.03	ND	ND	ND	ND	ND	ND
Toluene	4.39	3.33	2.78	1.82	1.18	1.17	1.02	0.02	0.01
Tetrachloroethene (PCE)	5.39	2.55	2.00	1.02	0.36	0.38	0.25	ND	ND
Chlorobenzene	ND	0.46	0.05	0.13	ND	0.06	ND	ND	ND
Ethylbenzene	26.02	15.50	10.85	8.77	3.44	3.33	2.34	0.02	ND
Total Xylenes	67.97	53.19	27.47	41.36	21.27	19.69	19.20	0.14	0.07
Styrene	0.53	0.34	0.22	0.21	0.07	0.09	0.06	0.02	ND
Total VOCs	106.93	77.51	44.99	54.54	27.47	25.60	23.52	0.34	0.13

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ND Non-detectable
* Samples analyzed for VOCs using EPA Method T014 (modified) by ERI (Storrs, Ct).
ppmv Parts-per-million by volume.
– Sample not taken at this time.
Note: The following compounds were not detected during the exhaust sample analyses:
chloroethane
vinyl chloride
cis-1,2-dichloroethene
1,1,2-trichloroethene
1,1,2,2-tetrachloroethane

TABLE 3-2

SVE BENCH TEST RESULTS - COLUMN 3 / OFF-SITE CONTAINMENT AREA SAMPLE

CUMULATIVE VOC MASS REMOVED

ACS - GRIFFITH, INDIANA

Date:	01/14/93	01/14/93	01/14/93	01/14/93	01/14/93	01/15/93	01/15/93	01/18/93	01/19/93	01/20/93	01/21/93	01/23/93	01/25/93	01/28/93
Time:	15:30	15:45	17:00	18:00	19:00	12:00	18:35	14:05	19:20	22:10	19:40	12:00	18:30	13:40
Run time (days)	0.00	0.01	0.06	0.10	0.15	0.85	1.13	3.94	5.16	6.28	7.17	8.85	11.13	13.92
Flow rate (ml/min)	100	100	98	105	98	105	100	105	105	105	105	105	112	115
Cumulative PVs	0	2	11	19	26	154	204	728	956	1,166	1,333	1,648	2,087	2,653
COMPOUND	**CUMULATIVE VOC MASS REMOVED (mg)**													
1,1-Dichloroethene	-	0.00	0.02	0.02	0.03	0.12	0.13	0.19	0.19	0.19	0.19	0.25	0.39	0.47
Acetone	-	0.06	0.34	0.45	0.46	0.66	0.74	1.34	1.97	1.97	1.97	2.11	2.39	2.61
Methylene chloride	-	0.33	1.90	3.01	4.08	16.00	17.54	22.25	23.13	23.13	23.59	25.83	29.16	32.95
2-Butanone (MEK)	-	0.15	0.89	1.45	2.01	12.88	17.05	32.06	32.12	32.20	32.22	32.26	32.37	32.72
Chloroform	-	0.02	0.13	0.21	0.29	1.50	1.81	2.81	2.89	2.92	2.92	2.92	2.92	2.92
1,1,1-Trichloroethane	-	0.65	3.84	6.18	8.48	42.35	50.78	77.21	80.64	82.68	83.80	85.37	86.69	87.60
Carbon tetrachloride	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	-	0.10	0.60	0.98	1.34	6.81	8.00	10.91	11.20	11.35	11.42	11.51	11.56	11.56
1,2-Dichloroethane	-	0.02	0.11	0.18	0.26	1.42	1.72	2.57	2.70	2.78	2.80	2.80	2.80	2.80
Trichloroethene	-	0.21	1.29	2.11	2.88	15.68	19.00	28.79	32.80	35.04	36.21	37.72	38.51	38.75
1,2-Dichloropropane	-	0.01	0.04	0.06	0.08	0.48	0.60	0.95	1.06	1.10	1.10	1.10	1.10	1.10
4-Methyl-2-pentanone	-	0.07	0.60	1.13	1.66	10.91	13.85	23.37	23.93	24.29	24.76	25.52	26.25	26.72
Toluene	-	0.23	1.38	2.21	3.03	16.61	22.44	54.65	74.89	99.37	123.13	162.77	200.06	220.83
Tetrachloroethene (PCE)	-	0.23	1.50	2.43	3.23	16.55	19.69	37.93	78.92	112.14	134.77	169.64	203.65	230.62
Chlorobenzene	-	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.07	0.10	0.10	0.10	0.10	0.10
Ethylbenzene	-	0.15	1.08	1.76	2.31	11.28	13.25	22.60	52.67	88.19	115.29	163.01	222.05	286.09
Total Xylenes	-	0.42	2.93	4.77	6.29	30.58	35.87	67.80	144.64	213.51	256.59	332.88	472.62	642.59
Styrene	-	0.00	0.01	0.01	0.01	0.06	0.06	0.25	0.97	1.64	2.16	3.11	4.36	5.73
Total VOCs	-	2.64	16.64	26.96	36.43	183.90	222.53	385.71	564.82	732.59	853.03	1,058.89	1,336.96	1,626.13

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TABLE 3-2

SVE BENCH TEST RESULTS - COLUMN 3 / OFF-SITE CONTAINMENT AREA SAMPLE

CUMULATIVE VOC MASS REMOVED

ACS - GRIFFITH, INDIANA

Date:	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	14:35	14:30	13:00	17:45	13:00	12:20	16:30	18:40	13:40
Run time (days)	14.96	18.96	19.90	21.09	24.90	25.87	28.04	34.13	38.92
Flow rate (ml/min)	115	120	120	220	210	210	210	210	220
Cumulative PVs	2,865	3,702	3,902	4,265	5,722	6,086	6,899	9,178	11,013
COMPOUND	**CUMULATIVE VOC MASS REMOVED (mg)**								
1,1-Dichloroethene	0.50	0.65	0.66	0.67	0.67	0.67	0.67	0.71	0.74
Acetone	2.68	3.01	3.08	3.09	3.27	3.34	3.39	3.48	3.56
Methylene chloride	34.27	38.57	39.43	40.67	45.12	46.03	47.62	49.93	50.27
2-Butanone (MEK)	32.82	32.82	32.82	32.82	32.82	32.82	32.82	32.82	32.82
Chloroform	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92	2.92
1,1,1-Trichloroethane	87.82	88.41	88.51	88.61	88.78	88.81	88.94	89.09	89.09
Carbon tetrachloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	11.56	11.56	11.56	11.56	11.56	11.56	11.56	11.56	11.56
1,2-Dichloroethane	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80	2.80
Trichloroethene	38.90	39.36	39.44	39.54	39.74	39.76	39.82	39.82	39.82
1,2-Dichloropropane	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10	1.10
4-Methyl-2-pentanone	26.82	26.92	26.93	26.94	26.94	26.94	26.94	26.94	26.94
Toluene	223.98	233.99	235.89	238.33	245.15	246.48	249.25	252.93	253.02
Tetrachloroethene (PCE)	237.55	255.91	258.45	261.21	266.87	267.62	269.04	270.63	270.63
Chlorobenzene	0.10	0.84	1.03	1.17	1.54	1.58	1.67	1.67	1.67
Ethylbenzene	306.43	367.17	376.45	388.57	420.15	424.48	432.59	442.04	442.10
Total Xylenes	695.68	875.86	904.68	951.83	1,115.60	1,142.15	1,198.52	1,277.05	1,277.74
Styrene	6.13	7.40	7.60	7.87	8.59	8.69	8.90	9.22	9.29
Total VOCs	1,712.06	1,989.29	2,033.33	2,099.69	2,313.61	2,347.76	2,418.55	2,514.71	2,516.06

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TABLE 3-3

SVE BENCH TEST RESULTS – COLUMN 3 / OFF-SITE CONTAINMENT AREA SAMPLE

PERCENT MASS REMOVED vs. PORE VOLUMES EXCHANGED

ACS – GRIFFITH, INDIANA

Date:	01/14/93	01/14/93	01/14/93	01/14/93	01/14/93	01/15/93	01/15/93	01/18/93	01/19/93	01/20/93	01/21/93	01/23/93	01/25/93	01/28/93
Time:	15:45	17:00	18:00	19:00	12:00	18:35	ERR	14:05	19:20	22:10	19:40	12:00	18:30	13:40
Run time (days)	0	0.01	0.06	0.10	0.15	0.85	1.13	3.94	5.16	6.28	7.17	8.85	11.13	13.92
Flow rate (ml/min)	100	100	98	105	98	105	100	105	105	105	105	105	112	115
Cumulative PVs	0	2	11	19	26	154	204	718	946	1,155	1,323	1,637	2,076	2,642
COMPOUND						**PERCENT MASS REMOVED vs. PORE VOLUMES**								
1,1-Dichloroethene	–	0.40	2.18	3.26	4.21	15.75	17.89	27.50	27.50	27.50	27.50	34.87	53.51	64.23
Acetone	–	1.23	7.11	9.49	9.75	13.95	15.49	53.30	66.56	66.56	66.56	69.46	75.33	79.85
Methylene chloride	–	0.63	3.57	5.66	7.68	30.11	33.00	47.28	48.94	48.94	49.81	54.02	60.28	67.41
2-Butanone (MEK)	–	0.40	2.37	3.85	5.35	34.34	45.44	97.97	98.13	98.34	98.39	98.50	98.81	99.73
Chloroform	–	0.66	3.94	6.36	8.80	45.57	55.00	96.89	99.11	100.00	100.00	100.00	100.00	100.00
1,1,1-Trichloroethane	–	0.65	3.82	6.15	8.43	42.10	50.48	88.19	91.60	93.63	94.74	96.30	97.62	98.52
Carbon tetrachloride	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	–	0.78	4.72	7.65	10.51	53.35	62.68	94.96	97.22	98.36	98.94	99.65	100.00	100.00
1,2-Dichloroethane	–	0.58	3.55	5.76	7.98	44.35	53.74	93.00	97.12	99.33	100.00	100.00	100.00	100.00
Trichloroethene	–	0.44	2.75	4.50	6.16	33.48	40.56	76.46	85.02	89.80	92.30	95.52	97.20	97.71
1,2-Dichloropropane	–	0.45	2.79	4.49	6.17	36.32	44.83	88.40	97.06	100.00	100.00	100.00	100.00	100.00
4-Methyl-2-pentanone	–	0.22	1.94	3.68	5.39	35.49	45.03	88.39	90.22	91.39	92.91	95.39	97.75	99.30
Toluene	–	0.08	0.49	0.79	1.08	5.95	8.04	28.94	36.19	44.96	53.47	67.67	81.03	88.47
Tetrachloroethene (PCE)	–	0.07	0.48	0.78	1.04	5.34	6.35	24.91	38.14	48.86	56.16	67.41	78.39	87.09
Chlorobenzene	–	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Ethylbenzene	–	0.03	0.23	0.38	0.50	2.45	2.88	8.94	15.47	23.18	29.06	39.42	52.23	66.13
Total Xylenes	–	0.03	0.22	0.35	0.47	2.27	2.66	10.25	15.95	21.06	24.26	29.92	40.28	52.89
Styrene	–	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total VOCs		0.10	0.62	1.00	1.35	6.80	8.23	21.23	27.85	34.05	38.51	46.12	56.40	67.09

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TABLE 3-3

SVE BENCH TEST RESULTS – COLUMN 3 / OFF-SITE CONTAINMENT AREA SAMPLE

PERCENT MASS REMOVED vs. PORE VOLUMES EXCHANGED

ACS – GRIFFITH, INDIANA

Date:	01/29/93	02/02/93	02/03/93	02/04/93	02/08/93	02/09/93	02/11/93	02/17/93	02/22/93
Time:	14:35	14:30	13:00	17:45	13:00	12:20	16:30	18:40	13:40
Run time (days)	14.96	18.96	19.90	21.09	24.8958	25.8680	28.0416	34.1319	38.9236
Flow rate (ml/min)	115	120	120	220	210	210	210	210	220
Cumulative PVs	2,855	3,691	3,892	4,255	5,711	6,075	6,888	9,167	11,003
COMPOUND	**PERCENT MASS REMOVED vs. PORE VOLUMES**								
1,1-Dichloroethene	69.21	88.41	89.69	91.32	91.32	91.32	91.32	96.18	100.00
Acetone	81.33	88.39	89.71	90.07	93.86	95.28	96.28	98.15	100.00
Methylene chloride	69.90	77.99	79.60	81.93	90.30	92.03	95.02	99.37	100.00
2-Butanone (MEK)	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Chloroform	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1,1,1-Trichloroethane	98.73	99.33	99.42	99.52	99.69	99.72	99.85	100.00	100.00
Carbon tetrachloride	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Benzene	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
1,2-Dichloroethane	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Trichloroethene	98.04	99.03	99.20	99.41	99.83	99.89	100.00	100.00	100.00
1,2-Dichloropropane	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
4-Methyl-2-pentanone	99.62	99.93	99.96	100.00	100.00	100.00	100.00	100.00	100.00
Toluene	89.60	93.18	93.87	94.74	97.18	97.66	98.65	99.97	100.00
Tetrachloroethene (PCE)	89.33	95.25	96.07	96.96	98.79	99.03	99.49	100.00	100.00
Chlorobenzene	NA	NA	62.94	71.03	92.26	94.65	100.00	100.00	100.00
Ethylbenzene	70.55	83.73	85.75	88.38	95.23	96.17	97.93	99.99	100.00
Total Xylenes	56.83	70.19	72.33	75.83	87.97	89.94	94.12	99.95	100.00
Styrene	0.00	0.00	0.00	85.65	92.95	93.98	96.14	99.37	100.00
Total VOCs	70.27	80.52	82.15	84.60	92.51	93.78	96.39	99.95	100.00

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TABLE 4

LUMPED PARAMETER MODEL EVALUATIONS*

ASC/GRIFFITH, INDIANA

COLUMN NUMBER		R	DX	DR
COL. 1	TOTAL VOC	200	24	394
	TOTAL XYLENE	100	174	4,018
COL. 2	TOTAL VOC	480	3,935	3,585
	TOTAL XYLENE	800	12,050	114
COL. 3	TOTAL VOC	600	13,360	1,842
	TOTAL XYLENE	1,300	1,976	164

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* Based on the results of one-dimensional transport modeling simulations.

FIGURES

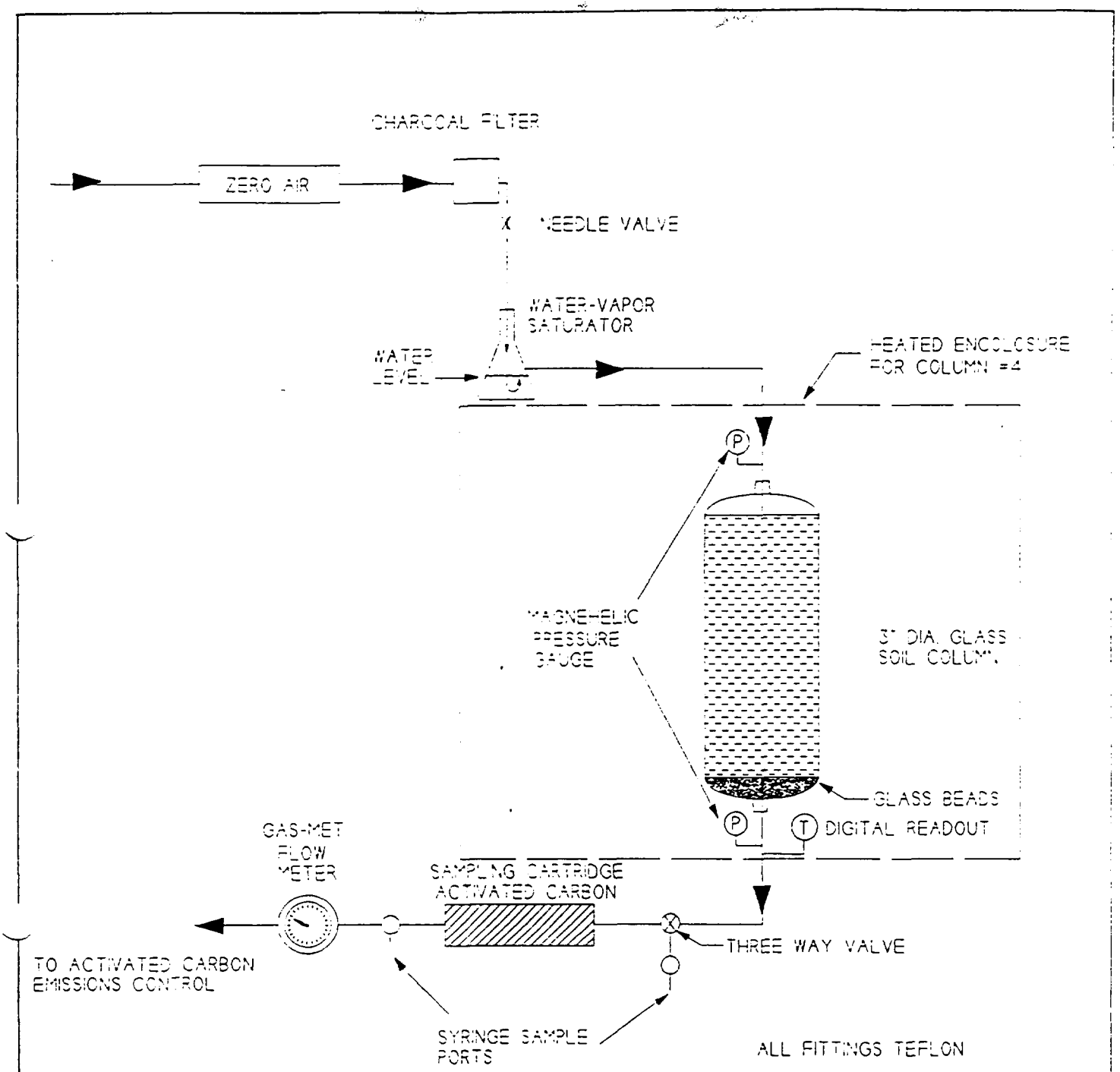

FIGURE 1

JOB#: 00332	TITLE: SVES TREATABILITY STUDY
DATE: 12/92	SITE: ACS GRIFFITH, INDIANA
SCALE: NTS	DRAWING#: 000-ST-S
DRAWN:	VAPEX®
CHECKED:	Environmental Technologies 480 Neponset Street Canton, MA 02021 Tel. 617 821-5560 Fax 617 821-4967

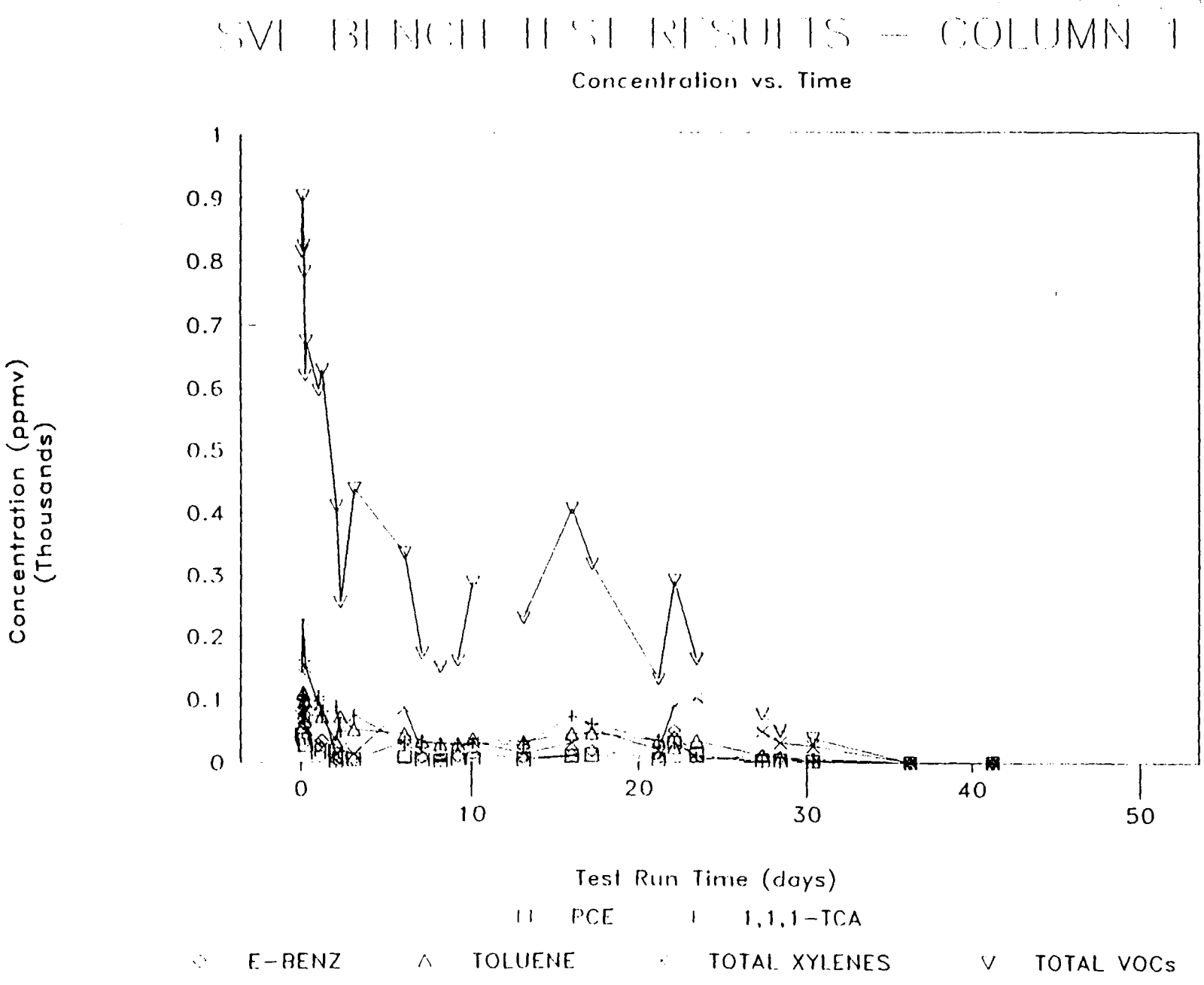
SVE BENCH TEST RESULTS — COLUMN 1
Concentration vs. Time
Concentration (ppmv)
(Thousands)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
Test Run Time (days)
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 1-1

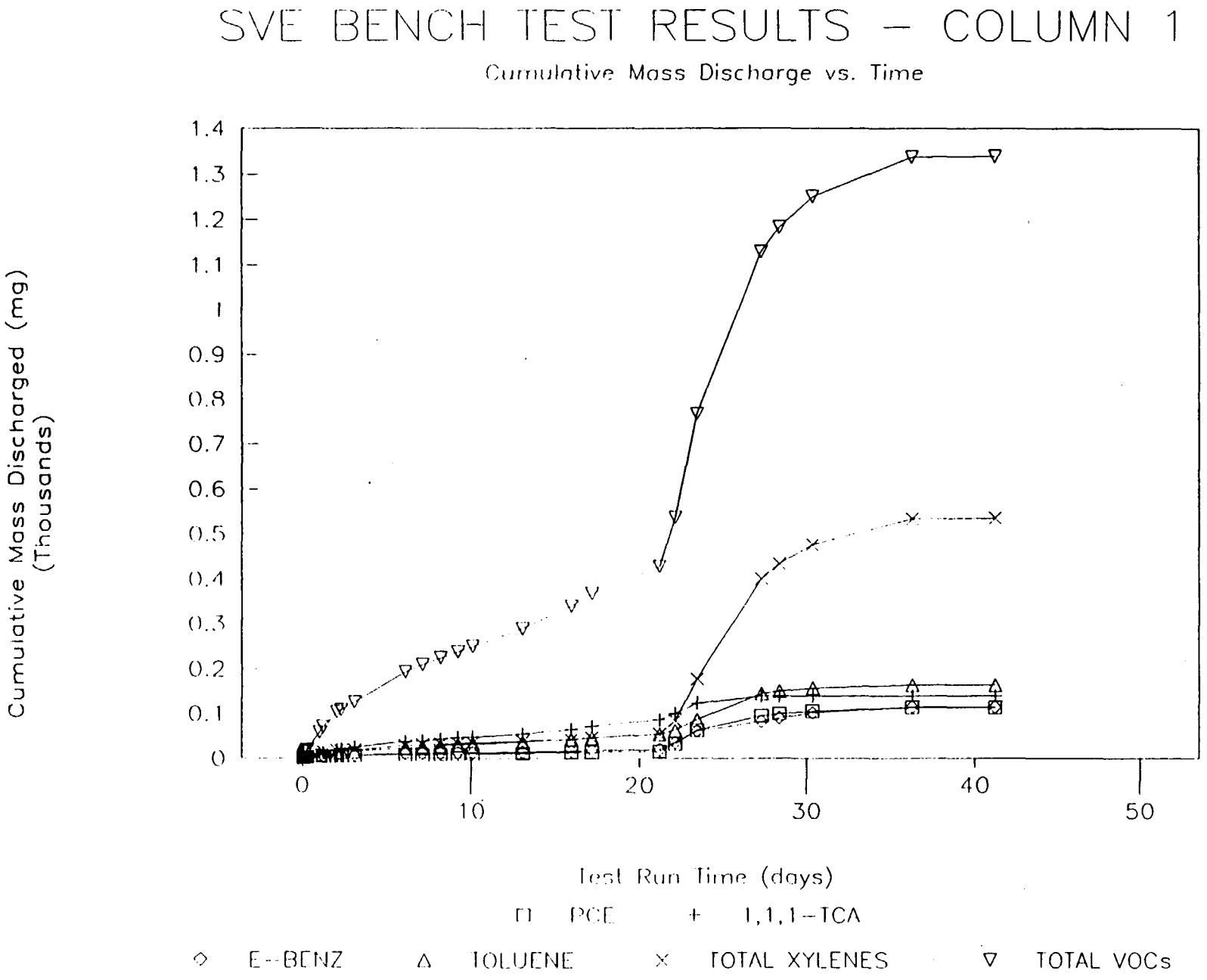
SVE BENCH TEST RESULTS – COLUMN 1
Cumulative Mass Discharge vs. Time
Cumulative Mass Discharged (mg)
(Thousands)
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
Test Run Time (days)
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 1-2

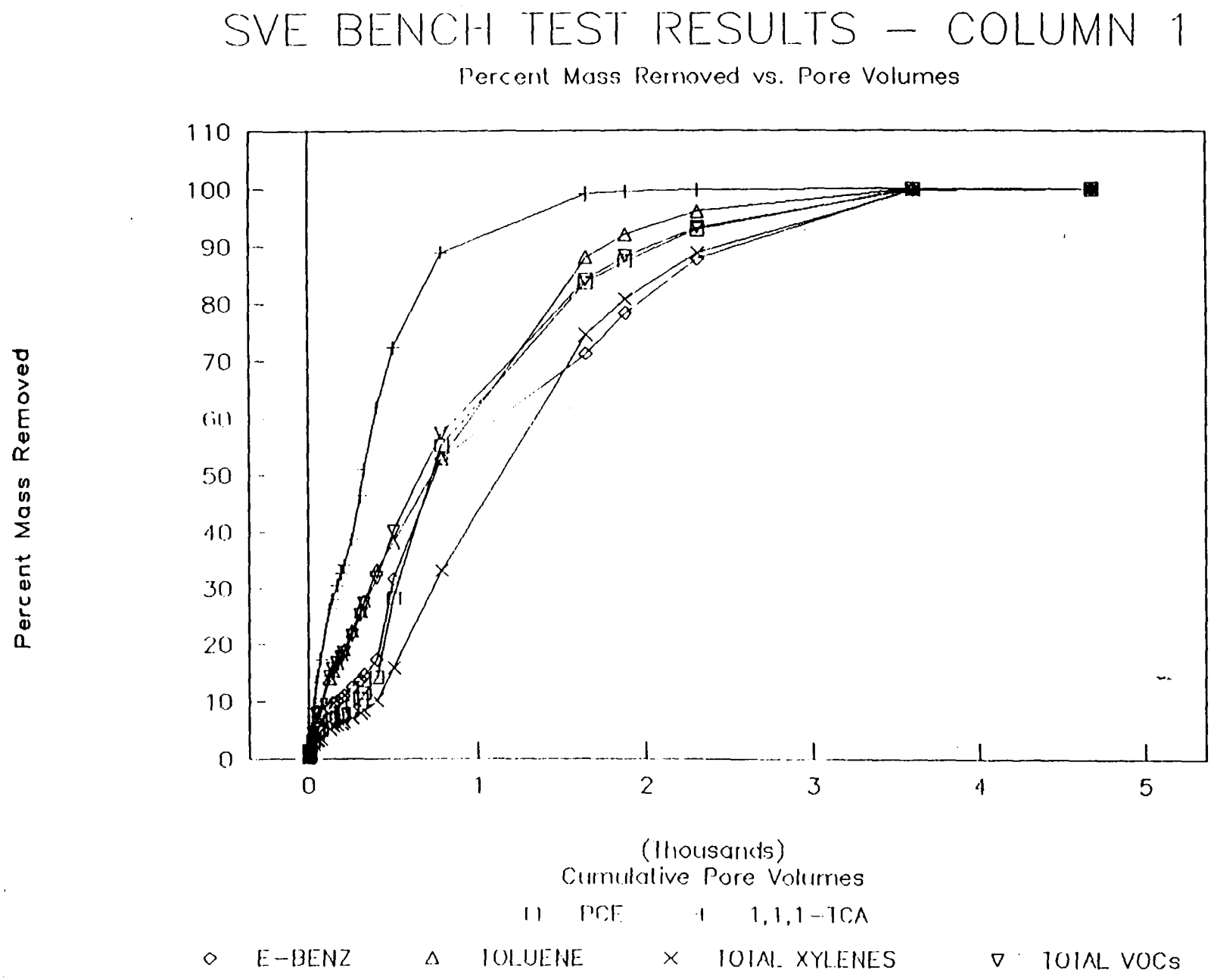
SVE BENCH TEST RESULTS – COLUMN 1
Percent Mass Removed vs. Pore Volumes
Percent Mass Removed
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
(Thousands)
Cumulative Pore Volumes
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 1-3

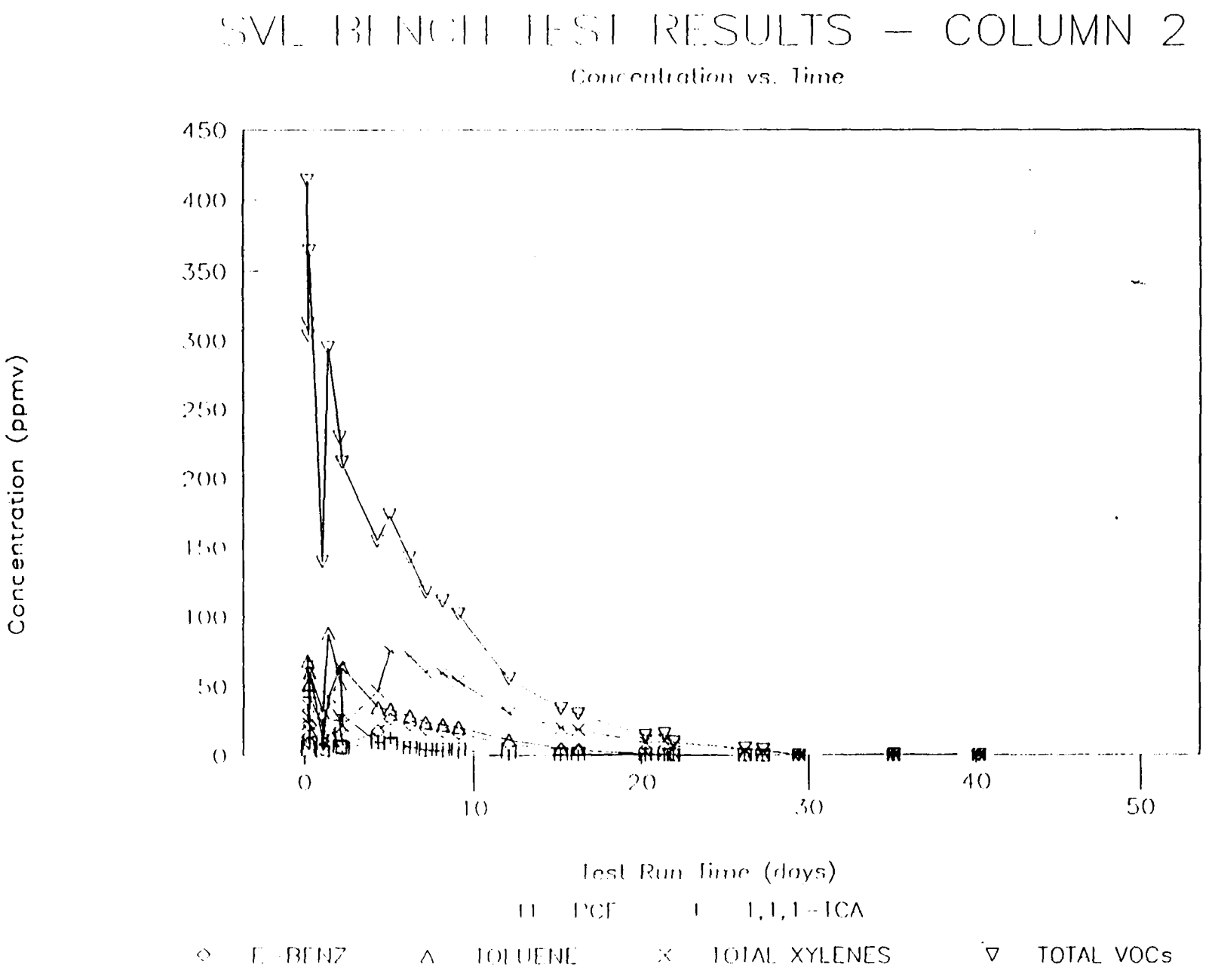
SVL BENCH TEST RESULTS – COLUMN 2
Concentration vs. Time
Concentration (ppmv)
450
400
350
300
250
200
150
100
50
0
0
10
20
30
40
50
Test Run Time (days)
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 2-1

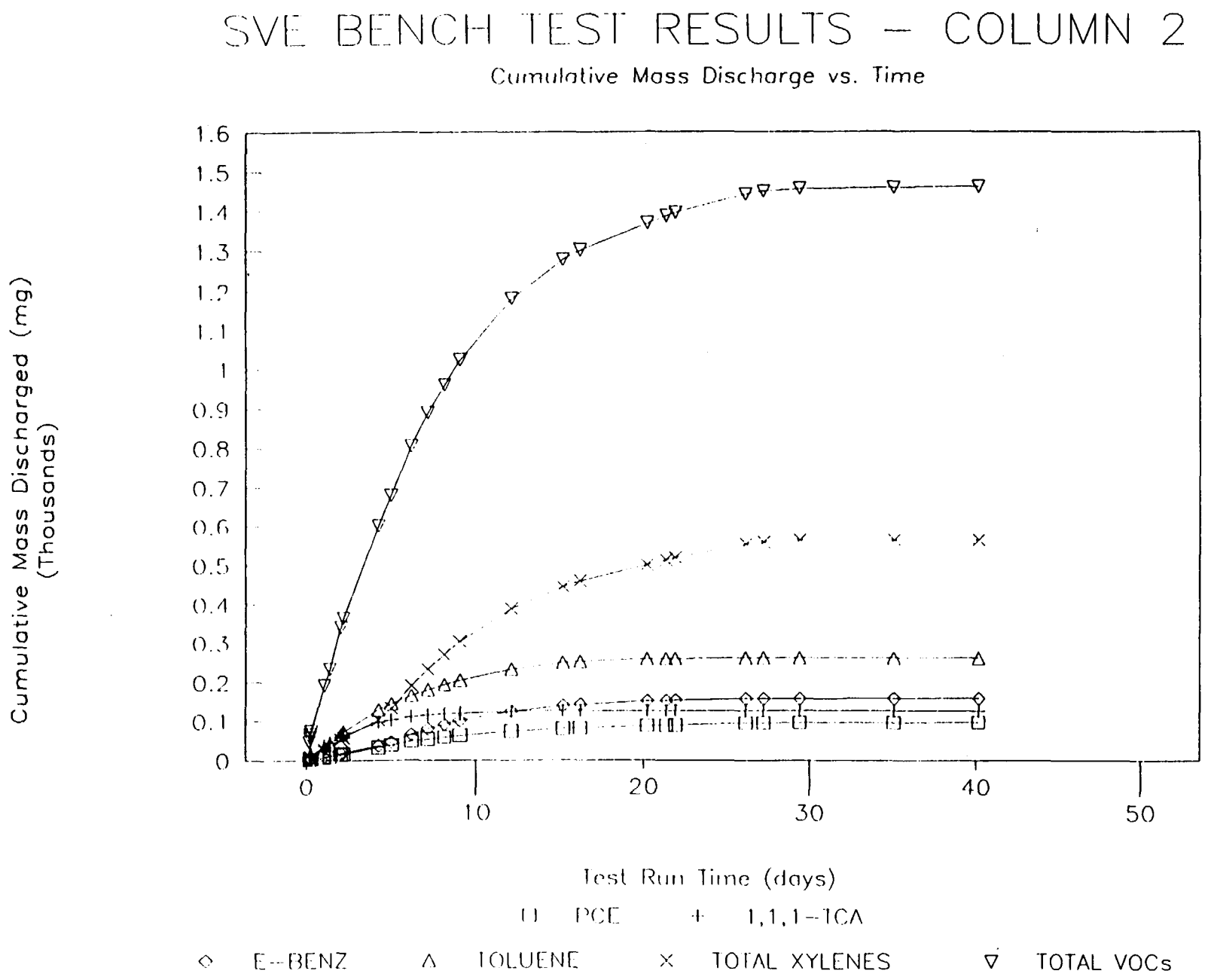
SVE BENCH TEST RESULTS – COLUMN 2
Cumulative Mass Discharge vs. Time
Cumulative Mass Discharged (mg)
(Thousands)
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
10
20
30
40
50
Test Run Time (days)
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 2-2

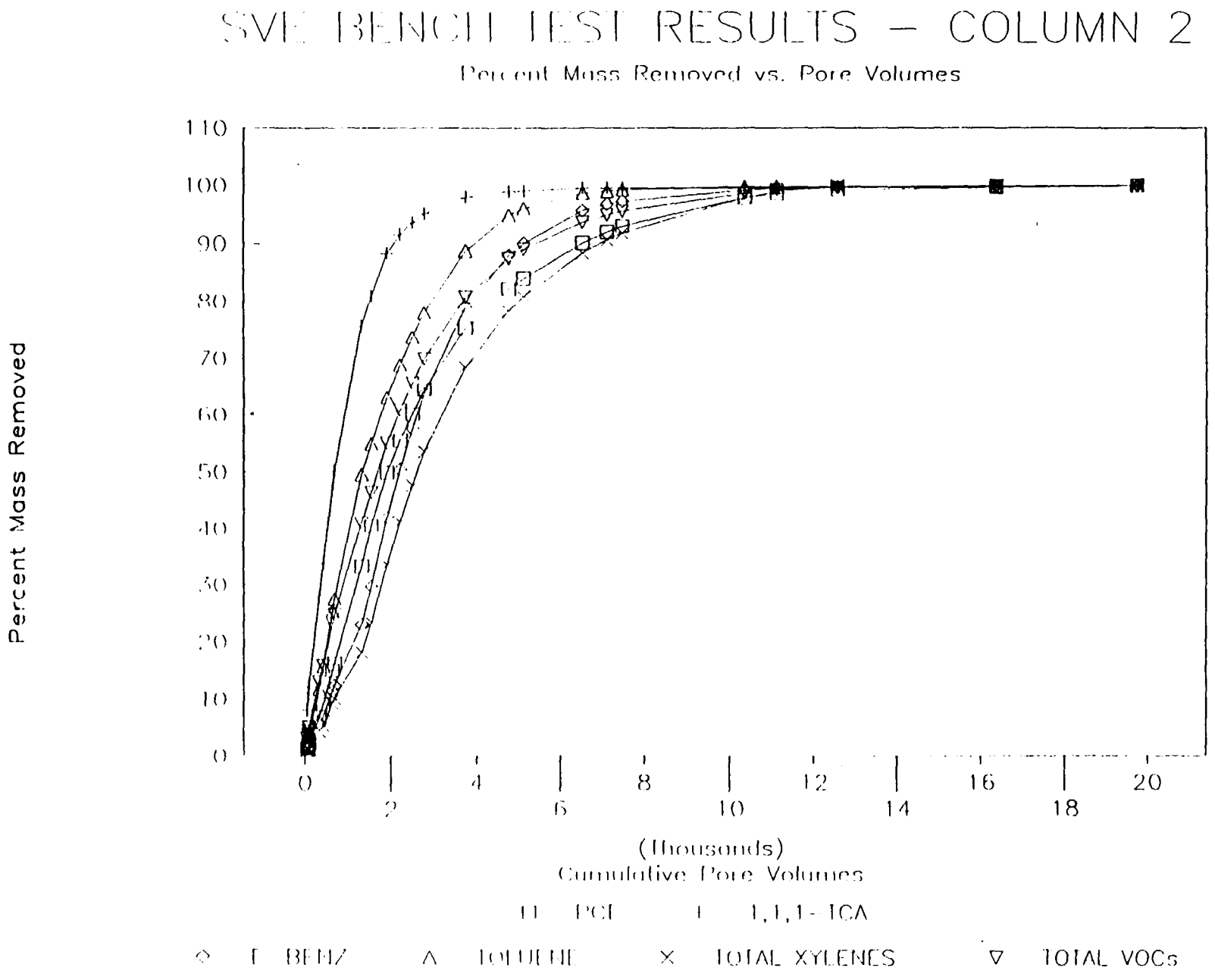
SVE BENCH TEST RESULTS – COLUMN 2
Percent Mass Removed vs. Pore Volumes
Percent Mass Removed
110
100
90
80
70
60
50
40
30
20
10
0
0
2
4
6
8
10
12
14
16
18
20
(Thousands)
Cumulative Pore Volumes
PCE
1,1,1-TCA
BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 2-3

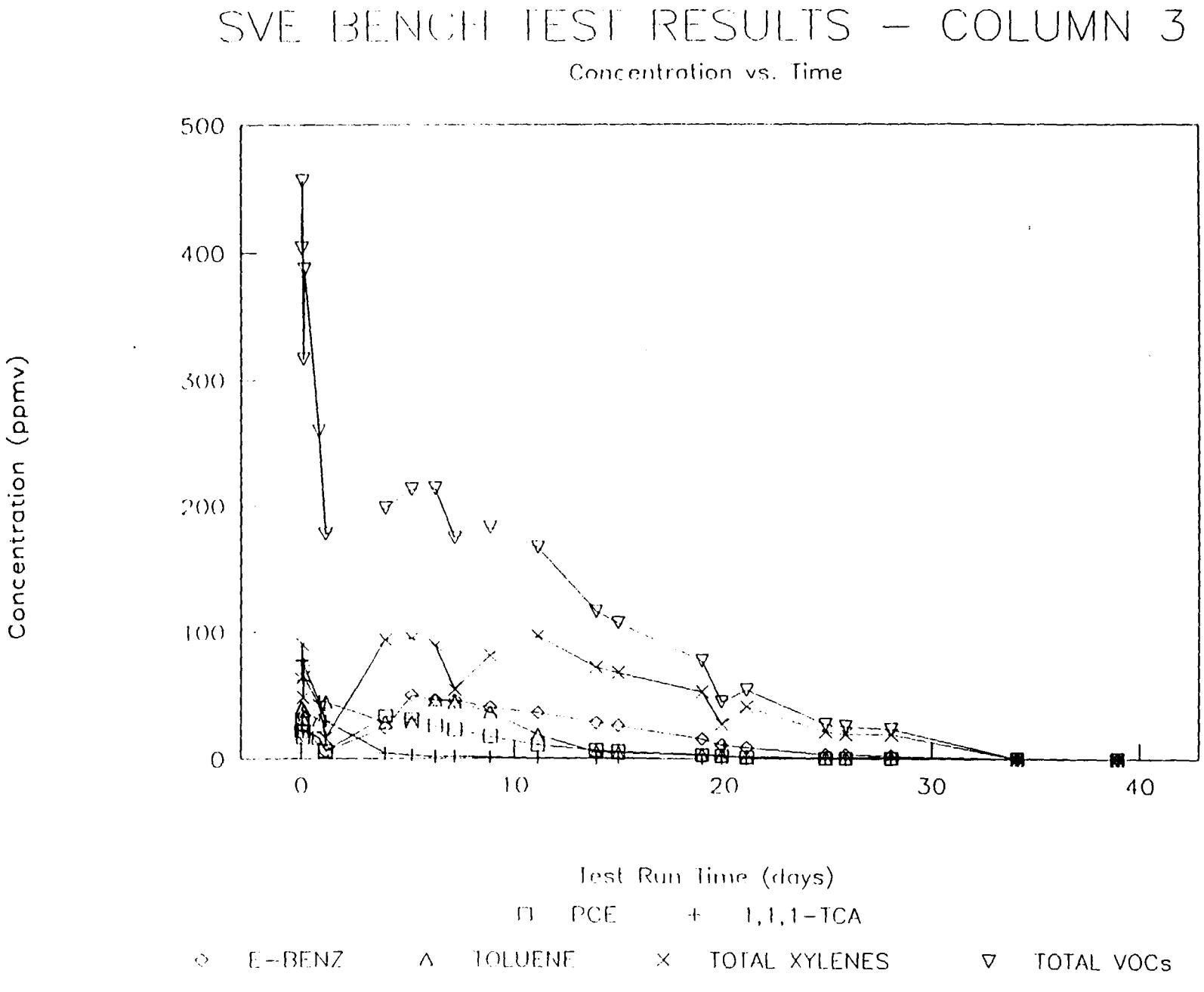
SVE BENCH TEST RESULTS – COLUMN 3
Concentration vs. Time
Concentration (ppmv)
500
400
300
200
100
0
0
10
20
30
40
Test Run Time (days)
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 3-1

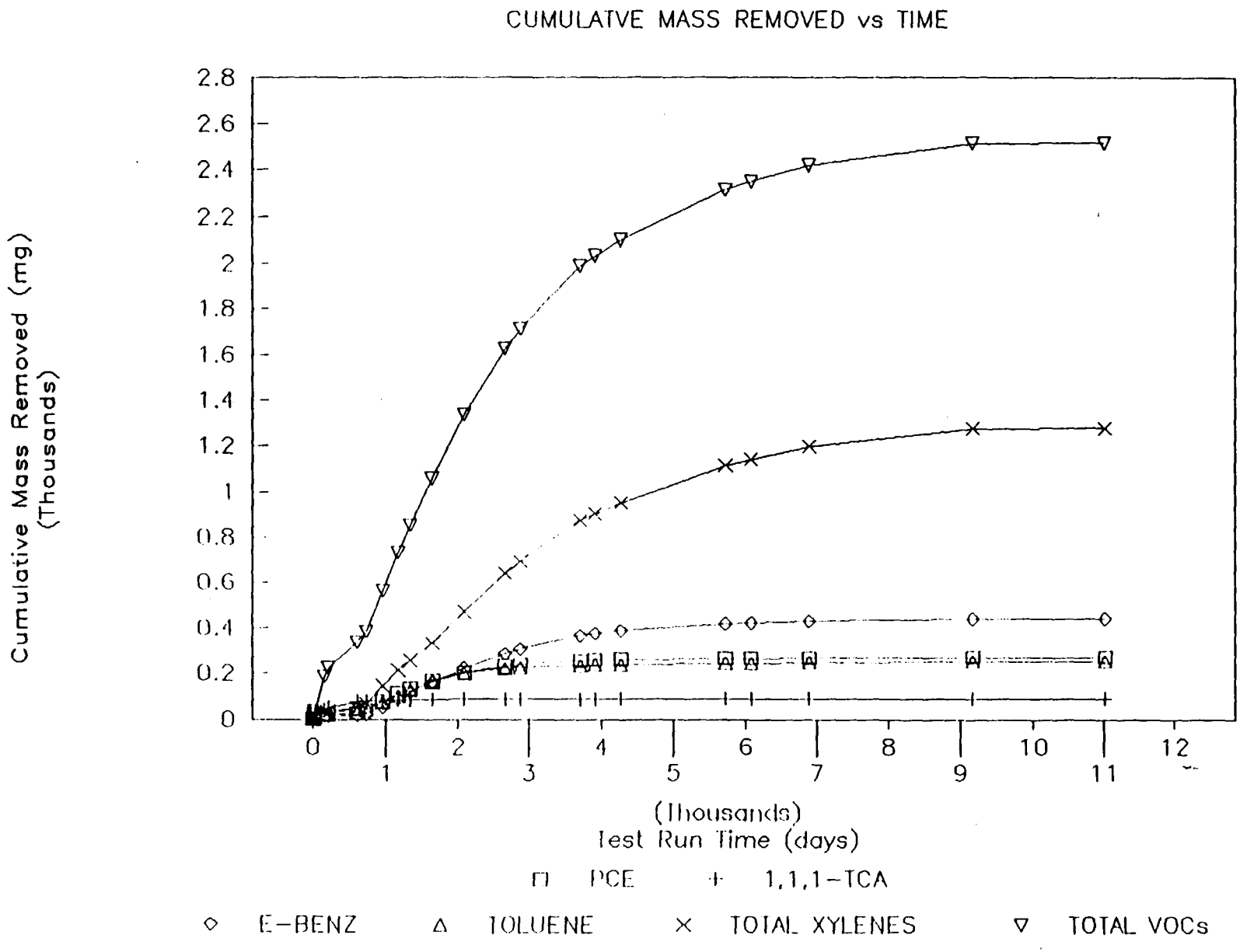
SVE BENCH TEST RESULTS – COLUMN 3
CUMULATVE MASS REMOVED vs TIME
Cumulative Mass Removed (mg)
(Thousands)
2.8
2.6
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
1
2
3
4
5
6
7
8
9
10
11
12
(Thousands)
Test Run Time (days)
PCE
1,1,1-TCA
E-BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 3-2

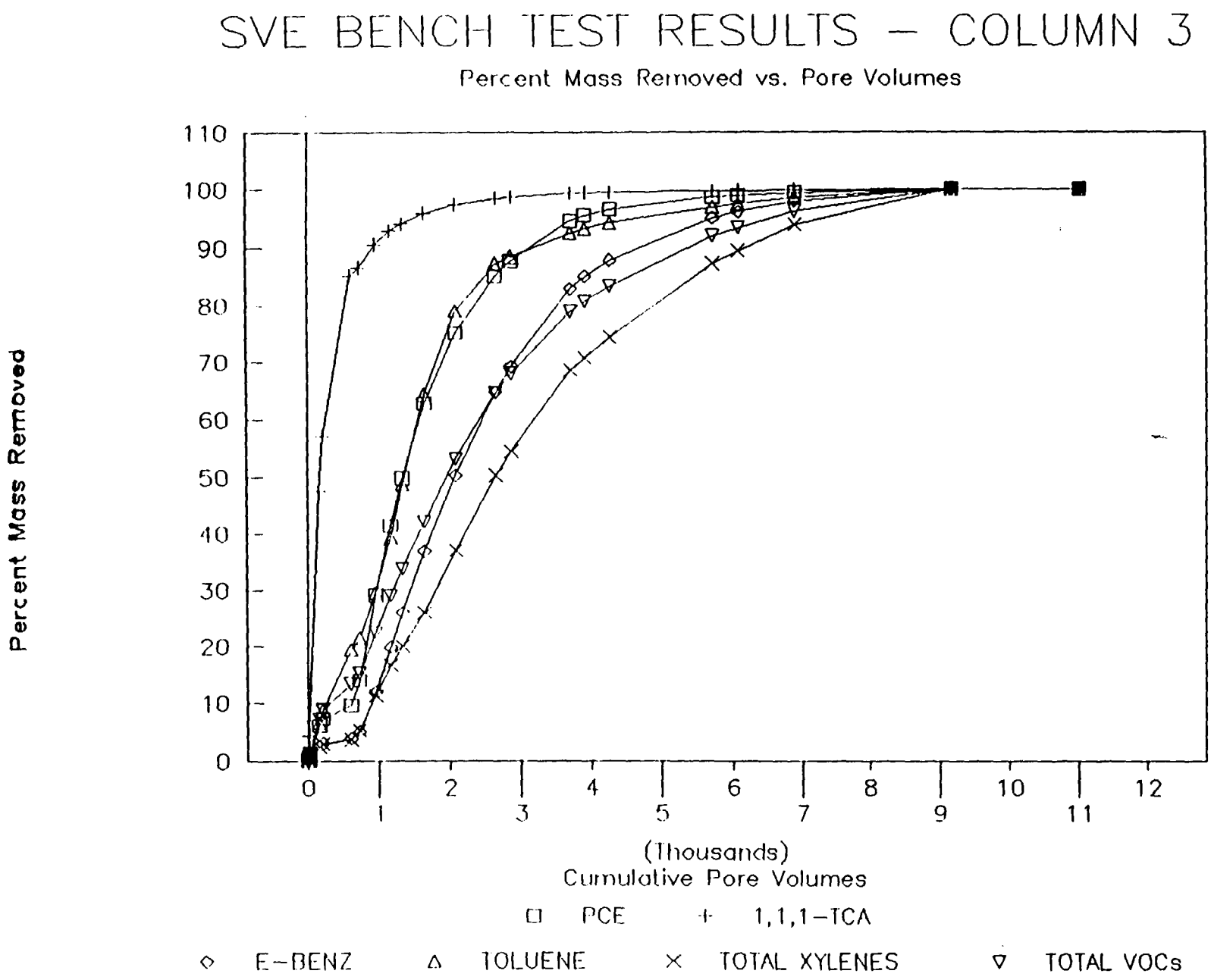
SVE BENCH TEST RESULTS – COLUMN 3
Percent Mass Removed vs. Pore Volumes
Percent Mass Removed
110
100
90
80
70
60
50
40
30
20
10
0
0
1
2
3
4
5
6
7
8
9
10
11
12
(Thousands)
Cumulative Pore Volumes
PCE
1,1,1–TCA
E–BENZ
TOLUENE
TOTAL XYLENES
TOTAL VOCs

FIGURE 3-3

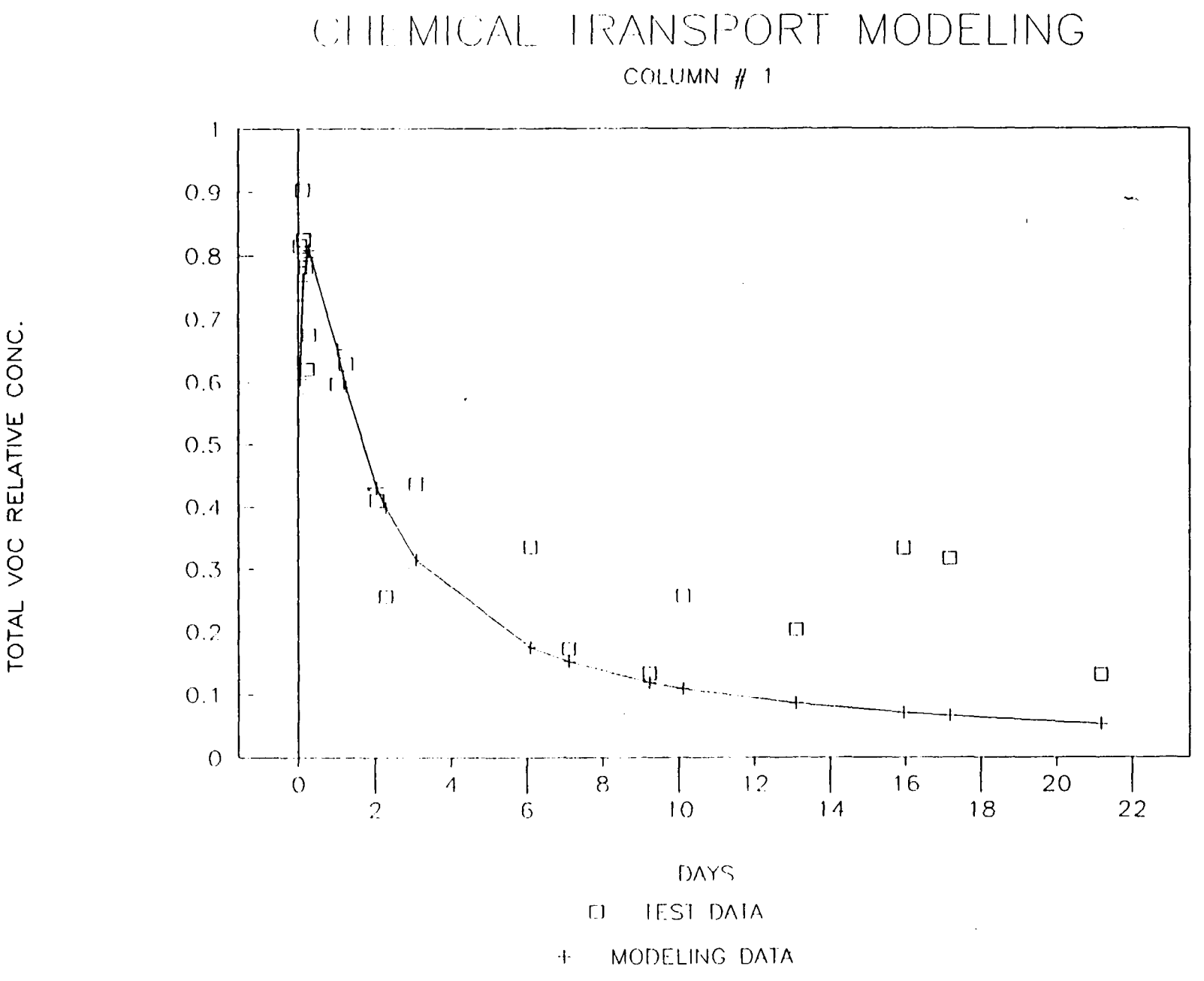
CHEMICAL TRANSPORT MODELING
COLUMN # 1
TOTAL VOC RELATIVE CONC.
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
2
4
6
8
10
12
14
16
18
20
22
DAYS
TEST DATA
MODELING DATA

FIGURE 4

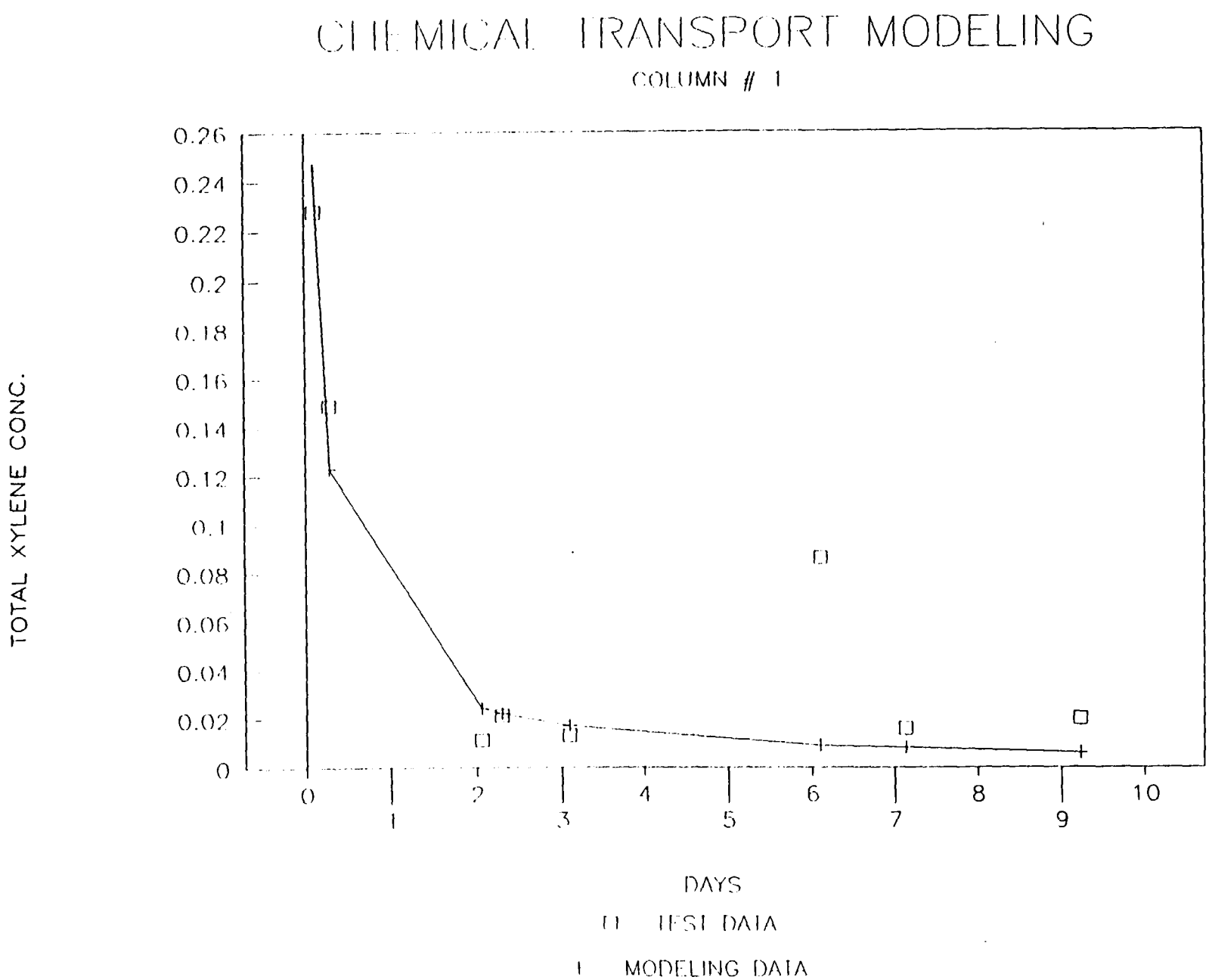
CHEMICAL TRANSPORT MODELING
COLUMN # 1
TOTAL XYLENE CONC.
0.26
0.24
0.22
0.2
0.18
0.16
0.14
0.12
0.1
0.08
0.06
0.04
0.02
0
0
1
2
3
4
5
6
7
8
9
10
DAYS
TEST DATA
MODELING DATA

FIGURE 5

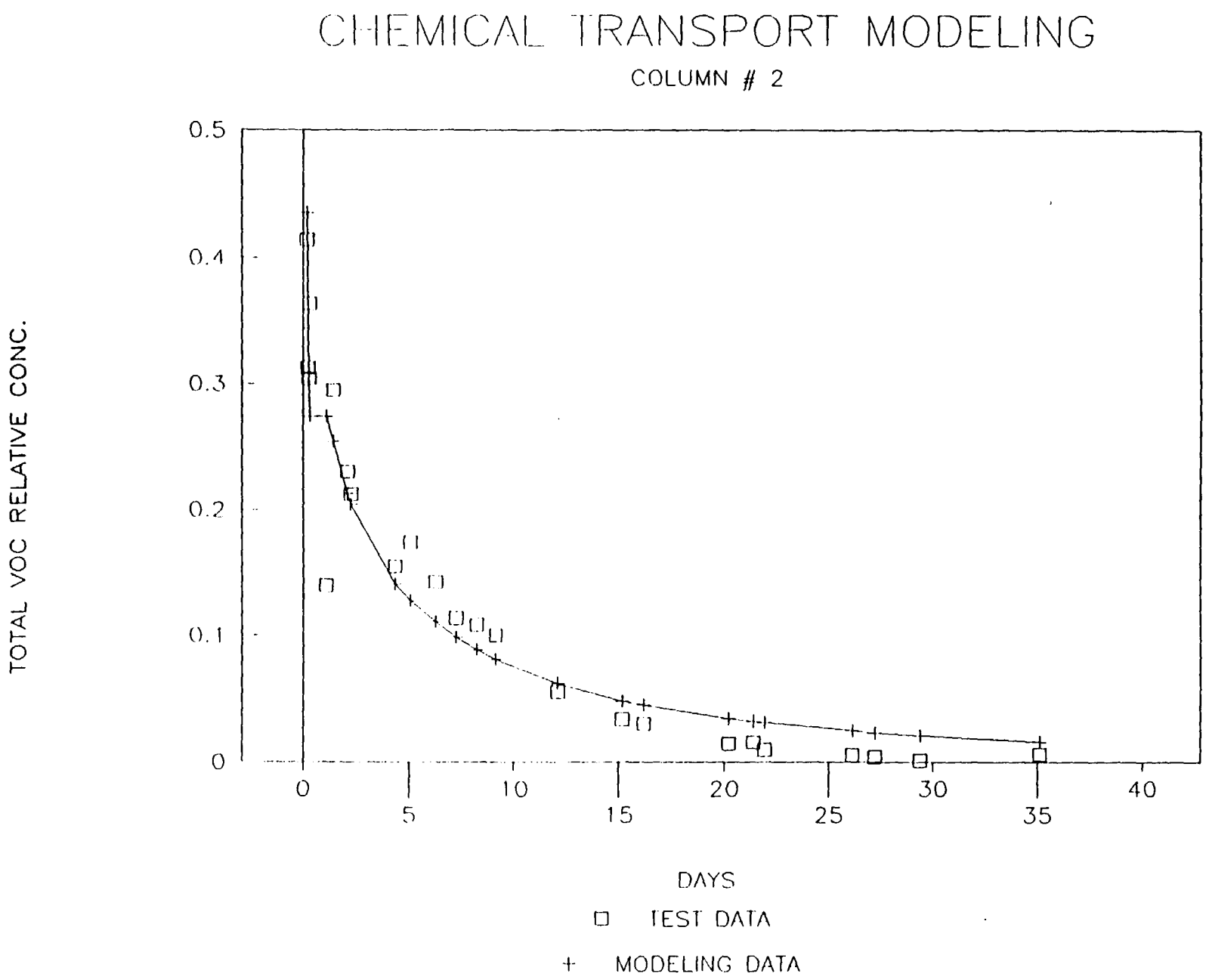
CHEMICAL TRANSPORT MODELING
COLUMN # 2
TOTAL VOC RELATIVE CONC.
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
30
35
40
DAYS
TEST DATA
MODELING DATA

FIGURE 6

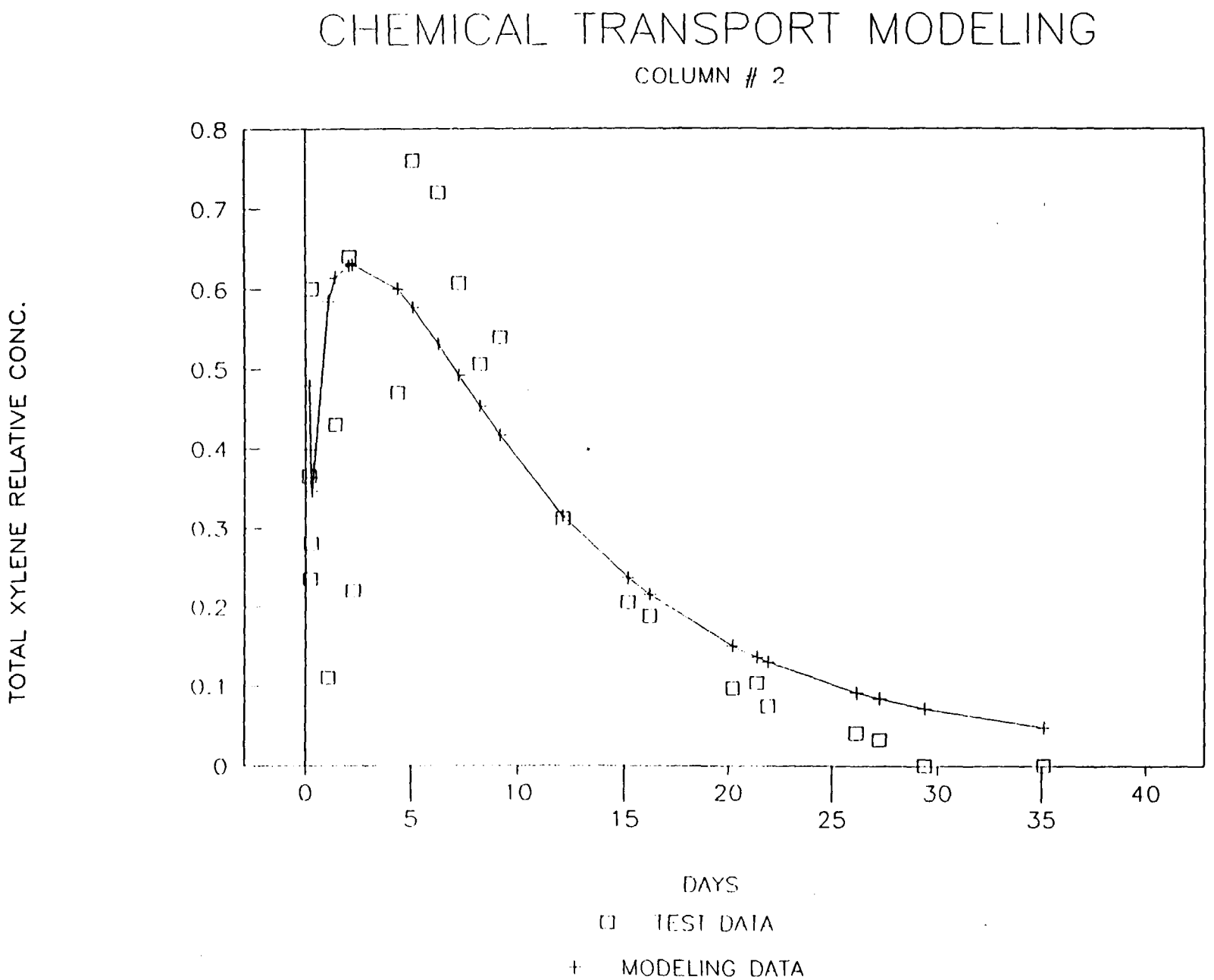
CHEMICAL TRANSPORT MODELING
COLUMN # 2
TOTAL XYLENE RELATIVE CONC.
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
30
35
40
DAYS
TEST DATA
MODELING DATA

FIGURE 7

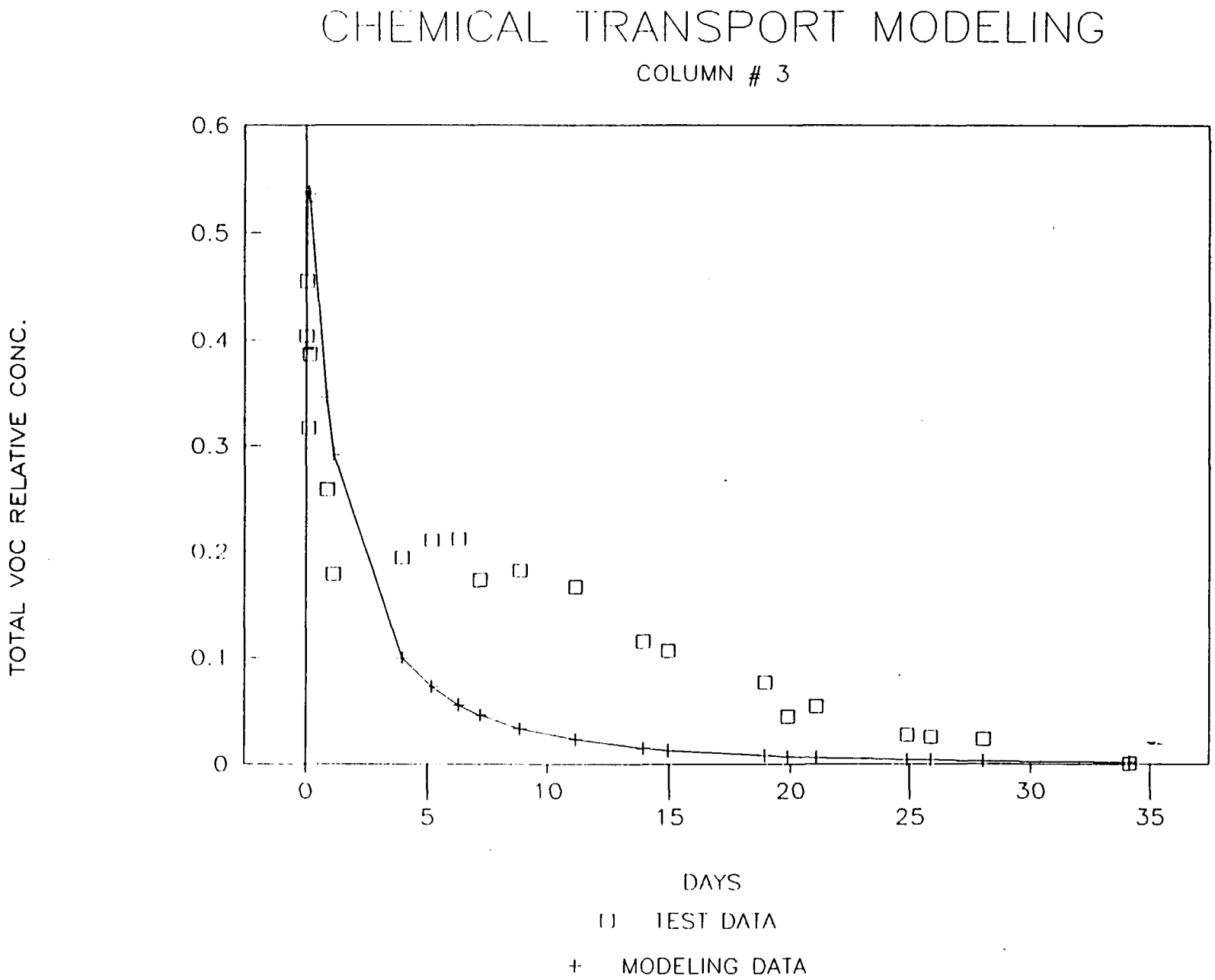
CHEMICAL TRANSPORT MODELING
COLUMN # 3
TOTAL VOC RELATIVE CONC.
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
30
35
DAYS
TEST DATA
MODELING DATA

FIGURE 8

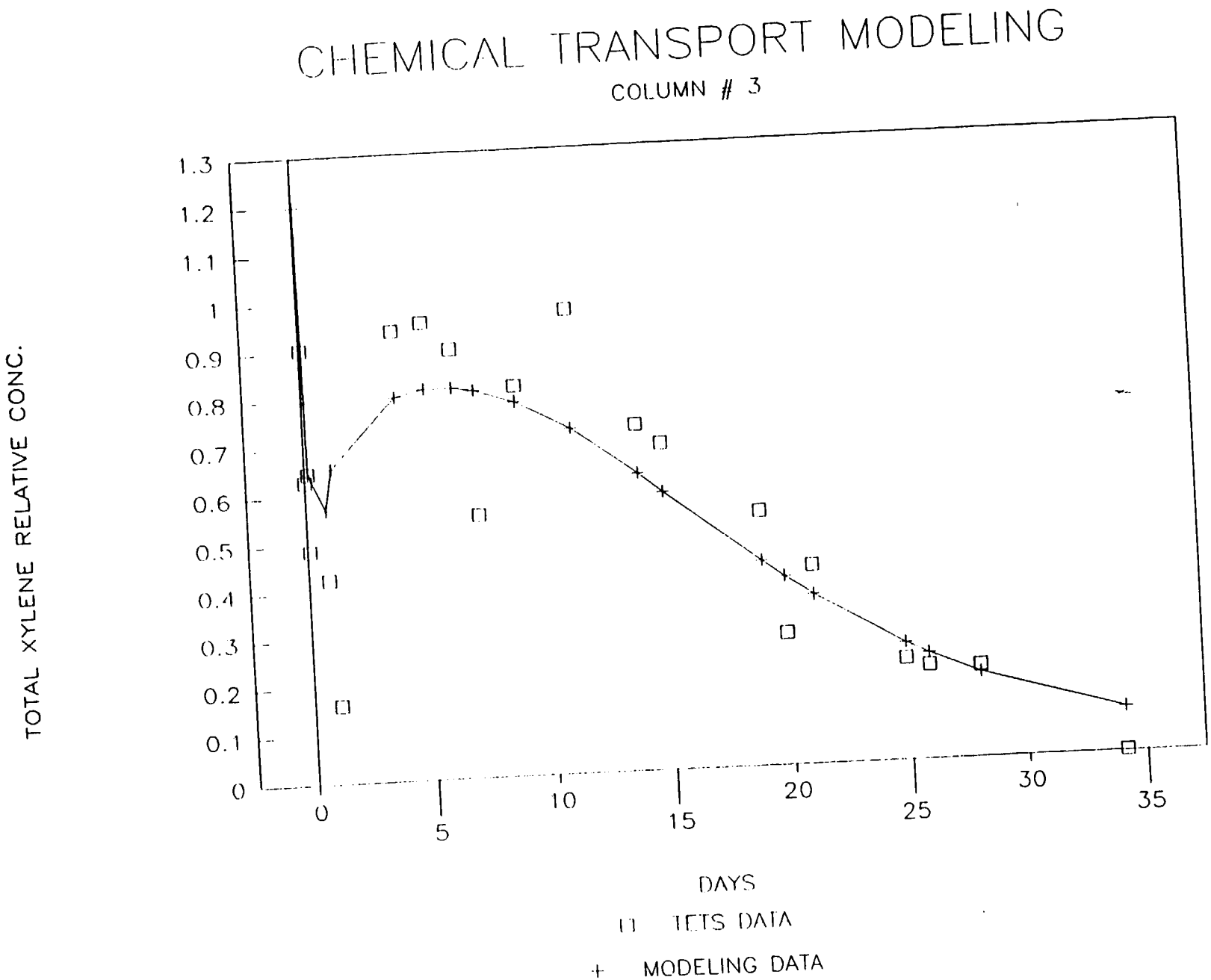
CHEMICAL TRANSPORT MODELING
COLUMN # 3
TOTAL XYLENE RELATIVE CONC.
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
0
5
10
15
20
25
30
35
DAYS
TETS DATA
MODELING DATA

FIGURE 9

APPENDIX A

PRE-TEST SOIL ANALYSES

EPA Method 8240
EPA Method 8270
Percent Moisture Analyses

ANALYTICAL REPORT

Report To:	Mr. John Polonsky Vapex Environmental Tech 480 Neponset Street Canton, MA 02021
Project:	Pre-Test Analyses

01/29/1993

NET Job Number: 93.00087

National Environmental Testing

NET Atlantic, Inc.
Cambridge Division
12 Oak Park
Bedford, MA 01730

NET Cambridge Division

ANALYTICAL REPORT

Report To:	Reported By:
Mr. John Polonsky Vapex Environmental Tech 480 Neponset Street Canton, MA 02021	National Environmental Testing NET Atlantic, Incorporated Cambridge Division 12 Oak Park Bedford, MA 01730

Report Date: 01/29/1993	Collected By: client	NET Job Number: 93.00087
Project: Pre-Test Analyses	Shipped Via: Fedex	Client P.O. No: 1328
Job Description: Pre-Test Analyses	Airbill No: 2 shipments	NET Client No: 79670

This report has been approved and certified for release by the following staff. Please feel free to call the NET Project Manager at 617-275-3535 with any questions or comments.

Edward A. Lawler
NET Project Manager

Michael F. Delaney, Ph.D.
Laboratory Director

Analytical data for the following samples are included in this data report.

SAMPLE ID	NET ID	DATE TAKEN	TIME TAKEN	DATE REC'D	MATRIX
CONTROL-1	71143	01/14/1993	13:00	01/15/1993	SOIL
NUTRIENT-1	71144	01/14/1993	13:00	01/15/1993	SOIL
KILLED-1	71145	01/14/1993	13:00	01/15/1993	SOIL
COL-2 START	71146	01/13/1993		01/15/1993	SOIL
COL-1 START	71147	01/12/1993		01/15/1993	SOIL
OFFSITE-COL-START	71148	01/14/1993		01/15/1993	SOIL

NET Cambridge Division
ANALYTICAL REPORT

R ort Date: 01/29/1993

: port To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Date Rec'd: 01/15/1993

Sample ID: COL-2 START

ET Sample No: 71146

Parameter		Result	Units	Analysis Date	Analyst
EX Acid/Base/Neutrals 8270	S	1/20/1993	date	01/20/1993	ner

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 01/29/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Date Rec'd: 01/15/1993

Sample ID: COL-2 START

NET Sample No: 71146

Parameter	Result		Units	Analysis Date	Analyst
TCL Volatiles by GC/MS 8240 S					
Acetone	27000		ug/Kg	01/20/1993	mfw
Benzene	<7700.		ug/Kg		
Bromodichloromethane	<7700.		ug/Kg		
Bromoform	<7700.		ug/Kg		
Bromomethane	<7700.		ug/Kg		
2-Butanone (MEK)	23000		ug/Kg		
Carbon Disulfide	<7700.		ug/Kg		
Carbon Tetrachloride	<7700.		ug/Kg		
Chlorobenzene	<7700.		ug/Kg		
Chloroethane	<7700.		ug/Kg		
2-Chloroethylvinyl ether	<7700.		ug/Kg		
Chloroform	<7700.		ug/Kg		
Chloromethane	<7700.		ug/Kg		
Dibromochloromethane	<7700.		ug/Kg		
1,2-Dichlorobenzene	<7700.		ug/Kg		
1,3-Dichlorobenzene	<7700.		ug/Kg		
1,4-Dichlorobenzene	<7700.		ug/Kg		
1,1-Dichloroethane	<7700.		ug/Kg		
1,2-Dichloroethane	<7700.		ug/Kg		
1,1-Dichloroethene	<7700.		ug/Kg		
trans-1,2-Dichloroethene	<7700.		ug/Kg		
1,2-Dichloropropane	<7700.		ug/Kg		
cis-1,3-Dichloropropene	<7700.		ug/Kg		
trans-1,3-Dichloropropene	<7700.		ug/Kg		
Ethylbenzene	86000		ug/Kg		
2-Hexanone	<7700.		ug/Kg		
4-Methyl-2-pentanone (MIBK	48000		ug/Kg		
Methylene Chloride	<7700.		ug/Kg		
Styrene	<7700.		ug/Kg		
1,1,2,2-Tetrachloroethane	<7700.		ug/Kg		
Tetrachloroethene	30000		ug/Kg		
Toluene	140000		ug/Kg		
1,1,1-Trichloroethane	40000		ug/Kg		
1,1,2-Trichloroethane	<7700.		ug/Kg		
Trichloroethene	14000		ug/Kg		
Trichlorofluoromethane	<7700.		ug/Kg		
Vinyl Acetate	<7700.		ug/Kg		
Vinyl Chloride	<7700.		ug/Kg		
m-Xylene	320000	*	ug/Kg		
o-Xylene	100000		ug/Kg		
p-Xylene	<7700.	*	ug/Kg		

* M and P xylenes co-elute. The reported result is either one, the other or a combination of the two isomers.

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 01/29/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Date Rec'd: 01/15/1993

Sample ID: COL-2 START

NET Sample No: 71146

Parameter	Result	Units	Analysis Date	Analyst
TCL Acid/Base/Neutrals 8270 S				
Acenaphthene	<900.	ug/Kg	01/26/1993	cdl
Acenaphthylene	<900.	ug/Kg		
Anthracene	<900.	ug/Kg		
Benzo(a)Anthracene	<900.	ug/Kg		
Benzo(a)Pyrene	<900.	ug/Kg		
Benzo(b)Fluoranthene	<900.	ug/Kg		
Benzo(g,h,i)Perylene	<900.	ug/Kg		
Benzo(k)Fluoranthene	<900.	ug/Kg		
Benzoic Acid	<900.	ug/Kg		
Benzyl Alcohol	<900.	ug/Kg		
4-Bromophenyl-phenylether	<900.	ug/Kg		
Butylbenzylphthalate	17000	ug/Kg		
4-Chloro-3-Methylphenol	<900.	ug/Kg		
4-Chloroaniline	<900.	ug/Kg		
bis(2-Chloroethoxy)Methane	<900.	ug/Kg		
bis(2-Chloroethyl)Ether	2000	ug/Kg		
bis(2-Chloroisopropyl)Ether	<900.	ug/Kg		
2-Chloronaphthalene	<900.	ug/Kg		
2-Chlorophenol	<900.	ug/Kg		
4-Chlorophenyl-phenylether	<900.	ug/Kg		
Chrysene	<900.	ug/Kg		
Di-n-Butylphthalate	15000	ug/Kg		
Di-n-Octyl Phthalate	<900.	ug/Kg		
Dibenz(a,h)Anthracene	<900.	ug/Kg		
Dibenzofuran	<900.	ug/Kg		
1,2-Dichlorobenzene	<900.	ug/Kg		
1,3-Dichlorobenzene	<900.	ug/Kg		
1,4-Dichlorobenzene	<900.	ug/Kg		
3,3'-Dichlorobenzidine	<900.	ug/Kg		
2,4-Dichlorophenol	<900.	ug/Kg		
Diethylphthalate	1000	ug/Kg		
Dimethyl Phthalate	3000	ug/Kg		
2,4-Dimethylphenol	<900.	ug/Kg		
4,6-Dinitro-2-Methylphenol	<900.	ug/Kg		
2,4-Dinitrophenol	<900.	ug/Kg		
2,4-Dinitrotoluene	<900.	ug/Kg		
2,6-Dinitrotoluene	<900.	ug/Kg		
bis(2-Ethylhexyl)Phthalate	76000	ug/Kg		
Fluoranthene	<900.	ug/Kg		
Fluorene	<900.	ug/Kg		
Hexachlorobenzene	<900.	ug/Kg		
Hexachlorobutadiene	2000	ug/Kg		
Hexachlorocyclopentadiene	<900.	ug/Kg		
Hexachloroethane	<900.	ug/Kg		
Indeno(1,2,3-cd)Pyrene	<900.	ug/Kg		
Isophorone	23000	ug/Kg		
2-Methylnaphthalene	5000	ug/Kg		

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 01/29/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Date Rec'd: 01/15/1993

Sample ID: COL-2 START

NET Sample No: 71146

Parameter	Result	Units	Analysis Date	Analyst
2-Methylphenol	<900.	ug/Kg		
4-Methylphenol	<900.	ug/Kg	01/26/1993	cdl
N-Nitroso-di-n-Propylamine	<900.	ug/Kg		
N-Nitrosodimethylamine	<900.	ug/Kg		
N-Nitrosodiphenylamine	<900.	ug/Kg		
Naphthalene	10000	ug/Kg		
2-Nitroaniline	<900.	ug/Kg		
3-Nitroaniline	<900.	ug/Kg		
4-Nitroaniline	<900.	ug/Kg		
Nitrobenzene	<900.	ug/Kg		
2-Nitrophenol	<900.	ug/Kg		
4-Nitrophenol	<900.	ug/Kg		
Pentachlorophenol	<900.	ug/Kg		
Phenanthrene	<900.	ug/Kg		
Phenol	4000	ug/Kg		
Pyrene	<900.	ug/Kg		
1,2,4-Trichlorobenzene	<900.	ug/Kg		
2,4,5-Trichlorophenol	<900.	ug/Kg		
2,4,6-Trichlorophenol	<900.	ug/Kg		

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 01/29/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Date Rec'd: 01/15/1993

Sample ID: COL-1 START

NET Sample No: 71147

Parameter	Result		Units	Analysis Date	Analyst
TCL Volatiles by GC/MS 8240 S					
Acetone	37000		ug/Kg	01/20/1993	mfw
Benzene	<8000.		ug/Kg		
Bromodichloromethane	<8000.		ug/Kg		
Bromoform	<8000.		ug/Kg		
Bromomethane	<8000.		ug/Kg		
2-Butanone (MEK)	20000		ug/Kg		
Carbon Disulfide	<8000.		ug/Kg		
Carbon Tetrachloride	<8000.		ug/Kg		
Chlorobenzene	<8000.		ug/Kg		
Chloroethane	<8000.		ug/Kg		
2-Chloroethylvinyl ether	<8000.		ug/Kg		
Chloroform	<8000.		ug/Kg		
Chloromethane	<8000.		ug/Kg		
Dibromochloromethane	<8000.		ug/Kg		
1,2-Dichlorobenzene	<8000.		ug/Kg		
1,3-Dichlorobenzene	<8000.		ug/Kg		
1,4-Dichlorobenzene	<8000.		ug/Kg		
1,1-Dichloroethane	<8000.		ug/Kg		
1,2-Dichloroethane	<8000.		ug/Kg		
1,1-Dichloroethene	<8000.		ug/Kg		
trans-1,2-Dichloroethene	<8000.		ug/Kg		
1,2-Dichloropropane	<8000.		ug/Kg		
cis-1,3-Dichloropropene	<8000.		ug/Kg		
trans-1,3-Dichloropropene	<8000.		ug/Kg		
Ethylbenzene	56000		ug/Kg		
2-Hexanone	<8000.		ug/Kg		
4-Methyl-2-pentanone (MIBK	40000		ug/Kg		
Methylene Chloride	<8000.		ug/Kg		
Styrene	<8000.		ug/Kg		
1,1,2,2-Tetrachloroethane	<8000.		ug/Kg		
Tetrachloroethene	18000		ug/Kg		
Toluene	86000		ug/Kg		
1,1,1-Trichloroethane	18000		ug/Kg		
1,1,2-Trichloroethane	<8000.		ug/Kg		
Trichloroethene	<8000.		ug/Kg		
Trichlorofluoromethane	<8000.		ug/Kg		
Vinyl Acetate	<8000.		ug/Kg		
Vinyl Chloride	<8000.		ug/Kg		
m-Xylene	200000	*	ug/Kg		
o-Xylene	62000		ug/Kg		
p-Xylene	<8000.	*	ug/Kg		

* M and P xylenes co-elute. The reported result is either one, the other or a combination of the two isomers.

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 01/29/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Date Rec'd: 01/15/1993

Sample ID: OFFSITE-COL-START

NET Sample No: 71148

Parameter	Result		Units	Analysis Date	Analyst
TCL Volatiles by GC/MS 8240 S					
Acetone	<39000.		ug/Kg	01/22/1993	dhg
Benzene	<39000.		ug/Kg		
Bromodichloromethane	<39000.		ug/Kg		
Bromoform	<39000.		ug/Kg		
Bromomethane	<39000.		ug/Kg		
2-Butanone (MEK)	<39000.		ug/Kg		
Carbon Disulfide	<39000.		ug/Kg		
Carbon Tetrachloride	<39000.		ug/Kg		
Chlorobenzene	<39000.		ug/Kg		
Chloroethane	<39000.		ug/Kg		
2-Chloroethylvinyl ether	<39000.		ug/Kg		
Chloroform	<39000.		ug/Kg		
Chloromethane	<39000.		ug/Kg		
Dibromochloromethane	<39000.		ug/Kg		
1,2-Dichlorobenzene	<39000.		ug/Kg		
1,3-Dichlorobenzene	<39000.		ug/Kg		
1,4-Dichlorobenzene	<39000.		ug/Kg		
1,1-Dichloroethane	<39000.		ug/Kg		
1,2-Dichloroethane	<39000.		ug/Kg		
1,1-Dichloroethene	<39000.		ug/Kg		
trans-1,2-Dichloroethene	<39000.		ug/Kg		
1,2-Dichloropropane	<39000.		ug/Kg		
cis-1,3-Dichloropropene	<39000.		ug/Kg		
trans-1,3-Dichloropropene	<39000.		ug/Kg		
Ethylbenzene	440000		ug/Kg		
2-Hexanone	<39000.		ug/Kg		
4-Methyl-2-pentanone (MIBK	62000		ug/Kg		
Methylene Chloride	<39000.		ug/Kg		
Styrene	<39000.		ug/Kg		
1,1,2,2-Tetrachloroethane	<39000.		ug/Kg		
Tetrachloroethene	220000		ug/Kg		
Toluene	1200000		ug/Kg		
1,1,1-Trichloroethane	57000		ug/Kg		
1,1,2-Trichloroethane	<39000.		ug/Kg		
Trichloroethene	<39000.		ug/Kg		
Trichlorofluoromethane	<39000.		ug/Kg		
Vinyl Acetate	<39000.		ug/Kg		
Vinyl Chloride	<39000.		ug/Kg		
m-Xylene	1800000	*	ug/Kg		
o-Xylene	690000		ug/Kg		
p-Xylene	<39000.	*	ug/Kg		

* M and P xylenes co-elute. The reported result is either one, the other or a combination of the two isomers.

NET Cambridge Division

QUALITY CONTROL DATA

Client: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Report Date: 01/29/1993

Surrogate Standard Percent Recovery

Abbreviated Surrogate Standard Names:

SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12
Bromofl	1,2-Dic	Toluene	2-Fluor	Phenol-	2,4,6-T	2-Fluor	Nitrobe	p-Terph			

			Percent Recovery											
Sample ID	NET ID	Matrix	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12
CONTROL-1	71143	SOIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL			
NUTRIENT-1	71144	SOIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL			
KILLED-1	71145	SOIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL			
COL-2 START	71146	SOIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL	DIL			
COL-1 START	71147	SOIL	DIL	DIL	DIL									
OFFSITE-COL-START	71148	SOIL	DIL	DIL	DIL									

Notes:
NR - This surrogate standard is Not Required. Other versions of this test method may use this surrogate standard.
Dil - This surrogate standard was diluted to below detectable levels due to concentrations of analytes in this sample.

Complete Surrogate Standard Names Listed by Analysis:

Pesticide Surrogate Standards:
Decachl = Decachlorobiphenyl
Dibutyl = Dibutylchlorendate
Tetrach = Tetrachloro-m-xylene

Volatile Surrogate Standards:
Bromofl = Bromofluorobenzene
1,2-Dichl = 1,2-Dichloroethane-d4
Toluene = Toluene-d8

Drinking Water Method 524 1,2-Dichl = 1,2-Dichlorobenzene-d4

Semivolatile Surrogate Standards:
2-Fluor (1st) = 2-Fluorobiphenyl
2-Fluor (2nd) = 2-Fluorophenol
Phenol- = Phenol-d6
Nitrobe = Nitrobenzene-d5
2,4,6-T = 2,4,6-Tribromophenol
p-Terph = p-Terphenyl

Herbicides Surrogate Standard:
2,4-Dic = 2,4-Dichlorophenyl acetic acid

Petroleum Hydrocarbon Fingerprint Surrogate Standard:
2-Fluor = 2-Fluorobiphenyl
para-Te = para-Terphynyl

NET Cambridge Division
QUALITY CONTROL DATA

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Report Date : 01/29/1993

Method Blank Analysis Data

Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Volatiles by GC/MS 8240 S					
Bromofluorobenzene	98	% recov.	306	01/21/1993	dhg
1,2-Dichloroethane-d4	97	% recov.	306	01/21/1993	dhg
Toluene-d8	102	% recov.	306	01/21/1993	dhg
Acetone	680 .	ug/Kg	306	01/21/1993	dhg
Benzene	<250.	ug/Kg	306	01/21/1993	dhg
Bromodichloromethane	<250.	ug/Kg	306	01/21/1993	dhg
Bromoform	<250.	ug/Kg	306	01/21/1993	dhg
Bromomethane	<250.	ug/Kg	306	01/21/1993	dhg
2-Butanone (MEK)	<250.	ug/Kg	306	01/21/1993	dhg
Carbon Disulfide	<250.	ug/Kg	306	01/21/1993	dhg
Carbon Tetrachloride	<250.	ug/Kg	306	01/21/1993	dhg
Chlorobenzene	<250.	ug/Kg	306	01/21/1993	dhg
Chloroethane	<250.	ug/Kg	306	01/21/1993	dhg
2-Chloroethylvinyl ether	<250.	ug/Kg	306	01/21/1993	dhg
Chloroform .	<250.	ug/Kg	306	01/21/1993	dhg
Chloromethane	<250.	ug/Kg	306	01/21/1993	dhg
Dibromochloromethane	<250.	ug/Kg	306	01/21/1993	dhg
1,2-Dichlorobenzene	<250.	ug/Kg	306	01/21/1993	dhg
1,3-Dichlorobenzene	<250.	ug/Kg	306	01/21/1993	dhg
1,4-Dichlorobenzene	<250.	ug/Kg	306	01/21/1993	dhg
1,1-Dichloroethane	<250.	ug/Kg	306	01/21/1993	dhg
1,2-Dichloroethane	<250.	ug/Kg	306	01/21/1993	dhg
1,1-Dichloroethene	<250.	ug/Kg	306	01/21/1993	dhg
trans-1,2-Dichloroethene	<250.	ug/Kg	306	01/21/1993	dhg
1,2-Dichloropropane	<250.	ug/Kg	306	01/21/1993	dhg
cis-1,3-Dichloropropene	<250.	ug/Kg	306	01/21/1993	dhg
trans-1,3-Dichloropropene	<250.	ug/Kg	306	01/21/1993	dhg
Ethylbenzene	<250.	ug/Kg	306	01/21/1993	dhg
2-Hexanone	<250.	ug/Kg	306	01/21/1993	dhg
4-Methyl-2-pentanone (MIBK	<250.	ug/Kg	306	01/21/1993	dhg
Methylene Chloride	<250.	ug/Kg	306	01/21/1993	dhg
Styrene	<250.	ug/Kg	306	01/21/1993	dhg
1,1,2,2-Tetrachloroethane	<250.	ug/Kg	306	01/21/1993	dhg
Tetrachloroethene	<250.	ug/Kg	306	01/21/1993	dhg
Toluene	<250.	ug/Kg	306	01/21/1993	dhg
1,1,1-Trichloroethane	<250.	ug/Kg	306	01/21/1993	dhg
1,1,2-Trichloroethane	<250.	ug/Kg	306	01/21/1993	dhg
Trichloroethene	<250.	ug/Kg	306	01/21/1993	dhg
Trichlorofluoromethane	<250.	ug/Kg	306	01/21/1993	dhg
Vinyl Acetate	<250.	ug/Kg	306	01/21/1993	dhg
Vinyl Chloride	<250.	ug/Kg	306	01/21/1993	dhg
m-Xylene	<250.	ug/Kg	306	01/21/1993	dhg
o-Xylene	<250.	ug/Kg	306	01/21/1993	dhg
p-Xylene	<250.	ug/Kg	306	01/21/1993	dhg

NET Cambridge Division
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NET Job No: 93.00087

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Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Volatiles by GC/MS 8240 S					
Bromofluorobenzene	101	% recov.	307	01/20/1993	mfw
1,2-Dichloroethane-d4	103	% recov.	307	01/20/1993	mfw
Toluene-d8	103	% recov.	307	01/20/1993	mfw
Acetone	<250.	ug/Kg	307	01/20/1993	mfw
Benzene	<250.	ug/Kg	307	01/20/1993	mfw
Bromodichloromethane	<250.	ug/Kg	307	01/20/1993	mfw
Bromoform	<250.	ug/Kg	307	01/20/1993	mfw
Bromomethane	<250.	ug/Kg	307	01/20/1993	mfw
2-Butanone (MEK)	<250.	ug/Kg	307	01/20/1993	mfw
Carbon Disulfide	<250.	ug/Kg	307	01/20/1993	mfw
Carbon Tetrachloride	<250.	ug/Kg	307	01/20/1993	mfw
Chlorobenzene	<250.	ug/Kg	307	01/20/1993	mfw
Chloroethane	<250.	ug/Kg	307	01/20/1993	mfw
2-Chloroethylvinyl ether	<250.	ug/Kg	307	01/20/1993	mfw
Chloroform	<250.	ug/Kg	307	01/20/1993	mfw
Chloromethane	<250.	ug/Kg	307	01/20/1993	mfw
Dibromochloromethane	<250.	ug/Kg	307	01/20/1993	mfw
1,2-Dichlorobenzene	<250.	ug/Kg	307	01/20/1993	mfw
1,3-Dichlorobenzene	<250.	ug/Kg	307	01/20/1993	mfw
1,4-Dichlorobenzene	<250.	ug/Kg	307	01/20/1993	mfw
1,1-Dichloroethane	<250.	ug/Kg	307	01/20/1993	mfw
1,2-Dichloroethane	<250.	ug/Kg	307	01/20/1993	mfw
1,1-Dichloroethene	<250.	ug/Kg	307	01/20/1993	mfw
trans-1,2-Dichloroethene	<250.	ug/Kg	307	01/20/1993	mfw
1,2-Dichloropropane	<250.	ug/Kg	307	01/20/1993	mfw
cis-1,3-Dichloropropene	<250.	ug/Kg	307	01/20/1993	mfw
trans-1,3-Dichloropropene	<250.	ug/Kg	307	01/20/1993	mfw
Ethylbenzene	<250.	ug/Kg	307	01/20/1993	mfw
2-Hexanone	<250.	ug/Kg	307	01/20/1993	mfw
4-Methyl-2-pentanone (MIBK	<250.	ug/Kg	307	01/20/1993	mfw
Methylene Chloride	<250.	ug/Kg	307	01/20/1993	mfw
Styrene	<250.	ug/Kg	307	01/20/1993	mfw
1,1,2,2-Tetrachloroethane	<250.	ug/Kg	307	01/20/1993	mfw
Tetrachloroethene	<250.	ug/Kg	307	01/20/1993	mfw
Toluene	<250.	ug/Kg	307	01/20/1993	mfw
1,1,1-Trichloroethane	<250.	ug/Kg	307	01/20/1993	mfw
1,1,2-Trichloroethane	<250.	ug/Kg	307	01/20/1993	mfw
Trichloroethene	<250.	ug/Kg	307	01/20/1993	mfw
Trichlorofluoromethane	<250.	ug/Kg	307	01/20/1993	mfw
Vinyl Acetate	<250.	ug/Kg	307	01/20/1993	mfw
Vinyl Chloride	<250.	ug/Kg	307	01/20/1993	mfw
m-Xylene	<250.	ug/Kg	307	01/20/1993	mfw
o-Xylene	<250.	ug/Kg	307	01/20/1993	mfw
p-Xylene	<250.	ug/Kg	307	01/20/1993	mfw

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Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Acid/Base/Neutrals 8270 S					
2-Fluorophenol	80	% recov.	178	01/26/1993	jcg
Phenol-d5	86	% recov.	178	01/26/1993	jcg
2,4,6-Tribromophenol	75	% recov.	178	01/26/1993	jcg
2-Fluorobiphenyl	94	% recov.	178	01/26/1993	jcg
Nitrobenzene-d15	103	% recov.	178	01/26/1993	jcg
p-Terphenyl-d14	105	% recov.	178	01/26/1993	jcg
Acenapnthene	<40	ug/Kg	178	01/26/1993	jcg
Acenapnthylene	<40	ug/Kg	178	01/26/1993	jcg
Anthracene	<40	ug/Kg	178	01/26/1993	jcg
Benzo(a)Anthracene	<40	ug/Kg	178	01/26/1993	jcg
Benzo(a)Pyrene	<40	ug/Kg	178	01/26/1993	jcg
Benzo(b)Fluoranthene	<40	ug/Kg	178	01/26/1993	jcg
Benzo(g,h,i)Perylene	<40	ug/Kg	178	01/26/1993	jcg
Benzo(k)Fluoranthene	<40	ug/Kg	178	01/26/1993	jcg
4-Bromophenyl-phenylether	<40	ug/Kg	178	01/26/1993	jcg
Butylbenzylphthalate	<40	ug/Kg	178	01/26/1993	jcg
4-Chloro-3-Methylphenol	<40	ug/Kg	178	01/26/1993	jcg
bis(2-Chloroethoxy)Methane	<40	ug/Kg	178	01/26/1993	jcg
bis(2-Chloroethyl)Ether	<40	ug/Kg	178	01/26/1993	jcg
bis(2-Chloroisopropyl)Ether	<40	ug/Kg	178	01/26/1993	jcg
2-Chloronaphthalene	<40	ug/Kg	178	01/26/1993	jcg
2-Chlorophenol	<40	ug/Kg	178	01/26/1993	jcg
4-Chlorophenyl-phenylether	<40	ug/Kg	178	01/26/1993	jcg
Chrysene	<40	ug/Kg	178	01/26/1993	jcg
Di-n-Butylphthalate	<40	ug/Kg	178	01/26/1993	jcg
Di-n-Octyl Phthalate	<40	ug/Kg	178	01/26/1993	jcg
Dibenz(a,h)Anthracene	<40	ug/Kg	178	01/26/1993	jcg
1,2-Dichlorobenzene	<40	ug/Kg	178	01/26/1993	jcg
1,3-Dichlorobenzene	<40	ug/Kg	178	01/26/1993	jcg
1,4-Dichlorobenzene	<40	ug/Kg	178	01/26/1993	jcg
3,3'-Dichlorobenzidine	<40	ug/Kg	178	01/26/1993	jcg
2,4-Dichlorophenol	<40	ug/Kg	178	01/26/1993	jcg
Diethylphthalate	<40	ug/Kg	178	01/26/1993	jcg
Dimethyl Phthalate	<40	ug/Kg	178	01/26/1993	jcg
2,4-Dimethylphenol	<40	ug/Kg	178	01/26/1993	jcg
4,6-Dinitro-2-Methylphenol	<40	ug/Kg	178	01/26/1993	jcg
2,4-Dinitrophenol	<40	ug/Kg	178	01/26/1993	jcg
2,4-Dinitrotoluene	<40	ug/Kg	178	01/26/1993	jcg
2,6-Dinitrotoluene	<40	ug/Kg	178	01/26/1993	jcg
bis(2-Ethylhexyl)Phthalate	<40	ug/Kg	178	01/26/1993	jcg
Fluoranthene	<40	ug/Kg	178	01/26/1993	jcg
Fluorene	<40	ug/Kg	178	01/26/1993	jcg
Hexachlorobenzene	<40	ug/Kg	178	01/26/1993	jcg
Hexachlorobutadiene	<40	ug/Kg	178	01/26/1993	jcg
Hexachlorocyclopentadiene	<40	ug/Kg	178	01/26/1993	jcg
Hexachloroethane	<40	ug/Kg	178	01/26/1993	jcg
Indeno(1,2,3-cd)Pyrene	<40	ug/Kg	178	01/26/1993	jcg
Isophorone	<40	ug/Kg	178	01/26/1993	jcg
N-Nitroso-di-n-Propylamine	<40	ug/Kg	178	01/26/1993	jcg
N-Nitrosodimethylamine	<40	ug/Kg	178	01/26/1993	jcg

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Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
N-Nitrosodiphenylamine	<40	ug/Kg	178	01/26/1993	jcg
Naphthalene	<40	ug/Kg	178	01/26/1993	jcg
Nitrobenzene	<40	ug/Kg	178	01/26/1993	jcg
2-Nitrophenol	<40	ug/Kg	178	01/26/1993	jcg
4-Nitrophenol	<40	ug/Kg	178	01/26/1993	jcg
Pentachlorophenol	<40	ug/Kg	178	01/26/1993	jcg
Phenanthrene	<40	ug/Kg	178	01/26/1993	jcg
Phenol	<40	ug/Kg	178	01/26/1993	jcg
Pyrene	<40	ug/Kg	178	01/26/1993	jcg
1,2,4-Trichlorobenzene	<40	ug/Kg	178	01/26/1993	jcg
2,4,6-Trichlorophenol	<40	ug/Kg	178	01/26/1993	jcg

NET Cambridge Division
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Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Report Date: 01/29/1993

Matrix Spike/Matrix Spike Duplicate Results

Compound	Spike Amount	Sample Result	Units	MS Result	MS % Recovery	MSD Result	MSD % Recovery	RPD
TCL Acid/Base/Neutrals 8270 S								
Acenaphthene	50	<200.	ug/Kg	52	104.00	50	100.00	3.90
Acenaphthylene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Anthracene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzo(a)Anthracene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzo(a)Pyrene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzo(b)Fluoranthene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzo(g,h,i)Perylene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzo(k)Fluoranthene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzoic Acid	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzyl Alcohol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Bromophenyl-phenylether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Butylbenzylphthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Chloro-3-Methylphenol	75	<200.	ug/Kg	72	96.00	74	98.70	2.80
4-Chloroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Chloroethoxy)Methane	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Chloroethyl)Ether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Chloroisopropyl)Ether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Chloronaphthalene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Chlorophenol	75	<200.	ug/Kg	73	97.30	74	98.70	1.40
4-Chlorophenyl-phenylether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Chrysene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Di-n-Butylphthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Di-n-Octyl Phthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Dibenz(a,h)Anthracene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Dibenzofuran	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
1,2-Dichlorobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
1,3-Dichlorobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
1,4-Dichlorobenzene	50	<200.	ug/Kg	45	90.00	48	96.00	6.50
3,3'-Dichlorobenzidine	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dichlorophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Diethylphthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Dimethyl Phthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dimethylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4,6-Dinitro-2-Methylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dinitrophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dinitrotoluene	50	<200.	ug/Kg	30	60.00	30	60.00	0.00
2,6-Dinitrotoluene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Ethylhexyl)Phthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Fluoranthene	0.0	200	ug/Kg	0.00	0	0.00	0	0
Fluorene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachlorobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachlorobutadiene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0

NOTE: Data reported for spiked samples were analyzed in the same batch, but may not necessarily be that of your sample.

NET Cambridge Division
QUALITY CONTROL DATA

Report To: Vapex Environmental Tech

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Project: Pre-Test Analyses

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Matrix Spike/Matrix Spike Duplicate Results

Compound	Spike Amount	Sample Result	Units	MS Result	MS % Recovery	MSD Result	MSD % Recovery	RPD
Hexachlorocyclopentadiene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachloroethane	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Indeno(1,2,3-cd)Pyrene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Isophorone	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Methylnaphthalene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Methylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Methylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
N-Nitroso-di-n-Propylamine	50	<200.	ug/Kg	45	90.00	48	96.00	6.50
N-Nitrosodimethylamine	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
N-Nitrosodiphenylamine	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Naphthalene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Nitroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
3-Nitroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Nitroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Nitrobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Nitrophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Nitrophenol	75	<200.	ug/Kg	38	50.70	40	53.30	5.00
Pentachlorophenol	75	<200.	ug/Kg	36	48.00	28	37.30	25.10
Phenanthrene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Phenol	75	<200.	ug/Kg	70	93.30	70	93.30	0.00
Pyrene	50	<200.	ug/Kg	59	118.00	52	104.00	12.60
1,2,4-Trichlorobenzene	50	<200.	ug/Kg	48	96.00	47	94.00	2.10
2,4,5-Trichlorophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4,6-Trichlorophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
TCL Acid/Base/Neutrals 8270 S								
Acenaphthene	2000	<200.	ug/Kg	2000	100.00	2220	111.00	10.40
Acenaphthylene	0.0	200	ug/Kg	0.00	0	0.00	0	0
Anthracene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzo(a)Anthracene	0.0	600	ug/Kg	0.00	0	0.00	0	0
Benzo(a)Pyrene	0.0	700	ug/Kg	0.00	0	0.00	0	0
Benzo(b)Fluoranthene	0.0	800	ug/Kg	0.00	0	0.00	0	0
Benzo(g,h,i)Perylene	0.0	400	ug/Kg	0.00	0	0.00	0	0
Benzo(k)Fluoranthene	0.0	700	ug/Kg	0.00	0	0.00	0	0
Benzoic Acid	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Benzyl Alcohol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Bromophenyl-phenylether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Butylbenzylphthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Chloro-3-Methylphenol	3000	<200.	ug/Kg	2660	88.70	3000	100.00	11.90
4-Chloroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Chloroethoxy)Methane	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Chloroethyl)Ether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Chloroisopropyl)Ether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Chloronaphthalene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0

NOTE: Data reported for spiked samples were analyzed in the same batch, but may not necessarily be that of your sample.

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QUALITY CONTROL DATA

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NET Job No: 93.00087

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Matrix Spike/Matrix Spike Duplicate Results

Compound	Spike Amount	Sample Result	Units	MS Result	MS % Recovery	MSD Result	MSD % Recovery	RPD
2-Chlorophenol	3000	<200.	ug/Kg	2780	92.70	3040	101.30	8.80
4-Chlorophenyl-phenylether	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Chrysene	0.0	900	ug/Kg	0.00	0	0.00	0	0
Di-n-Butylphthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Di-n-Octyl Phthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Dibenz(a,h)Anthracene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Dibenzofuran	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
1,2-Dichlorobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
1,3-Dichlorobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
1,4-Dichlorobenzene	2000	<200.	ug/Kg	1800	90.00	1780	89.00	1.10
3,3'-Dichlorobenzidine	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dichlorophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Diethylphthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Dimethyl Phthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dimethylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4,6-Dinitro-2-Methylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dinitrophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4-Dinitrotoluene	2000	<200.	ug/Kg	1140	57.00	1620	81.00	34.80
2,6-Dinitrotoluene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
bis(2-Ethylhexyl)Phthalate	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Fluoranthene	0.0	2000	ug/Kg	0.00	0	0.00	0	0
Fluorene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachlorobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachlorobutadiene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachlorocyclopentadiene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Hexachloroethane	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Indeno(1,2,3-cd)Pyrene	0.0	400	ug/Kg	0.00	0	0.00	0	0
Isophorone	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Methylnaphthalene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Methylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Methylphenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
N-Nitroso-di-n-Propylamine	2000	<200.	ug/Kg	1760	88.00	1760	88.00	0.00
N-Nitrosodimethylamine	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
N-Nitrosodiphenylamine	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Naphthalene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Nitroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
3-Nitroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Nitroaniline	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
Nitrobenzene	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2-Nitrophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
4-Nitrophenol	3000	<200.	ug/Kg	560	18.70	2320	77.30	122.10
Pentachlorophenol	3000	<200.	ug/Kg	760	25.30	2020	67.30	90.70
Phenanthrene	0.0	900	ug/Kg	0.00	0	0.00	0	0

NOTE: Data reported for spiked samples were analyzed in the same batch, but may not necessarily be that of your sample.

NET Cambridge Division
QUALITY CONTROL DATA

Report To: Vapex Environmental Tech

NET Job No: 93.00087

Project: Pre-Test Analyses

Report Date: 01/29/1993

Matrix Spike/Matrix Spike Duplicate Results

Compound	Spike Amount	Sample Result	Units	MS Result	MS % Recovery	MSD Result	MSD % Recovery	RPD
Phenol	3000	<200.	ug/Kg	2720	90.70	2780	92.70	2.20
Pyrene	2000	2000	ug/Kg	3080	54.00	3280	64.00	16.90
1,2,4-Trichlorobenzene	2000	<200.	ug/Kg	1940	97.00	2080	104.00	6.90
2,4,5-Trichlorophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0
2,4,6-Trichlorophenol	0.0	<200.	ug/Kg	0.00	0	0.00	0	0

NOTE: Data reported for spiked samples were analyzed in the same batch, but may not necessarily be that of your sample.

Medium level

NET CAMBRIDGE

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

JOB NO. 93-00278 SAMPLE NO. 71098

KE71

FILE

COMPOUNDS	SPIKE ADDED (UG/Kg)	SAMPLE CONCENTRATION (UG/Kg)	MS CONCENTRATION (UG/Kg)	MS % REC.	QC LIMITS REC
1,1-DICHLOROETHENE..	50	0.0	49.6	99.2	59-172
TRICHLOROETHENE.....	50	0.0	50.1	100.2	62-137
BENZENE.....	50	0.0	52.4	104.8	66-142
TOLUENE.....	50	0.0	50.2	100.4	59-139
CHLOROBENZENE.....	50	0.0	49.8	99.6	60-133

FILE

COMPOUNDS	SPIKE ADDED (UG/Kg)	MSD CONCENTRATION (UG/Kg)	MSD % REC.	% RPD.	QC LIMITS % RPD	% REC
1,1-DICHLOROETHENE..	50	49.6	99.2	0	22	59-172
TRICHLOROETHENE.....	50	51.2	102.4	2	24	62-137
BENZENE.....	50	54.6	109.2	4	21	66-142
TOLUENE.....	50	52.2	104.4	4	21	59-139
CHLOROBENZENE.....	50	51.9	103.8	4	21	60-133

(%RPD FOR COMM. = 35%)

VALUES OUTSIDE OF QC LIMITS

RPD: 0 OUT OF ___ 5 ___ OUTSIDE LIMITS

SPIKE RECOVERY: 0 OUT OF ___ 10 ___ OUTSIDE OF LIMITS

COMMENTS: _____

3/90

VAPEX

CHAIN OF CUSTODY RECORD

NET NATIONAL ENVIRONMENTAL TESTING, INC.

Cambridge Division, 12 Oak Park, Bedford, MA 01730

PROJECT NAME
COMPANY VAPEV Environ. Tech Inc
ADDRESS 480 Neponset St. Canton, MA 02021
PHONE (617) 821 5560

SAMPLED BY S. Liu

(Print Name) Signature

(Print Name) Signature

SAMPLE NO	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER GP	CHAIN	COMP	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics 8240	Extractable Organics 8270	Pesticides PCBs	Metals	Cyanide	Phenols				COMMENTS
20001001	1/12		Col 1. Start	50				Soil	ICE	X									
20001001	1/13		Col 2 Start	50				"	↓	X									
Off site	1/14		Off site Col Start.	50				"	↓	X									
20001001	1/13		Col 2 Start	500				"	↓			X							

Relinquished by	Date / Time	Received by	Relinquished by	Date / Time	Received by
Liu Shi	1/14 17:20				
Relinquished by	Date / Time	Received by	Relinquished by	Date / Time	Received for Laboratory by
				1/15/93 10:30	

Method of Shipment

Remarks:

PT 1 – ORIGINAL PT 2 NET Project Manager – Yellow PT 3 – Customer Copy – Pink

AIR Bill 44-4712945-70

NATIONAL ENVIRONMENTAL TESTING, INC., CAMBRIDGE DIVISION

(formerly Cambridge Analytical Associates)
12 OAK PARK
BEDFORD, MA 01730

Fax (Reception) (617)275-7411 Main Number (617)275-3535
Fax (Proj. Management)(617)275-1151 Auto Attendant (617)275-2111

Soil Solids Analysis Before Testing

FAX TRANSMITTAL SHEET

COMPANY NAME: VAPEX
ATTENTION: John Polonsky
PHONE:
FAX: 821-4967
TOTAL PAGES (INCLUDING COVER SHEET): This One
SENT BY: Ed Lawler
DATE: 2/11/93 TIME:

COMMENTS: % Solids Information

ID	NET ID	% SOLIDS
Control -1	71143	82
Nutrient-1	71144	8.1
Killed -1	71145	82
#2 Col -2-Start	71146	81
#1 Col - 1- START	71147	78
#3 OFFSITE -COL-START	71148	81

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VAPEX

CHAIN OF CUSTODY RECORD

PROJECT NAME WAR-Column
COMPANY Envirogen
ADDRESS 4100 Quakerbridge Lawrenceville NJ 08648
PHONE (609) 936-9300

SAMPLED BY GEORGE LATHAM (Print Name) Signature
(Print Name) Signature

NET NATIONAL ENVIRONMENTAL TESTING, INC.
Cambridge Division, 12 Oak Park, Bedford, MA 01730

SAMPLE NO	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	GRAB	COMP	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics	Extractable Organics	Pesticides PCBs	Metals	Cyanide	Phenols	COMMENTS
1	1/15/92	13:00	Control-1	125			1	So.	vapor	X					SW846-8240
2			Nutrient-1	125			1			X					
3			Killed-1	125			1			X					
1			Control-1	500			1				X				SW846-8270
2			Nutrient-1	500			1				X				
3			Killed-1	500			1				X				

Relinquished by	Date / Time	Received by	Relinquished by	Date / Time	Received by
	1/15/92 13:00 hrs			1/15 10:30	
Relinquished by	Date / Time	Received by	Relinquished by	Date / Time	Received for Laboratory by

Method of Shipment FEDEX

Remarks: VAPEX PO # 1328

PT 1 — ORIGINAL PT 2 NET Project Manager—Yellow PT 3 — Customer Copy—Pink

APPENDIX B

POST-TEST SOIL ANALYSES

EPA Method 8240
EPA Method 8270
Percent Moisture Analyses

ANALYTICAL REPORT

Report To:	Mr. John Polonsky Vapex Environmental Tech 480 Neponset Street Canton, MA 02021
Project:	ERI End of Test

03/08/1993

NET Job Number: 93.00490

National Environmental Testing

NET Atlantic, Inc.
Cambridge Division
12 Oak Park
Bedford, MA 01730

NET Cambridge Division

ANALYTICAL REPORT

Report To:	Reported By:
Mr. John Polonsky Vapex Environmental Tech 480 Neponset Street Canton, MA 02021	National Environmental Testing NET Atlantic, Incorporated Cambridge Division 12 Oak Park Bedford, MA 01730

Report Date: 03/08/1993	Collected By: ERI/L.Shili	NET Job Number: 93.00490
Project: ERI End of Test	Shipped Via: Fedex	Client P.O. No: 1328
Job Description: ERI Samples	Airbill No: 4447124485	NET Client No: 79670

This report has been approved and certified for release by the following staff. Please feel free to call the NET Project Manager at 617-275-3535 with any questions or comments.

Edward A. Lawler
NET Project Manager

Michael F. Delaney, Ph.D.
Laboratory Director

Analytical data for the following samples are included in this data report.

SAMPLE ID	NET ID	DATE TAKEN	TIME TAKEN	DATE REC'D	MATRIX
Column I, end of SVE	72328	02/23/1993		02/24/1993	SOIL
Column II, end of SVE	72329	02/23/1993		02/24/1993	SOIL
Column III, end of SVE	72330	02/23/1993		02/24/1993	SOIL

NET Cambridge Division
ANALYTICAL REPORT

R ort Date: 03/08/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00490

F ject: ERI End of Test

Date Rec'd: 02/24/1993

S mple ID: Column II, end of SVE

NET Sample No: 72329

Parameter		Result	Units	Analysis Date	Analyst
EX Acid/Base/Neutrals 8270	S	03/01/1993	date	03/01/1993	ljs

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 03/08/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Date Rec'd: 02/24/1993

Sample ID: Column I, end of SVE

NET Sample No: 72328

Parameter	Result		Units	Analysis Date	Analyst
TCL Volatiles by GC/MS 8240 S					
Acetone	<28		ug/Kg	02/26/1993	rmr
Benzene	<28		ug/Kg		
Bromodichloromethane	<28		ug/Kg		
Bromoform	<28		ug/Kg		
Bromomethane	<28		ug/Kg		
2-Butanone (MEK)	<28		ug/Kg		
Carbon Disulfide	<28		ug/Kg		
Carbon Tetrachloride	<28		ug/Kg		
Chlorobenzene	<28		ug/Kg		
Chloroethane	<28		ug/Kg		
2-Chloroethylvinyl ether	<28		ug/Kg		
Chloroform	<28		ug/Kg		
Chloromethane	<28		ug/Kg		
Dibromochloromethane	<28		ug/Kg		
1,2-Dichlorobenzene	<28		ug/Kg		
1,3-Dichlorobenzene	<28		ug/Kg		
1,4-Dichlorobenzene	<28		ug/Kg		
1,1-Dichloroethane	<28		ug/Kg		
1,2-Dichloroethane	<28		ug/Kg		
1,1-Dichloroethene	<28		ug/Kg		
trans-1,2-Dichloroethene	<28		ug/Kg		
1,2-Dichloropropane	<28		ug/Kg		
cis-1,3-Dichloropropene	<28		ug/Kg		
trans-1,3-Dichloropropene	<28		ug/Kg		
Ethylbenzene	44		ug/Kg		
2-Hexanone	<28		ug/Kg		
4-Methyl-2-pentanone (MIBK	<28		ug/Kg		
Methylene Chloride	<28		ug/Kg		
Styrene	<28		ug/Kg		
1,1,2,2-Tetrachloroethane	<28		ug/Kg		
Tetrachloroethene	<28		ug/Kg		
Toluene	<28		ug/Kg		
1,1,1-Trichloroethane	<28		ug/Kg		
1,1,2-Trichloroethane	<28		ug/Kg		
Trichloroethene	<28		ug/Kg		
Trichlorofluoromethane	<28		ug/Kg		
Vinyl Acetate	<28		ug/Kg		
Vinyl Chloride	<28		ug/Kg		
m-Xylene	130	*	ug/Kg		
o-Xylene	300		ug/Kg		
p-Xylene	<28	*	ug/Kg		

* These two compounds coelute on some gas chromatography columns. The reported concentration may be one, the other, or a combination of both isomers.

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 03/08/1993

eport To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Date Rec'd: 02/24/1993

Sample ID: Column II, end of SVE

IET Sample No: 72329

Parameter	Result	Units	Analysis Date	Analyst
TCL Volatiles by GC/MS 8240 S				
Acetone	<6.0	ug/Kg	03/01/1993	bel
Benzene	<6.0	ug/Kg		
Bromodichloromethane	<6.0	ug/Kg		
Bromoform	<6.0	ug/Kg		
Bromomethane	<6.0	ug/Kg		
2-Butanone (MEK)	<6.0	ug/Kg		
Carbon Disulfide	<6.0	ug/Kg		
Carbon Tetrachloride	<6.0	ug/Kg		
Chlorobenzene	<6.0	ug/Kg		
Chloroethane	<6.0	ug/Kg		
2-Chloroethylvinyl ether	<6.0	ug/Kg		
Chloroform	<6.0	ug/Kg		
Chloromethane	<6.0	ug/Kg		
Dibromochloromethane	<6.0	ug/Kg		
1,2-Dichlorobenzene	<6.0	ug/Kg		
1,3-Dichlorobenzene	<6.0	ug/Kg		
1,4-Dichlorobenzene	<6.0	ug/Kg		
1,1-Dichloroethane	<6.0	ug/Kg		
1,2-Dichloroethane	<6.0	ug/Kg		
1,1-Dichloroethene	<6.0	ug/Kg		
trans-1,2-Dichloroethene	<6.0	ug/Kg		
1,2-Dichloropropane	<6.0	ug/Kg		
cis-1,3-Dichloropropene	<6.0	ug/Kg		
trans-1,3-Dichloropropene	<6.0	ug/Kg		
Ethylbenzene	<6.0	ug/Kg		
2-Hexanone	<6.0	ug/Kg		
4-Methyl-2-pentanone (MIBK	<6.0	ug/Kg		
Methylene Chloride	<6.0	ug/Kg		
Styrene	<6.0	ug/Kg		
1,1,2,2-Tetrachloroethane	<6.0	ug/Kg		
Tetrachloroethene	<6.0	ug/Kg		
Toluene	<6.0	ug/Kg		
1,1,1-Trichloroethane	<6.0	ug/Kg		
1,1,2-Trichloroethane	<6.0	ug/Kg		
Trichloroethene	<6.0	ug/Kg		
Trichlorofluoromethane	<6.0	ug/Kg		
Vinyl Acetate	<6.0	ug/Kg		
Vinyl Chloride	<6.0	ug/Kg		
m-Xylene	<6.0	ug/Kg		
o-Xylene	<6.0	ug/Kg		
p-Xylene	<6.0	ug/Kg		

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 03/08/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Date Rec'd: 02/24/1993

Sample ID: Column II, end of SVE

NET Sample No: 72329

Parameter	Result	Units	Analysis Date	Analyst
TCL Acid/Base/Neutrals 8270 S				
Acenaphthene	<400	ug/Kg	03/03/1993	cdl
Acenaphthylene	<400	ug/Kg		
Anthracene	<400	ug/Kg		
Benzo(a)Anthracene	<400	ug/Kg		
Benzo(a)Pyrene	<400	ug/Kg		
Benzo(b)Fluoranthene	<400	ug/Kg		
Benzo(g,h,i)Perylene	<400	ug/Kg		
Benzo(k)Fluoranthene	<400	ug/Kg		
Benzoic Acid	<400	ug/Kg		
Benzyl Alcohol	<400	ug/Kg		
4-Bromophenyl-phenylether	<400	ug/Kg		
Butylbenzylphthalate	9900	ug/Kg		
4-Chloro-3-Methylphenol	<400	ug/Kg		
4-Chloroaniline	<400	ug/Kg		
bis(2-Chloroethoxy)Methane	<400	ug/Kg		
bis(2-Chloroethyl)Ether	<400	ug/Kg		
bis(2-Chloroisopropyl)Ether	<400	ug/Kg		
2-Chloronaphthalene	<400	ug/Kg		
2-Chlorophenol	<400	ug/Kg		
4-Chlorophenyl-phenylether	<400	ug/Kg		
Chrysene	<400	ug/Kg		
Di-n-Butylphthalate	8800	ug/Kg		
Di-n-Octyl Phthalate	400	ug/Kg		
Dibenz(a,h)Anthracene	<400	ug/Kg		
Dibenzofuran	<400	ug/Kg		
1,2-Dichlorobenzene	<400	ug/Kg		
1,3-Dichlorobenzene	<400	ug/Kg		
1,4-Dichlorobenzene	<400	ug/Kg		
3,3'-Dichlorobenzidine	<400	ug/Kg		
2,4-Dichlorophenol	<400	ug/Kg		
Diethylphthalate	600	ug/Kg		
Dimethyl Phthalate	400	ug/Kg		
2,4-Dimethylphenol	<400	ug/Kg		
4,6-Dinitro-2-Methylphenol	<400	ug/Kg		
2,4-Dinitrophenol	<400	ug/Kg		
2,4-Dinitrotoluene	<400	ug/Kg		
2,6-Dinitrotoluene	<400	ug/Kg		
bis(2-Ethylhexyl)Phthalate	35000	ug/Kg		
Fluoranthene	<400	ug/Kg		
Fluorene	<400	ug/Kg		
Hexachlorobenzene	<400	ug/Kg		
Hexachlorobutadiene	2000	ug/Kg		
Hexachlorocyclopentadiene	<400	ug/Kg		
Hexachloroethane	<400	ug/Kg		
Indeno(1,2,3-cd)Pyrene	<400	ug/Kg		
Isophorone	9600	ug/Kg		
2-Methylnaphthalene	500	ug/Kg		

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 03/08/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Date Rec'd: 02/24/1993

Sample ID: Column II, end of SVE

NET Sample No: 72329

Parameter	Result	Units	Analysis Date	Analyst
2-Methylphenol	<400	ug/Kg		
4-Methylphenol	<400	ug/Kg	03/03/1993	cdl
N-Nitroso-di-n-Propylamine	<400	ug/Kg		
N-Nitrosodimethylamine	<400	ug/Kg		
N-Nitrosodiphenylamine	<400	ug/Kg		
Naphthalene	600	ug/Kg		
2-Nitroaniline	<400	ug/Kg		
3-Nitroaniline	<400	ug/Kg		
4-Nitroaniline	<400	ug/Kg		
Nitrobenzene	<400	ug/Kg		
2-Nitrophenol	<400	ug/Kg		
4-Nitrophenol	<400	ug/Kg		
Pentachlorophenol	5400	ug/Kg		
Phenanthrene	<400	ug/Kg		
Phenol	<400	ug/Kg		
Pyrene	<400	ug/Kg		
1,2,4-Trichlorobenzene	<400	ug/Kg		
2,4,5-Trichlorophenol	<400	ug/Kg		
2,4,6-Trichlorophenol	<400	ug/Kg		

NET Cambridge Division
ANALYTICAL REPORT

Report Date: 03/08/1993

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Date Rec'd: 02/24/1993

Sample ID: Column III, end of SVE

NET Sample No: 72330

Parameter	Result		Units	Analysis Date	Analyst
TCL Volatiles by GC/MS 8240 S					
Acetone	<780		ug/Kg	03/05/1993	mfw
Benzene	<780		ug/Kg		
Bromodichloromethane	<780		ug/Kg		
Bromoform	<780		ug/Kg		
Bromomethane	<780		ug/Kg		
2-Butanone (MEK)	<780		ug/Kg		
Carbon Disulfide	<780		ug/Kg		
Carbon Tetrachloride	<780		ug/Kg		
Chlorobenzene	<780		ug/Kg		
Chloroethane	<780		ug/Kg		
2-Chloroethylvinyl ether	<780		ug/Kg		
Chloroform	<780		ug/Kg		
Chloromethane	<780		ug/Kg		
Dibromochloromethane	<780		ug/Kg		
1,2-Dichlorobenzene	5600		ug/Kg		
1,3-Dichlorobenzene	<780		ug/Kg		
1,4-Dichlorobenzene	<780		ug/Kg		
1,1-Dichloroethane	<780		ug/Kg		
1,2-Dichloroethane	<780		ug/Kg		
1,1-Dichloroethene	<780		ug/Kg		
trans-1,2-Dichloroethene	<780		ug/Kg		
1,2-Dichloropropane	<780		ug/Kg		
cis-1,3-Dichloropropene	<780		ug/Kg		
trans-1,3-Dichloropropene	<780		ug/Kg		
Ethylbenzene	3400		ug/Kg		
2-Hexanone	<780		ug/Kg		
4-Methyl-2-pentanone (MIBK	<780		ug/Kg		
Methylene Chloride	<780		ug/Kg		
Styrene	<780		ug/Kg		
1,1,2,2-Tetrachloroethane	<780		ug/Kg		
Tetrachloroethene	<780		ug/Kg		
Toluene	1600		ug/Kg		
1,1,1-Trichloroethane	<780		ug/Kg		
1,1,2-Trichloroethane	<780		ug/Kg		
Trichloroethene	<780		ug/Kg		
Trichlorofluoromethane	<780		ug/Kg		
Vinyl Acetate	<780		ug/Kg		
Vinyl Chloride	<780		ug/Kg		
m-Xylene	11000	*	ug/Kg		
o-Xylene	15000		ug/Kg		
p-Xylene	<780	*	ug/Kg		

* These two compounds coelute on some gas chromatography columns. The reported concentration may be one, the other, or a combination of both isomers.

NET Cambridge Division

QUALITY CONTROL DATA

Client: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Report Date: 03/08/1993

Surrogate Standard Percent Recovery

Abbreviated Surrogate Standard Names:

SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12
Bromofl	1,2-Dic	Toluene	2-Fluor	Phenol-	2,4,6-T	2-Fluor	Nitrobe	p-Terph			

Sample ID	NET ID	Matrix	Percent Recovery SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10	SS11	SS12
Column I, end of	72328	SOIL	102	109	114									
Column II, end of	72329	SOIL	71	96	93	90	90	160	120	110	130			
Column III, end o	72330	SOIL	103	88	99									

Notes:

NR - This surrogate standard is Not Required. Other versions of this test method may use this surrogate standard.

Dil - This surrogate standard was diluted to below detectable levels due to concentrations of analytes in this sample.

Complete Surrogate Standard Names Listed by Analysis:

Pesticide Surrogate Standards:

Decachl = Decachlorobiphenyl Dibutyl = Dibutylchlorendate Tetrach = Tetrachloro-m-xylene

Volatile Surrogate Standards:

Bromofl = Bromofluorobenzene 1,2-Dichl = 1,2-Dichloroethane-d4 Toluene = Toluene-d8

Drinking Water Method 524 1,2-Dichl = 1,2-Dichlorobenzene-d4

Semivolatlile Surrogate Standards:

2-Fluor (1st) = 2-Fluorobiphenyl Phenol- = Phenol-d6 2,4,6-T = 2,4,6-Tribromophenol

2-Fluor (2nd) = 2-Fluorophenol Nitrobe = Nitrobenzene-d5 p-Terph = p-Terphenyl

Herbicides Surrogate Standard:

2,4-Dic = 2,4-Dichlorophenyl acetic acid

Petroleum Hydrocarbon Fingerprint Surrogate Standard:

2-Fluor = 2-Fluorobiphenyl para-Te = para-Terphynyl

NET Cambridge Division
QUALITY CONTROL DATA

NET Job No: 93.00490

Report To: Vapex Environmental Tech

Report Date : 03/08/1993

Project: ERI End of Test

Method Blank Analysis Data

Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Volatiles by GC/MS 8240 S					
Bromofluorobenzene	97	% recov.	317	02/26/1993	rmr
1,2-Dichloroethane-d4	104	% recov.	317	02/26/1993	rmr
Toluene-d8	104	% recov.	317	02/26/1993	rmr
Acetone	<5.0	ug/Kg	317	02/26/1993	rmr
Benzene	<5.0	ug/Kg	317	02/26/1993	rmr
Bromodichloromethane	<5.0	ug/Kg	317	02/26/1993	rmr
Bromoform	<5.0	ug/Kg	317	02/26/1993	rmr
Bromomethane	<5.0	ug/Kg	317	02/26/1993	rmr
2-Butanone (MEK)	<5.0	ug/Kg	317	02/26/1993	rmr
Carbon Disulfide	<5.0	ug/Kg	317	02/26/1993	rmr
Carbon Tetrachloride	<5.0	ug/Kg	317	02/26/1993	rmr
Chlorobenzene	<5.0	ug/Kg	317	02/26/1993	rmr
Chloroethane	<5.0	ug/Kg	317	02/26/1993	rmr
2-Chloroethylvinyl ether	<5.0	ug/Kg	317	02/26/1993	rmr
Chloroform	<5.0	ug/Kg	317	02/26/1993	rmr
Chloromethane	<5.0	ug/Kg	317	02/26/1993	rmr
Dibromochloromethane	<5.0	ug/Kg	317	02/26/1993	rmr
1,2-Dichlorobenzene	<5.0	ug/Kg	317	02/26/1993	rmr
1,3-Dichlorobenzene	<5.0	ug/Kg	317	02/26/1993	rmr
1,4-Dichlorobenzene	<5.0	ug/Kg	317	02/26/1993	rmr
1,1-Dichloroethane	<5.0	ug/Kg	317	02/26/1993	rmr
1,2-Dichloroethane	<5.0	ug/Kg	317	02/26/1993	rmr
1,1-Dichloroethene	<5.0	ug/Kg	317	02/26/1993	rmr
trans-1,2-Dichloroethene	<5.0	ug/Kg	317	02/26/1993	rmr
1,2-Dichloropropane	<5.0	ug/Kg	317	02/26/1993	rmr
cis-1,3-Dichloropropene	<5.0	ug/Kg	317	02/26/1993	rmr
trans-1,3-Dichloropropene	<5.0	ug/Kg	317	02/26/1993	rmr
Ethylbenzene	<5.0	ug/Kg	317	02/26/1993	rmr
2-Hexanone	<5.0	ug/Kg	317	02/26/1993	rmr
4-Methyl-2-pentanone (MIBK	<5.0	ug/Kg	317	02/26/1993	rmr
Methylene Chloride	<5.0	ug/Kg	317	02/26/1993	rmr
Styrene	<5.0	ug/Kg	317	02/26/1993	rmr
1,1,2,2-Tetrachloroethane	<5.0	ug/Kg	317	02/26/1993	rmr
Tetrachloroethene	<5.0	ug/Kg	317	02/26/1993	rmr
Toluene	<5.0	ug/Kg	317	02/26/1993	rmr
1,1,1-Trichloroethane	<5.0	ug/Kg	317	02/26/1993	rmr
1,1,2-Trichloroethane	<5.0	ug/Kg	317	02/26/1993	rmr
Trichloroethene	<5.0	ug/Kg	317	02/26/1993	rmr
Trichlorofluoromethane	<5.0	ug/Kg	317	02/26/1993	rmr
Vinyl Acetate	<5.0	ug/Kg	317	02/26/1993	rmr
Vinyl Chloride	<5.0	ug/Kg	317	02/26/1993	rmr
m-Xylene	<5.0	ug/Kg	317	02/26/1993	rmr
o-Xylene	<5.0	ug/Kg	317	02/26/1993	rmr
p-Xylene	<5.0	ug/Kg	317	02/26/1993	rmr

NET Cambridge Division
QUALITY CONTROL DATA

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Report Date : 03/08/1993

Method Blank Analysis Data

Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Volatiles by GC/MS 8240 S					
Bromofluorobenzene	83	% recov.	319	03/01/1993	bel
1,2-Dichloroethane-d4	92	% recov.	319	03/01/1993	bel
Toluene-d8	89	% recov.	319	03/01/1993	bel
Acetone	<5.0	ug/Kg	319	03/01/1993	bel
Benzene	<5.0	ug/Kg	319	03/01/1993	bel
Bromodichloromethane	<5.0	ug/Kg	319	03/01/1993	bel
Bromoform	<5.0	ug/Kg	319	03/01/1993	bel
Bromomethane	<5.0	ug/Kg	319	03/01/1993	bel
2-Butanone (MEK)	<5.0	ug/Kg	319	03/01/1993	bel
Carbon Disulfide	<5.0	ug/Kg	319	03/01/1993	bel
Carbon Tetrachloride	<5.0	ug/Kg	319	03/01/1993	bel
Chlorobenzene	<5.0	ug/Kg	319	03/01/1993	bel
Chloroethane	<5.0	ug/Kg	319	03/01/1993	bel
2-Chloroethylvinyl ether	<5.0	ug/Kg	319	03/01/1993	bel
Chloroform	<5.0	ug/Kg	319	03/01/1993	bel
Chloromethane	<5.0	ug/Kg	319	03/01/1993	bel
Dibromochloromethane	<5.0	ug/Kg	319	03/01/1993	bel
1,2-Dichlorobenzene	<5.0	ug/Kg	319	03/01/1993	bel
1,3-Dichlorobenzene	<5.0	ug/Kg	319	03/01/1993	bel
1,4-Dichlorobenzene	<5.0	ug/Kg	319	03/01/1993	bel
1,1-Dichloroethane	<5.0	ug/Kg	319	03/01/1993	bel
1,2-Dichloroethane	<5.0	ug/Kg	319	03/01/1993	bel
1,1-Dichloroethene	<5.0	ug/Kg	319	03/01/1993	bel
trans-1,2-Dichloroethene	<5.0	ug/Kg	319	03/01/1993	bel
1,2-Dichloropropane	<5.0	ug/Kg	319	03/01/1993	bel
cis-1,3-Dichloropropene	<5.0	ug/Kg	319	03/01/1993	bel
trans-1,3-Dichloropropene	<5.0	ug/Kg	319	03/01/1993	bel
Ethylbenzene	<5.0	ug/Kg	319	03/01/1993	bel
2-Hexanone	<5.0	ug/Kg	319	03/01/1993	bel
4-Methyl-2-pentanone (MIBK	<5.0	ug/Kg	319	03/01/1993	bel
Methylene Chloride	<5.0	ug/Kg	319	03/01/1993	bel
Styrene	<5.0	ug/Kg	319	03/01/1993	bel
1,1,2,2-Tetrachloroethane	<5.0	ug/Kg	319	03/01/1993	bel
Tetrachloroethene	<5.0	ug/Kg	319	03/01/1993	bel
Toluene	<5.0	ug/Kg	319	03/01/1993	bel
1,1,1-Trichloroethane	<5.0	ug/Kg	319	03/01/1993	bel
1,1,2-Trichloroethane	<5.0	ug/Kg	319	03/01/1993	bel
Trichloroethene	<5.0	ug/Kg	319	03/01/1993	bel
Trichlorofluoromethane	<5.0	ug/Kg	319	03/01/1993	bel
Vinyl Acetate	<5.0	ug/Kg	319	03/01/1993	bel
Vinyl Chloride	<5.0	ug/Kg	319	03/01/1993	bel
m-Xylene	<5.0	ug/Kg	319	03/01/1993	bel
o-Xylene	<5.0	ug/Kg	319	03/01/1993	bel
p-Xylene	<5.0	ug/Kg	319	03/01/1993	bel

NET Cambridge Division
QUALITY CONTROL DATA

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Report Date : 03/08/1993

Method Blank Analysis Data

Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Volatiles by GC/MS 8240 S					
Bromofluorobenzene	106	% recov.	320	03/04/1993	mfw
1,2-Dichloroethane-d4	94	% recov.	320	03/04/1993	mfw
Toluene-d8	106	% recov.	320	03/04/1993	mfw
Acetone	<250.	ug/Kg	320	03/04/1993	mfw
Benzene	<250.	ug/Kg	320	03/04/1993	mfw
Bromodichloromethane	<250.	ug/Kg	320	03/04/1993	mfw
Bromoform	<250.	ug/Kg	320	03/04/1993	mfw
Bromomethane	<250.	ug/Kg	320	03/04/1993	mfw
2-Butanone (MEK)	<250.	ug/Kg	320	03/04/1993	mfw
Carbon Disulfide	<250.	ug/Kg	320	03/04/1993	mfw
Carbon Tetrachloride	<250.	ug/Kg	320	03/04/1993	mfw
Chlorobenzene	<250.	ug/Kg	320	03/04/1993	mfw
Chloroethane	<250.	ug/Kg	320	03/04/1993	mfw
2-Chloroethylvinyl ether	<250.	ug/Kg	320	03/04/1993	mfw
Chloroform	<250.	ug/Kg	320	03/04/1993	mfw
Chloromethane	<250.	ug/Kg	320	03/04/1993	mfw
Dibromochloromethane	<250.	ug/Kg	320	03/04/1993	mfw
1,2-Dichlorobenzene	<250.	ug/Kg	320	03/04/1993	mfw
1,3-Dichlorobenzene	<250.	ug/Kg	320	03/04/1993	mfw
1,4-Dichlorobenzene	<250.	ug/Kg	320	03/04/1993	mfw
1,1-Dichloroethane	<250.	ug/Kg	320	03/04/1993	mfw
1,2-Dichloroethane	<250.	ug/Kg	320	03/04/1993	mfw
1,1-Dichloroethene	<250.	ug/Kg	320	03/04/1993	mfw
trans-1,2-Dichloroethene	<250.	ug/Kg	320	03/04/1993	mfw
1,2-Dichloropropane	<250.	ug/Kg	320	03/04/1993	mfw
cis-1,3-Dichloropropene	<250.	ug/Kg	320	03/04/1993	mfw
trans-1,3-Dichloropropene	<250.	ug/Kg	320	03/04/1993	mfw
Ethylbenzene	<250.	ug/Kg	320	03/04/1993	mfw
2-Hexanone	<250.	ug/Kg	320	03/04/1993	mfw
4-Methyl-2-pentanone (MIBK	<250.	ug/Kg	320	03/04/1993	mfw
Methylene Chloride	<250.	ug/Kg	320	03/04/1993	mfw
Styrene	<250.	ug/Kg	320	03/04/1993	mfw
1,1,2,2-Tetrachloroethane	<250.	ug/Kg	320	03/04/1993	mfw
Tetrachloroethene	<250.	ug/Kg	320	03/04/1993	mfw
Toluene	<250.	ug/Kg	320	03/04/1993	mfw
1,1,1-Trichloroethane	<250.	ug/Kg	320	03/04/1993	mfw
1,1,2-Trichloroethane	<250.	ug/Kg	320	03/04/1993	mfw
Trichloroethene	<250.	ug/Kg	320	03/04/1993	mfw
Trichlorofluoromethane	<250.	ug/Kg	320	03/04/1993	mfw
Vinyl Acetate	<250.	ug/Kg	320	03/04/1993	mfw
Vinyl Chloride	<250.	ug/Kg	320	03/04/1993	mfw
m-Xylene	<250.	ug/Kg	320	03/04/1993	mfw
o-Xylene	<250.	ug/Kg	320	03/04/1993	mfw
p-Xylene	<250.	ug/Kg	320	03/04/1993	mfw

NET Cambridge Division
QUALITY CONTROL DATA

Report To: Vapex Environmental Tech

NET Job No: 93.00490

Project: ERI End of Test

Report Date : 03/08/1993

Method Blank Analysis Data

Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
TCL Acid/Base/Neutrals 8270 S					
2-Fluorophenol	88	% recov.	186	03/05/1993	cdl
Phenol-d5	92	% recov.	186	03/05/1993	cdl
2,4,6-Tribromophenol	98	% recov.	186	03/05/1993	cdl
2-Fluorobiphenyl	98	% recov.	186	03/05/1993	cdl
Nitrobenzene-d15	94	% recov.	186	03/05/1993	cdl
p-Terphenyl-d14	107	% recov.	186	03/05/1993	cdl
Acenaphthene	<40	ug/Kg	186	03/05/1993	cdl
Acenaphthylene	<40	ug/Kg	186	03/05/1993	cdl
Anthracene	<40	ug/Kg	186	03/05/1993	cdl
Benzo(a)Anthracene	<40	ug/Kg	186	03/05/1993	cdl
Benzo(a)Pyrene	<40	ug/Kg	186	03/05/1993	cdl
Benzo(b)Fluoranthene	<40	ug/Kg	186	03/05/1993	cdl
Benzo(g,h,i)Perylene	<40	ug/Kg	186	03/05/1993	cdl
Benzo(k)Fluoranthene	<40	ug/Kg	186	03/05/1993	cdl
4-Bromophenyl-phenylether	<40	ug/Kg	186	03/05/1993	cdl
Butylbenzylphthalate	<40	ug/Kg	186	03/05/1993	cdl
4-Chloro-3-Methylphenol	<40	ug/Kg	186	03/05/1993	cdl
bis(2-Chloroethoxy)Methane	<40	ug/Kg	186	03/05/1993	cdl
bis(2-Chloroethyl)Ether	<40	ug/Kg	186	03/05/1993	cdl
bis(2-Chloroisopropyl)Ether	<40	ug/Kg	186	03/05/1993	cdl
2-Chloronaphthalene	<40	ug/Kg	186	03/05/1993	cdl
2-Chlorophenol	<40	ug/Kg	186	03/05/1993	cdl
4-Chlorophenyl-phenylether	<40	ug/Kg	186	03/05/1993	cdl
Chrysene	<40	ug/Kg	186	03/05/1993	cdl
Di-n-Butylphthalate	100	ug/Kg	186	03/05/1993	cdl
Di-n-Octyl Phthalate	<40	ug/Kg	186	03/05/1993	cdl
Dibenz(a,h)Anthracene	<40	ug/Kg	186	03/05/1993	cdl
1,2-Dichlorobenzene	<40	ug/Kg	186	03/05/1993	cdl
1,3-Dichlorobenzene	<40	ug/Kg	186	03/05/1993	cdl
1,4-Dichlorobenzene	<40	ug/Kg	186	03/05/1993	cdl
3,3'-Dichlorobenzidine	<40	ug/Kg	186	03/05/1993	cdl
2,4-Dichlorophenol	<40	ug/Kg	186	03/05/1993	cdl
Diethylphthalate	<40	ug/Kg	186	03/05/1993	cdl
Dimethyl Phthalate	<40	ug/Kg	186	03/05/1993	cdl
2,4-Dimethylphenol	<40	ug/Kg	186	03/05/1993	cdl
4,6-Dinitro-2-Methylphenol	<40	ug/Kg	186	03/05/1993	cdl
2,4-Dinitrophenol	<40	ug/Kg	186	03/05/1993	cdl
2,4-Dinitrotoluene	<40	ug/Kg	186	03/05/1993	cdl
2,6-Dinitrotoluene	<40	ug/Kg	186	03/05/1993	cdl
bis(2-Ethylhexyl)Phthalate	<40	ug/Kg	186	03/05/1993	cdl
Fluoranthene	<40	ug/Kg	186	03/05/1993	cdl
Fluorene	<40	ug/Kg	186	03/05/1993	cdl
Hexachlorobenzene	<40	ug/Kg	186	03/05/1993	cdl
Hexachlorobutadiene	<40	ug/Kg	186	03/05/1993	cdl
Hexachlorocyclopentadiene	<40	ug/Kg	186	03/05/1993	cdl
Hexachloroethane	<40	ug/Kg	186	03/05/1993	cdl
Indeno(1,2,3-cd)Pyrene	<40	ug/Kg	186	03/05/1993	cdl
Isophorone	<40	ug/Kg	186	03/05/1993	cdl
N-Nitroso-di-n-Propylamine	<40	ug/Kg	186	03/05/1993	cdl
N-Nitrosodimethylamine	<40	ug/Kg	186	03/05/1993	cdl

NET Cambridge Division
QUALITY CONTROL DATA

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Report Date : 03/08/1993

Method Blank Analysis Data

Test Name	Result	Units	Run Batch	Run Date	Analyst Initials
N-Nitrosodiphenylamine	<40	ug/Kg	186	03/05/1993	cdl
Naphthalene	<40	ug/Kg	186	03/05/1993	cdl
Nitrobenzene	<40	ug/Kg	186	03/05/1993	cdl
2-Nitrophenol	<40	ug/Kg	186	03/05/1993	cdl
4-Nitrophenol	<40	ug/Kg	186	03/05/1993	cdl
Pentachlorophenol	<40	ug/Kg	186	03/05/1993	cdl
Phenanthrene	<40	ug/Kg	186	03/05/1993	cdl
Phenol	<40	ug/Kg	186	03/05/1993	cdl
Pyrene	<40	ug/Kg	186	03/05/1993	cdl
1,2,4-Trichlorobenzene	<40	ug/Kg	186	03/05/1993	cdl
2,4,6-Trichlorophenol	<40	ug/Kg	186	03/05/1993	cdl

93.00490

CHAIN OF CUSTODY RECORD

NET® NATIONAL ENVIRONMENTAL TESTING, INC.

Cambridge Division, 12 Oak Park, Bedford, MA 01730

PROJECT NAME
COMPANY VAPEX Environ. Tech. Inc.
ADDRESS 450 Neponset St. Canton, MA 02021
PHONE (617) 521-5310
contact: J Palensky

SAMPLED BY

(Print Name) Signature
(Print Name) Signature

ANALYSES

SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	CONTAINER SIZE	CONTAINER G/P	GRAB	COMP	NO. OF CONTAINER	SAMPLE MATRIX	PRESERVATIVE	Volatile Organics 8240	Extractable Organics 8270	Metals	Cyanide	Pesticides					COMMENTS
2000F001	[illegible]	[illegible]	[illegible] I, end of SVE	50					Soil	ice	X									
2000F001	02/23		Column II, end of SVE	50					Soil	"	X									
2000F001	02/23		Column III, end of SVE	50					Soil	"	X									
2000F001	02/23		Column II, " " "	500					Soil	"	X		X							

Relinquished by	Date / Time	Received by	Relinquished by	Date / Time	Received by
[signature]	2/23/14:10pm			2/24/81415	[signature]
Relinquished by	Date / Time	Received by	Relinquished by	Date / Time	Received for Laboratory by

Method of Shipment
Federal Exp. Air Bill
4477124485

Remarks:

PT 1 — ORIG PT 2 NET Project Manager—Yellow PT 3—Customer Copy—Pink

NET NATIONAL ENVIRONMENTAL TESTING, INC.

Cambridge Division
12 Oak Park
Bedford, MA 01730
Tel: (617) 275-3535
Fax: (617) 275-7411

To: John Polonsky, Vapex

From: Wesley Miller

Date: March 10, 1993

RE: % Soilid Information for ERI and Envirogen Analyses

John, here is the requested % solid informtaion.

ERI:

Column I	89% solid
Column II	89% solid
Column III	80% solid

Envirogen:

Nutrient	73% solid
Control	71% solid
Killed	74% solid

The report for Envrogen will go out today. Please feel free to call either Ed or myself if you have any other questions.

Take Care

Wes

After the termination of the vapor stripping process, the columns were weighed on an OHAUS-scale (maximum capacity of 20 Kg with an accuracy of ± 1 gr). The columns were then emptied and were weighed again. The results are as follows:

	Column I	Column II	Column III
Total wt. of column with soil (gr)	7400	5708	4920
wt. of the empty column	3025	2203	2264
Net wt. of soil in the column	4375 gr	3505 gr	2656 gr

APPENDIX C

SOIL VAPOR DISCHARGE SAMPLE ANALYSES

Modified EPA Method TO14

COLUMN 1 / TL-SBPA SAMPLE

Sample I.D.		On site Lagoon, composite		Column No:	17		
Date	Time	Flow Rate	Prs.Dif.	Sample Vol.	Temp.	Anal. Time	Data File
MM/DD/YY	HH:MM	ml/min	in. water	ml	deg C	HH:MM	
GC/MSD							
1/11/93	12:30	Starting the air flow and Allowing the excess water to drain out					
1/12/93	14:20	15	11.0	1.0	23	14:35	BH17A10A
1/12/93	15:35	12	8.0	1.0	23	15:50	BH17A11A
1/12/93	16:40	13	5.0	1.0	23	16:52	BH17A12A
1/12/93	17:45	15	4.0	1.0	23	17:56	BH17A13A
1/12/93	18:50	12	5.0	1.0	23	18:59	BH17A14A
1/12/93	19:45	11	5.0	1.0	23	20:02	BH17A15
1/13/93	11:20	LAB. BLK.	air	50.0	23	11:20	BH17A16A
1/13/93	12:27	NBS	GAS	1000.0	23	12:27	BH17A17A
1/13/93	13:50	15	5.0	1.0	23	14:10	BH17A18A
1/13/93	19:00	10	5.0	1.0	23	19:52	BH17A19A
1/14/93	11:00	LAB. BLK.	air	50.0	23	11:10	BH17A20A
1/14/93	12:10	NBS	GAS	1000.0	23	12:10	BH17A23A
1/14/93	14:20	10	5.0	1.0	23	14:42	BH17A24A
1/14/93	20:00	11	5.0	1.0	23	20:19	BH17A25A
1/15/93	15:15	10	5.0	1.0	23	15:32	BH17A26A
1/18/93	15:30	10	5.0	2.0	23	15:32	BH17A28A
1/19/93	16:10	10	5.0	2.0	23	16:18	BH17A29A
1/20/93	17:30	17	2.0	2.0	23	17:41	BH17A30A
1/21/93	18:25	9.5	2.0	2.0	23	18:38	BH17A31
1/22/93	15:40	9.5	2.0	2.0	23	15:50	BH17A32A
1/25/93	15:25	9.5	2.0	2.0	23	15:36	BH17A33A
1/28/93	12:00	9.5	2.0	2.0	23	12:09	BH17A34A
1/29/93	17:30	17	2.0	2.0	23	17:38	BH17A35A
2/2/93	17:25	11	8	2.0	23	17:34	BH17A36A
2/3/93	15:35	115	60	2.0	23	15:40	BH17A37A
2/4/93	22:35	120	50.0	2.0	23	22:49	BH17A38A
2/8/93	20:15	120	45	2.0	23	20:22	BH17A39A
2/9/93	22:15	120	45	5.0	23	22:26	BH17A40A
2/11/93	22:00	120	45	5.0	23	22:03	BH17A41A
2/17/93	20:15	120	45	20.0	23	20:20	BH17A42A
2/22/93	18:50	120	45	20.0	23	18:55	BH17A43A

Vapor Extraction Bench Scale Experiment Data Sheet 1

PROJECT: ACS

PROJECT #: 20007001 GRIFFITH, INDIANA

Column Number: 17

Packed Date: 1/11/93

Soil Sample ID: COLUMN (I)

Sample Description: ON-SITE LAGOON COMPOSITE

Column:

	D=	7.6	cm
	H=	66.00	cm
	V=	2992.5	cm3
Sample Mass:	M=	4375	g
Packed density	d=	1.46	g/cm3

BH17A10A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/12/93 14:20	Relative Humidity(%):				
TIME ANALYZED: 1/12/93 14:35	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A10A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A10A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.84	1.84	0.46	J
00067-64-1 Acetone	58.08	9.8	9.8	4.1	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	472.60	472.60	135.14	E
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	101.7	101.7	34.2	
00067-66-3 Chloroform	119.39	284.10	284.10	57.79	
00071-55-6 1,1,1-Trichloroethane	133.42	580.10	580.10	105.59	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	59.73	59.73	18.57	
00107-06-2 1,2-Dichloroethane	98.96	36.57	36.57	8.97	
00079-01-6 Trichloroethene	131.40	293.30	293.30	54.21	
00078-87-5 1,2-Dichloropropane	113.00	34.92	34.92	7.50	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	252.6	252.6	61.2	
00108-88-3 Toluene	92.13	211.20	211.20	55.67	
00079-34-5 1,1,2,2,-Tetrachloroetha	167.85				
00127-18-4 Tetrachloroethene	165.85	303.20	303.20	44.40	E
00108-90-7 Chlorobenzene	112.60	1.99	1.99	0.43	J
00100-41-4 Ethylbenzene	106.16	361.30	361.30	82.65	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	192.40	192.40	44.01	
00095-47-6 o-Xylene	106.16	433.80	433.80	99.24	E
00100-42-5 Styrene	104.10	3.32	3.32	0.77	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		75.5	85.4	88.4%	
Surrogate 2 Toluene-d8		58.9	65.0	90.6%	
Surrogate 3 1,4-Bromofluorobenzene		70.3	66.3	106.0%	

BH17A11N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/12/93 15:35	Relative Humidity(%):				
TIME ANALYZED: 1/12/93 15:50	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A11A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A11A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.81	1.81	0.45	J
00067-64-1 Acetone	58.08	12.2	12.2	5.1	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	404.80	404.80	115.75	E
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	103.4	103.4	34.8	
00067-66-3 Chloroform	119.39	230.30	230.30	46.85	
00071-55-6 1,1,1-Trichloroethane	133.42	577.80	577.80	105.17	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	42.94	42.94	13.35	
00107-06-2 1,2-Dichloroethane	98.96	23.15	23.15	5.68	
00079-01-6 Trichloroethene	131.40	215.10	215.10	39.76	
00078-87-5 1,2-Dichloropropane	113.00	22.01	22.01	4.73	
00108-10-1 4-Methyl-2-pentanon(MIBK	100.16	261.5	261.5	63.4	
00108-88-3 Toluene	92.13	415.50	415.50	109.53	E
00079-34-5 1,1,2,2,-Tetrachloroetha	167.85				
00127-18-4 Tetrachloroethene	165.85	279.00	279.00	40.85	
00108-90-7 Chlorobenzene	112.60	0.63	0.63	0.14	J
00100-41-4 Ethylbenzene	106.16	389.80	389.80	89.17	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	572.90	572.90	131.06	E
00095-47-6 o-Xylene	106.16	421.50	421.50	96.43	E
00100-42-5 Styrene	104.10	2.95	2.95	0.69	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.5	85.4	103.6%	
Surrogate 2 Toluene-d8		73.5	65.0	113.1%	
Surrogate 3 1,4-Bromofluorobenzene		90.9	66.3	137.1%	

BH17A12N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/12/93 16:40	Relative Humidity(%):				
TIME ANALYZED: 1/12/93 16:52	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A12A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A12A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.36	1.36	0.34	J
00067-64-1 Acetone	58.08	9.2	9.2	3.9	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	374.00	374.00	106.95	E
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	113.6	113.6	38.2	
00067-66-3 Chloroform	119.39	234.40	234.40	47.68	
00071-55-6 1,1,1-Trichloroethane	133.42	542.10	542.10	98.68	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	49.66	49.66	15.44	
00107-06-2 1,2-Dichloroethane	98.96	29.87	29.87	7.33	
00079-01-6 Trichloroethene	131.40	258.00	258.00	47.68	
00078-87-5 1,2-Dichloropropane	113.00	28.29	28.29	6.08	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	262.9	262.9	63.7	
00108-88-3 Toluene	92.13	419.20	419.20	110.50	E
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				
00127-18-4 Tetrachloroethene	165.85	255.20	255.20	37.37	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	305.50	305.50	69.89	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	415.90	415.90	95.14	E
00095-47-6 o-Xylene	106.16	326.40	326.40	74.67	E
00100-42-5 Styrene	104.10	1.96	1.96	0.46	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		81.6	85.4	95.5%	
Surrogate 2 Toluene-d8		64.9	65.0	99.8%	
Surrogate 3 1,4-Bromofluorobenzene		66.9	66.3	100.9%	

BH17A13N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/12/93 17:45	Relative Humidity(%):				
TIME ANALYZED: 1/12/93 17:56	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A13A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A13A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.22	1.22	0.31	J
00067-64-1 Acetone	58.08	11.4	11.4	4.8	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	275.60	275.60	78.81	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	105.5	105.5	35.5	
00067-66-3 Chloroform	119.39	182.00	182.00	37.02	
00071-55-6 1,1,1-Trichloroethane	133.42	488.70	488.70	88.96	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	36.58	36.58	11.37	
00107-06-2 1,2-Dichloroethane	98.96	20.89	20.89	5.13	
00079-01-6 Trichloroethene	131.40	220.90	220.90	40.83	
00078-87-5 1,2-Dichloropropane	113.00	20.37	20.37	4.38	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	245.7	245.7	59.6	
00108-88-3 Toluene	92.13	406.40	406.40	107.13	E
00079-34-5 1,1,2,2,-Tetrachloroetha	167.85				
00127-18-4 Tetrachloroethene	165.85	254.80	254.80	37.31	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	329.50	329.50	75.38	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	448.10	448.10	102.51	E
00095-47-6 o-Xylene	106.16	404.50	404.50	92.54	E
00100-42-5 Styrene	104.10	2.67	2.67	0.62	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		81.3	85.4	95.2%	
Surrogate 2 Toluene-d8		70.0	65.0	107.6%	
Surrogate 3 1,4-Bromofluorobenzene		77.3	66.3	116.5%	

BH17A14N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/12/93 18:50	Relative Humidity(%):				
TIME ANALYZED: 1/12/93 18:59	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A14A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A14A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	10.1	10.1	4.2	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	189.20	189.20	54.10	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	98.7	98.7	33.2	
00067-66-3 Chloroform	119.39	119.80	119.80	24.37	
00071-55-6 1,1,1-Trichloroethane	133.42	349.90	349.90	63.69	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	22.89	22.89	7.12	
00107-06-2 1,2-Dichloroethane	98.96	13.56	13.56	3.33	
00079-01-6 Trichloroethene	131.40	162.50	162.50	30.03	
00078-87-5 1,2-Dichloropropane	113.00	13.19	13.19	2.83	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	229.6	229.6	55.7	
00108-88-3 Toluene	92.13	371.20	371.20	97.85	E
00079-34-5 1,1,2,2,-Tetrachloroetha	167.85				
00127-18-4 Tetrachloroethene	165.85	189.30	189.30	27.72	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	267.70	267.70	61.24	
01330-20-7 m-Xylene and/or p-Xylene	106.16	381.50	381.50	87.27	E
00095-47-6 o-Xylene	106.16	295.00	295.00	67.49	
00100-42-5 Styrene	104.10	1.62	1.62	0.38	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		79.1	85.4	92.6%	
Surrogate 2 Toluene-d8		66.7	65.0	102.7%	
Surrogate 3 1,4-Bromofluorobenzene		79.1	66.3	119.3%	

BH17A15N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/12/93 19:45	Relative Humidity(%):				
TIME ANALYZED: 1/12/93 20:02	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A15A.D	Sample Temperature(C°):			23.0	
REPORT FILE: BH17A15A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.59	1.59	0.40	J
00067-64-1 Acetone	58.08	8.4	8.4	3.5	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	285.40	285.40	81.61	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	129.7	129.7	43.7	
00067-66-3 Chloroform	119.39	163.20	163.20	33.20	
00071-55-6 1,1,1-Trichloroethane	133.42	438.90	438.90	79.89	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	27.80	27.80	8.64	
00107-06-2 1,2-Dichloroethane	98.96	17.48	17.48	4.29	
00079-01-6 Trichloroethene	131.40	170.20	170.20	31.46	
00078-87-5 1,2-Dichloropropane	113.00	15.25	15.25	3.28	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	227.1	227.1	55.1	
00108-88-3 Toluene	92.13	358.20	358.20	94.42	E
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				
00127-18-4 Tetrachloroethene	165.85	186.40	186.40	27.30	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	256.30	256.30	58.63	
01330-20-7 m-Xylene and/or p-Xylene	106.16	377.70	377.70	86.41	E
00095-47-6 o-Xylene	106.16	273.90	273.90	62.66	
00100-42-5 Styrene	104.10	1.46	1.46	0.34	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		82.3	85.4	96.4%	
Surrogate 2 Toluene-d8		69.3	65.0	106.6%	
Surrogate 3 1,4-Bromofluorobenzene		85.8	66.3	129.4%	

BH17A16N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 11:20	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 11:20	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH17A16A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A16A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	0.68	0.01	0.00	J
00067-64-1 Acetone	58.08	1.07	0.0	0.01	J
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	4.46	0.09	0.03	J
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	0.54	0.0	0.00	J
00108-88-3 Toluene	92.13	4.31	0.09	0.02	J
00079-34-5 1,1,2,2,-Tetrachloroetha	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.39	0.03	0.01	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	4.16	0.08	0.02	J
00095-47-6 o-Xylene	106.16	1.58	0.03	0.01	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		79.35	85.4	92.92	
Surrogate 2 Toluene-d8		67.93	65.0	104.51	
Surrogate 3 1,4-Bromofluorobenzene		78.39	66.3	118.24	

BH17A17N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 12:27	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 12:27	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH17A17A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A17A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	16.93	16.9	7.08	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	20.86	20.86	5.96	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	10.49	10.5	3.53	
00067-66-3 Chloroform	119.39	29.44	29.44	5.99	
00071-55-6 1,1,1-Trichloroethane	133.42	35.61	35.61	6.48	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	24.15	24.15	3.81	
00071-43-2 Benzene	78.11	16.13	16.13	5.02	
00107-06-2 1,2-Dichloroethane	98.96	25.15	25.15	6.17	
00079-01-6 Trichloroethene	131.40	39.50	39.50	7.30	
00078-87-5 1,2-Dichloropropane	113.00	29.03	29.03	6.24	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	3.01	3.0	0.73	J
00108-88-3 Toluene	92.13	26.79	26.79	7.06	
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	51.84	51.84	7.59	
00108-90-7 Chlorobenzene	112.60	27.55	27.55	5.94	
00100-41-4 Ethylbenzene	106.16	26.01	26.01	5.95	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	25.27	25.27	5.78	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		78.27	85.4	91.65	
Surrogate 2 Toluene-d8		69.15	65.0	106.38	
Surrogate 3 1,4-Bromofluorobenzene		81.13	66.3	122.37	

BH17A18N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 13:50	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 14:10	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A18A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A18A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.79	1.79	0.45	J
00067-64-1 Acetone	58.08				
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	416.50	416.50	119.10	E
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	31.5	31.5	10.6	
00067-66-3 Chloroform	119.39	230.70	230.70	46.93	
00071-55-6 1,1,1-Trichloroethane	133.42	573.30	573.30	104.36	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				C
00071-43-2 Benzene	78.11	42.49	42.49	13.21	
00107-06-2 1,2-Dichloroethane	98.96	23.05	23.05	5.66	
00079-01-6 Trichloroethene	131.40	213.90	213.90	39.53	
00078-87-5 1,2-Dichloropropane	113.00	20.46	20.46	4.40	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	143.9	143.9	34.9	
00108-88-3 Toluene	92.13	316.40	316.40	83.40	E
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				
00127-18-4 Tetrachloroethene	165.85	102.30	102.30	14.98	
00108-90-7 Chlorobenzene	112.60	1.09	1.09	0.23	J
00100-41-4 Ethylbenzene	106.16	120.10	120.10	27.47	
01330-20-7 m-Xylene and/or p-Xylene	106.16	257.80	257.80	58.98	
00095-47-6 o-Xylene	106.16	139.60	139.60	31.94	
00100-42-5 Styrene	104.10	0.56	0.56	0.13	J
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		80.7	85.4	94.5%	
Surrogate 2 Toluene-d8		67.3	65.0	103.5%	
Surrogate 3 1,4-Bromofluorobenzene		72.3	66.3	109.0%	

BH17A19N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 19:00	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 19:52	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A19A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A19A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			EXTSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	1.34	1.34	0.34	J
00067-64-1 Acetone	58.08				
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	764.90	764.90	218.72	E
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	18.1	18.1	6.1	
00067-66-3 Chloroform	119.39	150.30	150.30	30.57	
00071-55-6 1,1,1-Trichloroethane	133.42	405	405	73.68	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	28.82	28.82	8.96	
00107-06-2 1,2-Dichloroethane	98.96	16.10	16.10	3.95	
00079-01-6 Trichloroethene	131.40	172.20	172.20	31.83	
00078-87-5 1,2-Dichloropropane	113.00	14.37	14.37	3.09	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	152.0	152.0	36.9	
00108-88-3 Toluene	92.13	274.40	274.40	72.33	
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				
00127-18-4 Tetrachloroethene	165.85	127.20	127.20	18.63	
00108-90-7 Chlorobenzene	112.60				J
00100-41-4 Ethylbenzene	106.16	149.80	149.80	34.27	
01330-20-7 m-Xylene and/or p-Xylene	106.16	254	254	58.11	
00095-47-6 o-Xylene	106.16	139.10	139.10	31.82	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.4		
Surrogate 2 Toluene-d8			65.0		
Surrogate 3 1,4-Bromofluorobenzene			66.3		

BH17A20N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 11:20	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 11:20	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH17A20A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A20A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94				J
00067-64-1 Acetone	58.08	2.33	0.0	0.02	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	9.11	0.18	0.05	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	0.51	0.0	0.00	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	0.92	0.0	0.00	J
00108-88-3 Toluene	92.13	4.54	0.09	0.02	J
00079-34-5 1,1,2,2,-Tetrachloroetha	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	2.55	0.05	0.01	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	6.71	0.13	0.03	
00095-47-6 o-Xylene	106.16	2.76	0.06	0.01	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		55.32	85.4	64.78	
Surrogate 2 Toluene-d8		49.78	65.0	76.58	
Surrogate 3 1,4-Bromofluorobenzene		54.88	66.3	82.78	

BH17A23N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 12:10	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 12:10	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH17A23A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A23A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			EXTSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	17.95	17.95	5.13	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	7.90	7.9	2.66	
00067-66-3 Chloroform	119.39	27.99	27.99	5.69	
00071-55-6 1,1,1-Trichloroethane	133.42	32.84	32.84	5.98	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	29.74	29.74	4.70	
00071-43-2 Benzene	78.11	17.11	17.11	5.32	
00107-06-2 1,2-Dichloroethane	98.96	22.46	22.46	5.51	
00079-01-6 Trichloroethene	131.40	37.32	37.32	6.90	
00078-87-5 1,2-Dichloropropane	113.00	28.46	28.46	6.12	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	3.09	3.1	0.75	J
00108-88-3 Toluene	92.13	36.06	36.06	9.51	
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	64.18	64.18	9.40	
00108-90-7 Chlorobenzene	112.60	41.77	41.77	9.01	
00100-41-4 Ethylbenzene	106.16	37.20	37.20	8.51	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.52	0.52	0.12	U
00095-47-6 o-Xylene	106.16	40.96	40.96	9.37	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.4		
Surrogate 2 Toluene-d8			65.0		
Surrogate 3 1,4-Bromofluorobenzene			66.3		

BH17A24N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 14:20	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 14:42	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A24A.D	Sample Temperature(C°):			23.0	
REPORT FILE: BH17A24A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/14/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	2.30	2.30	0.58	J
00067-64-1 Acetone	58.08	14.6	14.6	6.1	
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	337.00	337.00	96.37	E
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	207.6	207.6	69.9	
00067-66-3 Chloroform	119.39	149.00	149.00	30.31	
00071-55-6 1,1,1-Trichloroethane	133.42	486	486	88.54	E
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	12.01	12.01	3.73	
00107-06-2 1,2-Dichloroethane	98.96	10.18	10.18	2.50	
00079-01-6 Trichloroethene	131.40	48.33	48.33	8.93	
00078-87-5 1,2-Dichloropropane	113.00	6.77	6.77	1.46	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	225.2	225.2	54.6	
00108-88-3 Toluene	92.13	126.10	126.10	33.24	
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				
00127-18-4 Tetrachloroethene	165.85	12.45	12.45	1.82	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	17.21	17.21	3.94	
01330-20-7 m-Xylene and/or p-Xylene	106.16	38	38	8.69	
00095-47-6 o-Xylene	106.16	11.28	11.28	2.58	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		55.0	85.4	64.4%	
Surrogate 2 Toluene-d8		46.6	65.0	71.7%	
Surrogate 3 1,4-Bromofluorobenzene		91.5	66.3	138.0%	

BH17A25A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 20:00	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 20:19	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A25A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A25A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/14/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	0.95	0.95	0.24	J
00067-64-1 Acetone	58.08	5.3	5.3	2.2	
09003-22-9 Vinyl chloride	62.50				
00075-09-2 Methylene chloride	84.93	132.10	132.10	37.77	
00156-59-2 cis-1,2-Dichloroethane	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	78.7	78.7	26.5	
00067-66-3 Chloroform	119.39	30.40	30.40	6.18	
00071-55-6 1,1,1-Trichloroethane	133.42	268	268	48.75	
00079-00-5 1,1,2-Trichloroethane	133.42				
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	17.17	17.17	5.34	
00107-06-2 1,2-Dichloroethane	98.96	3.87	3.87	0.95	J
00079-01-6 Trichloroethene	131.40	49.46	49.46	9.14	
00078-87-5 1,2-Dichloropropane	113.00	1.51	1.51	0.33	J
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	48.2	48.2	11.7	
00108-88-3 Toluene	92.13	274.80	274.80	72.44	
00079-34-5 1,1,2,2,-Tetrachloroethane	167.85				
00127-18-4 Tetrachloroethene	165.85	45.92	45.92	6.72	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	30.71	30.71	7.03	
01330-20-7 m-Xylene and/or p-Xylene	106.16	66	66	15.16	
00095-47-6 o-Xylene	106.16	21.56	21.56	4.93	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		51.2	85.4	60.0%	
Surrogate 2 Toluene-d8		44.3	65.0	68.2%	
Surrogate 3 1,4-Bromofluorobenzene		66.3	66.3	100.1%	

BH17A26N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 15:15	Relative Humidity(%):				
TIME ANALYZED: 1/15/93 15:32	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A26A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A26A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/15/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				
00067-64-1 Acetone	58.08	198.0	198.0	82.8	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	294.70	294.70	84.27	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	150.4	150.4	50.6	
00067-66-3 Chloroform	119.39	125.50	125.50	25.53	
00071-55-6 1,1,1-Trichloroethane	133.42	407	407	74.12	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	13.78	13.78	4.28	
00107-06-2 1,2-Dichloroethane	98.96	8.98	8.98	2.20	J
00079-01-6 Trichloroethene	131.40	50.91	50.91	9.41	
00078-87-5 1,2-Dichloropropane	113.00	6.00	6.00	1.29	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	121.4	121.4	29.4	
00108-88-3 Toluene	92.13	197.00	197.00	51.93	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	26.65	26.65	3.90	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	19.21	19.21	4.39	
01330-20-7 m-Xylene and/or p-Xylene	106.16	42	42	9.50	
00095-47-6 o-Xylene	106.16	15.82	15.82	3.62	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		76.9	85.4	90.0%	
Surrogate 2 Toluene-d8		62.8	65.0	96.6%	
Surrogate 3 1,4-Bromofluorobenzene		80.7	66.3	121.8%	

BH17A28N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/18/93 15:30	Relative Humidity(%):				
TIME ANALYZED: 1/18/93 15:32	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A28A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A28A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94	0.88	0.44	0.11	J
00067-64-1 Acetone	58.08	10.1	5.1	2.1	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	177.20	88.60	25.34	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	200.5	100.3	33.7	
00067-66-3 Chloroform	119.39	102.40	51.20	10.41	
00071-55-6 1,1,1-Trichloroethane	133.42	326	163	29.68	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	17.40	8.70	2.70	
00107-06-2 1,2-Dichloroethane	98.96	12.32	6.16	1.51	
00079-01-6 Trichloroethene	131.40	140.20	70.10	12.96	
00078-87-5 1,2-Dichloropropane	113.00	10.91	5.46	1.17	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	216.3	108.2	26.2	
00108-88-3 Toluene	92.13	339.90	169.95	44.80	E
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	101.30	50.65	7.42	
00108-90-7 Chlorobenzene	112.60	176.00	88.00	18.98	U
00100-41-4 Ethylbenzene	106.16	276.70	138.35	31.65	
01330-20-7 m-Xylene and/or p-Xylene	106.16	381	191	43.63	E
00095-47-6 o-Xylene	106.16	370.40	185.20	42.37	E
00100-42-5 Styrene	104.10	2.63	1.32	0.31	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		82.0	85.4	96.0%	
Surrogate 2 Toluene-d8		69.3	65.0	106.6%	
Surrogate 3 1,4-Bromofluorobenzene		85.3	66.3	128.7%	

BH17A29N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/19/93 16:10	Relative Humidity(%):				
TIME ANALYZED: 1/19/93 16:18	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A29A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A29A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/19/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	17.2	8.6	3.6	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	188.50	94.25	26.95	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	9.9	5.0	1.7	
00067-66-3 Chloroform	119.39	121.80	60.90	12.39	
00071-55-6 1,1,1-Trichloroethane	133.42	337	169	30.67	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	17.23	8.62	2.68	
00107-06-2 1,2-Dichloroethane	98.96	13.15	6.58	1.61	
00079-01-6 Trichloroethene	131.40	111.70	55.85	10.32	
00078-87-5 1,2-Dichloropropane	113.00	10.62	5.31	1.14	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	182.7	91.4	22.1	
00108-88-3 Toluene	92.13	252.10	126.05	33.23	E
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	49.31	24.66	3.61	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	58.53	29.27	6.69	
01330-20-7 m-Xylene and/or p-Xylene	106.16	98	49	11.25	E
00095-47-6 o-Xylene	106.16	42.64	21.32	4.88	E
00100-42-5 Styrene	104.10	2.63	1.32	0.31	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.5	85.4	97.8%	
Surrogate 2 Toluene-d8		71.0	65.0	109.3%	
Surrogate 3 1,4-Bromofluorobenzene		93.0	66.3	140.3%	

BH17A30N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/20/93 17:30	Relative Humidity(%):				
TIME ANALYZED: 1/20/93 17:41	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A30A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A30A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	17.03	8.52	3.56	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	191.00	95.50	27.31	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	8.26	4.13	1.39	
00067-66-3 Chloroform	119.39	106.40	53.20	10.82	
00071-55-6 1,1,1-Trichloroethane	133.42	326.20	163.10	29.69	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	14.17	7.09	2.20	
00107-06-2 1,2-Dichloroethane	98.96	10.67	5.34	1.31	
00079-01-6 Trichloroethene	131.40	88.68	44.34	8.20	
00078-87-5 1,2-Dichloropropane	113.00	8.87	4.43	0.95	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	168.10	84.05	20.38	
00108-88-3 Toluene	92.13	221.50	110.75	29.19	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene					
00108-90-7 Chlorobenzene	165.85	28.89	14.45	2.12	
00100-41-4 Ethylbenzene	112.60				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	33.31	16.66	3.81	
00095-47-6 o-Xylene	106.16	51.65	25.83	5.91	
00100-42-5 Styrene	106.16	23.38	11.69	2.67	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries					
Surrogate 1 1,2-Dichloroethane-d4		Rec(ng	Add(ng	Rec(%)	
Surrogate 2 Toluene-d8		85.80	85.40	100.5	
Surrogate 3 1,4-Bromofluorobenzene		71.18	65.00	109.5	
00075-15-0 Carbon disulfide		92.54	66.30	139.6	

BH17A31N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/21/93 18:25	Relative Humidity(%):				
TIME ANALYZED: 1/21/93 18:38	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A31A.D	Sample Tmperature(C'):			23.0	
REPORT FILE: BH17A31A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	12.28	6.14	2.57	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	160.30	80.15	22.92	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	6.84	3.42	1.15	
00067-66-3 Chloroform	119.39	101.10	50.55	10.28	
00071-55-6 1,1,1-Trichloroethane	133.42	298.70	149.35	27.19	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	13.94	6.97	2.17	
00107-06-2 1,2-Dichloroethane	98.96	10.38	5.19	1.27	
00079-01-6 Trichloroethene	131.40	98.10	49.05	9.07	
00078-87-5 1,2-Dichloropropane	113.00	8.87	4.43	0.95	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	170.70	85.35	20.69	
00108-88-3 Toluene	92.13	221.50	110.75	29.19	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	57.38	28.69	4.20	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	77.14	38.57	8.82	
01330-20-7 m-Xylene and/or p-Xylene	106.16	112.70	56.35	12.89	
00095-47-6 o-Xylene	106.16	65.08	32.54	7.44	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.27	85.40	98.7	
Surrogate 2 Toluene-d8		69.99	65.00	107.7	
Surrogate 3 1,4-Bromofluorobenzene		92.63	66.30	139.7	

BH17A32N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/22/93 15:50	Relative Humidity(%):				
TIME ANALYZED: 1/22/93 15:50	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A32A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A32A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	293.80	146.90	61.43	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	209.50	104.75	29.95	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	188.60	94.30	31.75	
00067-66-3 Chloroform	119.39	110.50	55.25	11.24	
00071-55-6 1,1,1-Trichloroethane	133.42	333.80	166.90	30.38	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	16.29	8.15	2.53	
00107-06-2 1,2-Dichloroethane	98.96	11.21	5.61	1.38	
00079-01-6 Trichloroethene	131.40	112.70	56.35	10.41	
00078-87-5 1,2-Dichloropropane	113.00	10.02	5.01	1.08	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	175.70	87.85	21.30	
00108-88-3 Toluene	92.13	275.20	137.60	36.27	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	77.57	38.79	5.68	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	110.20	55.10	12.61	
01330-20-7 m-Xylene and/or p-Xylene	106.16	164.50	82.25	18.82	
00095-47-6 o-Xylene	106.16	114.20	57.10	13.06	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.84	85.40	98.2	
Surrogate 2 Toluene-d8		34.59	65.00	53.2	
Surrogate 3 1,4-Bromofluorobenzene		89.39	66.30	134.8	

BH17A33N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/25/93 15:25	Relative Humidity(%):				
TIME ANALYZED: 1/25/93 15:36	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A33A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A33A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.96	0.48	0.12	J
00067-64-1 Acetone	58.08	234.60	117.30	49.05	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	209.50	104.75	29.95	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	153.60	76.80	25.85	
00067-66-3 Chloroform	119.39	102.60	51.30	10.44	
00071-55-6 1,1,1-Trichloroethane	133.42	289.20	144.60	26.32	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	12.74	6.37	1.98	
00107-06-2 1,2-Dichloroethane	98.96	11.15	5.58	1.37	
00079-01-6 Trichloroethene	131.40	95.84	47.92	8.86	
00078-87-5 1,2-Dichloropropane	113.00	9.38	4.69	1.01	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	172.00	86.00	20.85	
00108-88-3 Toluene	92.13	238.80	119.40	31.47	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	44.35	22.18	3.25	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	51.36	25.68	5.87	
01330-20-7 m-Xylene and/or p-Xylene	106.16	74.31	37.16	8.50	
00095-47-6 o-Xylene	106.16	40.93	20.47	4.68	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.52	85.40	99.0	
Surrogate 2 Toluene-d8		71.84	65.00	110.5	
Surrogate 3 1,4-Bromofluorobenzene		84.76	66.30	127.8	

BH17A34N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/28/93 12:00	Relative Humidity(%):				
TIME ANALYZED: 1/28/93 12:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A34A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A34A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	3.36	1.68	0.42	J
00067-64-1 Acetone	58.08	240.30	120.15	50.24	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	471.60	235.80	67.43	E
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	114.20	57.10	19.22	
00067-66-3 Chloroform	119.39	344.70	172.35	35.06	E
00071-55-6 1,1,1-Trichloroethane	133.42	794.30	397.15	72.29	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	69.65	34.83	10.83	
00107-06-2 1,2-Dichloroethane	98.96	28.90	14.45	3.55	
00079-01-6 Trichloroethene	131.40	318.70	159.35	29.45	E
00078-87-5 1,2-Dichloropropane	113.00	31.78	15.89	3.42	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	165.80	82.90	20.10	
00108-88-3 Toluene	92.13	340.20	170.10	44.84	E
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	115.90	57.95	8.49	
00108-90-7 Chlorobenzene	112.60	0.86	0.43	0.09	J
00100-41-4 Ethylbenzene	106.16	93.58	46.79	10.70	
01330-20-7 m-Xylene and/or p-Xylene	106.16	176.30	88.15	20.17	
00095-47-6 o-Xylene	106.16	81.58	40.79	9.33	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.37	85.40	98.8	
Surrogate 2 Toluene-d8		75.67	65.00	116.4	
Surrogate 3 1,4-Bromofluorobenzene		90.09	66.30	135.9	

BH17A35N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/29/93 17:30	Relative Humidity(%):				
TIME ANALYZED:1/29/93 17:38	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A35A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A35A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	2.27	1.14	0.28	J
00067-64-1 Acetone	58.08	5.73	2.87	1.20	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	242.80	121.40	34.71	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	55.13	27.57	9.28	
00067-66-3 Chloroform	119.39	249.50	124.75	25.38	
00071-55-6 1,1,1-Trichloroethane	133.42	658.70	329.35	59.95	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	45.61	22.81	7.09	
00107-06-2 1,2-Dichloroethane	98.96	25.10	12.55	3.08	
00079-01-6 Trichloroethene	131.40	275.60	137.80	25.47	
00078-87-5 1,2-Dichloropropane	113.00	28.79	14.40	3.09	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	167.20	83.60	20.27	
00108-88-3 Toluene	92.13	349.20	174.60	46.03	E
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	148.90	74.45	10.90	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	155.80	77.90	17.82	
01330-20-7 m-Xylene and/or p-Xylene	106.16	278.40	139.20	31.84	
00095-47-6 o-Xylene	106.16	179.20	89.60	20.50	
00100-42-5 Styrene	104.10	0.65	0.32	0.08	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.18	85.40	103.3	
Surrogate 2 Toluene-d8		74.12	65.00	114.0	
Surrogate 3 1,4-Bromofluorobenzene		88.75	66.30	133.9	

BH17A36N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/2/93 17:25	Relative Humidity(%):				
TIME ANALYZED:2/2/93 17:34	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A36A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A36A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichlorcethene	96.94	1.14	0.57	0.14	J
00067-64-1 Acetone	58.08	9.72	4.86	2.03	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	52.46	26.23	7.50	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	39.71	44.86	9.12	
00071-55-6 1,1,1-Trichloroethane	133.42	367.80	183.90	33.47	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	12.17	6.09	1.89	
00107-06-2 1,2-Dichloroethane	98.96	8.75	4.37	1.07	
00079-01-6 Trichloroethene	131.40	123.70	61.85	11.43	
00078-87-5 1,2-Dichloropropane	113.00	12.28	6.14	1.32	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	4.65	2.33	0.56	J
00108-88-3 Toluene	92.13	257.80	128.90	33.98	
00079-34-5 1,1,2,2-Tetrachlorcethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	55.03	27.52	4.03	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	51.66	25.83	5.91	
01330-20-7 m-Xylene and/or p-Xylene	106.16	116.70	58.35	13.35	
00095-47-6 o-Xylene	106.16	48.14	24.07	5.51	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		90.83	85.40	106.4	
Surrogate 2 Toluene-d8		76.67	65.00	118.0	
Surrogate 3 1,4-Bromofluorobenzene		92.58	66.30	139.6	

BH17A37N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/3/93 15:35	Relative Humidity(%):				
TIME ANALYZED:2/3/93 15:40	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A37A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A37A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	32.85	16.43	6.87	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	21.31	10.66	3.05	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	19.89	9.95	3.35	
00067-66-3 Chloroform	119.39	69.56	34.78	7.07	
00071-55-6 1,1,1-Trichloroethane	133.42	341.90	170.95	31.12	E
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	15.00	7.50	2.33	
00107-06-2 1,2-Dichloroethane	98.96	8.14	4.07	1.00	
00079-01-6 Trichloroethene	131.40	216.70	108.35	20.03	
00078-87-5 1,2-Dichloropropane	113.00	16.10	8.05	1.73	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	179.90	89.95	21.81	
00108-88-3 Toluene	92.13	175.40	87.70	23.12	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	413.80	206.90	30.30	E
00108-90-7 Chlorobenzene	112.60	1.26	0.63	0.14	J
00100-41-4 Ethylbenzene	106.16	431.70	215.85	49.38	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	249.00	124.50	28.48	
00095-47-6 o-Xylene	106.16	528.90	264.45	60.50	E
00100-42-5 Styrene	104.10	4.38	2.19	0.51	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.20	85.40	99.8	
Surrogate 2 Toluene-d8		70.81	65.00	108.9	
Surrogate 3 1,4-Bromofluorobenzene		70.09	66.30	105.7	

BH17A38N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/4/93 22:45	Relative Humidity(%):				
TIME ANALYZED:2/4/93 22:45	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A38A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A38A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.71	0.36	0.09	J
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	4.05	2.02	0.58	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	7.08	3.54	0.72	
00071-55-6 1,1,1-Trichloroethane	133.42	79.67	39.84	7.25	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	1.19	0.59	0.18	J
00107-06-2 1,2-Dichloroethane	98.96	0.57	0.28	0.07	J
00079-01-6 Trichloroethene	131.40	47.59	23.80	4.40	
00078-87-5 1,2-Dichloropropane	113.00	1.93	0.96	0.21	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	8.19	4.10	0.99	
00108-88-3 Toluene	92.13	254.30	127.15	33.52	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	144.80	72.40	10.60	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	27.20	13.60	3.11	
01330-20-7 m-Xylene and/or p-Xylene	106.16	443.60	221.80	50.74	E
00095-47-6 o-Xylene	106.16	440.90	220.45	50.43	E
00100-42-5 Styrene	104.10	2.89	1.44	0.34	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		90.77	85.40	106.3	
Surrogate 2 Toluene-d8		75.44	65.00	116.1	
Surrogate 3 1,4-Bromofluorobenzene		75.58	66.30	114.0	

BH17A39N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/8/93 20:15	Relative Humidity(%):				
TIME ANALYZED:2/8/93 20:22	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH17A39A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A39A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.63	0.31	0.13	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	3.97	1.99	0.57	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	5.46	2.73	0.50	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	7.62	3.81	0.70	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	85.21	42.61	11.23	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	47.18	23.59	3.45	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	100.10	50.05	11.45	
01330-20-7 m-Xylene and/or p-Xylene	106.16	249.00	124.50	28.48	
00095-47-6 o-Xylene	106.16	174.70	87.35	19.98	
00100-42-5 Styrene	104.10	2.89	1.44	0.34	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.65	85.40	105.0	
Surrogate 2 Toluene-d8		74.29	65.00	114.3	
Surrogate 3 1,4-Bromofluorobenzene		69.75	66.30	105.2	

BH17A40N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS						
SAMPLE ID : column 17 (1/12/93)		Canister ID Number:			DIR	
TIME RECEIVED: 2/9/93 22:15		Relative Humidity(%):				
TIME ANALYZED:2/9/93 22:26		Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):			5.00	
GC/MS DATA FILE: BH17A40A.D		Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A40A		Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93		Calibration (Int/Ext):			ISTD	
		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94	0.57	0.11	0.03	U
00067-64-1	Acetone	58.08				U
09003-22-9	Vinyl chloride	62.50				U
00075-09-2	Methylene chloride	84.93	1.70	0.34	0.10	J
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14				U
00067-66-3	Chloroform	119.39				U
00071-55-6	1,1,1-Trichloroethane	133.42	8.10	1.62	0.29	
00079-00-5	1,1,2-Trichloroethane	133.42				U
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11				U
00107-06-2	1,2-Dichloroethane	98.96				U
00079-01-6	Trichloroethene	131.40	12.34	2.47	0.46	
00078-87-5	1,2-Dichloropropane	113.00				U
00108-10-1	4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3	Toluene	92.13	126.60	25.32	6.67	
00079-34-5	1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4	Tetrachloroethene	165.85	104.20	20.84	3.05	
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16	183.80	36.76	8.41	
01330-20-7	m-Xylene and/or p-Xylene	106.16	355.00	71.00	16.24	E
00095-47-6	o-Xylene	106.16	323.00	64.60	14.78	E
00100-42-5	Styrene	104.10	1.60	0.32	0.07	J
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4		76.29	85.40	89.3	
Surrogate 2	Toluene-d8		62.85	65.00	96.7	
Surrogate 3	1,4-Bromofluorobenzene		66.27	66.30	100.0	

BH17A41N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)		Canister ID Number:		DIR	
TIME RECEIVED: 2/11/93 22:00		Relative Humidity(%):			
TIME ANALYZED:2/11/93 22:03		Dryer Use (Yes/No):		NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):		5.00	
GC/MS DATA FILE: BH17A41A.D		Sample Tmperature(C°):		23.0	
REPORT FILE: BH17A41A		Sample Press. (mmHg):		760.0	
DATE REPORTED: 2/11/93		Calibration (Int/Ext):		ISTD	
		CONCENTRATION			
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94				U
00067-64-1	Acetone	58.08				U
09003-22-9	Vinyl chloride	62.50				U
00075-09-2	Methylene chloride	84.93	1.57	0.31	0.09	J
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14				U
00067-66-3	Chloroform	119.39				U
00071-55-6	1,1,1-Trichloroethane	133.42	3.18	0.64	0.12	J
00079-00-5	1,1,2-Trichloroethane	133.42				U
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11				U
00107-06-2	1,2-Dichloroethane	98.96				U
00079-01-6	Trichloroethene	131.40	4.67	0.93	0.17	J
00078-87-5	1,2-Dichloropropane	113.00				U
00108-10-1	4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3	Toluene	92.13	62.09	12.42	3.27	
00079-34-5	1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4	Tetrachloroethene	165.85	76.86	15.37	2.25	
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16	135.80	27.16	6.21	
01330-20-7	m-Xylene and/or p-Xylene	106.16	303.90	60.78	13.90	E
00095-47-6	o-Xylene	106.16	251.80	50.36	11.52	
00100-42-5	Styrene	104.10	1.04	0.21	0.05	J
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4		92.50	85.40	108.3	
Surrogate 2	Toluene-d8		76.56	65.00	117.8	
Surrogate 3	1,4-Bromofluorobenzene		81.58	66.30	123.0	

BH17A42N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/17/93 20:15	Relative Humidity(%):				
TIME ANALYZED:2/11/93 20:20	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			20.00	
GC/MS DATA FILE: BH17A42A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A42A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.83	0.04	0.02	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	2.89	0.14	0.04	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	0.75	0.04	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	2.81	0.14	0.02	J
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	6.01	0.30	0.07	
01330-20-7 m-Xylene and/or p-Xylene	106.16	24.56	1.23	0.28	
00095-47-6 o-Xylene	106.16	14.22	0.71	0.16	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		92.02	85.40	107.8	
Surrogate 2 Toluene-d8		74.96	65.00	115.3	
Surrogate 3 1,4-Bromofluorobenzene		68.58	66.30	103.4	

BH17A43N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 17 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/22/93 18:50	Relative Humidity(%):				
TIME ANALYZED:2/22/93 18:55	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			20.00	
GC/MS DATA FILE: BH17A43A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH17A43A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/24/93	Calibration (Int/Ext): Int				
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.65	0.03	0.01	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	3.39	0.17	0.05	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	0.86	0.04	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	2.56	0.13	0.02	J
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	20.77	1.04	0.24	
00095-47-6 o-Xylene	106.16	17.17	0.86	0.20	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.40	85.40	104.7	
Surrogate 2 Toluene-d8		64.04	65.00	98.5	
Surrogate 3 1,4-Bromofluorobenzene		38.63	66.30	58.3	

COLUMN 2 / TL-SBPA SAMPLE

Sample I.D.		On site Lagoon, composite		Column No:	18		
Date	Time	Flow Rate	Prs.Dif.	Sample Vol.	Temp.	Anal. Time	Data File
MM/DD/YY	HH:MM	ml/min	in. water	ml	deg C	HH:MM	
GC/MSD							
1/12/93	10:30	Starting the air flow and Allowing the excess water to drain out					
1/13/93	15:20	105		1.0	23	15:27	BH18A01A
1/13/93	16:30	100		1.0	23	16:32	BH18A02A
1/13/93	17:30	110		1.0	23	17:36	BH18A03A
1/13/93	18:30	98		1.0	23	18:40	BH18A04A
1/14/93	13:20	100		1.0	23	13:33	BH18A05A
1/14/93	21:00	98		1.0	23	21:17	BH18A06A
1/15/93	9:41	LAB. BLK.	air	50.0	23	9:41	BH18A07A
1/15/93	10:39	NBS	GAS	1000.0	23	10:39	BH18A08A
1/15/93	13:00	100		1.0	23	13:20	BH18A09A
1/15/93	17:15	100		1.0	23	17:31	BH18A10A
1/17/93	15:19	LAB. BLK.	air	50.0	23	15:19	BH18A11A
1/17/93	17:33	NBS	GAS	1000.0	23	17:33	BH18A12A
1/17/93	19:30	100		1.0	23	19:43	BH18A13A
1/18/93	11:09	LAB. BLK.	air	50.0	23	11:09	BH18A14A
1/18/93	12:08	NBS	GAS	1000.0	23	12:08	BH18A15A
1/18/93	13:00	104		2.0	23	13:09	BH18A16A
1/19/93	10:02	LAB. BLK.	air	50.0	23	10:02	BH18A17A
1/19/93	file is empty						BH18A18A
1/19/93	12:22	NBS	GAS	1000.0	23	12:22	BH18A19A
1/19/93	17:25	105		2.0	23	17:34	BH18A20A
1/20/93	12:46	LAB. BLK.	air	50.0	23	12:46	BH18A21A
1/20/93	14:25	NBS	GAS	1000.0	23	14:26	BH18A22A
1/20/93	16:30	105		2.0	23	16:38	BH18A23A
1/21/93	10:59	LAB. BLK.	air	50.0	23	10:59	BH18A24A
1/21/93	14:37	NBS	GAS	1000.0	23	14:37	BH18A25A
1/21/93	15:40	95		2.0	23	15:53	BH18A26A
1/22/93	11:29	LAB. BLK.	air	50.0	23	11:29	BH18A27A
1/22/93	12:39	NBS	GAS	1000.0	23	12:39	BH18A28A
1/22/93	14:00	105		2.0	23	14:05	BH18A29A
1/25/93	10:06	LAB. BLK.	air	50.0	23	10:06	BH18A30A
1/25/93	12:39	NBS	GAS	1000.0	23	12:39	BH18A31A
1/25/93	13:30	106		2.0	23	13:42	BH18A32A
1/28/93	15:40	115		2.0	23	16:03	BH18A33A
1/29/93	16:00	115		2.0	23	16:17	BH18A34A
2/2/93	16:10	115		2.0	23	16:17	BH18A35A
2/3/93	19:50	220		2.0	23	20:00	BH18A36A
2/4/93	20:45	220		2.0	23	20:51	BH18A37A
2/8/93	14:30	230		2.0	23	14:41	BH18A38A
2/9/93	16:55	225		5.0	23	17:09	BH18A39A
2/11/93	9:15	LAB. BLK.	air	50.0	23	9:15	BH18A40A
2/11/93	10:57	NBS	GAS	1000.0	23	10:57	BH18A41A
2/11/93	20:40	220		20.0	23	20:46	BH18A42A
2/17/93	10:39	LAB. BLK.	air	50.0	23	10:39	BH18A43A
2/17/93	12:03	NBS	GAS	500.0	23	12:03	BH18A44A
2/17/93	13:30	220		100.0	23	13:47	BH18A45A
[illegible]	15:05	220		100.0	23	15:10	BH18A46A

Vapor Extraction Bench Scale Experiment Data Sheet 1

PROJECT: ACS

PROJECT #: 20007001 GRIFFITH, INDIANA

Column Number: 18

Packed Date: 1/12/93

Soil Sample ID: COLUMN (II)

Sample Description: ON-SITE LAGOON COMPOSITE

Column:

	D=	7.6	cm
	H=	48.00	cm
	V=	2176	cm3
Sample Mass:	M=	3505	g
Packed density	d=	1.61	g/cm3

BH18A01A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)		Canister ID Number:		DIR	
TIME RECEIVED: 1/13/93 15:20		Relative Humidity(%):			
TIME ANALYZED: 1/13/93 15:27		Dryer Use (Yes/No):		NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):		1.00	
GC/MS DATA FILE: BH17A18A.D		Sample Tmperature(C°):		23.0	
REPORT FILE: BH17A18A		Sample Press. (mmHg):		760.0	
DATE REPORTED: 1/13/93		Calibration (Int/Ext):		ISTD	
		CONCENTRATION			
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94	1.07	1.07	0.27	J
00067-64-1	Acetone	58.08	69.5	69.5	29.1	
09003-22-9	Vinyl chloride	62.5				U
00075-09-2	Methylene chloride	84.93	204.80	204.80	58.56	
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14	119.9	119.9	40.4	
00067-66-3	Chloroform	119.39	97.21	97.21	19.77	
00071-55-6	1,1,1-Trichloroethane	133.42	375	375	68.30	E
00079-00-5	1,1,2-Trichloroethane	133.42				U
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11	14.78	14.78	4.60	
00107-06-2	1,2-Dichloroethane	98.96	9.64	9.64	2.37	
00079-01-6	Trichloroethene	131.40	94.45	94.45	17.46	
00078-87-5	1,2-Dichloropropane	113.00	8.10	8.10	1.74	
00108-10-1	4-Methyl-2-pentanone (MI	100.16	191.4	191.4	46.4	
00108-88-3	Toluene	92.13	258.60	258.60	68.17	
00079-34-5	1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4	Tetrachloroethene	165.85	46.50	46.50	6.81	
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16	59.44	59.44	13.60	
01330-20-7	m-Xylene and/or p-Xylene	106.16	118	118	27.09	
00095-47-6	o-Xylene	106.16	41.17	41.17	9.42	
00100-42-5	Styrene	104.10				U
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng	Add(ng	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4		75.6	85.4	88.5%	
Surrogate 2	Toluene-d8		65.6	65.0	100.9%	
Surrogate 3	1,4-Bromofluorobenzene		80.2	66.3	121.0%	

BH18A02E.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 16:30	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 16:32	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH17A18A.D	Sample Temperature(C°):			23.0	
REPORT FILE: BH17A18A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/13/93	Calibration (Int/Ext):			ExtSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	1.19	1.19	0.30	J
00067-64-1 Acetone	58.08	72.0	72.0	30.1	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	145.40	145.40	41.58	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	98.9	98.9	33.3	
00067-66-3 Chloroform	119.39	69.06	69.06	14.05	
00071-55-6 1,1,1-Trichloroethane	133.42	262	262	47.73	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	11.11	11.11	3.45	
00107-06-2 1,2-Dichloroethane	98.96	7.02	7.02	1.72	
00079-01-6 Trichloroethene	131.40	70.06	70.06	12.95	
00078-87-5 1,2-Dichloropropane	113.00	5.97	5.97	1.28	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	155.1	155.1	37.6	
00108-88-3 Toluene	92.13	195.90	195.90	51.64	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	30.67	30.67	4.49	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	40.74	40.74	9.32	
01330-20-7 m-Xylene and/or p-Xylene	106.16	78	78	17.90	
00095-47-6 o-Xylene	106.16	24.33	24.33	5.57	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.4		
Surrogate 2 Toluene-d8			65.0		
Surrogate 3 1,4-Bromofluorobenzene			66.3		

BH18A03E.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 17:30	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 17:36	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A03A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A03A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ExtSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	1.06	1.06	0	
00067-64-1 Acetone	58.08	72	72	30	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	127	127	36	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	98	98	33	
00067-66-3 Chloroform	119.39	62	62	13	
00071-55-6 1,1,1-Trichloroethane	133.42	236	236	43	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	10	10	3	
00107-06-2 1,2-Dichloroethane	98.96	6	6	2	
00079-01-6 Trichloroethene	131.40	64	64	12	
00078-87-5 1,2-Dichloropropane	113.00	5	5	1	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	152	152	37	
00108-88-3 Toluene	92.13	192	192	51	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	32	32	5	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	45	45	10	
01330-20-7 m-Xylene and/or p-Xylene	106.16	92	92	21	
00095-47-6 o-Xylene	106.16	30	30	7	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85		
Surrogate 2 Toluene-d8			65		
Surrogate 3 1,4-Bromofluorobenzene			66		

BH18A04E.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/13/93 18:30	Relative Humidity(%):				
TIME ANALYZED: 1/13/93 18:40	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A04A.D	Sample Temperature(C°):			23.0	
REPORT FILE: BH18A04A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ExtSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.78	0.78	0	J
00067-64-1 Acetone	58.08	76	76	32	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	114	114	33	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	103	103	35	
00067-66-3 Chloroform	119.39	60	60	12	
00071-55-6 1,1,1-Trichloroethane	133.42	231	231	42	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	11	11	3	
00107-06-2 1,2-Dichloroethane	98.96	6	6	2	
00079-01-6 Trichloroethene	131.40	78	78	14	
00078-87-5 1,2-Dichloropropane	113.00	6	6	1	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	163	163	39	
00108-88-3 Toluene	92.13	227	227	60	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	63	63	9	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	97	97	22	
01330-20-7 m-Xylene and/or p-Xylene	106.16	184	184	42	
00095-47-6 o-Xylene	106.16	80	80	18	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85		
Surrogate 2 Toluene-d8			65		
Surrogate 3 1,4-Bromofluorobenzene			66		

BH18A05E.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 13:20	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 13:33	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A05A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A05A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ExtSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chlcroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				J
00067-64-1 Acetone	58.08	8	8	3	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	41	41	12	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	57	57	19	
00067-66-3 Chloroform	119.39	24	24	5	
00071-55-6 1,1,1-Trichloroethane	133.42	122	122	22	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	4	4	1	
00107-06-2 1,2-Dichloroethane	98.96	2	2	1	J
00079-01-6 Trichloroethene	131.40	28	28	5	
00078-87-5 1,2-Dichloropropane	113.00	2	2	0	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	87	87	21	
00108-88-3 Toluene	92.13	116	116	31	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	23	23	3	
00108-90-7 Chlorobenzene	112.60	7	7	1	
00100-41-4 Ethylbenzene	106.16	24	24	5	
01330-20-7 m-Xylene and/or p-Xylene	106.16	32	32	7	
00095-47-6 o-Xylene	106.16	18	18	4	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		66	85	76.83	
Surrogate 2 Toluene-d8		56	65	86.86	
Surrogate 3 1,4-Bromofluorobenzene		75	66	112.41	

BH18A06A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 21:00	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 21:17	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A06A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A06A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.69	0.69	0	J
00067-64-1 Acetone	58.08	4	4	2	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	50	50	14	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	87	87	29	
00067-66-3 Chloroform	119.39	32	32	6	
00071-55-6 1,1,1-Trichloroethane	133.42	210	210	38	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	12	12	4	
00107-06-2 1,2-Dichloroethane	98.96	4	4	1	J
00079-01-6 Trichloroethene	131.40	66	66	12	
00078-87-5 1,2-Dichloropropane	113.00	3	3	1	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	126	126	31	
00108-88-3 Toluene	92.13	334	334	88	E
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	77	77	11	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	65	65	15	
01330-20-7 m-Xylene and/or p-Xylene	106.16	135	135	31	
00095-47-6 o-Xylene	106.16	53	53	12	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		28	85	0.33	
Surrogate 2 Toluene-d8		22	65	0.34	
Surrogate 3 1,4-Bromofluorobenzene		29	66	0.43	

BH18A07N.XLS

MBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
AMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 9:41	Relative Humidity(%):				
TIME ANALYZED: 1/15/93 9:41	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A07A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A07A	Sample Pres's. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	1.03	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.66	0.07	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	6.28	0.13	0.03	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.05	0.02	0.00	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	3.23	0	0.01	J
00095-47-6 o-Xylene	106.16	0.94	0.02	0.00	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		70.12	85.4	82.1%	
Surrogate 2 Toluene-d8		63.13	65.0	97.1%	
4-Bromofluorobenzene		63.93	66.3	96.4%	

BH18A08N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 10:37	Relative Humidity(%):				
TIME ANALYZED: 1/15/93 10:37	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A08A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A08A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	13.56	13.6	5.7	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	23.65	23.65	6.76	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	8.78	8.8	3.0	
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	40.01	40	7.28	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	32.15	32.15	5.08	
00071-43-2 Benzene	78.11	18.26	18.26	5.68	
00107-06-2 1,2-Dichloroethane	98.96	27.27	27.27	6.69	
00079-01-6 Trichloroethene	131.40	43.85	43.85	8.10	
00078-87-5 1,2-Dichloropropane	113.00	33.24	33.24	7.14	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	2.65	2.6	0.6	J
00108-88-3 Toluene	92.13	33.36	33.36	8.79	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	69.81	69.81	10.22	
00108-90-7 Chlorobenzene	112.60	39.62	39.62	8.55	
00100-41-4 Ethylbenzene	106.16	38.40	38.40	8.78	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	40.32	40.32	9.22	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		59.69	85.4	69.9%	
Surrogate 2 Toluene-d8		50.08	65.0	77.0%	
Surrogate 3 1,4-Bromofluorobenzene		57.08	66.3	86.1%	

BH18A09N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 13:00	Relative Humidity(%):				
TIME ANALYZED: 1/15/93 13:20	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A09A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A09A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.56	0.56	0	J
00067-64-1 Acetone	58.08	5	5	2	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	35	35	10	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	51	51	17	
00067-66-3 Chloroform	119.39	24	24	5	
00071-55-6 1,1,1-Trichloroethane	133.42	145	145	26	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	4	4	1	J
00107-06-2 1,2-Dichloroethane	98.96	2	2	0	J
00079-01-6 Trichloroethene	131.40	42	42	8	
00078-87-5 1,2-Dichloropropane	113.00	2	2	1	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	73	73	18	
00108-88-3 Toluene	92.13	195	195	52	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	45	45	7	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	85	85	19	
01330-20-7 m-Xylene and/or p-Xylene	106.16	190	190	43	
00095-47-6 o-Xylene	106.16	90	90	21	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		69	85	0.80	
Surrogate 2 Toluene-d8		59	65	0.91	
Surrogate 3 1,4-Bromofluorobenzene		61	66	0.92	

BH18A10N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 17:15	Relative Humidity(%):				
TIME ANALYZED: 1/15/93 17:31	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A10A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A10A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	1.17	1.17	0	J
00067-64-1 Acetone	58.08	10	10	4	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	40	40	12	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	82	82	28	
00067-66-3 Chloroform	119.39	27	27	5	
00071-55-6 1,1,1-Trichloroethane	133.42	167	167	30	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	5	5	2	J
00107-06-2 1,2-Dichloroethane	98.96	3	3	1	J
00079-01-6 Trichloroethene	131.40	44	44	8	
00078-87-5 1,2-Dichloropropane	113.00	3	3	1	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	88	88	21	
00108-88-3 Toluene	92.13	242	242	64	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	38	38	6	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	35	35	8	
01330-20-7 m-Xylene and/or p-Xylene	106.16	71	71	16	
00095-47-6 o-Xylene	106.16	26	26	6	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		60	85	0.71	
Surrogate 2 Toluene-d8		51	65	0.78	
Surrogate 3 1,4-Bromofluorobenzene		61	66	0.92	

BH18A11N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/17/93 15:19	Relative Humidity(%):				
TIME ANALYZED: 1/17/93 15:19	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A011A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A011A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			EXTSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.55	0.01	0.00	U
00067-64-1 Acetone	58.08	1.62	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.38	0.07	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	2.23	0.04	0.01	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				J
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.76	0	0.00	J
00095-47-6 o-Xylene	106.16				J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.4		
Surrogate 2 Toluene-d8			65.0		
Surrogate 3 1,4-Bromofluorobenzene			66.3		

BH18A12N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS

SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/17/93 17:33	Relative Humidity(%):				
TIME ANALYZED: 1/17/93 17:33	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A12A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A12A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	8.61	8.6	3.6	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	19.95	19.95	5.70	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	5.17	5.2	1.7	
00067-66-3 Chloroform	119.39	29.40	29.40	5.98	
00071-55-6 1,1,1-Trichloroethane	133.42	33.74	34	6.14	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	20.32	20.32	3.21	
00071-43-2 Benzene	78.11	17.45	17.45	5.43	
00107-06-2 1,2-Dichloroethane	98.96	23.80	23.80	5.84	
00079-01-6 Trichloroethene	131.40	38.24	38.24	7.07	
00078-87-5 1,2-Dichloropropane	113.00	28.28	28.28	6.08	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.92	1.9	0.5	J
00108-88-3 Toluene	92.13	28.85	28.85	7.60	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	52.11	52.11	7.63	
00108-90-7 Chlorobenzene	112.60	32.63	32.63	7.04	
00100-41-4 Ethylbenzene	106.16	29.48	29.48	6.74	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	32.41	32.41	7.41	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.4		
Surrogate 2 Toluene-d8			65.0		
Surrogate 3 1,4-Bromofluorobenzene			66.3		

BH18A13E.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS						
SAMPLE ID : column 18 (1/13/93)		Canister ID Number:			DIR	
TIME RECEIVED: 1/17/93 19:30		Relative Humidity(%):				
TIME ANALYZED: 1/17/93 19:43		Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):			1.00	
GC/MS DATA FILE: BH18A13A.D		Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A13A		Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93		Calibration (Int/Ext):			ExtSTD	
		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94				U
00067-64-1	Acetone	58.08	22	22	9	
09003-22-9	Vinyl chloride	62.5				U
00075-09-2	Methylene chloride	84.93	10	10	3	
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14	4	4	1	J
00067-66-3	Chloroform	119.39	13	13	3	
00071-55-6	1,1,1-Trichloroethane	133.42	52	52	9	
00079-00-5	1,1,2-Trichloroethane	133.42				U
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11	6	6	2	
00107-06-2	1,2-Dichloroethane	98.96	5	5	1	
00079-01-6	Trichloroethene	131.40	27	27	5	
00078-87-5	1,2-Dichloropropane	113.00	9	9	2	
00108-10-1	4-Methyl-2-pentanone (MI	100.16	12	12	3	
00108-88-3	Toluene	92.13	134	134	35	
00079-34-5	1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4	Tetrachloroethene	165.85	66	66	10	
00108-90-7	Chlorobenzene	112.60	32	32	7	
00100-41-4	Ethylbenzene	106.16	78	78	18	
01330-20-7	m-Xylene and/or p-Xylene	106.16	119	119	27	
00095-47-6	o-Xylene	106.16	87	87	20	
00100-42-5	Styrene	104.10				U
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng	Add(ng	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4			85		
Surrogate 2	Toluene-d8			65		
Surrogate 3	1,4-Bromofluorobenzene			66		

BH18A14N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/18/93 11:09	Relative Humidity(%):				
TIME ANALYZED: 1/18/93 11:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A014A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A014A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.81	0.08	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	1.27	0.03	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16				U
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		80.92	85.4	94.8%	
Surrogate 2 Toluene-d8		68.76	65.0	105.8%	
Surrogate 3 1,4-Bromofluorobenzene		76.29	66.3	115.1%	

BH18A15N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/18/93 12:08	Relative Humidity(%):				
TIME ANALYZED: 1/18/93 12:08	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A15A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A15A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	7.69	7.7	3.2	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	20.66	20.66	5.91	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	4.86	4.9	1.6	J
00067-66-3 Chloroform	119.39	29.69	29.69	6.04	
00071-55-6 1,1,1-Trichloroethane	133.42	35.36	35	6.44	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	32.70	32.70	5.16	
00071-43-2 Benzene	78.11	16.26	16.26	5.06	
00107-06-2 1,2-Dichloroethane	98.96	25.15	25.15	6.17	
00079-01-6 Trichloroethene	131.40	39.81	39.81	7.36	
00078-87-5 1,2-Dichloropropane	113.00	29.48	29.48	6.34	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.53	1.5	0.4	J
00108-88-3 Toluene	92.13	29.04	29.04	7.66	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	52.73	52.73	7.72	
00108-90-7 Chlorobenzene	112.60	29.59	29.59	6.38	
00100-41-4 Ethylbenzene	106.16	30.66	30.66	7.01	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	32.44	32.44	7.42	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.03	85.4	99.6%	
Surrogate 2 Toluene-d8		71.10	65.0	109.4%	
Surrogate 3 1,4-Bromofluorobenzene		73.65	66.3	111.1%	

BH18A16A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/18/93 13:00	Relative Humidity(%):				
TIME ANALYZED: 1/18/93 13:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A16A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A16A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	13	7	3	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	10	5	1	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	2	1	0	J
00067-66-3 Chloroform	119.39	16	8	2	
00071-55-6 1,1,1-Trichloroethane	133.42	142	71	13	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	3	2	1	J
00107-06-2 1,2-Dichloroethane	98.96	1	1	0	J
00079-01-6 Trichloroethene	131.40	64	32	6	
00078-87-5 1,2-Dichloropropane	113.00	3	2	0	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	15	7	2	
00108-88-3 Toluene	92.13	261	130	34	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	123	61	9	
00108-90-7 Chlorobenzene	112.60	1	0	0	
00100-41-4 Ethylbenzene	106.16	237	119	27	
01330-20-7 m-Xylene and/or p-Xylene	106.16	361	180	41	
00095-47-6 o-Xylene	106.16	308	154	35	E
00100-42-5 Styrene	104.10	2	1	0	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85	85	0.99	
Surrogate 2 Toluene-d8		73	65	1.12	
Surrogate 3 1,4-Bromofluorobenzene		82	66	1.24	

BH18A17N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/19/93 10:02	Relative Humidity(%):				
TIME ANALYZED: 1/19/93 10:02	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A17A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A17A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.77	0.02	0.00	J
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	2.99	0.06	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	2.00	0.04	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.12	0.02	0.01	
01330-20-7 m-Xylene and/or p-Xylene	106.16	3.10	0	0.01	
00095-47-6 o-Xylene	106.16	1.49	0.03	0.01	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		80.85	85.4	94.7%	
Surrogate 2 Toluene-d8		70.42	65.0	108.3%	
Surrogate 3 1,4-Bromofluorobenzene		98.06	66.3	147.9%	

BH18A19N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/19/93 12:22	Relative Humidity(%):				
TIME ANALYZED: 1/19/93 12:22	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A19A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A19A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93				U
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	5.30	5.3	1.8	
00067-66-3 Chloroform	119.39	29.93	29.93	6.09	
00071-55-6 1,1,1-Trichloroethane	133.42	36.18	36	6.59	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	33.41	33.41	5.27	
00071-43-2 Benzene	78.11	15.92	15.92	4.95	
00107-06-2 1,2-Dichloroethane	98.96	24.01	24.01	5.89	
00079-01-6 Trichloroethene	131.40	38.24	38.24	7.07	
00078-87-5 1,2-Dichloropropane	113.00	28.49	28.49	6.12	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.68	1.7	0.4	J
00108-88-3 Toluene	92.13	30.66	30.66	8.08	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	53.22	53.22	7.79	
00108-90-7 Chlorobenzene	112.60	30.74	30.74	6.63	
00100-41-4 Ethylbenzene	106.16	30.97	30.97	7.08	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	34.80	34.80	7.96	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		82.11	85.4	96.1%	
Surrogate 2 Toluene-d8		74.03	65.0	113.9%	
Surrogate 3 1,4-Bromofluorobenzene		88.31	66.3	133.2%	

BH18A20N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/19/93 17:25	Relative Humidity(%):				
TIME ANALYZED: 1/19/93 17:34	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A20A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A20A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	5	2	1	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1	1	0	J
00067-66-3 Chloroform	119.39	7	3	1	
00071-55-6 1,1,1-Trichloroethane	133.42	61	31	6	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	1	1	0	J
00107-06-2 1,2-Dichloroethane	98.96	1	0	0	J
00079-01-6 Trichloroethene	131.40	31	15	3	
00078-87-5 1,2-Dichloropropane	113.00	1	1	0	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	8	4	1	
00108-88-3 Toluene	92.13	217	108	29	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	83	42	6	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	201	100	23	
01330-20-7 m-Xylene and/or p-Xylene	106.16	337	169	39	E
00095-47-6 o-Xylene	106.16	285	142	33	
00100-42-5 Styrene	104.10	2	1	0	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		87	85	102.20	
Surrogate 2 Toluene-d8		74	65	114.48	
Surrogate 3 1,4-Bromofluorobenzene		91	66	137.42	

BH18A21N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/20/93 12:46	Relative Humidity(%):				
TIME ANALYZED: 1/20/93 12:46	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A21A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A21A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	2.77	0.1	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	4.86	0.10	0.03	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.09	0.0	0.0	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	3.03	0.06	0.02	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.73	0.03	0.01	
01330-20-7 m-Xylene and/or p-Xylene	106.16	5.90	0	0.03	
00095-47-6 o-Xylene	106.16	3.14	0.06	0.01	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.76	85.4	98.1%	
Surrogate 2 Toluene-d8		72.94	65.0	112.2%	
Surrogate 3 1,4-Bromofluorobenzene		95.02	66.3	143.3%	

BH18A22N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/20/93 14:26	Relative Humidity(%):				
TIME ANALYZED: 1/20/93 14:26	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A22A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A22A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.54	0.54	0.13	J
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93				U
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	5.65	5.7	1.9	
00067-66-3 Chloroform	119.39	31.28	31.28	6.36	
00071-55-6 1,1,1-Trichloroethane	133.42	37.19	37	6.77	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	34.93	34.93	5.51	
00071-43-2 Benzene	78.11	16.28	16.28	5.06	
00107-06-2 1,2-Dichloroethane	98.96	25.77	25.77	6.32	
00079-01-6 Trichloroethene	131.40	40.63	40.63	7.51	
00078-87-5 1,2-Dichloropropane	113.00	29.78	29.78	6.40	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	2.71	2.7	0.7	J
00108-88-3 Toluene	92.13	45.26	45.26	11.93	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	74.12	74.12	10.85	
00108-90-7 Chlorobenzene	112.60	55.05	55.05	11.87	
00100-41-4 Ethylbenzene	106.16	54.36	54.36	12.44	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.92	1	0.21	J
00095-47-6 o-Xylene	106.16	63.97	63.97	14.63	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.72	85.4	100.4%	
Surrogate 2 Toluene-d8		74.97	65.0	115.3%	
Surrogate 3 1,4-Bromofluorobenzene		98.41	66.3	148.4%	

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 1% (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/20/93 16:30	Relative Humidity(%):				
TIME ANALYZED: 1/20/93 16:38	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A23A.D	Sample Temperature(C°):			23.0	
REPORT FILE: BH18A23A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.86	0.43	0.11	
00067-64-1 Acetone	58.08	0.79	0.39	0.16	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	5.03	2.51	0.72	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	4.48	2.24	0.46	J
00071-55-6 1,1,1-Trichloroethane	133.42	42.31	21.16	3.85	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	0.88	0.44	0.14	J
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	23.51	11.76	2.17	
00078-87-5 1,2-Dichloropropane	113.00	1.07	0.54	0.11	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	2.44	1.22	0.30	J
00108-88-3 Toluene	92.13	188.30	94.15	24.82	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	66.49	33.25	4.87	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	169.40	84.70	19.38	
01330-20-7 m-Xylene and/or p-Xylene	106.16	288.80	144.40	33.03	
00095-47-6 o-Xylene	106.16	242.10	121.05	27.69	
00100-42-5 Styrene	104.10	1.24	0.62	0.14	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.88	85.40	98.2	
Surrogate 2 Toluene-d8		71.49	65.00	110.0	
Surrogate 3 1,4-Bromofluorobenzene		85.40	66.30	128.8	

BH18A24N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/21/93 10:59	Relative Humidity(%):				
TIME ANALYZED: 1/21/93 10:59	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A24A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A24A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
0067-64-1 Acetone	58.08				J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93				J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	93.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	1.70	0.03	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.31	0.03	0.01	
01330-20-7 m-Xylene and/or p-Xylene	106.16	4.50	0	0.02	
00095-47-6 o-Xylene	106.16	3.16	0.06	0.01	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.30	85.4	98.7%	
Surrogate 2 Toluene-d8		73.61	65.0	113.2%	
Surrogate 3 1,4-Bromofluorobenzene		97.08	66.3	146.4%	

BH18A25N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/21/93 14:37	Relative Humidity(%):				
TIME ANALYZED: 1/21/93 14:37	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A25A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A25A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	13.67	13.67	3.91	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	27.72	27.72	5.64	
00071-55-6 1,1,1-Trichloroethane	133.42	33.03	33	6.01	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	29.12	29.12	4.60	
00071-43-2 Benzene	78.11	14.49	14.49	4.51	
00107-06-2 1,2-Dichloroethane	98.96	23.15	23.15	5.68	
00079-01-6 Trichloroethene	131.40	36.24	36.24	6.70	
00078-87-5 1,2-Dichloropropane	113.00	26.74	26.74	5.75	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.88	1.9	0.5	J
00108-88-3 Toluene	92.13	28.23	28.23	7.44	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	51.62	51.62	7.56	
00108-90-7 Chlorobenzene	112.60	29.43	29.43	6.35	
00100-41-4 Ethylbenzene	106.16	29.31	29.31	6.71	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.52	1	0.12	J
00095-47-6 o-Xylene	106.16	32.85	32.85	7.51	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.86	85.4	101.7%	
Surrogate 2 Toluene-d8		75.42	65.0	116.0%	
Surrogate 3 1,4-Bromofluorobenzene		92.89	66.3	140.1%	

BH18A26N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/21/93 15:40	Relative Humidity(%):				
TIME ANALYZED: 1/21/93 15:53	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A26A.D	Sample Temperature(C'):			23.0	
REPORT FILE: BH18A26A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.86	0.43	0.11	
00067-64-1 Acetone	58.08	0.65	0.32	0.14	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	6.46	3.23	0.92	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	3.05	1.53	0.31	J
00071-55-6 1,1,1-Trichloroethane	133.42	32.44	16.22	2.95	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	0.61	0.31	0.10	J
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	19.42	9.71	1.79	
00078-87-5 1,2-Dichloropropane	113.00	0.84	0.42	0.09	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	1.82	0.91	0.22	J
00108-88-3 Toluene	92.13	173.20	86.60	22.83	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	62.63	31.32	4.59	
00108-90-7 Chlorobenzene	112.60	1.26	0.63	0.14	U
00100-41-4 Ethylbenzene	106.16	156.00	78.00	17.84	
01330-20-7 m-Xylene and/or p-Xylene	106.16	280.70	140.35	32.11	
00095-47-6 o-Xylene	106.16	241.10	120.55	27.58	
00100-42-5 Styrene	104.10	1.30	0.65	0.15	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.77	85.40	100.4	
Surrogate 2 Toluene-d8		73.55	65.00	113.2	
Surrogate 3 1,4-Bromofluorobenzene		86.25	66.30	130.1	

BH18A27N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/22/93 11:29	Relative Humidity(%):				
TIME ANALYZED: 1/22/93 11:29	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A27A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A27A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.72	0.01	0.00	J
00067-64-1 Acetone	58.08	1.37	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	2.75	0.05	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	1.72	0.03	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.31	0.03	0.01	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	3.96	0	0.02	J
00095-47-6 o-Xylene	106.16	3.01	0.06	0.01	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.14	85.4	97.4%	
Surrogate 2 Toluene-d8		72.30	65.0	111.2%	
Surrogate 3 1,4-Bromofluorobenzene		82.62	66.3	124.6%	

BH18A28N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/22/93 12:39	Relative Humidity(%):				
TIME ANALYZED: 1/22/93 12:39	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A28A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A28A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.56	0.56	0.14	J
00067-64-1 Acetone	58.08	8.04	8.0	3.4	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	21.62	21.62	6.18	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	5.18	5.2	1.7	J
00067-66-3 Chloroform	119.39	30.03	30.03	6.11	
00071-55-6 1,1,1-Trichloroethane	133.42	34.75	35	6.33	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	29.70	29.70	4.69	J
00071-43-2 Benzene	78.11	15.14	15.14	4.71	J
00107-06-2 1,2-Dichloroethane	98.96	24.93	24.93	6.12	
00079-01-6 Trichloroethene	131.40	37.70	37.70	6.97	
00078-87-5 1,2-Dichloropropane	113.00	27.77	27.77	5.97	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.93	1.9	0.5	J
00108-88-3 Toluene	92.13	27.52	27.52	7.25	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	47.21	47.21	6.91	
00108-90-7 Chlorobenzene	112.60	27.09	27.09	5.84	
00100-41-4 Ethylbenzene	106.16	27.20	27.20	6.22	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.56	1	0.13	J
00095-47-6 o-Xylene	106.16	30.00	30.00	6.86	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.68	85.4	101.5%	
Surrogate 2 Toluene-d8		74.53	65.0	114.7%	
Surrogate 3 1,4-Bromofluorobenzene		86.65	66.3	130.7%	

BH18A29N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/22/93 14:00	Relative Humidity(%):				
TIME ANALYZED: 1/22/93 14:05	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A29A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A29A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.54	0.27	0.07	J
00067-64-1 Acetone	58.08	0.88	0.44	0.18	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	5.19	2.59	0.74	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	2.14	1.07	0.22	J
00071-55-6 1,1,1-Trichloroethane	133.42	25.01	12.51	2.28	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	0.52	0.26	0.08	J
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	16.28	8.14	1.50	
00078-87-5 1,2-Dichloropropane	113.00	0.79	0.39	0.08	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	1.51	0.75	0.18	J
00108-88-3 Toluene	92.13	157.60	78.80	20.77	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	61.27	30.64	4.49	
00108-90-7 Chlorobenzene	112.60	13.11	6.56	1.41	
00100-41-4 Ethylbenzene	106.16	143.00	71.50	16.36	
01330-20-7 m-Xylene and/or p-Xylene	106.16	245.70	122.85	28.10	
00095-47-6 o-Xylene	106.16	226.00	113.00	25.85	
00100-42-5 Styrene	104.10	1.06	0.53	0.12	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.13	85.40	97.3	
Surrogate 2 Toluene-d8		71.87	65.00	110.6	
Surrogate 3 1,4-Bromofluorobenzene		77.40	66.30	116.7	

BH18A30N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/25/93 10:06	Relative Humidity(%):				
TIME ANALYZED: 1/25/93 10:06	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A30A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A30A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	4.40	0.1	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	4.49	0.09	0.03	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	1.29	0.03	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	0.81	0.02	0.00	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.99	0	0.01	J
00095-47-6 o-Xylene	106.16	2.02	0.04	0.01	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		87.15	85.4	102.0%	
Surrogate 2 Toluene-d8		75.20	65.0	115.7%	
Surrogate 3 1,4-Bromofluorobenzene		91.38	66.3	137.8%	

BH18A31N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/25/93 12:39	Relative Humidity(%):				
TIME ANALYZED: 1/25/93 12:39	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A31A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A31A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	7.59	7.6	3.2	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	19.07	19.07	5.45	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	4.55	4.6	1.5	J
00067-66-3 Chloroform	119.39	29.33	29.33	5.97	
00071-55-6 1,1,1-Trichloroethane	133.42	33.13	33	6.03	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	21.74	21.74	3.43	
00071-43-2 Benzene	78.11	14.45	14.45	4.49	
00107-06-2 1,2-Dichloroethane	98.96	25.24	25.24	6.19	
00079-01-6 Trichloroethene	131.40	36.08	36.08	6.67	
00078-87-5 1,2-Dichloropropane	113.00	26.54	26.54	5.70	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	24.58	24.58	6.48	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	40.91	40.91	5.99	
00108-90-7 Chlorobenzene	112.60	24.10	24.10	5.20	
00100-41-4 Ethylbenzene	106.16	26.65	26.65	6.10	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	31.34	31.34	7.17	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		91.65	85.4	107.3%	
Surrogate 2 Toluene-d8		81.58	65.0	125.5%	
Surrogate 3 1,4-Bromofluorobenzene		110.50	66.3	166.7%	

BH18A32N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/25/93 13:30	Relative Humidity(%):				
TIME ANALYZED: 1/25/93 13:42	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A32A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A32A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.69	0.35	0.09	J
00067-64-1 Acetone	58.08	0.68	0.34	0.14	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	6.51	3.26	0.93	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	0.65	0.33	0.07	J
00071-55-6 1,1,1-Trichloroethane	133.42	7.29	3.64	0.66	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	7.07	3.54	0.65	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	87.18	43.59	11.49	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	31.69	15.85	2.32	
00108-90-7 Chlorobenzene	112.60	1.14	0.57	0.12	J
00100-41-4 Ethylbenzene	106.16	72.60	36.30	8.30	
01330-20-7 m-Xylene and/or p-Xylene	106.16	134.60	67.30	15.40	
00095-47-6 o-Xylene	106.16	137.90	68.95	15.77	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.12	85.40	100.8	
Surrogate 2 Toluene-d8		74.80	65.00	115.1	
Surrogate 3 1,4-Bromofluorobenzene		85.94	66.30	129.6	

BH18A33N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/28/93 15:40	Relative Humidity(%):				
TIME ANALYZED: 1/28/93 16:03	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A33A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A33A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	1.00	0.50	0.21	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	5.08	2.54	0.73	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	2.92	1.46	0.27	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	2.99	1.49	0.28	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	41.83	20.92	5.51	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	22.74	11.37	1.66	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	42.71	21.36	4.89	
01330-20-7 m-Xylene and/or p-Xylene	106.16	76.77	38.39	8.78	
00095-47-6 o-Xylene	106.16	102.70	51.35	11.75	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.22	85.40	98.6	
Surrogate 2 Toluene-d8		72.78	65.00	112.0	
Surrogate 3 1,4-Bromofluorobenzene		88.03	66.30	132.8	

BH18A35N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/2/93 16:10	Relative Humidity(%):				
TIME ANALYZED: 2/2//93 16:17	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A35A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A35A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.74	0.37	0.16	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	4.21	2.11	0.60	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	1.22	0.61	0.11	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	0.97	0.48	0.09	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	8.03	4.01	1.06	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	13.90	6.95	1.02	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	15.24	7.62	1.74	
01330-20-7 m-Xylene and/or p-Xylene	106.16	23.27	11.64	2.66	
00095-47-6 o-Xylene	106.16	61.72	30.86	7.06	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.57	85.40	104.9	
Surrogate 2 Toluene-d8		77.74	65.00	119.6	
Surrogate 3 1,4-Bromofluorobenzene		93.82	66.30	141.5	

BH18A36N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/3/93 19:50	Relative Humidity(%):				
TIME ANALYZED: 2/3/93 20:00	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A36A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A36A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	5.27	2.64	1.10	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	2.72	1.36	0.39	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.95	0.97	0.33	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	0.61	0.31	0.06	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	7.61	3.81	1.00	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	12.61	6.31	0.92	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	12.51	6.26	1.43	
01330-20-7 m-Xylene and/or p-Xylene	106.16	34.19	17.10	3.91	
00095-47-6 o-Xylene	106.16	57.11	28.56	6.53	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.48	85.40	100.1	
Surrogate 2 Toluene-d8		76.35	65.00	117.5	
Surrogate 3 1,4-Bromofluorobenzene		97.00	66.30	146.3	

BH18A37N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/4/93 20:45	Relative Humidity(%):				
TIME ANALYZED: 2/4/93 20:51	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A37A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A37A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	2.77	1.39	0.40	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	3.19	1.59	0.42	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	9.43	4.72	0.69	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	7.08	3.54	0.81	
01330-20-7 m-Xylene and/or p-Xylene	106.16	20.70	10.35	2.37	
00095-47-6 o-Xylene	106.16	44.42	22.21	5.08	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.96	85.40	104.2	
Surrogate 2 Toluene-d8		76.97	65.00	118.4	
Surrogate 3 1,4-Bromofluorobenzene		91.77	66.30	138.4	

BH18A38N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/8/93 14:30	Relative Humidity(%):				
TIME ANALYZED: 2/8/93 14:41	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH18A38A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A38A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	3.64	1.82	0.52	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	0.66	0.33	0.09	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	4.50	2.25	0.33	J
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	2.27	1.14	0.26	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	7.98	3.99	0.91	
00095-47-6 o-Xylene	106.16	28.01	14.01	3.20	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		90.11	85.40	105.5	
Surrogate 2 Toluene-d8		75.65	65.00	116.4	
Surrogate 3 1,4-Bromofluorobenzene		81.11	66.30	122.3	

BH18A39N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/9/93 16:55	Relative Humidity(%):				
TIME ANALYZED: 2/9/93 17:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			5.00	
GC/MS DATA FILE: BH18A39A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A39A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.57	0.11	0.05	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	2.60	0.52	0.15	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	0.54	0.11	0.02	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	1.00	0.20	0.05	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	8.92	1.78	0.26	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	4.08	0.82	0.19	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	14.81	2.96	0.68	
00095-47-6 o-Xylene	106.16	57.15	11.43	2.61	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		87.94	85.40	103.0	
Surrogate 2 Toluene-d8		74.53	65.00	114.7	
Surrogate 3 1,4-Bromofluorobenzene		86.28	66.30	130.1	

BH18A40N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/11/93 9:15	Relative Humidity(%):				
TIME ANALYZED: 2/11/93 9:15	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A40A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A40A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	1.28	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	2.92	0.06	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	2.57	0.05	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.21	0	0.01	J
00095-47-6 o-Xylene	106.16	0.70	0.01	0.00	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		83.41	85.4	97.7%	
Surrogate 2 Toluene-d8		66.33	65.0	102.0%	
Surrogate 3 1,4-Bromofluorobenzene		65.38	66.3	98.6%	

BH18A41E.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/11/93 10:57	Relative Humidity(%):				
TIME ANALYZED: 2/11/93 10:57	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A41A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A41A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			EXTSTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	14.64	14.64	4.19	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.94	1.9	0.7	J
00067-66-3 Chloroform	119.39	25.05	25.05	5.10	
00071-55-6 1,1,1-Trichloroethane	133.42	29.42	29	5.36	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	28.11	28.11	4.44	
00071-43-2 Benzene	78.11	13.84	13.84	4.30	
00107-06-2 1,2-Dichloroethane	98.96	22.04	22.04	5.41	
00079-01-6 Trichloroethene	131.40	30.93	30.93	5.72	
00078-87-5 1,2-Dichloropropane	113.00	23.97	23.97	5.15	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	0.80	0.8	0.2	J
00108-88-3 Toluene	92.13	28.95	28.95	7.63	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	44.29	44.29	6.49	
00108-90-7 Chlorobenzene	112.60	38.26	38.26	8.25	
00100-41-4 Ethylbenzene	106.16	43.09	43.09	9.86	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.53	1	0.12	J
00095-47-6 o-Xylene	106.16	53.62	53.62	12.27	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.4		
Surrogate 2 Toluene-d8			65.0		
Surrogate 3 1,4-Bromofluorobenzene			66.3		

BH18A42N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/11/93 20:40	Relative Humidity(%):				
TIME ANALYZED: 2/11/93 20:46	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			20.00	
GC/MS DATA FILE: BH18A42A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A42A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	4.10	0.20	0.06	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	0.59	0.03	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	0.63	0.03	0.00	J
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.94	0.05	0.01	J
00095-47-6 o-Xylene	106.16	3.96	0.20	0.05	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		91.35	85.40	107.0	
Surrogate 2 Toluene-d8		76.57	65.00	117.8	
Surrogate 3 1,4-Bromofluorobenzene		89.80	66.30	135.4	

BH18A43N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/17/93 10:39	Relative Humidity(%):				
TIME ANALYZED: 2/17/93 10:39	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH18A43A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A43A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.53	0.01	0.00	J
00067-64-1 Acetone	58.08	8.68	0.2	0.1	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	5.05	0.10	0.03	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.39	0.0	0.0	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	2.05	0.04	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	2.55	0	0.01	J
00095-47-6 o-Xylene	106.16	1.87	0.04	0.01	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		92.83	85.4	108.7%	
Surrogate 2 Toluene-d8		77.88	65.0	119.8%	
Surrogate 3 1,4-Bromofluorobenzene		75.00	66.3	113.1%	

BH18A44N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/13/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/17/93 12:03	Relative Humidity(%):				
TIME ANALYZED: 2/17/93 12:03	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (Liter):			1.00	
GC/MS DATA FILE: BH18A44A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A44A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	2.34	2.3	1.0	J
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	12.68	12.68	3.63	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.13	1.1	0.4	J
00067-66-3 Chloroform	119.39	17.37	17.37	3.53	
00071-55-6 1,1,1-Trichloroethane	133.42	19.91	20	3.62	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	14.56	14.56	2.30	
00071-43-2 Benzene	78.11	8.03	8.03	2.50	
00107-06-2 1,2-Dichloroethane	98.96	14.38	14.38	3.53	
00079-01-6 Trichloroethene	131.40	19.73	19.73	3.65	
00078-87-5 1,2-Dichloropropane	113.00	15.32	15.32	3.29	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	17.75	17.75	4.68	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	26.73	26.73	3.91	
00108-90-7 Chlorobenzene	112.60	16.68	16.68	3.60	
00100-41-4 Ethylbenzene	106.16	17.85	17.85	4.08	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	19.43	19.43	4.44	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		92.67	85.4	108.5%	
Surrogate 2 Toluene-d8		78.25	65.0	120.4%	
Surrogate 3 1,4-Bromofluorobenzene		83.21	66.3	125.5%	

BH18A45N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/17/93 13:30	Relative Humidity(%):				
TIME ANALYZED: 2/17/93 13:47	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			100.00	
GC/MS DATA FILE: BH18A45A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A45A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	5.55	0.06	0.02	
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	17.78	0.18	0.05	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.70	0.02	0.01	J
00067-66-3 Chloroform	119.39	26.08	0.26	0.05	
00071-55-6 1,1,1-Trichloroethane	133.42	29.32	0.29	0.05	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	12.64	0.13	0.04	
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	29.78	0.30	0.06	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	0.73	0.01	0.00	J
00108-88-3 Toluene	92.13	27.57	0.28	0.07	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	38.99	0.39	0.06	
00108-90-7 Chlorobenzene	112.60	28.31	0.28	0.06	
00100-41-4 Ethylbenzene	106.16	29.40	0.29	0.07	
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.23	0.01	0.00	J
00095-47-6 o-Xylene	106.16	33.21	0.33	0.08	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		93.14	85.40	109.1	
Surrogate 2 Toluene-d8		78.53	65.00	120.8	
Surrogate 3 1,4-Bromofluorobenzene		82.04	66.30	123.7	

BH18A46N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/22/93 15:05	Relative Humidity(%):				
TIME ANALYZED: 2/22/93 15:10	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			100.00	
GC/MS DATA FILE: BH18A46A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH18A46A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/24/93	Calibration (Int/Ext):			Ext	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	2.90	0.03	0.01	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	1.20	0.01	0.0066 0.00	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	0.53	0.01	0.0072 0.00	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.22	0.01	0.0013 0.00	J
00095-47-6 o-Xylene	106.16	0.72	0.01	0.0027 0.00	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.40		
Surrogate 2 Toluene-d8			65.00		
Surrogate 3 1,4-Bromofluorobenzene			66.30		

COLUMN 3 ~ OSCA SAMPLE

imple I.D.		Off site		Column No:	19		
Date	Time	Flow Rate	Prs.Dif.	Sample Vol.	Temp.	Anal. Time	Data File
MM/DD/YY	HH:MM	ml/min	in. water	ml	deg C	HH:MM	
GC/MSD							
1/14/93	13:00	Starting the air flow					
1/14/93	15:55	100	24.0	1.0	23	16:13	BH19A01A
1/14/93	17:00	98	20.0	1.0	23	17:15	BH19A02A
1/14/93	18:00	105	18.5	1.0	23	18:10	BH19A03A
1/14/93	19:00	98	17.0	1.0	23	19:11	BH19A04A
1/15/93	12:00	105	8.5	1.0	23	12:20	BH19A05A
1/15/93	18:35	100	4.0	1.0	23	18:49	BH19A06A
1/17/93	22:00	108	4.0	1.0	23	22:10	BH19A07A
1/18/93	14:05	105	2.5	2.0	23	14:18	BH19A08A
1/19/93	19:20	105	2.5	2.0	23	19:27	BH19A09A
1/20/93	22:10	105	3.0	2.0	23	22:23	BH19A10A
1/21/93		Standard Mix	Direct Injection		23		BH19A11A
1/21/93	19:40	105	3.0	2.0	23	19:49	BH19A12A
1/23/93	12:00	105	3.0	2.0	23	12:07	BH19A13A
1/25/93	18:30	112	5.0	2.0	23	18:36	BH19A14A
1/28/93	9:14	Lab Blk. (Dryer Used)		50.0	23	9:14	BH19A15A
1/28/93	10:20	NBS Gas(Dryer Used)		1000.0	23	10:20	BH19A16A
1/28/93	13:55	115	4.0	2.0	23	14:14	BH19A17A
1/29/93	11:00	LAB. BLK.	air	50.0	23	11:00	BH19A18A
1/29/93	12:43	NBS	GAS	1000.0	23	12:43	BH19A19A
1/29/93	14:35	115	3.0	2.0	23	14:55	BH19A20A
2/2/93	11:00	LAB. BLK.	air	50.0	23	11:00	BH19A21A
2/2/93	12:02	NBS	GAS	1000.0	23	12:02	BH19A22A
2/2/93	14:30	120	5.0	2.0	23	14:41	BH19A23A
2/3/93	10:02	LAB. BLK.	air	50.0	23	10:02	BH19A24A
2/3/93	11:36	NBS	GAS	1000.0	23	11:36	BH19A25A
2/3/93	13:00	120	5.0	2.0	23	13:21	BH19A26A
2/4/93	14:38	LAB. BLK.	air	50.0	23	14:38	BH19A27A
2/4/93	16:17	NBS	GAS	1000.0	23	16:17	BH19A28A
2/4/93	17:45	220	8.0	2.0	25	18:03	BH19A29A
2/8/93	9:47	LAB. BLK.	air	50.0	25	9:47	BH19A30A
2/8/93	11:21	NBS	GAS	1000.0	25	11:21	BH19A31A
2/8/93	13:00	210	6.0	2.0	25	13:09	BH19A32A
2/9/93	9:23	LAB. BLK.	air	50.0	25	9:23	BH19A33A
2/9/93	11:09	NBS	GAS	1000.0	25	11:09	BH19A34A
2/9/93	12:20	210	10.0	5.0	25	12:36	BH19A35A
2/11/93	File is	Empty	0	0	0	0:00	BH19A36A
2/11/93	16:30	210	10.0	5.0	23	16:43	BH19A37A
2/17/93	18:40	210	11.0	20.0	23	18:48	BH19A38A
2/22/93	11:09	LAB. BLK.	air	50.0	23	11:09	BH19A39A
2/22/93	11:33	NBS	GAS	1000.0	23	11:33	BH19A40A
2/22/93	13:40	210	9	50.0	23	13:50	BH19A41A

Vapor Extraction Bench Scale Experiment Data Sheet 1

PROJECT: ACS

PROJECT #: 20007001 GRIFFITH, INDIANA

Column Number: 19

Packed Date: 1/14/93

Soil Sample ID: COLUMN (III)

Sample Description: OFF-SITE

Column:

	D=	7.6	cm
	H=	46.00	cm
	V=	2086	cm3
Sample Mass:	M=	2656	g
Packed density	d=	1.27	g/cm3

BH19A01A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS						
SAMPLE ID : column 19 (1/14/93)		Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 15:45		Relative Humidity(%):				
TIME ANALYZED: 1/14/93 16:13		Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A01A.D		Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A01A		Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93		Calibration (Int/Ext):			ISTD	
		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94	4.03	2.01	0.50	J
00067-64-1	Acetone	58.08	77.6	38.8	16.2	
09003-22-9	Vinyl chloride	62.5				U
00075-09-2	Methylene chloride	84.93	441.60	220.80	63.14	E
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14	201.5	100.8	33.9	
00067-66-3	Chloroform	119.39	28.89	14.45	2.94	
00071-55-6	1,1,1-Trichloroethane	133.42	859	430	78.20	E
00079-00-5	1,1,2-Trichloroethane	133.42				J
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11	130.60	65.30	20.30	
00107-06-2	1,2-Dichloroethane	98.96	25.58	12.79	3.14	
00079-01-6	Trichloroethene	131.40	271.00	135.50	25.04	
00078-87-5	1,2-Dichloropropane	113.00	8.04	4.02	0.86	
00108-10-1	4-Methyl-2-pentanone (MI	100.16	90.8	45.4	11.0	
00108-88-3	Toluene	92.13	304.30	152.15	40.11	E
00079-34-5	1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4	Tetrachloroethene	165.85	298.00	149.00	21.82	
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16	204.70	102.35	23.41	
01330-20-7	m-Xylene and/or p-Xylene	106.16	373	187	42.71	E
00095-47-6	o-Xylene	106.16	177.00	88.50	20.25	
00100-42-5	Styrene	104.10	0.84	0.42	0.10	J
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng	Add(ng	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4		72.3	85.4	84.7%	
Surrogate 2	Toluene-d8		57.3	65.0	88.2%	
Surrogate 3	1,4-Bromofluorobenzene		74.8	66.3	112.8%	

BH19A02A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 17:00	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 17:15	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A02A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A02A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	3.25	1.62	0.41	J
00067-64-1 Acetone	58.08	72.0	36.0	15.0	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	392.90	196.45	56.18	E
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	201.8	100.9	34.0	
00067-66-3 Chloroform	119.39	28.69	14.35	2.92	
00071-55-6 1,1,1-Trichloroethane	133.42	846	423	76.97	E
00079-00-5 1,1,2-Trichloroethane	133.42				J
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	137.10	68.55	21.31	
00107-06-2 1,2-Dichloroethane	98.96	26.83	13.42	3.29	
00079-01-6 Trichloroethene	131.40	307.00	153.50	28.37	E
00078-87-5 1,2-Dichloropropane	113.00	8.89	4.44	0.95	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	196.9	98.5	23.9	
00108-88-3 Toluene	92.13	304.30	152.15	40.11	E
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	382.90	191.45	28.03	E
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	295.70	147.85	33.82	
01330-20-7 m-Xylene and/or p-Xylene	106.16	479	240	54.82	E
00095-47-6 o-Xylene	106.16	311.21	155.61	35.60	E
00100-42-5 Styrene	104.10	2.21	1.11	0.26	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.4	85.4	103.5%	
Surrogate 2 Toluene-d8		75.0	65.0	115.4%	
Surrogate 3 1,4-Bromofluorobenzene		91.1	66.3	137.5%	

BH19A03A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 18:00	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 18:10	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A03A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A03A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	2.17	1.09	0.27	J
00067-64-1 Acetone	58.08	4.4	2.2	0.9	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	330.90	165.45	47.31	E
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	167.4	83.7	28.2	
00067-66-3 Chloroform	119.39	23.38	11.69	2.38	
00071-55-6 1,1,1-Trichloroethane	133.42	685	342	62.33	E
00079-00-5 1,1,2-Trichloroethane	133.42				J
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	106.20	53.10	16.51	
00107-06-2 1,2-Dichloroethane	98.96	21.12	10.56	2.59	
00079-01-6 Trichloroethene	131.40	229.20	114.60	21.18	
00078-87-5 1,2-Dichloropropane	113.00	6.27	3.14	0.67	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	157.3	78.7	19.1	
00108-88-3 Toluene	92.13	239.20	119.60	31.53	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	228.70	114.35	16.74	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	158.30	79.15	18.11	
01330-20-7 m-Xylene and/or p-Xylene	106.16	279	139	31.89	
00095-47-6 o-Xylene	106.16	146.30	73.15	16.73	
00100-42-5 Styrene	104.10	0.68	0.34	0.08	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		68.2	85.4	79.9%	
Surrogate 2 Toluene-d8		57.0	65.0	87.6%	
Surrogate 3 1,4-Bromofluorobenzene		71.6	66.3	107.9%	

BH19A04A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/14/93 19:00	Relative Humidity(%):				
TIME ANALYZED: 1/14/93 19:11	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A04A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A04A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	2.58	1.29	0.32	J
00067-64-1 Acetone	58.08	4.0	2.0	0.8	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	370.60	185.30	52.99	E
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	205.4	102.7	34.6	
00067-66-3 Chloroform	119.39	29.08	14.54	2.96	
00071-55-6 1,1,1-Trichloroethane	133.42	813	407	74.01	E
00079-00-5 1,1,2-Trichloroethane	133.42				J
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	131.10	65.55	20.38	
00107-06-2 1,2-Dichloroethane	98.96	26.90	13.45	3.30	
00079-01-6 Trichloroethene	131.40	278.00	139.00	25.69	
00078-87-5 1,2-Dichloropropane	113.00	8.52	4.26	0.92	
00108-10-1 4-Methyl-2-pentanone (MI	100.16	190.4	95.2	23.1	
00108-88-3 Toluene	92.13	289.30	144.65	38.13	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	293.50	146.75	21.49	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	208.10	104.05	23.80	
01330-20-7 m-Xylene and/or p-Xylene	106.16	364	182	41.65	E
00095-47-6 o-Xylene	106.16	201.50	100.75	23.05	
00100-42-5 Styrene	104.10	1.18	0.59	0.14	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		60.6	85.4	70.9%	
Surrogate 2 Toluene-d8		47.3	65.0	72.7%	
Surrogate 3 1,4-Bromofluorobenzene		77.6	66.3	117.0%	

BH19A05A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS						
SAMPLE ID : column 19 (1/15/93)		Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 12:00		Relative Humidity(%):				
TIME ANALYZED: 1/15/93 12:20		Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A05A.D		Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A05A		Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93		Calibration (Int/Ext):			ISTD	
		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94	0.90	0.45	0.11	J
00067-64-1	Acetone	58.08	4.0	2.0	0.8	J
09003-22-9	Vinyl chloride	62.5				U
00075-09-2	Methylene chloride	84.93	95.04	47.52	13.59	
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14	218.7	109.4	36.8	
00067-66-3	Chloroform	119.39	17.65	8.83	1.80	
00071-55-6	1,1,1-Trichloroethane	133.42	496	248	45.12	E
00079-00-5	1,1,2-Trichloroethane	133.42				J
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11	79.15	39.58	12.30	
00107-06-2	1,2-Dichloroethane	98.96	19.44	9.72	2.39	
00079-01-6	Trichloroethene	131.40	214.10	107.05	19.79	
00078-87-5	1,2-Dichloropropane	113.00	7.09	3.55	0.76	
00108-10-1	4-Methyl-2-pentanone (MI	100.16	170.1	85.1	20.6	
00108-88-3	Toluene	92.13	230.30	115.15	30.35	
00079-34-5	1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4	Tetrachloroethene	165.85	219.20	109.60	16.05	
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16	142.50	71.25	16.30	
01330-20-7	m-Xylene and/or p-Xylene	106.16	252	126	28.80	
00095-47-6	o-Xylene	106.16	119.70	59.85	13.69	
00100-42-5	Styrene	104.10	0.53	0.27	0.06	J
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng	Add(ng	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4		79.6	85.4	93.2%	
Surrogate 2	Toluene-d8		69.2	65.0	106.5%	
Surrogate 3	1,4-Bromofluorobenzene		106.7	66.3	160.9%	

BH19A06N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS						
SAMPLE ID : column 19 (1/15/93)		Canister ID Number:			DIR	
TIME RECEIVED: 1/15/93 18:35		Relative Humidity(%):				
TIME ANALYZED: 1/15/93 17:49		Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A06A.D		Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A06A		Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/20/93		Calibration (Int/Ext):			ISTD	
		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94	0.70	0.35	0.09	J
00067-64-1	Acetone	58.08	3.3	1.6	0.7	J
09003-22-9	Vinyl chloride	62.5				U
00075-09-2	Methylene chloride	84.93	54.29	27.15	7.76	
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14	196.6	98.3	33.1	
00067-66-3	Chloroform	119.39	12.62	6.31	1.28	
00071-55-6	1,1,1-Trichloroethane	133.42	326	163	29.62	E
00079-00-5	1,1,2-Trichloroethane	133.42				J
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11	35.99	18.00	5.59	
00107-06-2	1,2-Dichloroethane	98.96	10.78	5.39	1.32	
00079-01-6	Trichloroethene	131.40	108.20	54.10	10.00	
00078-87-5	1,2-Dichloropropane	113.00	4.09	2.04	0.44	
00108-10-1	4-Methyl-2-pentanone (MI	100.16	120.3	60.2	14.6	
00108-88-3	Toluene	92.13	340.70	170.35	44.91	E
00079-34-5	1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4	Tetrachloroethene	165.85	84.88	42.44	6.21	
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16	51.05	25.53	5.84	
01330-20-7	m-Xylene and/or p-Xylene	106.16	102	51	11.63	
00095-47-6	o-Xylene	106.16	39.33	19.67	4.50	
00100-42-5	Styrene	104.10				J
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng	Add(ng	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4			85.4		
Surrogate 2	Toluene-d8			65.0		
Surrogate 3	1,4-Bromofluorobenzene			66.3		

BH19A07N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 18 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/17/93 22:00	Relative Humidity(%):				
TIME ANALYZED: 1/17/93 22:10	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A07A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A07A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	87.98	43.99	11.02	J
00067-64-1 Acetone	58.08	0.68	0.34	0.14	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	6.51	3.26	0.93	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	0.65	0.33	0.07	J
00071-55-6 1,1,1-Trichloroethane	133.42				J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	7.07	3.54	0.65	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	87.18	43.59	11.49	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	31.69	15.85	2.32	
00108-90-7 Chlorobenzene	112.60	1.14	0.57	0.12	J
00100-41-4 Ethylbenzene	106.16	72.60	36.30	8.30	
01330-20-7 m-Xylene and/or p-Xylene	106.16	134.60	67.30	15.40	
00095-47-6 o-Xylene	106.16	137.90	68.95	15.77	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.12	85.40	100.8	
Surrogate 2 Toluene-d8		74.80	65.00	115.1	
Surrogate 3 1,4-Bromofluorobenzene		85.94	66.30	129.6	

BH19A08N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS						
SAMPLE ID : column 19 (1/12/93)		Canister ID Number:			DIR	
TIME RECEIVED: 1/18/93 14:05		Relative Humidity(%):				
TIME ANALYZED: 1/18/93 14:18		Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400		Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A08A.D		Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A08A		Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93		Calibration (Int/Ext):			ISTD	
		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94				U
00067-64-1	Acetone	58.08	13.58	6.79	2.84	
09003-22-9	Vinyl chloride	62.50				U
00075-09-2	Methylene chloride	84.93	18.99	9.50	2.72	
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14				U
00067-66-3	Chloroform	119.39	0.86	0.43	0.09	J
00071-55-6	1,1,1-Trichloroethane	133.42	43.00	21.00	4.00	
00079-00-5	1,1,2-Trichloroethane	133.42				J
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11	3.99	1.99	0.62	J
00107-06-2	1,2-Dichloroethane	98.96	1.84	0.92	0.23	J
00079-01-6	Trichloroethene	131.40	53.66	26.83	4.96	
00078-87-5	1,2-Dichloropropane	113.00	1.57	0.78	0.17	J
00108-10-1	4-Methyl-2-pentanone (MI	100.16	11.49	5.75	1.39	
00108-88-3	Toluene	92.13	216.70	108.35	28.56	
00079-34-5	1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4	Tetrachloroethene	165.85	455.30	227.65	33.34	E
00108-90-7	Chlorobenzene	112.60	0.65	0.33	0.07	J
00100-41-4	Ethylbenzene	106.16	215.20	107.60	24.62	
01330-20-7	m-Xylene and/or p-Xylene	106.16	269.70	134.85	30.85	
00095-47-6	o-Xylene	106.16	550.30	275.15	62.95	E
00100-42-5	Styrene	104.10	7.38	3.69	0.86	
00091-20-3	Naphthalene	128.17				U
Surrogate Standards Recoveries			Rec(ng	Add(ng	Rec(%)	
Surrogate 1	1,2-Dichloroethane-d4		82.54	85.40	96.7	
Surrogate 2	Toluene-d8		65.74	65.00	101.1	
Surrogate 3	1,4-Bromofluorobenzene		54.34	66.30	82.0	

BH19A09N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/19/93 19:20	Relative Humidity(%):				
TIME ANALYZED: 1/19/93 19:27	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A09A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A09A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93				U
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.30	0.65	0.22	J
00067-66-3 Chloroform	119.39	0.69	0.35	0.07	J
00071-55-6 1,1,1-Trichloroethane	133.42	29.82	14.91	2.71	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	2.21	1.11	0.34	J
00107-06-2 1,2-Dichloroethane	98.96	1.08	0.54	0.13	J
00079-01-6 Trichloroethene	131.40	32.55	16.28	3.01	
00078-87-5 1,2-Dichloropropane	113.00	0.91	0.46	0.10	J
00108-10-1 4-Methyl-2-pentanone (MI	100.16	0.84	0.42	0.10	J
00108-88-3 Toluene	92.13	216.80	108.40	28.57	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	426.60	213.30	31.23	E
00108-90-7 Chlorobenzene	112.60	0.54	0.27	0.06	J
00100-41-4 Ethylbenzene	106.16	440.80	220.40	50.42	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	255.60	127.80	29.24	
00095-47-6 o-Xylene	106.16	577.50	288.75	66.06	E
00100-42-5 Styrene	104.10	8.13	4.07	0.95	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.29	85.40	103.4	
Surrogate 2 Toluene-d8		74.53	65.00	114.7	
Surrogate 3 1,4-Bromofluorobenzene		77.66	66.30	117.1	

BH19A10N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/20/93 22:10	Relative Humidity(%):				
TIME ANALYZED: 1/20/93 22:23	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A10A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A10A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93				U
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	0.58	0.29	0.10	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	18.11	9.06	1.65	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	1.25	0.63	0.19	J
00107-06-2 1,2-Dichloroethane	98.96	0.65	0.32	0.08	J
00079-01-6 Trichloroethene	131.40	19.93	9.97	1.84	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	7.78	3.89	0.94	
00108-88-3 Toluene	92.13	354.40	177.20	46.71	E
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	352.70	176.35	25.82	E
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	403.70	201.85	46.18	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	240.20	120.10	27.47	
00095-47-6 o-Xylene	106.16	541.90	270.95	61.98	E
00100-42-5 Styrene	104.10	7.40	3.70	0.86	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.35	85.40	101.1	
Surrogate 2 Toluene-d8		72.28	65.00	111.2	
Surrogate 3 1,4-Bromofluorobenzene		70.80	66.30	106.8	

BH19A12N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/21/93 19:40	Relative Humidity(%):				
TIME ANALYZED: 1/21/93 19:49	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A12A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A12A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	13.40	6.70	1.92	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	14.76	7.38	1.34	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	0.90	0.45	0.14	J
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	14.34	7.17	1.33	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	6.20	3.10	0.75	
00108-88-3 Toluene	92.13	337.90	168.95	44.54	E
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	309.60	154.80	22.67	E
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	400.30	200.15	45.79	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	236.00	118.00	26.99	
00095-47-6 o-Xylene	106.16	243.20	121.60	27.82	
00100-42-5 Styrene	104.10	7.87	3.93	0.92	
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.87	85.40	101.7	
Surrogate 2 Toluene-d8		73.26	65.00	112.7	
Surrogate 3 1,4-Bromofluorobenzene		77.68	66.30	117.2	

BH19A13N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/23/93 12:00	Relative Humidity(%):				
TIME ANALYZED: 1/23/93 12:07	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A13A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A13A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.86	0.43	0.11	J
00067-64-1 Acetone	58.08	2.17	1.08	0.45	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	21.48	10.74	3.07	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	0.65	0.32	0.11	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	9.80	4.90	0.89	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11	0.53	0.27	0.08	J
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	9.11	4.56	0.84	
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	5.82	2.91	0.71	
00108-88-3 Toluene	92.13	277.50	138.75	36.58	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	234.40	117.20	17.16	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	354.60	177.30	40.56	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	194.20	97.10	22.21	
00095-47-6 o-Xylene	106.16	517.00	258.50	59.14	E
00100-42-5 Styrene	104.10	6.97	3.49	0.81	
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.30	85.40	98.7	
Surrogate 2 Toluene-d8		72.03	65.00	110.8	
Surrogate 3 1,4-Bromofluorobenzene		72.18	66.30	108.9	

BH19A14N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/25/93 18:30	Relative Humidity(%):				
TIME ANALYZED: 1/25/93 18:36	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A14A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A14A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.74	0.37	0.09	J
00067-64-1 Acetone	58.08	1.00	0.50	0.21	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	15.88	7.94	2.27	
00156-59-2 cis-1,2-Dichlorcethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	0.65	0.32	0.11	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	5.13	2.57	0.47	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	2.50	1.25	0.30	J
00108-88-3 Toluene	92.13	141.40	70.70	18.64	
00079-34-5 1,1,2,2-Tetrachlorcethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	148.40	74.20	10.87	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	315.60	157.80	36.10	E
01330-20-7 m-Xylene and/or p-Xylene	106.16	310.20	155.10	35.48	E
00095-47-6 o-Xylene	106.16	535.80	267.90	61.29	E
00100-42-5 Styrene	104.10	7.07	3.53	0.82	
00091-20-3 Naphthalene	128.17				
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.87	85.40	100.6	
Surrogate 2 Toluene-d8		73.99	65.00	113.8	
Surrogate 3 1,4-Bromofluorobenzene		74.67	66.30	112.6	

BH19A15N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/28/93 9:14	Relative Humidity(%):				
TIME ANALYZED: 1/28/93 9:14	Dryer Use (Yes/No):			YES	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A15A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A15A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	4.53	0.09	0.03	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13				U
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16				U
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		80.14	85.4	93.8%	
Surrogate 2 Toluene-d8		70.08	65.0	107.8%	
Surrogate 3 1,4-Bromofluorobenzene		89.75	66.3	135.4%	

BH19A16N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/28/93 10:20	Relative Humidity(%):				
TIME ANALYZED: 1/28/93 10:20	Dryer Use (Yes/No):			YES	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A16A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A16A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	15.21	15.21	4.35	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	22.70	22.70	4.62	
00071-55-6 1,1,1-Trichloroethane	133.42	26.53	27	4.83	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	29.21	29.21	4.61	
00071-43-2 Benzene	78.11	16.07	16.07	5.00	
00107-06-2 1,2-Dichloroethane	98.96	17.19	17.19	4.22	
00079-01-6 Trichloroethene	131.40	32.02	32.02	5.92	
00078-87-5 1,2-Dichloropropane	113.00	20.28	20.28	4.36	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	20.45	20.45	5.39	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	47.74	47.74	6.99	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	19.63	19.63	4.49	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	19.30	19.30	4.42	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		75.15	85.4	88.0%	
Surrogate 2 Toluene-d8		65.93	65.0	101.4%	
Surrogate 3 1,4-Bromofluorobenzene		84.74	66.3	127.8%	

BH19A17N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/28/93 13:55	Relative Humidity(%):				
TIME ANALYZED: 1/28/93 14:14	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A17A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A17A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 1/28/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.88	0.44	0.18	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	16.94	8.47	2.42	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	2.35	1.17	0.40	J
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	2.75	1.38	0.25	U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	2.04	1.02	0.19	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.74	0.87	0.21	J
00108-88-3 Toluene	92.13	39.11	19.56	5.15	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	86.18	43.09	6.31	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	248.00	124.00	28.37	
01330-20-7 m-Xylene and/or p-Xylene	106.16	135.90	67.95	15.54	
00095-47-6 o-Xylene	106.16	494.30	247.15	56.54	E
00100-42-5 Styrene	104.10	4.81	2.40	0.56	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		85.25	85.40	99.8	
Surrogate 2 Toluene-d8		73.84	65.00	113.6	
Surrogate 3 1,4-Bromofluorobenzene		78.44	66.30	118.3	

BH19A18N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/29/93 11:00	Relative Humidity(%):				
TIME ANALYZED: 1/29/93 11:00	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A18A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A18A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.60	0.01	0.00	J
00067-64-1 Acetone	58.08	1.26	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.96	0.08	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	3.23	0.06	0.02	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	0.63	0.01	0.00	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.39	0	0.01	J
00095-47-6 o-Xylene	106.16	0.89	0.02	0.00	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		84.54	85.4	99.0%	
Surrogate 2 Toluene-d8		72.89	65.0	112.1%	
Surrogate 3 1,4-Bromofluorobenzene		88.02	66.3	132.8%	

BH19A19N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/29/93 12:43	Relative Humidity(%):				
TIME ANALYZED: 1/29/93 12:43	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A19A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A19A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	19.58	19.6	8.2	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	22.32	22.32	6.38	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	12.64	12.6	4.3	
00067-66-3 Chloroform	119.39	30.54	30.54	6.21	
00071-55-6 1,1,1-Trichloroethane	133.42	35.05	35	6.38	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	25.22	25.22	3.98	
00071-43-2 Benzene	78.11	15.73	15.73	4.89	
00107-06-2 1,2-Dichloroethane	98.96	26.00	26.00	6.38	
00079-01-6 Trichloroethene	131.40	38.62	38.62	7.14	
00078-87-5 1,2-Dichloropropane	113.00	29.25	29.25	6.29	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	2.96	3.0	0.7	J
00108-88-3 Toluene	92.13	36.92	36.92	9.73	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	59.01	59.01	8.64	
00108-90-7 Chlorobenzene	112.60	41.26	41.26	8.90	U
00100-41-4 Ethylbenzene	106.16	41.59	41.59	9.51	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.52	1	0.12	J
00095-47-6 o-Xylene	106.16	49.48	49.48	11.32	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		90.21	85.4	105.6%	
Surrogate 2 Toluene-d8		78.30	65.0	120.5%	
Surrogate 3 1,4-Bromofluorobenzene		94.93	66.3	143.2%	

BH19A20N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 1/29/93 14:35	Relative Humidity(%):				
TIME ANALYZED: 1/29/93 14:55	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A20A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A20A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.86	0.43	0.11	J
00067-64-1 Acetone	58.08	0.77	0.39	0.16	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	13.66	6.83	1.95	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	2.23	1.11	0.20	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	1.56	0.78	0.14	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	0.61	0.31	0.07	J
00108-88-3 Toluene	92.13	33.32	16.66	4.39	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	72.54	36.27	5.31	
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	227.50	113.75	26.02	
01330-20-7 m-Xylene and/or p-Xylene	106.16	111.70	55.85	12.78	
00095-47-6 o-Xylene	106.16	482.50	241.25	55.19	E
00100-42-5 Styrene	104.10	4.56	2.28	0.53	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.85	85.40	101.7	
Surrogate 2 Toluene-d8		76.23	65.00	117.3	
Surrogate 3 1,4-Bromofluorobenzene		82.30	66.30	124.1	

BH19A21N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/2/93 11:00	Relative Humidity(%):				
TIME ANALYZED: 2/2/93 11:00	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A21A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A21A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				J
00067-64-1 Acetone	58.08	2.59	0.1	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	5.43	0.11	0.03	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	1.53	0.03	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				J
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.01	0	0.00	J
00095-47-6 o-Xylene	106.16	0.85	0.02	0.00	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		91.08	85.4	106.7%	
Surrogate 2 Toluene-d8		78.94	65.0	121.4%	
Surrogate 3 1,4-Bromofluorobenzene		93.11	66.3	140.4%	

BH19A22N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/2/93 12:02	Relative Humidity(%):				
TIME ANALYZED: 2/2/93 12:02	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A22A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A22A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	9.64	9.6	4.0	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	22.12	22.12	6.33	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	5.45	5.5	1.8	
00067-66-3 Chloroform	119.39	29.73	29.73	6.05	
00071-55-6 1,1,1-Trichloroethane	133.42	35.11	35	6.39	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	30.37	30.37	4.79	
00071-43-2 Benzene	78.11	14.80	14.80	4.60	
00107-06-2 1,2-Dichloroethane	98.96	24.11	24.11	5.92	
00079-01-6 Trichloroethene	131.40	35.41	35.41	6.54	
00078-87-5 1,2-Dichloropropane	113.00	27.22	27.22	5.85	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.34	1.3	0.3	J
00108-88-3 Toluene	92.13	25.16	25.16	6.63	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	44.08	44.08	6.45	
00108-90-7 Chlorobenzene	112.60	24.39	24.39	5.26	
00100-41-4 Ethylbenzene	106.16	26.05	26.05	5.96	
01330-20-7 m-Xylene and/or p-Xylene	106.16				J
00095-47-6 o-Xylene	106.16	28.85	28.85	6.60	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.19	85.4	104.4%	
Surrogate 2 Toluene-d8		75.95	65.0	116.8%	
Surrogate 3 1,4-Bromofluorobenzene		86.01	66.3	129.7%	

BH19A23N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/2/93 14:30	Relative Humidity(%):				
TIME ANALYZED: 2/2/93 14:41	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A23A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A23A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	1.19	0.59	0.25	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	11.61	5.81	1.66	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	1.28	0.64	0.12	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	1.24	0.62	0.11	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	25.28	12.64	3.33	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	34.86	17.43	2.55	
00108-90-7 Chlorobenzene	112.60	4.27	2.13	0.46	J
00100-41-4 Ethylbenzene	106.16	135.50	67.75	15.50	
01330-20-7 m-Xylene and/or p-Xylene	106.16	73.47	36.74	8.40	
00095-47-6 o-Xylene	106.16	391.60	195.80	44.79	E
00100-42-5 Styrene	104.10	2.93	1.47	0.34	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.04	85.40	104.3	
Surrogate 2 Toluene-d8		79.87	65.00	122.9	
Surrogate 3 1,4-Bromofluorobenzene		84.57	66.30	127.6	

BH19A24N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/3/93 10:02	Relative Humidity(%):				
TIME ANALYZED: 2/3/93 10:02	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A24A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A24A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				J
00067-64-1 Acetone	58.08	1.71	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.85	0.08	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	2.65	0.05	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				J
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.55	0	0.00	J
00095-47-6 o-Xylene	106.16				J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.76	85.4	105.1%	
Surrogate 2 Toluene-d8		78.59	65.0	120.9%	
Surrogate 3 1,4-Bromofluorobenzene		93.68	66.3	141.3%	

BH19A25N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/3/93 11:36	Relative Humidity(%):				
TIME ANALYZED: 2/3/93 11:36	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A25A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A25A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	7.82	7.8	3.3	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	23.41	23.41	6.69	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	4.64	4.6	1.6	J
00067-66-3 Chloroform	119.39	31.55	31.55	6.42	
00071-55-6 1,1,1-Trichloroethane	133.42	36.51	37	6.65	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	33.11	33.11	5.23	
00071-43-2 Benzene	78.11	16.48	16.48	5.12	
00107-06-2 1,2-Dichloroethane	98.96	26.70	26.70	6.55	
00079-01-6 Trichloroethene	131.40	39.69	39.69	7.34	
00078-87-5 1,2-Dichloropropane	113.00	30.07	30.07	6.46	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.33	1.3	0.3	J
00108-88-3 Toluene	92.13	32.23	32.23	8.50	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	53.53	53.53	7.84	
00108-90-7 Chlorobenzene	112.60	32.08	32.08	6.92	
00100-41-4 Ethylbenzene	106.16	33.57	33.57	7.68	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	38.39	38.39	8.78	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.34	85.4	104.6%	
Surrogate 2 Toluene-d8		76.44	65.0	117.6%	
Surrogate 3 1,4-Bromofluorobenzene		84.90	66.3	128.1%	

BH19A26N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/3/93 13:00	Relative Humidity(%):				
TIME ANALYZED: 2/3/93 13:21	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			5.00	
GC/MS DATA FILE: BH19A26A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A26A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.69	0.14	0.03	J
00067-64-1 Acetone	58.08	0.86	0.17	0.07	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	23.17	4.63	1.33	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	2.61	0.52	0.09	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	1.77	0.35	0.07	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16	0.54	0.11	0.03	J
00108-88-3 Toluene	92.13	52.76	10.55	2.78	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	68.33	13.67	2.00	
00108-90-7 Chlorobenzene	112.60	1.25	0.25	0.05	J
00100-41-4 Ethylbenzene	106.16	237.10	47.42	10.85	
01330-20-7 m-Xylene and/or p-Xylene	106.16	73.47	14.69	3.36	
00095-47-6 o-Xylene	106.16	529.10	105.82	24.21	E
00100-42-5 Styrene	104.10	4.81	0.96	0.22	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.34	85.40	103.4	
Surrogate 2 Toluene-d8		77.67	65.00	119.5	
Surrogate 3 1,4-Bromofluorobenzene		80.93	66.30	122.1	

BH19A27N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS	
SAMPLE ID : column 19 (1/14/93)	Canister ID Number: DIR
TIME RECEIVED: 2/4/93 14:38	Relative Humidity(%):
TIME ANALYZED: 2/4/93 14:38	Dryer Use (Yes/No): NO
ANALYTICAL METHODS: Method 1400	Sample Volume (ML): 50.00
GC/MS DATA FILE: BH19A27A.D	Sample Tmperature(C°): 23.0
REPORT FILE: BH19A27A	Sample Press. (mmHg): 760.0
DATE REPORTED: 3/22/93	Calibration (Int/Ext): ISTND

		CONCENTRATION				
CAS No. /	Compound	MW	ng	ng/ml	ppm	Q
00075-00-3	Chloroethane	64.52				U
00075-35-4	1,1-Dichloroethene	96.94				U
00067-64-1	Acetone	58.08	1.35	0.0	0.0	J
09003-22-9	Vinyl chloride	62.5				U
00075-09-2	Methylene chloride	84.93	6.08	0.12	0.03	J
00156-59-2	cis-1,2-Dichloroethene	96.94				U
00078-93-3	2-Butanone (MEK)	72.14				U
00067-66-3	Chloroform	119.39				U
00071-55-6	1,1,1-Trichloroethane	133.42				U
00079-00-5	1,1,2-Trichloroethane	133.42				U
00056-23-5	Carbon tetrachloride	153.83				U
00071-43-2	Benzene	78.11				U
00107-06-2	1,2-Dichloroethane	98.96				U
00079-01-6	Trichloroethene	131.40				U
00078-87-5	1,2-Dichloropropane	113.00				U
00108-10-1	4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3	Toluene	92.13	3.23	0.06	0.02	J
00079-34-5	1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4	Tetrachloroethene	165.85				U
00108-90-7	Chlorobenzene	112.60				U
00100-41-4	Ethylbenzene	106.16				U
01330-20-7	m-Xylene and/or p-Xylene	106.16	1.24	0	0.01	J
00095-47-6	o-Xylene	106.16				U
00100-42-5	Styrene	104.10				U
00091-20-3	Naphthalene	128.17				U

Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)
Surrogate 1	1,2-Dichloroethane-d4	91.55	85.4	107.2%
Surrogate 2	Toluene-d8	79.09	65.0	121.7%
Surrogate 3	1,4-Bromofluorobenzene	87.53	66.3	132.0%

BH19A28N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/4/93 16:17	Relative Humidity(%):				
TIME ANALYZED: 2/4/93 16:17	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A28A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A28A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.52	0.52	0.13	J
00067-64-1 Acetone	58.08	7.06	7.1	3.0	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	22.48	22.48	6.43	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	4.25	4.2	1.4	J
00067-66-3 Chloroform	119.39	32.48	32.48	6.61	
00071-55-6 1,1,1-Trichloroethane	133.42	38.26	38	6.96	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	31.14	31.14	4.92	
00071-43-2 Benzene	78.11	16.65	16.65	5.18	
00107-06-2 1,2-Dichloroethane	98.96	27.25	27.25	6.69	
00079-01-6 Trichloroethene	131.40	40.65	40.65	7.51	
00078-87-5 1,2-Dichloropropane	113.00	31.10	31.10	6.68	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.27	1.3	0.3	J
00108-88-3 Toluene	92.13	33.52	33.52	8.84	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	56.50	56.50	8.27	
00108-90-7 Chlorobenzene	112.60	33.85	33.85	7.30	
00100-41-4 Ethylbenzene	106.16	35.03	35.03	8.01	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.53	1	0.12	J
00095-47-6 o-Xylene	106.16	39.22	39.22	8.97	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		82.47	85.4	96.6%	
Surrogate 2 Toluene-d8		69.77	65.0	107.3%	
Surrogate 3 1,4-Bromofluorobenzene		74.58	66.3	112.5%	

BH19A29N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/4/93 17:45	Relative Humidity(%):				
TIME ANALYZED: 2/4/93 18:03	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A29A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A29A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/5/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	7.84	3.92	1.12	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	0.58	0.29	0.05	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	0.64	0.32	0.06	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	13.82	6.91	1.82	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	13.87	6.94	1.02	
00108-90-7 Chlorobenzene	112.60	1.16	0.58	0.13	J
00100-41-4 Ethylbenzene	106.16	76.68	38.34	8.77	
01330-20-7 m-Xylene and/or p-Xylene	106.16	59.93	29.97	6.86	
00095-47-6 o-Xylene	106.16	301.60	150.80	34.50	E
00100-42-5 Styrene	104.10	1.79	0.90	0.21	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		86.58	85.40	101.4	
Surrogate 2 Toluene-d8		74.52	65.00	114.6	
Surrogate 3 1,4-Bromofluorobenzene		82.94	66.30	125.1	

BH19A30N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
AMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/8/93 9:47	Relative Humidity(%):				
IME ANALYZED: 2/8/93 9:47	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A30A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A30A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	2.54	0.1	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.40	0.07	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	4.63	0.09	0.02	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	0.72	0.01	0.00	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	2.24	0	0.01	J
00095-47-6 o-Xylene	106.16	1.20	0.02	0.01	J
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		91.55	85.4	107.2%	
Surrogate 2 Toluene-d8		79.09	65.0	121.7%	
Surrogate 3 1,4-Bromofluorobenzene		87.53	66.3	132.0%	

BH19A31N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/8/93 11:21	Relative Humidity(%):				
TIME ANALYZED: 2/8/93 11:21	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A31A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A31A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	5.49	5.5	2.3	
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	23.63	23.63	6.76	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	2.80	2.8	0.9	U
00067-66-3 Chloroform	119.39	32.63	32.63	6.64	
00071-55-6 1,1,1-Trichloroethane	133.42	39.49	39	7.19	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	37.21	37.21	5.87	
00071-43-2 Benzene	78.11	17.75	17.75	5.52	
00107-06-2 1,2-Dichloroethane	98.96	29.33	29.33	7.20	
00079-01-6 Trichloroethene	131.40	42.31	42.31	7.82	
00078-87-5 1,2-Dichloropropane	113.00	32.49	32.49	6.98	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	1.03	1.0	0.2	J
00108-88-3 Toluene	92.13	35.56	35.56	9.37	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	55.80	55.80	8.17	
00108-90-7 Chlorobenzene	112.60	34.18	34.18	7.37	
00100-41-4 Ethylbenzene	106.16	34.15	34.15	7.81	
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.51	1	0.12	J
00095-47-6 o-Xylene	106.16	39.15	39.15	8.96	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		93.06	85.4	109.0%	
Surrogate 2 Toluene-d8		79.06	65.0	121.6%	
Surrogate 3 1,4-Bromofluorobenzene		85.69	66.3	129.2%	

BH19A32N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/8/93 13:00	Relative Humidity(%):				
TIME ANALYZED: 2/8/93 13:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			2.00	
GC/MS DATA FILE: BH19A32A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A32A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.64	0.32	0.13	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	7.11	3.56	1.02	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	8.97	4.49	1.18	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	4.98	2.49	0.36	J
00108-90-7 Chlorobenzene	112.60	0.61	0.30	0.07	J
00100-41-4 Ethylbenzene	106.16	30.05	15.03	3.44	
01330-20-7 m-Xylene and/or p-Xylene	106.16	35.80	17.90	4.09	
00095-47-6 o-Xylene	106.16	150.20	75.10	17.18	
00100-42-5 Styrene	104.10	0.58	0.29	0.07	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		87.17	85.40	102.1	
Surrogate 2 Toluene-d8		74.35	65.00	114.4	
Surrogate 3 1,4-Bromofluorobenzene		78.28	66.30	118.1	

BH19A33N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/9/93 9:23	Relative Humidity(%):				
TIME ANALYZED: 2/9/93 9:23	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A33A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A33A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.72	0.0	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	3.43	0.07	0.02	J
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	2.56	0.05	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.50				U
00100-41-4 Ethylbenzene	106.16	1.37	0.03	0.01	J
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16				U
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		93.20	85.4	109.1%	
Surrogate 2 Toluene-d8		78.82	65.0	121.3%	
Surrogate 3 1,4-Bromofluorobenzene		84.54	66.3	127.5%	

BH19A34N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/9/93 11:09	Relative Humidity(%):				
TIME ANALYZED: 2/9/93 11:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A34A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A34A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	20.06	20.06	5.74	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.69	1.7	0.6	J
00067-66-3 Chloroform	119.39	35.43	35.43	7.21	
00071-55-6 1,1,1-Trichloroethane	133.42	41.32	41	7.52	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	36.99	36.99	5.84	
00071-43-2 Benzene	78.11	18.11	18.11	5.63	
00107-06-2 1,2-Dichloroethane	98.96	28.90	28.90	7.09	
00079-01-6 Trichloroethene	131.40	43.24	43.24	7.99	
00078-87-5 1,2-Dichloropropane	113.00	33.48	33.48	7.20	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	0.59	0.6	0.1	J
00108-88-3 Toluene	92.13	35.73	35.73	9.42	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	58.30	58.30	8.54	
00108-90-7 Chlorobenzene	112.60	35.21	35.21	7.59	
00100-41-4 Ethylbenzene	106.16	35.68	35.68	8.16	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	40.93	40.93	9.36	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		95.63	85.4	112.0%	
Surrogate 2 Toluene-d8		81.41	65.0	125.2%	
Surrogate 3 1,4-Bromofluorobenzene		90.12	66.3	135.9%	

BH19A35N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/9/93 12:20	Relative Humidity(%):				
TIME ANALYZED: 2/9/93 12:36	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			5.00	
GC/MS DATA FILE: BH19A35A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A35A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	0.68	0.14	0.06	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	13.17	2.63	0.75	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	1.17	0.23	0.04	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40	0.78	0.16	0.03	J
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	22.13	4.43	1.17	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	12.92	2.58	0.38	
00108-90-7 Chlorobenzene	112.60	1.50	0.30	0.06	J
00100-41-4 Ethylbenzene	106.16	72.85	14.57	3.33	
01330-20-7 m-Xylene and/or p-Xylene	106.16	102.10	20.42	4.67	
00095-47-6 o-Xylene	106.16	328.30	65.66	15.02	E
00100-42-5 Styrene	104.10	1.93	0.39	0.09	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		88.27	85.40	103.4	
Surrogate 2 Toluene-d8		74.99	65.00	115.4	
Surrogate 3 1,4-Bromofluorobenzene		83.69	66.30	126.2	

BH19A37N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/11/93 16:30	Relative Humidity(%):				
TIME ANALYZED: 2/11/93 16:43	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			5.00	
GC/MS DATA FILE: BH19A37A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A37A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/11/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08				U
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	10.90	2.18	0.62	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42	0.72	0.14	0.03	J
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	19.39	3.88	1.02	
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85	8.39	1.68	0.25	J
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	51.25	10.25	2.34	
01330-20-7 m-Xylene and/or p-Xylene	106.16	91.33	18.27	4.18	
00095-47-6 o-Xylene	106.16	328.30	65.66	15.02	E
00100-42-5 Styrene	104.10	1.29	0.26	0.06	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		89.87	85.40	105.2	
Surrogate 2 Toluene-d8		74.20	65.00	114.2	
Surrogate 3 1,4-Bromofluorobenzene		70.60	66.30	106.5	

BH19A38N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/12/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/17/93 18:40	Relative Humidity(%):				
TIME ANALYZED: 2/17/93 18:48	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			20.00	
GC/MS DATA FILE: BH19A38A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A38A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/18/93	Calibration (Int/Ext):			ISTD	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	1.07	0.05	0.01	J
00067-64-1 Acetone	58.08	1.92	0.10	0.04	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	6.03	0.30	0.09	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MI	100.16				U
00108-88-3 Toluene	92.13	1.50	0.08	0.02	J
00079-34-5 1,1,2,2-Tetrachloroethan	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16	1.59	0.08	0.02	J
01330-20-7 m-Xylene and/or p-Xylene	106.16	3.37	0.17	0.04	J
00095-47-6 o-Xylene	106.16	8.49	0.42	0.10	
00100-42-5 Styrene	104.10	1.29	0.06	0.02	J
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng	Add(ng	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		97.30	85.40	113.9	
Surrogate 2 Toluene-d8		84.19	65.00	129.5	
Surrogate 3 1,4-Bromofluorobenzene		84.70	66.30	127.8	

BH19A39N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/22/93 11:09	Relative Humidity(%):				
TIME ANALYZED: 2/22/93 11:09	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A34A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A34A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.65	0.01	0.00	J
00067-64-1 Acetone	58.08	3.83	0.1	0.0	J
09003-22-9 Vinyl chloride	62.5				U
00075-09-2 Methylene chloride	84.93	8.10	0.16	0.05	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	4.38	0.09	0.02	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85				U
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	0.94	0	0.00	J
00095-47-6 o-Xylene	106.16				U
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		95.07	85.4	111.3%	
Surrogate 2 Toluene-d8		81.23	65.0	125.0%	
Surrogate 3 1,4-Bromofluorobenzene		83.37	66.3	125.7%	

BH19A40N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/22/93 11:33	Relative Humidity(%):				
TIME ANALYZED: 2/22/93 11:33	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (LITER):			1.00	
GC/MS DATA FILE: BH19A40A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A40A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 3/22/93	Calibration (Int/Ext):			ISTND	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppb	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94	0.55	0.55	0.14	J
00067-64-1 Acetone	58.08	3.89	3.9	1.6	J
09003-22-9 Vinyl chloride	62.5				
00075-09-2 Methylene chloride	84.93	26.11	26.11	7.47	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14	1.78	1.8	0.6	J
00067-66-3 Chloroform	119.39	35.60	35.60	7.24	
00071-55-6 1,1,1-Trichloroethane	133.42	40.01	40	7.28	
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83	28.94	28.94	4.57	
00071-43-2 Benzene	78.11	17.89	17.89	5.56	
00107-06-2 1,2-Dichloroethane	98.96	30.45	30.45	7.47	
00079-01-6 Trichloroethene	131.40	40.51	40.51	7.49	
00078-87-5 1,2-Dichloropropane	113.00	33.00	33.00	7.09	
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16	0.70	0.7	0.2	J
00108-88-3 Toluene	92.13	30.47	30.47	8.03	
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	45.24	45.24	6.62	
00108-90-7 Chlorobenzene	112.60	28.35	28.35	6.11	
00100-41-4 Ethylbenzene	106.16	29.46	29.46	6.74	
01330-20-7 m-Xylene and/or p-Xylene	106.16				U
00095-47-6 o-Xylene	106.16	32.72	32.72	7.49	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		90.96	85.4	106.5%	
Surrogate 2 Toluene-d8		75.73	65.0	116.5%	
Surrogate 3 1,4-Bromofluorobenzene		70.26	66.3	106.0%	

BH19A41N.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : column 19 (1/14/93)	Canister ID Number:			DIR	
TIME RECEIVED: 2/22/93 13:40	Relative Humidity(%):				
TIME ANALYZED:2/22/93 13:50	Dryer Use (Yes/No):			NO	
ANALYTICAL METHODS: Method 1400	Sample Volume (ML):			50.00	
GC/MS DATA FILE: BH19A41A.D	Sample Tmperature(C°):			23.0	
REPORT FILE: BH19A41A	Sample Press. (mmHg):			760.0	
DATE REPORTED: 2/24/93	Calibration (Int/Ext):			Ext	
	CONCENTRATION				
CAS No. / Compound	MW	ng	ng/ml	ppm	Q
00075-00-3 Chloroethane	64.52				U
00075-35-4 1,1-Dichloroethene	96.94				U
00067-64-1 Acetone	58.08	1.52	0.03	0.01	J
09003-22-9 Vinyl chloride	62.50				U
00075-09-2 Methylene chloride	84.93	7.77	0.16	0.04	
00156-59-2 cis-1,2-Dichloroethene	96.94				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39				U
00071-55-6 1,1,1-Trichloroethane	133.42				U
00079-00-5 1,1,2-Trichloroethane	133.42				U
00056-23-5 Carbon tetrachloride	153.83				U
00071-43-2 Benzene	78.11				U
00107-06-2 1,2-Dichloroethane	98.96				U
00079-01-6 Trichloroethene	131.40				U
00078-87-5 1,2-Dichloropropane	113.00				U
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	1.92	0.04	0.01	J
00079-34-5 1,1,2,2-Tetrachloroethane	167.85				U
00127-18-4 Tetrachloroethene	165.85	0.54	0.01	0.00	J
00108-90-7 Chlorobenzene	112.60				U
00100-41-4 Ethylbenzene	106.16				U
01330-20-7 m-Xylene and/or p-Xylene	106.16	3.74	0.07	0.02	J
00095-47-6 o-Xylene	106.16	10.86	0.22	0.05	
00100-42-5 Styrene	104.10				U
00091-20-3 Naphthalene	128.17				U
Surrogate Standards Recoveries		Rec(ng)	Add(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4			85.40		
Surrogate 2 Toluene-d8			65.00		
Surrogate 3 1,4-Bromofluorobenzene			66.30		

APPENDIX D

RESULTS OF GRAIN SIZE DISTRIBUTION ANALYSES

GEOTECHNICAL TESTING REPORT
AMERICAN CHEMICAL SERVICES NPL SITE
GRIFFITH, INDIANA

FOR:
VAPEX ENVIRONMENTAL TECHNOLOGIES, INC.
CANTON, MASSACHUSETTS

JOB NO. G078.001
MARCH, 1993

Huntingdon
Consulting engineers Environmental scientists

Empire Soils Investigations, Inc.
Corporate Offices
140 Telegraph Road
Box 297
Middleport, New York 14105
(716)735-3502
Fax (716)735-9027

March 15, 1993

Mr. Jon Polonski
VAPEX ENVIRONMENTAL TECHNOLOGIES, INC.
480 Neponset Street
Canton, Massachusetts 02021

SUBJECT: GEOTECHNICAL TESTING, CONTAM. SOIL SAMPLES
AMERICAN CHEMICAL SVCS. NPL SITE
GRIFFITH, INDIANA

Dear Mr. Polonski:

Transmitted herewith are the results of geotechnical testing performed on three (3) contaminated soil samples from the subject project. The samples were received in good condition at our laboratory in Middleport, New York on February 26, 1993. The work was performed under your Purchase Order No. 1373, dated February 23, 1993.

In accordance with your instructions we have performed grain size distribution analysis (ASTM D422) and water content determination (ASTM D2216) on all three (3) samples. Individual Grain Size Distribution Reports, with the water content reported under remarks were faxed to your attention on March 10, 1993, and are attached to this report.

It has been a pleasure working with your firm on this project. Should you have any questions, or in case we may be of further service, do not hesitate to contact the undersigned at 716-735-3400.

Respectfully submitted,

EMPIRE SOILS INVESTIGATIONS, INC.

Jorgen F. Christiansen

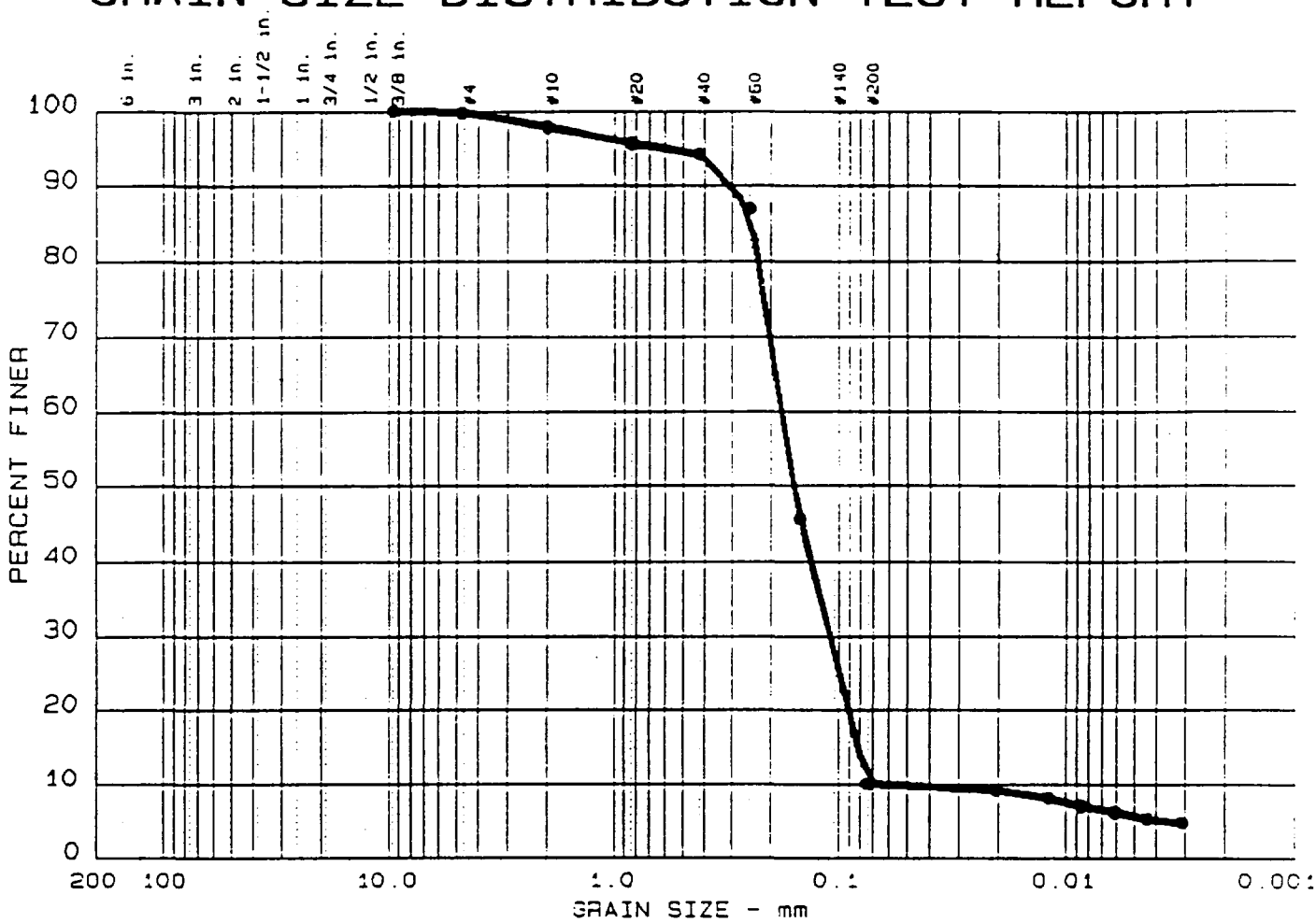
Jorgen F. Christiansen, PE
Director, Geotechnical Testing

JFC/rfp

Enc.

HIH

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% -3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.3	89.6	4.4	5.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.24	0.18	0.16	0.110	0.0816	0.0655	1.02	2.7

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SAND, trace clay & silt & gravel, ORGANCS		

Project No.: G078.001
Project: AMERICAN CHEMICAL SERVICE NPL SITE
● Location: COLUMN I

Date: MARCH 10, 1993

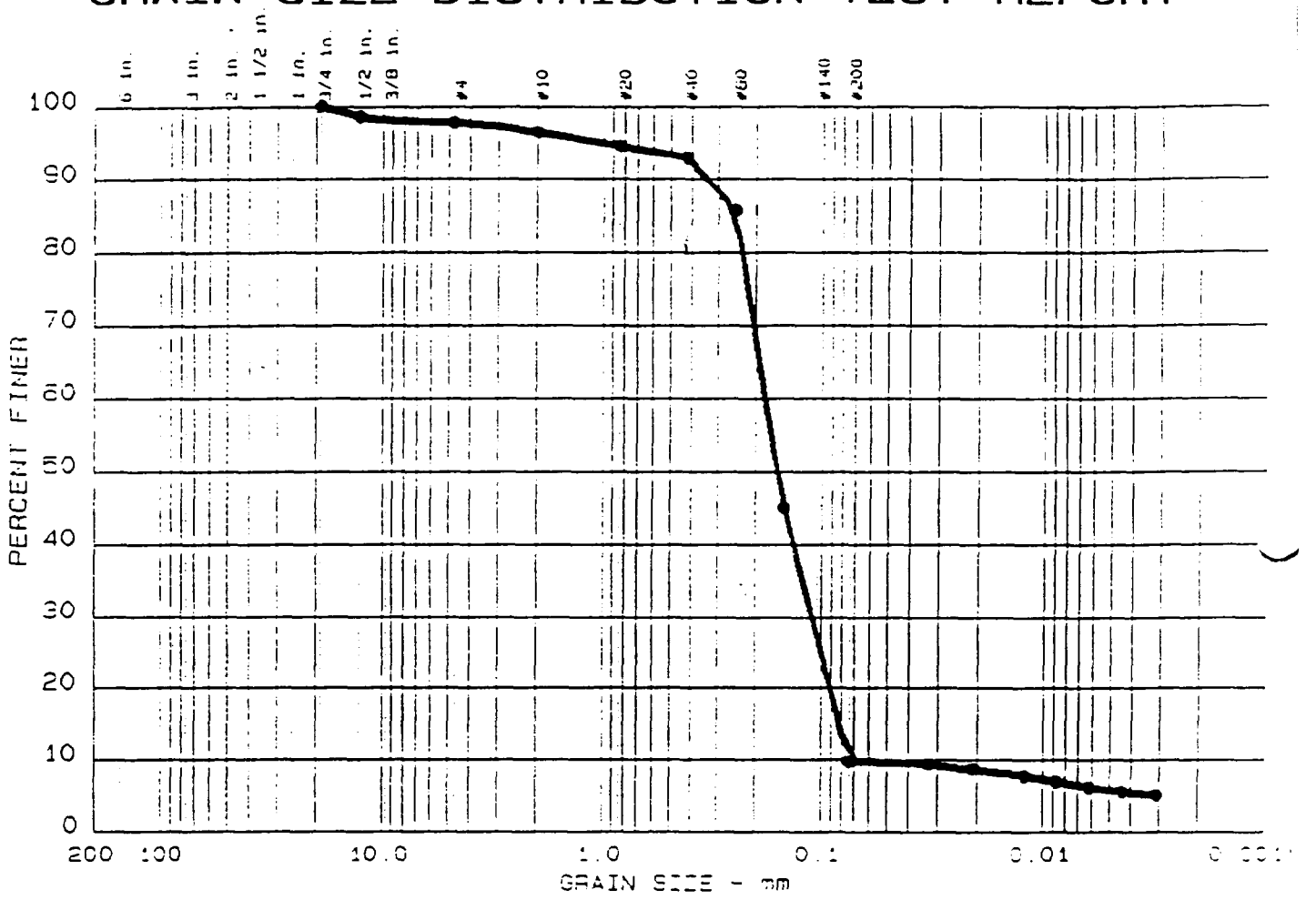
Remarks:
CLIENT: VAPEX ENVIRON - MENTAL TECH.
WATER CONTENT: 15.7%
LAB NO. 1544.001

GRAIN SIZE DISTRIBUTION TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC

Figure No. 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% -3"	% GRAVEL	% SAND	% SILT	% CLAY
●	2	0.0	2.3	88.0	4.0	5.7

	LL	PI	D_{95}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.25	0.18	0.16	0.110	0.0818	0.0740	0.91	2.5

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SAND, trace clay & silt & gravel. ORGANCS		

Project No.: G073.001

Project: AMERICAN CHEMICAL SERVICE NPL SITE

● Location: COLUMN II

Date: MARCH 10, 1993

Remarks:

CLIENT: VAPEX ENVIRON - MENTAL TECH.

WATER CONTENT: 13.4%

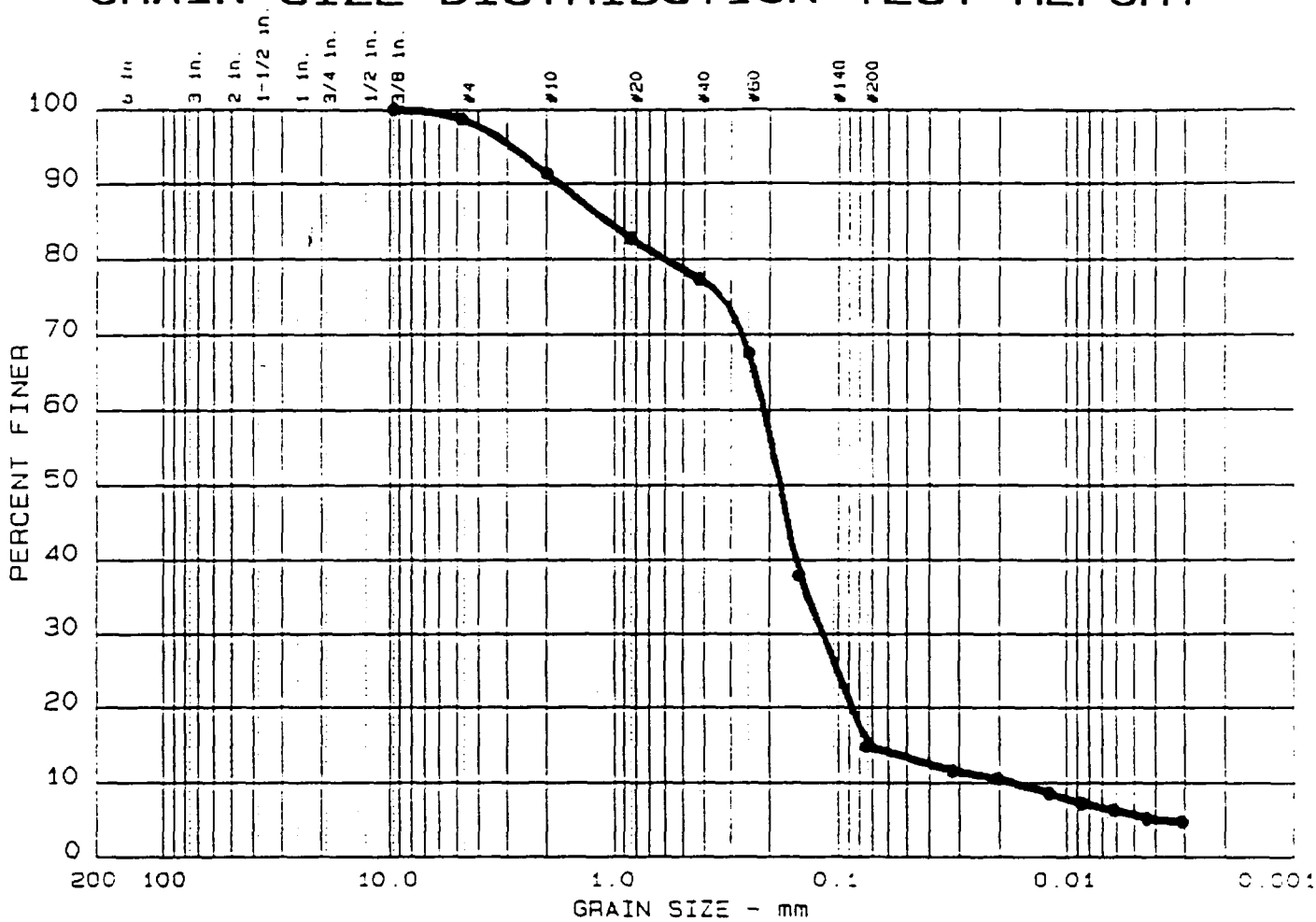
LAB NO. 1544.002

GRAIN SIZE DISTRIBUTION TEST REPORT

EMPIRE SOILS INVESTIGATIONS, INC

Figure No. 1

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	3	0.0	1.4	83.8	9.2	5.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			1.08	0.21	0.18	0.117	0.0740	0.0176	3.70	12.1

MATERIAL DESCRIPTION	USCS	AASHTO
● BROWN SAND, trace silt & clay & gravel, ORGANCS		

Project No.: G078.001
Project: AMERICAN CHEMICAL SERVICE NPL SITE
● Location: COLUMN III

Date: MARCH 10, 1993

Remarks:
CLIENT: VAPEX ENVIRON - MENTAL TECH.
WATER CONTENT: 17 1%
LAB NO. 1544.003

GRAIN SIZE DISTRIBUTION TEST REPORT
EMPIRE SOILS INVESTIGATIONS, INC

Figure No. 1

APPENDIX E

PHYSICAL AND CHEMICAL TRANSPORT MODELING INPUT AND OUTPUT

PHYSICAL MODELING/COL. 1

Col. 1

[illegible]==========

****
WELCOME TO USE THIS PROGRAM------F. M. Li
****

INPUT SAMPLE DATA

SAMPLE HEIGHT (CM) = [illegible]
SAMPLE DIAMETER (CM) = [illegible]
SAMPLE TEMPERATURE= [illegible]

FLOW RATE (ml/min)	DIFF PRESSURE (lbs. water)	PERMEABILITY (cm-2)
.1500E+02	.1100E+02	.1.98E-13
.1200E+02	.8000E+01	.1310E-13
.1300E+02	.3000E+01	.6888E-13
.1000E+02	.2000E+01	.1744E-13
.9500E+01	.2000E+01	.4138E-13

==========
COMPUTATION FINISHED

PHYSICAL MODELING/COL. 2

cul. 2

==========

****
WELCOME TO USE THIS PROGRAM-----F. M. Li
****

INPUT SAMPLE DATA

SAMPLE HEIGHT (CM) = 48.260000
SAMPLE DIAMETER (CM) = 7.620000
SAMPLE TEMPERTURE= 23.000000

FLOW RATE (ml/min)	DIFF. PRESSURE (cms. water)	PERMEBILITY (cm**2)
.2800E+03	.1000E+02	.1411E-07

==========
COMPUTATION FINISHED

PHYSICAL MODELING/Col. 3

col. 3

==========

****
WELCOME TO USE THIS PROGRAM-----F. M. Li
****

INPUT SAMPLE DATA

SAMPLE HEIGHT (CM) = 46.990000
SAMPLE DIAMETER (CM) = 7.620000
SAMPLE TEMPERTURE= 23.000000

FLOW RATE (ml/min)	DIFF. PRESSURE (ins. water)	PERMABILITY (cm-2)
.1000E+03	.2000E+02	.2135E-08
.9800E+02	.2000E+02	.3099E-08
.1050E+03	.2500E+01	.7700E-08
.1120E+03	.5000E+01	.1390E-07
.1150E+03	.3000E+01	.2373E-07
.3100E+02	.4000E+01	.1455E-07

==========

COMPUTATION FINISHED

VAPEX®

COMPUTATION SHEET

DATE 3/10/93

CLIENT _____ PROJECT NO. _____ BY Fengming Li

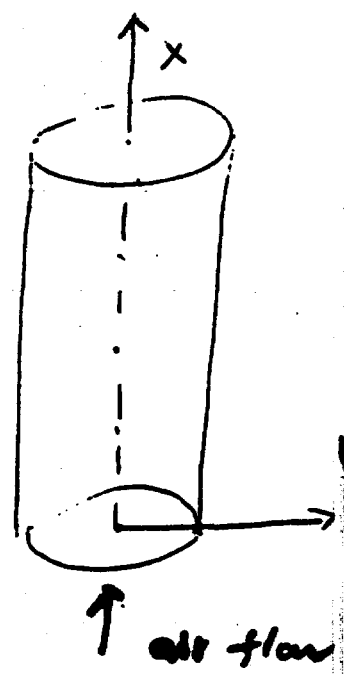
SUBJECT Chemical Transport Model CHECKED BY _____

Bench scale test model.

VAPEX modified the USGS 3DADE program to use in the bench scale test simulation.

(1) Soil column is a cylinder column

(2) Air flow is only vertical direction. see fig 1.



The Governing equation for this problem is

$$D_x \frac{\partial^2 c}{\partial x} - v\frac{\partial c}{\partial x} + \frac{\partial r}{r}\frac{\partial}{\partial r}\left[r\frac{\partial c}{\partial r}\right] - \mu c + \lambda = R\frac{\partial c}{\partial t}$$

$$c(x, r, 0) = \begin{cases} C_0 & 0 < x < x_L \\ & r < a \\ 0 & \text{otherwise} \end{cases}$$

The solution for above equation is

$$C(x, y, t) = \frac{C_0}{4}\int_0^a \Lambda_1(\tau) F_1(\rho, \tau)\, d\rho\, d\tau$$

$$+ \frac{\lambda}{4R}\int_0^t \int_0^\infty \Lambda_2(\tau) F_1(\rho, \tau)\, d\rho\, d\tau$$

Here. R · Retardation factor

D_x · Dispersion coefficient in x direction

[illegible]

CLIENT PROJECT NO. BY
SUBJECT CHECKED BY

C_0: Initial concentration

λ: Zero-order rate coefficient for production

μ: first-order rate coefficient for decay

and

$$\Lambda_1(t) = \exp\left[-\frac{\mu t}{R}\right]\left\{\exp\left[\frac{vx}{D_x}\right]\left[\left[1+\frac{v}{D_x}\left(x+x_L+\frac{vt}{R}\right)\right]\right.\right.$$

$$\operatorname{erfc}\left[\frac{R(x+x_L)+vt}{(4RD_x t)^{1/2}}\right]-\left[1+\frac{v}{D}\left(x+x_L+\frac{vt}{R}\right)\right]$$

$$\left.\operatorname{erfc}\left[\frac{R(x+x_L)+vt}{(4RD_x t)^{1/2}}\right]\right]+\operatorname{erfc}\left[\frac{R(x-x_L)-vt}{(4RD_x t)^{1/2}}\right]$$

$$-\operatorname{erfc}\left[\frac{R(x-x_L)-vt}{(4RD_x t)^{1/2}}\right]+\left[\frac{4v^2t}{\pi RD_x}\right]^{1/2}\exp\left[\frac{vx}{D_x}\right]$$

$$\left[\exp\left[\frac{-(R(x+x_L)+vt)^2}{4RD_x t}\right]-\exp\left[-\frac{[R(x+x_L)+vt]^2}{4RD_x t}\right]\right]$$

Also

$$\Lambda_2(\tau) = \exp\left[-\frac{\mu\tau}{R}\right]\left[\operatorname{erfc}\left[\frac{v\tau-Rx}{(4RD_x\tau)^{1/2}}\right]+\left[1+\frac{v}{D_x}\right.\right.$$

$$\left.\left.\left(x+\frac{v\tau}{R}\right)\right]\exp\left(\frac{vx}{D_x}\right)\operatorname{erfc}\left[\frac{Rx+v\tau}{(4RD_x\tau)^{1/2}}\right]-\right.$$

$$\left.\left[\frac{4v^2\tau}{\pi RD_x}\right]^{1/2}\exp\left[-\frac{(Rx-v\tau)^2}{4RD_x\tau}\right]\right]$$

and

$$F_1(\rho\,\tau) = \frac{\rho R}{D_r\tau}\exp\left[-\frac{R(r^2+\rho^2)}{4D_x\tau}\right]I_0\left(\frac{\rho_1 R}{2D_r\tau}\right)$$

I_0 zero order bessel function.

APPENDIX F

ERI QA/QC STANDARD OPERATING PROCEDURES

ATTACHMENT B
SUMMARY OF METHOD FOR DIRECT INJECTION AND GC/FID ANALYSIS

Method No.: ERI 80201

Title: Purge-trap-Trap GC-FID Method for Determination of Volatile Aromatic Compounds and Other Common Solvent in Water, Soil and Vapor Samples

Referenced method: EPA8020 and 5030

Last Update: October 22, 1991

Prepared by: Organic Lab.

Summary of the Method:

This method is based on EPA Method 8020 to determine the concentration of various aromatic volatile organic compounds and also can be expanded to other compounds. A Hewlett Packard 5890 Gas chromatograph equipped with a Flame Ionization Detector (FID) and a HP3396 Integrator interfaced with a Tekmar 4000 Purge-and-Trap device is used in this method. The modifications made in this method are that a flame ionization detector is used instead of a photoionization detector and a megabore capillary column is used instead of packed column. This method combined with the GC/MS method with similar conditions is able to monitor a wider range of compounds. This method is successfully used in this lab to monitor gasoline and common solvents (such as Trichloroethylene, Tetrachloroethylene) contaminated soil, water and vapor samples. The detection limit for water and vapor samples are 5 to 10 ng for the individual compound being completely separated by the gas chromatograph. The new technique for introduction of large volume air sample which is developed by this lab, can also be used in this method to analyze lower ppbv level air samples. The compounds that can be analyzed with this method are: 1,1-Dichloroethylene, 1,1-Dichloroethane, Chloroform, 1,1,1-Trichloroethane, Benzene Trichloroethene, Toluene, Tetrachloroethylene, Chlorobenzene, Ethylbenzene m+p-Xylenes o-Xylene, 1,3-Dichlorobenzene, 1,4 Dichlorobenzene and 1,2-Dichlorobenzene. The detection limits are 1 to 2 ppb in 5.0 ml water sample or 5 to 10 ng for each injection.

The method is described in more detail in the attached SOP (9 pages).

Addendum for Method 1400 SOP

Using large syringe to take and introduce air samples

The configuration of the instrument used for Method 1400 allows the use of a large syringe to introduce the sample into the analytical system. This procedure allows the analysis of air samples down to approximately 10 ppbv, with a short sampling time.

1. Apparatus

   1.1 One hundred ml glass airtight syringe (SEG) with shutoff valve.

   1.2 Syringe Needles: Perfektum Spinal (Quincke) Needle 22 x 31/2.

2. Instrument Setup

The Tekmar 5010 Thermal Desorber is configured in the same way as for the analysis of carbon sorbent tube sample, but placing an empty tube in the desorb furnace. Adjust the desorb flow rate to 10 ml/min. All conditions remain the same as for canister analysis outlined in ERI Method 1400.

3. Sample Collection

Pull the plunger of the syringe slowly to 10% more than the desired volume. Place the shutoff valve on the syringe needle. If the sample is taken at the exit of the exhaust, the sampling flow rate must be maintained at less than the exhaust flow rate.

4. Sample Introduction

   4.1 Start Tekmar 5010, wait for the cryogenic trap to reach the preset temperature and the desorb is ready.

   4.2 Open the shutoff valve of the syringe, adjust the volume to the desired volume. Punch the needle through the septum of the direct injection inlet of the Tekmar 5010. Control the sample introduction flow rate to between 20 to 40 ml/min.

   4.3 The rest of the procedure will be identical as that for the procedure used for canisters.

ERI METHOD 80201
AROMATIC VOLATILE ORGANICS AND OTHER COMMON SOLVENTS

1.0 SCOPE AND APPLICATION

1.1 This method is based on EPA Method 8020 to determine the concentration of various aromatic volatile organic compounds and also can be expanded to other compounds than aromatic. Because flame ionization detector and capilary column are used in this method, a wider range of compounds can be analyzed by this method. This method is successfully used in this lab to monitor gasoline and common solvents (such Trichloroethylene, Tetrachloroethylene) contaminated soil, water and vapor samples. The detection limit for water and vapor sample are 5 to 10 ng for the individual compound being completed separated by gas chromatograph. Table 1 indicates compounds which may be determined by this method and lists the method detection limit for each compound in reagent water.

2.0 SUMMARY OF METHOD

2.1 This method provides purge and trap and chromatographic conditions. Samples can be analyzed using direct injection of sample into gas chromatograph through the injection port, or purge-and-trap (Method 5030). A DB-624 megabore capillary column is used in the gas chromatograph to separate the organic compounds. Detection is achieved by a flame ionization detector (FID).

2.2 If interferences are encountered, GC/MS method with similar column and temperature program will be use in resolving the analytes from the interferences and for analyte confirmation.

3.0 INTERFERENCES

3.1 Any compounds coeluted with interested analyte will interference the analyzed. This method can not separate m-Xylene from p-Xylene.

3.2 Samples can be contaminated by diffusion of volatile organics (particularly chlorofluorocarbons and methylene chloride) through the sample container septum during shipment and storage. A field sample blank prepared from reagent water and carried through sampling and subsequent storage and handling can serve as a check on such contamination.

4.0 APPARATUS AND MATERIALS

4.1 Gas chromatograph:

4.1.1 Gas Chromatograph: Hewlett Packard 5890 with on-column injector and Flame Ionization Detector (FID) HP3396 Integrator.

4.1.2 Columns:

DB-624 column, 30 m long, 0.53 I.D. 3.0 µ film thickness.

4.2 Sample introduction apparatus: Tekmar 4000 Purge-and-Trap equipped with activated carbon trap (Supelco).

4.3 Syringes: A 5-ml Luerlok glass hypodermic and a 5-mL, gas-tight with a shutoff valve for water sample. 100 and 50 ml Luerlock gas-tight glass syringe with a shutoff valve for vapor sample

4.4 Volumetric flask: 10-, 50-, 100-, 500-, and 1,000-mL with a ground glass stopper.

4.5 Microsyringe: 10- and 25-µL with a 0.006-in I.D. needle (Hamilton 702N or equivalent) and a 100-µL.

5.0 REAGENTS

5.1 Reagent water: Reagent water is defined as a water in which an interferant is not observed at the method detection limit (MDL) of the parameters of interest.

5.2 Stock standards: Stock solutions is be prepared from pure standard materials or purchased Ultra Scientific as 100 or 200 ng/µl airtight solutions. Prepare stock standards in methanol using assayed liquids.

5.2.1 Place about 9.8 mL of methanol in a 10-mL tared ground-glass-stoppered volumetric flask. Allow the flask to stand, unstoppered, for about 10 min or until all alcohol-wetted surfaces have dried. Weigh the flask to the nearest 0.1 mg.

5.2.2 Using a 100-µL syringe, immediately add two or more drops of assayed reference material to the flask; then reweigh. The liquid must fall directly into the alcohol without contacting the neck of the flask.

5.2.3 Reweigh, dilute to volume, stopper, and then mix by inverting the flask several times. Calculate the concentration in micrograms per microliter (µg/µL) from the met gain in weight. When compound purity is assayed to be 96% or greater, the weight may be used without correction to calculate the concentration of the stock standard. Commercially prepared stock standards may be used at any concentration if they are certified by the manufacturer or by an independent source.

5.2.4 Transfer the stock standard solution into a Teflon-sealed screw-cap bottle. Store, with minimal headspace, at 4 degrees C and protect from light.

5.2.5 All standards must be replace after 6 months, or sooner if comparison with check standards indicates a problem.

5.3 Secondary dilution standards: Using stock standard solutions, prepare in methanol secondary dilution standards, as needed, that contain the compounds of interest, either singly or mixed together. The secondary dilution standards should be prepared at concentrations such that the aqueous calibration standards prepared in Paragraph 5.4 will bracket the working range of the analytical system. Secondary dilution standards should be stored with minimal headspace for volatiles and should be checked frequently for signs of degradation or evaporation, especially just prior to preparing calibration standards from them.

5.4 Calibration standards: Calibration standards at a minimum of five concentration levels are prepared in reagent water from the secondary dilution of the stock standards. One of the concentration levels should be at a concentration near, but above, the method detection limit. The remaining concentration levels should correspond to the expected range of concentrations found in real samples or should define the working range of the GC. Each standard should contain each analyte for detection by this method (e.g., some or all of the compounds listed in Table 1 may be included). In order to prepare accurate aqueous standard solutions, the following precautions must be observed.

5.4.1 Do not inject more than 20 µL of alcoholic standards into 100 mL of reagent water.

5.4.2 Use a 25-µL Hamilton 702N microsyringe or equivalent (variations in needle geometry will adversely affect the ability to deliver reproducible volumes of methanolic standards into water).

5.4.3 Rapidly inject the alcoholic standard into the filled volumetric flask. Remove the needle as fast as possible after injection.

5.4.4 Mix aqueous standards by inverting the flask three times only.

5.4.5 Fill the sample syringe form the standard solution contained in the expanded area of the flask (do not use any solution contained in the neck of the flask).

5.5.6 Never use pipets to dilute or transfer samples or aqueous standards.

5.4.7 Aqueous standards are not stable and should be discarded after 1 hr, unless properly sealed and stored. The aqueous standards can be stored up to 24 hr. if held in sealed vials with zero headspace.

5.5 Internal standards (if internal standard calibration is used): The compound, alpha, alpha, alpha-trifluorotoluene recommended by EPA for use as a surrogate spiking compound (Paragraph 5.6) has been used successfully as an internal standards. In most case internal standard method is not used.

5.5.1 Prepare calibration standards at a minimum of five concentration levels 5 , 10 20 40 100 ppb in 5.0 ml water or 25, 50, 100, 200, 500 for each component.

5.5.2 Prepare a spiking solution containing each of the internal standards using the procedures described in Sections 5.2 and 5.3. It is recommended that the secondary dilution standard by prepared at a concentration of 15 µg/mL of each internal standard compound. The addition of 10 µL of this standard to 5.0 mL of sample or calibration standard would be equivalent to 30 µg/L.

5.5.3 Analyze each calibration standard according to Section 7.0 adding 10 µL of internal standard spiking solution directly to the syringe.

5.6 Surrogate standards: The analyst should monitor both the performance of the analytical system and the effectiveness of the method in dealing with each sample matrix by spiking each sample, standard, and reagent water blank with surrogate compounds (e.g, alpha,alpha,alpha-trifluorotoluene) recommended to encompass the range of the temperature program used in the method. From stock standard solutions prepared as in Section 5.2, add a volume to give 750 µg of each surrogate to 45 mL of reagent water contained in a 50-mL volumetric flask, mix and dilute to volume for a concentration of 15 ng/µL. Add 10 µL of this surrogate spiking solution directly into the 5-mL syringe with every sample and reference standard analyzed. If the internal standard calibration procedure is used, the surrogate compounds may be added directly to the internal standard spiking solution. (Paragraph 5.5.2).

5.7 Methanol: VOC grade purchased from Baxter.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 The received sample should be check against sample chain of custody form along with the sample and kept in the refrigerator labeled **VOC Sample Only** in the organic analytical lab. Water and soil sample should analyzed with 5 days and vapor and gas should analyzed within 24 hours.

7.0 PROCEDURE

7.1 Volatile compounds are introduced into the gas chromatograph either by direct injection or purge-and-trap (Method 5030). Method 5030 may be used directly on ground water samples or low-level soils or sediments, methanolic extraction, as described in Method 5030, may be necessary prior to purge-and-trap analysis.

7.1.1 Purge and Trap conditions:

Purge: Helium at 40 ml/min. for 15 minute including 5 min. dry purge.

Desorb: at 240 °C for 4 min. at GC column flow rate

Bake: at 280 °C for 12 min. at same flow rate as that of purge

by ERI organic laboratory.

7.4.3 Direct injection for organic liquid sample: In very limited applications (e.g., aqueous process wastes), direct injection of the sample into the GC system with a 10 µL syringe may be appropriate. the detection limit is very high (approximately 10,000 µg/L); therefore, it is only permitted when concentrations in excess of 10,000 µg/L are expected or for water-soluble compounds that do not purge. The system must be calibrated by direct injection (bypassing the purge-and-trap device).

7.4.4 Purge and Trap for water sample. Fill out 5.0 ml luerlock syringe with water sample, replace the plunge and adjust the volume to 5.0 ml. Inject the water sample into glass sample device. Start the purge cycle.

7.4.5 If the response for a peak is off-scale, prepare a dilution of the sample with reagent water. Or small sample volume should be taken. The dilution must be performed on a second aliquot of the sample which has been properly sealed and stored prior to use.

8.0 QUALITY CONTROL

8.1 Refer to EPA SW 846 Chapter One for specific quality control procedures and Method 8000 for gas chromatographic procedures. Quality control to ensure the proper operation of the purge-and-trap device is covered in Method 5030.

8.2 Mandatory quality control to validate the GC system operation is found in EPA Method 8000, Section 8.6.

8.2.1 The quality control check sample concentrate (Method 8000, Section 8.6) should contain each parameter of interest at a concentration of 10 µg/mL in methanol.

8.2.2 Table 3 indicates the calibration and QC acceptance criteria for this method. Table 4 gives method accuracy and precision as functions of concentration for the analytes of interest. The contents of both Tables should be used to evaluate a laboratory's ability to

perform and generate acceptable data by this method.

8.3 Calculate surrogate standard recovery on all samples, blanks, and spikes. Determine if recovery is within limits (limits established by performing QC procedure outlined in Method 8000, Section 8.10).

8.3.1 If recovery is not within limits, the following is required.

* Check to be sure there are no errors in calculations, surrogate solutions and internal standards. Also, check instrument performance.

* Recalculate the data and/or reanalyze the extract is any of the above checks reveal a problem.

* Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration."

Standard Operating Procedure for the Determination of Volatile Organic Compounds in Summa Canister Ambient Air Samples by Cryogenic Preconcentration and Gas Chromatography/Mass Spectrometry (GC/MS).

1.0 Scope and Application

1.1 This document describes the standard operating procedure (SOP) for the determination of specific volatile organic compounds in ambient air (see Table 1, page 55).

1.2 The standard operating procedure is also applicable to other airborne organic contaminants that can be preconcentrated on a cryogenic trap, thermally desorbed, and eluted as sharp peaks from a GC capillary column. At this time no quantitative data are available for these compounds and they will be tentatively identified and their concentrations will be estimated.

1.3 The practical quantitation limit (PQL) for an individual compound is approximately 20 $\mu g/m^3$ based on a 500 ml aliquot of the whole air sample. PQLs will be proportionately lower for larger sample volumes.

1.4 This standard operating procedure is based upon the specific instrumentation and technology described in this document. In this method, 6 or 8 liter Summa Canisters are used for the sample container. A Tekmar 5010 automatic thermal desorber interfaced with a Hewlett Packard 5890/5970 - GC/MSD is used to analyze samples. The GC/MSD is equipped with a J&W DB-624 0.32 mm x 60 m capillary column using a capillary direct interface to a mass selective detector (MSD). The MSD is controlled with a Pascal ChemStation data system.

1.5 This procedure is optimized to share the same analytical system with Method 1000 (a Tekmar 5010 thermal desorber interfaced with a Hewlett Packard 5890/5970 - GC/MSD for sorbent tube analysis). This configuration of the sample introduction system permits the timely switching from Method 1000 to Method 1400 with no additional calibration.

1.5 This standard operating procedure is restricted for use by, or under the supervision of, analysts who are experienced in the use of this method and have demonstrated the ability of generating satisfactory data. Modifications to this SOP should be accompanied by appropriate documentation of the validity and reliability of amended procedure.

2.0 Summary of Standard Operating Procedure

2.1 An air sample is collected with a Summa Canister. The Canister is then pressurized with carbon filtered zero grade nitrogen. If the canister contains an air sample with a pressure of 20 psi or higher, the pressurization step is not necessary.

2.2 A portion of pressurized canister air sample passes through a cryogenic trap (Cryo 1) which has been cooled to -150°C with liquid nitrogen. At the same time, internal and surrogate standards are introduced into the sample flow stream. The flowrate is monitored and controlled with a calibrated electronic mass flow controllor (MFC). Once the sample passes through the Cryo 1 trap for a preset time, the trap is heated and the valve switched so that the GC carrier gas sweeps the contents onto a liquid nitrogen cooled pre-column (Cryo 2) where the analytes are cryogenically focused. Immediately after

removal of the flow of liquid cryogen to the pre-column, Cryo 2 is heated rapidly to inject the sample onto the analytical column.

2.3 The sample components eluting from the temperature programmed GC column are detected using a mass spectrometer. The detector provides both qualitative and quantitative information.

2.4 An internal standard calibration method is used to calculate the concentration in nanograms per sample. Spreadsheet software is used to convert and report the analyte concentrations into ng/L and ppb adjusted to field conditions (see Appendix 1).

3.0 DEFINITIONS

3.1 Internal standard -- A pure analyte added to the air sample during the sample introduction step, in a known amount, and used to measure the relative responses of other method analytes and surrogates in the sample. The internal standards employed in this method are bromochloromethane, 1,4-difluorobenzene and chlorobenzene-d5.

3.2 Surrogate standard -- A pure analyte which is extremely unlikely to be found in any sample. It is added to the sample during the transfer of the sample from the canister to the analytical system. Surrogates are measured using the same procedures used to measure other sample components. The purpose of a surrogate is to monitor instrumental response to each sample. One hundred nanograms (ng) of 1,4-Bromofluorobenzene is used as the surrogate in this method.

3.3 Laboratory reagent blank (LRB) -- A canister, containing carbon filtered zero grade nitrogen which is used to

pressurize the sample canister. It is treated exactly as field samples including exposure to all equipment, internal standards, and surrogates. The LRB's are used to determine if method analytes or other interferences are present in the laboratory environment, reagents, or the instrumental system.

3.4 Field reagent blank(FRB) -- An evacuated canister is prepared in the laboratory, pressurized with carbon filtered zero air in the field and treated as a sample in all respects, including exposure to sampling site conditions, storage, preservation, and all analytical procedures. The purpose of the FRB is to determine possible contamination by method analytes or other interferences present in the field environment.

3.5 Primary dilution standard vapor -- A vapor of method analytes prepared in the laboratory using the static dilution bottle method from neat standards and diluted as needed for multi-point calibration.

3.6 Calibration standard (CAL) -- A sorbent tube spiked with internal standards, the surrogate and an aliquot of the primary dilution standard vapor is used to calibrate the instrumental response with respect to analyte concentration.

Note: In this method, the instrumental calibration performed using the sorbent tube method (Method 1000) is used to analyze the canister samples.

3.7 Quality control sample (QCS) -- A gas sample containing method analytes of known and certified concentrations is used. The QCS is obtained from a source external to the laboratory and is used to check laboratory performance. In this method National Institute of Standards and Technology (NIST) calibration gas is used (see Table 3, pg 56).

3.8 Calibration check standard -- A canister containing all analytes in the calibration standard (CAL). The standard mixture is prepared in the laboratory by spiking primary dilution standard vapor into the canister. This standard is used to verify that the calibration performed for sorbent tube studies is compatible with canister collected analytes.

4.0 Interferences

4.1 Interferences vary considerably, depending upon the particular sample analyzed. The routine analysis of laboratory method blanks provides a check of the instrumental system for interferences. Field blanks and surrogate spikes also serve to enhance system reliability and integrity. All blanks are analyzed using the same procedures employed in the analysis of field samples.

4.2 Canisters can be contaminated by diffusion of volatile organics (particularly methylene chloride and fluorocarbons) through the valves and fittings during shipping and storage. This is especially likely when canisters are at sub-ambient pressures. A field blank canister, pre-cleaned, evacuated and pressurized in the field is carried through the sampling and handling operations to serve as a check on such contamination.

4.3 Cross-contamination can occur whenever high-level and low-level samples are analyzed sequentially. Whenever an unusually concentrated (over 500 ng) sample is analyzed, it will be followed by the analysis of a method blank to check for cross-contamination. The thermal desorption unit may require extensive bake-out and cleaning after a high-level sample. Any canister violated by a high concentration sample must be checked for background contaminants after baking, before its next use.

4.4 The laboratory environment where volatile analysis is performed should be completely free of solvents and other sources of potential (VOC) contamination.

4.5 Impurities in the carrier gas and from VOCs out-gassing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free of contamination under the routine analysis conditions by analyzing calibration and lab method blanks. Hydrocarbon purifiers (i.e. activated carbon filters) should be used for all the gases (except analyte standards) used in this method.

4.6 A significant limitation to this technique results from the condensation of moisture in the collection trap (Cryo 1). The possibility of ice plugging the trap and stopping the flow is of concern. Also water may be subsequently transferred to the capillary column resulting in the stoppage of flow and damage to certain column materials.

4.7 The off-gas of a soap bubble flow meter and soap solution may contain various volatile organic compounds. When it is used for for flow rate determinations, the off-gas diffusion into the sampling and analytical system must be avoided.

5.0 SAFETY

5.1 The toxicity or carcinogenicity of each reagent (or chemical) used in this method has not been precisely defined; however, each chemical compound should be treated as a potential health hazard. From this viewpoint, exposure to these chemicals must be reduced to the lowest possible level by whatever means are available.

The laboratory maintains a current awareness file of Occupational Safety and Health Administration (OSHA) regulations regarding the safe handling of the chemicals specified in this standard operating procedure. A

reference file of Material Safety Data Sheets (MSDS) are also available to all personnel involved in chemical analyses. It is also the responsibility of the laboratory to train all personnel regarding safe laboratory practices and potential laboratory dangers.

5.2 The following parameters covered by this standard operating procedure have been tentatively classified as known or suspected, human or mammalian carcinogens: Carbon tetrachloride, Chloroform, 1,4-Dichlorobenzene, Vinyl chloride and Benzene. Primary standards of these toxic compounds should be prepared according to National Institute for Occupational Safety and Health/Mining Safety Appliance Company (NIOSH/MSA) protocols approved for high concentrations of these toxic substances (see MSDS for proper handling of these substances).

6.0 Apparatus

6.1 Gas Chromatograph/Mass Spectrometer system

6.1.1 Gas chromatograph HP 5980 - Analytical system with liquid oven cooling accessory and split/splitless injection port.

6.1.2 Mass selective detector(MSD) HP 5970 - This instrument is capable of scanning from 35-260 amu every second, using 70 volts (nominal) electron energy in the electron impact mode and producing a mass spectrum that meets all the criteria in Table 2(page 35), when 50 ng of 4-bromofluorobenzene (BFB) is introduced through the sorbent tube.

6.1.3 GC/MS interface - Direct coupling, a 20 cm long, 0.22 mm i.d. deactivated fused silica transfer line is directly inserted to the ionization chamber of the MSD.

6.2 Data system - HP Pascal Chem Station, a computer system that allows for the continuous acquisition and storage on hard drive of all mass spectra, controls the chromatographic programming and mass spectrometer operations. The computer allows searching any GC/MS data file for ions of a specified mass and plotting such ion abundances versus time or scan number. This type of plot is defined as an Extracted Ion Current Profile (EICP). Data system software permits the integration of the ion abundances in any EICP between specified time windows, as well as, the library searching of mass spectra employing the NBS Mass Spectral Library.

6.3 GC Column - Analytical capillary column, J&W DB-624, 60-m x 0.32-mm. i.d. X 1.8 µm film thickness.

6.4 Thermal Desorption Unit - Tekmar 5010 automatic desorber. The unit consists of four main parts:

6.4.1 Six-port sampling valve - Electronically controlled and capable of being heated to 300°C.

6.4.2 Desorption furnace - for 1/4 in. o.d. x 7 in. thermal desorption tubes and can be heated to 400°C.

6.4.3 Desorption trap (Cryo 1) - 20 cm x 0.2 cm (1/16") I.D. stainless steel tubing. It is capable of being heated to 350°C and cooled to -150°C with liquid nitrogen.

6.4.4 Injector trap (Cryo 2) - 20 cm X .53 mm i.d. aluminum clad deactivated fused silica tubing. This trap is used for cryogenic focusing and capable to be heated to 350°C and cooled to -150°C with liquid nitrogen.

6.5 Canister - Summa canisters with 6 to 8 liter nominal volume and rated at 40 psi.

6.6 Carbotrap-300 Sorbent Tube (Supelco) - Multi-bed tube packed with carbon based adsorbent materials; the hydrophobic properties are such that atmospheres with a high relative humidity may be sampled. In addition, the adsorbent may be purged (or baked) at 400°C to reduce background interferences. Carbotrap 300 is composed of:

6.6.1 Carbotrap C - 20/40 mesh, 12 m^2/gram surface area, graphitized carbon black. Traps higher molecular weight airborne contaminants (e.g., alkyl benzenes, polynuclear aromatic hydrocarbons, polychlorinated biphenyls).

6.6.2 Carbotrap - 20/40 mesh, 100 m^2/gram surface area, graphitized carbon black. Traps lower molecular weight airborne contaminants not retained by the carbotrap C.

6.6.3 Carbosieve S-III - 550 m^2/gram surface area, 15-40 Angstrom pore size, spherical carbon molecular sieve. Traps small, highly volatile, air-borne molecules such as the C_2 hydrocarbons and vinyl chloride.

6.7 Microliter syringes - 1.0-10 µl for injecting liquid standards into dilution container; 50 to 5000 µl gas-tight syringes for spiking gas standards onto sorbent tubes.

6.8 Glass beads 3 mm i.d., 100 pieces.

6.9 Teflon magnetic stirrer bar 2.5 cm length.

6.10 Ultrasonic bath for cleaning static dilution bottles.

6.11 Millique Water Purification System for reagent water supply.

6.12 Tekmar 5100 Thermal Trap Conditioner for conditioning up to 12 sorbent tubes at one time.

6.13 Muffle furnace - used in the cleaning process for static dilution bottles.

6.14 Polyester gloves - for handling sorbent tubes.

6.15 Mass flow controller - TYLAN RO-32, 10-300 mL/min flow control range.

6.16 Soap bubble meter - to calibrate mass flow controller.

6.17 Analytical Balance - capable of accurately weighing 0.0001 g, and a top-loading balance capable of weighing 0.1 g with a capacity of 3 kg.

6.18 Oven - capable of maintaining temperature within one °C accurately over the range of 40°C to 200°C.

6.19 Static Dilution Bottle 2 liter volume. round with a Mininert valve (Tekmar Co.).

6.20 Quick Connector

6.21 Sample Introduction Line chromatographic grade stainless steel.

7.0 Reagents and Materials

7.1 Helium and Nitrogen - zero grade compressed gas (99.9999 % min.) with in line hydrocarbon purifier and an indicating purifier.

7.2 Liquid nitrogen - with siphon to the bottom of tank, pressurized at 50 PSI and with 50 PSI safety pressure release valve.

7.3 Calibration Gas - NIST Standard reference material (formally NBS)(or equivalent) - 18 component toxic organic reference standard is currently being utilized.

7.4 Chemical Standards - Neat compounds of interest, of highest purity, mainly from ChemService and Aldrich.

7.5 Surrogate standard - The EPA recommended surrogates are toluene-d8, 4-bromofluorobenzene, and 1,2-dichloroethane-d4. Currently only 4-bromofluorobenzene (BFB) is being used.

7.6 Internal standards - The internal standards; bromochloromethane, 1,4-difluorobenzene and chlorobenzene-d5, are used in this method.

7.7 Methanol - Burdick & Jackson P&T (Purge and Trap) grade.

8.0 Protocols for the Preparation of Collection Supplies prior to field sampling.

This section describes the cleanup and quality control measures needed. Refer to Method T109.

8.1 Protocols for the Preparation of Canisters Prior to Field Sampling. Refer to Method T107.

9.0 Preparation of Volatile Organic Vapor Standards using static dilution bottles.

9.1 Static Dilution Bottle Preparation

9.1.1 Fifteen three-millimeter diameter glass beads and a one inch Teflon stirring bar are placed in a clean, septum capped two liter bottle. The exact volume is determined by weighing the bottle (plus contents) before and after filling with deionized water.

9.1.2 The static dilution bottles are cleaned by filling with detergent solution and then immersed in water in an ultrasonic bath for one hour.

9.1.3 The static dilution bottles are then rinsed three times with Millique water, then once with methanol; then blown dry with nitrogen.

9.1.4 The static dilution bottle is then heated to 315°C in a muffle furnace for 30 minutes and allowed to cool to ambient temperature.

9.1.5 The glass beads are rinsed with methanol, blown dry with nitrogen, and put into the static dilution bottle.

9.1.6 A 2.5 cm Teflon stirring bar is rinsed with methanol, blown dry with nitrogen and then added to the bottle.

9.1.7 The bottle is flushed with nitrogen and then sealed by closing the mininert valve.

9.2 Vapor Standard Preparation

9.2.1 The static dilution bottle is heated to 65°C ± 1°C for 30 minutes. During heating the cap is tightened twice.

9.2.2 The amount of each standard to be injected into the vessel is calculated from the desired injection quantity and volume using the following equation:

$$W_i = \frac{W_s \times V_b}{V_s}$$

where:

W_i is the total quantity of analyte to be injected into the bottle in milligrams (mg).

W_i is the desired weight of analyte to be injected onto the GC/MS system or spiked onto the sorbent tube, in nanograms (ng).

V_i is the desired GC/MS injection volume (should not exceed 500) in microliters.

V_b is total volume of dilution bottle determined in 9.1.1, in liters.

9.2.3 The volume of neat standard to be injected into the dilution bottle is determined by using the following equation:

$$V_n = \frac{W_i}{d}$$

where:

V_n is the total volume of neat liquid to be injected in microliters(ul).

d is the density at room temperature of the neat standard, in grams per milliliter(ml). The density data of the compounds of interest are in the Table 1 (page 55).

9.2.4 The appropriate volume of each compound of interest is then injected with a microliter syringe through the septum of the static dilution bottle while the bottle contents are agitated with the magnetic stirrer. The static dilution bottle should be equilibrated at 65°C (for a minimum of thirty minutes) before drawing a sample.

9.2.5 Up to 500 µl can be removed in a single injection, with no more than 5% of the total volume removed. The static dilution bottle must be stored at 65 °C ±1°C.

9.3 Calibration Standard Preparation Method 1 -- sorbent tube method

When the canister method is used as an alternative method to the sorbent tube method to analyze the same compounds, the calibration for the sorbent tube method is used directly. The calibration procedure is identical as that in Method 1000.

9.3.1 Calibration Standards - Four Calibration standards consisting of prepared sorbent tubes spiked with a minimum of four different aliquots from a static dilution bottle's mixed vapor standard are prepared to calibrate the GC/MS (as detailed in Section 9.3.2). One of the calibration levels should be near, but above, the method detection limit. The remaining spiking levels should correspond to the expected range of concentrations found in real samples but should not exceed the working range of the GC/MS system. Each standard calibration which contains each targeted analyte is analyzed by this standard operating procedure (e.g. some or all of the compounds listed in Table 1 may be included). The levels of the concentration in the routine analysis are 50, 100, 150 amd 200 ng for each analyte in Table 1 (page 55).

9.3.2 Preparation of spiked sorbent tubes for calibration standards by vapor phase injection.

9.3.2.1 A Gas-tight syringe is washed with methanol three times, then dried with helium using a heated syringe cleaner (Hamilton Co. P/N 76610).

9.3.2.2 An aliquot of vapor phase standard mixture drawn from the static dilution bottle as prepared in Sections 9.1 and 9.2 is introduced into a flowing stream of nitrogen or air with a gas tight syringe. Two liters of nitrogen is used in this process.

Note: All zero grade gases have in line hydrocarbon traps to assure gas purity.

9.3.2.3 QC Spiking Apparatus

The following is the schematic diagram of the equipment used to add calibration standard mixtures, internal standards, and surrogate standards to sorbent tubes.

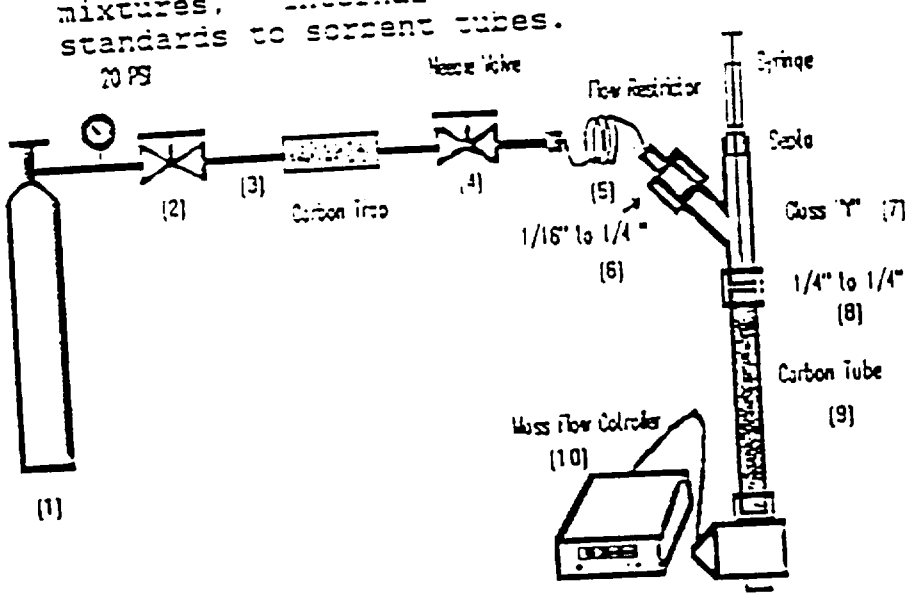


Diagram of Sample Preparation Device

1. Ultra pure grade nitrogen tank
2. Regulator
3. 1/4" copper tubing
4. Needle valve for flow control
5. 1/16" stainless steel tubing as flow restrictor

6. 1/16" to 1/4" Swagelok reducer with Teflon ferrule at 1/4" end to connect with 1/4" o.d. glass
7. Glass Y with silicon septum
8. 1/4" Swagelok union with Teflon ferrule to connect glass Y with sorbent tube
9. Sorbent sample tube
10. TYLAN RO-32 electronic mass flow controller

Note: When canisters are being analyzed, BFB and the internal standards are introduced into the analytical configuration (see Section 12.2.4).

9.3.2.4 Operation

9.3.2.4.1 The regulator of the nitrogen or air cylinder, is adjusted to the gauge pressure of 20 PSI. The mass flow controller is calibrated so that the indicated reading is approximately 100 ml/min actual flow (accurately measured). Connect the sorbent tube to the glass Y and mass flow controller, ensuring the flow direction is the same as the sampling flow direction. There is a printed arrow on the tube indicating the flow direction. The air flow is turned on slowly with the needle valve, until the desired flow rate is reached.

Note: use the smallest amount of Tygon tubing to connect the sorbent tube to the glass "Y" and the MFC, "butt to butt".

9.3.2.4.2 Use a gas-tight syringe (as defined in Section 9.3.2.1)to draw an aliquot of vapor phase standard mixture from the static dilution bottle and introduce the vapor to the top of the sorbent tube through the septum in the glass Y. This operation is similar (mechanically) to sample injection into a gas chromatograph.

9.3.2.4.3 Set a timer for 10:00 minutes. After 10 minutes turn off gas flow using the needle valve. Make sure the flow rate has decreased to zero before disconnecting the sorbent tube. If air pressure remains in the sample tube when disconnected from the system, packing materials in the tube may be dislodged. The spiked sorbent tubes are then stored or analyzed immediately.

9.4 Surrogate standards

9.4.1 4-Bromofluorobenzene (BFB) is used as the surrogate standard. A 100 uL aliquot of its vapor is spiked into the analytical configuration while the canister sample is being introduced.

9.4.2 A vapor phase standard is prepared in the same manner as the calibration standard gas mixture described in Section 9.0. The vapor phase surrogate standard is then spiked into the sorbent tube as described in Section 9.0, before sampling or spiking vapor calibration standards.

9.5 Internal standards

9.5.1 The internal standards used in this method are Bromochloromethane, 1,4-Difluorobenzene and Chlorobenzene-d5. An aliquot of vapor containing 100 ng of each internal standard is used.

9.5.2 A vapor phase standard is prepared in the same manner as the calibration standard gas mixture described in Section 9.2. The vapor phase internal standard mix is then spiked onto the sorbent tube as described in Section 9.0, (and SOP 1000) prior to initiating the dry purge step.

10.0 National Institute of Standards and Technology (NIST) Vapor Standard Preparation

10.1 Apparatus

Set up apparatus as pictured in Section 9.1.2.3, with the following changes:

a) Vacuum pump is attached to the outlet of the mass flow controller.

b) NIST gas cylinder replaces the nitrogen cylinder.

c) leg of glass Y that had contained the septum is now attached to the dump line and rotameter, as an indicator of excess flow.

NOTE: All plumbing upstream of the sorbent tube must be dedicated for spiking with NIST gas. Wear gloves when handling sorbent tubes.

10.2 Calibration of a Mass Flow Controller

NOTE: This operation must be performed at the begining and end of each spiking session.

10.2.1 When sorbent tubes are used, the mass flow controller (MFC) is first calibrated with a soap bubble meter (to get an indicated flow reading that equals, usually, 200 ml/min actual flow). Attach a "dummy" sorbent tube (one that will never be used to sample) to the inlet of the mass flow controller, with the scribed arrow pointing in the direction of the flow.

Note: A tag is attached to the MFC indicating reading versus estimated flow settings to assist in the calibration.

10.2.2 Adjust the mass flow controller "set" to the desired flow and record the "indicated flow rate". Turn on the vacuum pump. Also record temperature when this calibration is taking place, and the atmospheric pressure (mm Hg). Attach a soap bubble meter to the inlet of the "dummy" sorbent tube and turn on the pump. Take three readings, and calculate and average "uncorrected" ml/min. Turn off the pump. This procedure should be performed before and after spiking sorbent tubes with NIST standard.

10.2.3 Add the water vapor correction as follows:

a) using the water vapor pressure tables (Appendix 1, page 6), find the vapor pressure of the water (mmHg) at the recorded temperature.

b) use the following equation to calculate the corrected sample volume through the mass flow controller(at laboratory conditions):

$$\text{Corrected sample vol.} = \text{avg. ml/min} \times \text{min} \times \frac{(P-P_v)}{P}$$

where
P = atmospheric pressure (mmHg)
P_v = vapor pressure at average temperature during bubble meter use(mm Hg).

Note: The water vapor correction is incorporated to compensate for the surface tension/vapor pressure of the "bubble meter" solution.

10.3 Operation

10.3.1 Replace the "dummy" tube with the sorbent tube to be spiked (scribed arrow pointing in direction of flow). Hook up apparatus as described in Section 10.1.

Note: The "dummy" sorbent tube is a tube used only to calibrate the mass flow controller.

10.3.2 Open calibration gas needle valve fully and then turn on pump. Begin timing with a stopwatch, adjust the mass flow controller to the calibrated setting if necessary. Be sure that there is a small amount of excess gas being delivered (indicated by the rotameter). After an appropriate amount of time, turn off pump, close the needle valve, and immediately "stop" the timer. Record the elapsed time. **Note:** If the pressure is not equalized, the tube packing may be dislodged. Wait a few seconds before disconnecting the tube. The spiked sorbent tube is then stored or immediately analyzed.

11.0 Setup for the Thermal Desorber-GC/MS System

11.1.1 Programming the Tekmar 5010 Thermal Desorber

11.1.2 Push the "POWER" switch on for the Tekmar 5010. Wait for the instrument to become ready during the self check step. Then enter Date and Time.

11.1.3 Press the "PROGRAM" key, the display will now show "PROGRAM/VIEW" Enter "1, 2, or 3".

11.1.4 Select a method number for the method to be created (for example enter "1").

11.1.5 The screen of 5010 will display "1, Current values; 2, set to default". Enter "1" to access the current parameters.

11.1.6 The operating parameters will now be displayed sequentially. To change a value, first enter "E", and second, enter the value, then enter "E" to set the new value.

11.1.7 Press the "STEP" key to view the next parameter. Repeat step 11.1.6 until all the parameters are set

as in section 11.1.3.

11.1.8 The conditions used for Tekmar 5010:

Desorption Gas Press.	20 PSI
Desorption Gas	Helium at 15 ml/min
Valve Temp.	270°C
Transfer Line Temp.	180°C
Injector Temp.	180°C
Stand-by Temp.	40°C
Dry Purge 1 Time	5.0 min
Cryo 1 Cool 1 Temp.	-150°C
Dry Purge 2 Time	0.0 min
Desorption Temp.	350°C
Desorption Time	15.0 min
Cryo 2 Cool 2 Temp.	-150°C
Transfer Cryo 1 Temp.	250°C
Transfer Time	1.00 min
Inject Cryo 2 Temp.	250°C
Inject Time	0.80 min
Bake Temp.	380°C
Bake Time	10.0 min

11.1.9 To use this method, press the "method" key. The display will now read "Method to run Enter 1,2, or 3". Enter method number 1. Press the "Start" key to activate the method. After all of the instrument set points specified in the method have been reached, the program will advance to the "Standby" mode. The instrument is now ready for analysis.

12.0 Analyzing canister air samples

Two approaches can be used to analyze the air sample. One is to introduce a portion air sample onto a sorbent tube, then use method 1000 to analyzed the sorbent tube. This is the indirect method. This method maybe suitable for canister air sample with high moisture and low analyte concentration. Another method is to directly introduce the air sample to the cryogenic trap (Cryo 1) of the Tekmar 5010 thermal desorber. This is the direct method.

12.1 Indirect Method

12.1.1 Follow the instruction in Section 9.3.2.4, to connect the pressurized canister into the "Y" in place of the nitrogen cylinder. The air sample canister equipped with a quick connector(Swagelock QC4-S-400 and QC4-B-400). A 1/4" to 1/8" reducer is used to connect to the needle valve instead of the nitrogen cylinder. Because the pressure of the canister is no more than 40 psi, a pressure regulator is not used.

12.1.2 The remaining operations are as detailed in Sections 13-14.

12.1.3 Follow the procedure detailed in Section 9.5 to spike the internal standard and perform the dry purge.

12.1.4 Use the same procedure (see Section 11.0) to analyze the sorbent tube (i.e SOP 1000).

12.2 Direct Method

12.2.1 System Setup

12.2.1.1 Cool the furnace of the Tekmar 5010 to room temperature and unscrew the cap of the furnace. Replace the furnace cap with one which has the desorb gas orifices plugged. Turn off the desorb gas from the back of the Tekmar 5010.

12.2.2.2 Place a clean empty 1/4" o.d. tube with O ring into the furnace.

12.2.2.3 Put the furnace cap back. Unscrew the needle guide on the cap.

12.2.2.4 A sample introducing line which is made from a 2 foot long 1/16" o.d. stainless steel tubing at one end connected to a 1/4" o.d. stainless steel tubing

with a quick connector stem (QC4-S-400) at the other end is utilized. A reducing adapter is used to link the 1/16" and 1/4" tubing. This section is equipped with a tee which is used to introduce internal standards and the surrogate into the sample introduction line. To minimize condensation in the area of the reducing adapter, the tubing is wrapped with heating tape and kept at 38 degrees Centigrade. The 1/16" tubing is inserted through the septum on the furnace cap into the empty sorbent tube.

12.2.2.5 Ues a 1/16" swagelock fitting, a piece of 1/16" stainless steel tubing and a 1/16" to 1/4" union to connect the trap vent of Tekmar 5010 thermal desorber and the inlet of the mass flow controller.

12.2.2 Tekmar 5010 Thermal desorber conditions

12.2.2.1 All the descrption parameters used for canister sample analyses are stored in "Program 2" of the Tekmar 5010 memory. Load "program 2", and check all desorption conditions for correctness.

Valve Temp.	210°C
Transfer Line Temp.	180°C
Injector Temp.	180°C
Stand-by Temp.	150°C
Dry Purge 1 Time	2.0 min
Cryo 1 Cool 1 Temp.	-150°C
Dry Purge 2 Time	0.0 min
Desorption Temp.	150°C
Desorption Time	10 min
Cryo 2 Cool 2 Temp.	-150°C
Transfer Cryo 1 Temp.	250°C
Transfer Time	1.5 min
Inject Cryo 2 Temp.	250°C
Inject Time	0.80 min
Bake Temp.	150°C
Bake Time	0 min

These conditions set the furnace to a constant temperature for all steps. The furnace actually serves as part of the heated transfer. The canister sample is used to purge the air in the sample passage by setting the "dry purge 1 " time to two minutes. The solenoid valve or the desorb gas control is used as the canister's ON and OFF switch. The Mass Flow controller is used to control the flow rate of the canister sample passing through "cryo 1 ".

12.2.3 Calibration of the Mass Flow Controller

Note: The system is first checked for leaks by placing a "plug" at the exit of the Mass Flow Controller and then placing 20 psi pressure of zero air through the introduction line. A pressure gauge monitors the pressure for 30 minutes to be sure no drop in pressure occurs.

Note: The following operation must be performed at the beginning and end of each session.

12.2.3.1 The mass flow controller (MFC) is first calibrated with a soap bubble meter to adjust to approximately a 50 ml/min flow rate(accurately measured). Connect the air line from a compressed zero air cylinder to the inlet of the mass flow controller. Adjust the outlet regulator of the compressed air cylinder to 20 psi.

12.2.3.2 Adjust the mass flow controller readout to the desired setting and record the "indicated flow rate". Record the temperature (at the outlet of the MFC) and the atmospheric pressure (mm Hg) at the time of calibration. Attach a soap bubble meter to the outlet of the mass flow controller. Take three readings, calculate the average "uncorrected" flow rate in ml/min. This procedure should be performed every time the mass flow controller is used.

12.2.3.3 Add the water vapor correction as follows:

a) Using the water vapor pressure tables, find the vapor pressure of the water (mm Hg) at the recorded temperature.

b) Use the following equation to calculate the corrected (dry) flow rate through the mass flow controller:

Lab flow rate = (measured flow rate)x[$(P-P_v)/P$]

where
P = atmospheric pressure (mmHg)
P_v = vapor pressure at average temperature during bubble meter use.

12.2.3.4 Convert the flow rate to standard condition

Use the following equation to convert the flow rate to standard conditions, $F_{standard}$ (25°C, 760 mmHg):

$F_{standard} = F_{correct} \times [(298/T+273] \times (P/760)$

$F_{correct}$ - Corrected flow rate from section 12.2.3.3.

T - temperature °C when the flow controller is calibrated.
P - pressure mmHg, when the flow controller is calibrated.
Note: See Appendix 1, equation #2 & example #2.

The above procedure is used to standardize all data to the same temperature and pressure, thus allowing easy comparisons. Since Connecticut's HLV concentrations are not relative to standard conditions, but to actual conditions, the flow rate/air volumes will be reported in terms of "field conditions".

Note: Theoretically, the flow rate from the mass flow controller is not affected by changes in ambient temperature and pressure. It is more convenient to convert the calibrated flow rate to the flow rate at standard conditions.

12.2.4 Canister sample analysis

12.2.4.1 Wrap the canister to be analyzed with a heating jacket and heat for 30 minutes. Connect the outlet of the canister with a quick connector.

Note: The heating jacket and all transfer lines are heated to approximately 38 degrees Centigrade.

12.2.4.2 Fully open the valve of the canister and start the Tekmar 5010 by pressing the "START" keyon its control panel.After 2 minutes pre-purge with sample gas, cool cryo 1 down to -150°C. The air sample is now concentrated on Cryo 1 for a preset time. This time normally is 10 minutes and is set by "desorb time". The desorb time can be changed as required.

12.2.4.3 During the sample transfer, 100 ngs of the internal and surrogate standards vapor is injected into sample stream through the septum.

12.2.4.4 Close the valve of the canister at the end of the desorb time. The end of desorption corresponds to when the solenoid valve stops the sample flow.

12.2.4.5 At the end of the desorption step, check the HP ChemStation. When the GC/MSD system is ready for analysis, press the "STEP" key of the Tekmar 5010. The cylindrical heater is used to ballistically heat the Cryo 1 to 250°C (i.e. the sample transfer step). The six port valve is electronically activated to allow the purge gas to be transferred to Cryo 2 at column head.

12.2.4.6 The remainder of procedure is same as Method 1000 (i.e. sorbent tube method).

12.2.4.7 The air sample volume at standard condition is calculated using the following equation:

Sample volume = $t \times F_{std} \times [P/(P-P_w)]$

Where
- t - desorb time (min.)
- F_{std} - flow rate at standard conditions (ml/min.)
- P - field pressure (mmHg) when sample is taken for analysis.
- P_w - Water vapor pressure (mmHg) at sampling site. It can be calculated by humidity.

For reporting purposes the air sample volume will be converted to field conditions.

Note: See Appendix 1 for examples and explanations involving volume calculations at various temperatures and/or pressures, ppbv calculations and calculations involving dry and moist volumes.

12.2.5 NIST Calibration Gas verification

Adjust the outlet of the regulator of the NIST calibration gas tank to 20 psi. Connect it to the inlet of the quick connector of the Tekmar 5010. The rest of the procedure is described in Section 12.2.4. The maximum sample volume is analyzed is 2 liters.

13.1.0 GC/MSD Data Acquisition

The following operations are used to setup the data acquisition parameters for the HP GC/MSD.

13.1.1 From the TOPLEVEL menu, press the "DATA ACQUIS" soft function key to load the data acquisition program. The data acquisition entry form will be displayed on the screen.

13.1.2 Use the "TAB" key to move the highlighted field to the Parameter file. Type VOCAIR then ENTER to load the acquisition parameter file (VOCAIR.A).

13.1.3 When the file name VOCAIR.A is displayed press the "LOAD PARAMETERS" soft function key to load the parameters.

The GC/MS operating conditions are:

Carrier gas	Helium at 20 ml/min.
Head Pressure	10 psi
Oven Standby Temp.	40°C
Oven Cryogen	No
Oven temp Eq time	2.0 min
Initial Oven Temp.	40°C
Initial Hold Time	1.5 min.
Program Rate	5°C/min.
Final Oven Temp.	160°C
Final Hold Time	8.5 min.
Injector Temp.	180°C
Injection Mode	Splitless
Purge On Time	1.5 min.
Transfer Temp.	270°C.
Source Temp.	Manu. Spec.
Electron Energy	70 volts (nominal).
Mass range	35-350 amu.
Solvent Delay Time	3.00 min

More detailed parameters are in Appendix B, the file printout of the file.

13.1.4 Press the "EDIT" soft function key, and then press the "EDIT TEMP ZONES" soft function key to display the temperature program and heated zones form. Edit the individual parameters by moving the highlighted field to the parameter requiring change and entering the new value. When all of the

parameters are correct, press the "EXIT" soft function key to return to the data acquisition form.

13.1.5 Press the "EDIT" soft function key, and then press the "EDIT ACQ PARAMS" soft function key to display the scan acquisition form. Edit the individual parameters by moving the highlighted field to the parameter requiring change and entering the new value. When all of the parameters are correct, press the "EXIT" soft function key to return to the data acquisition form.

13.1.6 Press the "STORE PARAMS" soft function key to store the values entered. Press the "QUIT" soft function key to leave the data acquisition program.

13.2 Programming a method for the GC/MSD.

13.2.1 Press the "SPECIFY METHOD" soft function key from the TOP LEVEL menu from the HP Chem Station. The method file name will be highlighted. Enter the method name VOCAIR to load the method file used for this SOP.

13.2.2 When the correct file name is displayed press the "LOAD METHOD" soft function key to load the method edit form. This form contains the program names and the name of parameter files to be used by this program.

MSACQ The data acquisition program for the GC/MSD system.
Type in data acquisition file name(VOCAIR.A) for this item.

DATAED The data editor program. Enter the file name for the data editor macro (AIRCAL). See Appendix 2. for this macro.

REPORT The report program. Enter the file name for the report program (AIRCAL).

13.2.3 Press the "EDIT DATAFILE" soft function key to display the data file.

13.2.4 Move the highlighted field to the "METHOD FILE NAME" item and enter the name of the method file. To save the file press the "SAVE METHOD" soft function key.

13.3 Programming the Sequence for the GC/MSD.

13.3.1 Press the "SEQUENCE" soft function key from the TOP LEVEL menu. The SEQUENCE form will appear:

Sequence Table File Name: Enter the method name VOCAIR.R

Sample Table File Name: VOCARX.S - The "X" corresponds to the sample batch number.

Beginning Data File Name: Enter 4 characters for the raw data file, "AIRX" is used to differentiate with data produced with another method. The last character (X) is the batch number of the sample delivery group. The next four characters are supplied automatically and are incremented during the sequence to provide a unique name for each analysis. The first of these characters is a letter corresponding to the current method index. The next two characters are the numbers of analysis corresponding to the number in the sample table.

13.3.2 Press the "EDIT SEQ FILE" soft function key and the sequence table form is displayed.

Method File Name: Enter VOCAIR.M, file name of the method to be used.

Range: Enter the numbers corresponding to the number in the sample table containing the samples to be analyzed.

dup: Enter 1 for this item.

13.3.3 Press the "EXIT" soft function key to return to the sequence form. All changes made to the sequence table form are automatically saved.

13.3.4 Press the "EDIT SMPL TBL"soft function key to display the sample table form.

Index: This number should correspond to a number in the range of the sequence table.

Sample Identification: enter any descriptive information about the sample and the identification number of the sorbent tube associated with each sample.

Press the "EXIT" soft function key to return to the sequence form.

13.3.5 After completing the sequence table and sample table the sequence may be initiated by pressing the "START SEQUENCE" soft function key. To return to the TOP LEVEL menu press the "ABORT SEQUENCE" soft function key. The purpose of using the sequencing software to run the sample is to produce the data and integration file in an organized way so that the data can be processed and transferred in a batch.

14.0 Analysis Procedure

Use the following procedure to perform the analysis for all of the lab reagent blanks, calibration standards, NBS calibration gases, and field samples. Before performing any analyses, the Tekmar 5010/GC/MSD system should have been installed according to the manufacturers specifications. The method for the Tekmar 5010 (Section 13.1) and the data acquisition method and sequencing for the GC/MSD (Sections 13.2, 13.3 and 13.4) must have been previously created.

14.1 Remove the furnace cap - Wearing nylon gloves, place an O-ring on the end of the sorbent tube. Insert the sorbent tube into the furnace in the direction so that the arrow on the tube points out away from the furnace. Place the furnace cap over the furnace and finger tighten.

14.2 Press "Start" key of the Tekmar 5010 to begin the program. Press "Sequence" key of HP Chem Station to display sequence form. Complete the sequence table and the sample table.

14.3 When using sorbent tubes (i.e. calibration standards The desorption gas is turned on before heating the sorbent tube. This enables oxygen and water vapor to be removed from the trap before heating. Anything purged from the sorbent tube trap in this step will be passed through Cryo 1 at ambient temperature and vented.

14.4 Cryo 1 is then cooled to -150 °C. The sorbent tube trap is then heated to 350°C and this temperature is maintained for 15 minutes. During the desorption process the GC oven is cooled to 20°C to allow for immediate sample injection after the MS data system is set up for acquisition. After desorbing for 10 minutes, press the "START SEQUENCE" key of the GC/MSD ChemStation to start.

14.5 At the end of the 15 minute period, check the HP ChemStation. When the GC/MSD system is ready for analysis, press the "STEP" key of the Tekmar 5010. The cylindrical heater held in direct contact with the trap is used to heat the Cryo 1 to 250°C in 60 seconds or less during the sample transfer step. The construction of the Cryo 1 desorption trap is described in Section 6.4.3. The six port valve is electronically activated to allow the purge gas to be transferred to Cryo 2 at the head of the column.

14.6 Cryo 2 is maintained at -150°C during the sample focusing period. At the end of the sample focusing period, Cryo 2 is rapidly heated to 200 °C to desorb the components onto the GC column.

14.7 During the sample focusing period the GC column is stabilized at 20°C to allow for immediate injection of the sample after cryogenic focusing.

14.8 As the GC/MSD analysis is performed, the data will be stored in the pre-assigned data file.

15.0 p-BFB Tune for the HP GC/MSD

15.1 Leak testing of the Tekmar 5010/GC/MSD system.

15.1.1 From the TOP LEVEL menu of the system software press the "UTILITY" soft key. Then press the "MORE KEYS" soft key twice. To access the manual tune function press the "MANUAL TUNE" soft key.

15.1.2 Press the "EXECUTE" soft key, and then press the "SPECTRUM SCAN" soft key. The mass spectrum of the system air will be displayed on the terminal. The base peak should be nitrogen (28 m/z). The abundance of 28 m/z should be less than 150,000 counts. If the abundance of 28 is greater than 150,000 counts then determine the source of the leak and correct it before continuing.

15.1.3 Press the "EXIT" soft key, and then press the "QUIT" soft key to return to the Utility menu.

15.2 Autotune

15.2.1 Press "MORE KEYS", and then press "AUTOTUNE" to access the AUTOTUNE menu.

15.2.2 Press the "FULL AUTOTUNE" soft key, and then open the calibration valve of the MSD. Then press return to activate the MSD hardware tune.

15.2.3 The system will perform the AUTOTUNE function and produce a autotune report. The key parameters for this report and acceptance criteria are as follows:

EM Voltage:

1200 - 1800 volts	Good (New)
1800 - 2400 volts	Normal
2600 - 3000 volts	Dirty Source or Aging EM

Ion Focus:

0 - 10 volts	Good
> 10 volts	Possible Dirty Source

Repeller:

10.0 - 10.2	Good
9.6 - 10.0	Normal
< 9.6	Possible Dirty Source

Mass 502 Abundance:

> or = 2%	Good
1.5 - 2%	Acceptable
< 1.5 %	Problem

15.2.4 The Autotune report is compared to the above criteria. If the values are out of specification, then step 15.1 is repeated. If Autotune fails then the source should be cleaned in accordance with the manufacturer's instruction.

15.2.5 After completing a successful Autotune, press the "QUIT" soft function key to leave the autotune function. Press the "MORE KEYS" soft function key twice to access the manual tune function.

15.2.6 Press the "FILE" soft function key and then press the "SAVETUNE VALUES" soft function key. The system will then prompt the user "Save to what file ?". Enter "DATA:BFB.U" to save the parameters to the DATA:BFB.U file.

15.2.7 Press the "EXIT" soft function key, and then press the "QUIT" soft function key to return to the TOPLEVEL menu.

15.3.0 BFB Tune Criteia

15.3.1 Spike 50 ng 4-Bromofluorobenzene (p-BFB) onto a sorbent tube as described in Section 9.2.2.

15.3.2 Analyze the BFB spiked sorbent tube by using the procedure described in Section 14.

15.3.3 After completing the analysis, a report will be generated. The resultant mass spectra must meet all of the criteria given in Table 2.

TABLE 2. BFB key ion abundance criteria

Mass	Ion Abundance Criteria
50	15 to 40% of mass 95
75	30 to 60% of mass 95
95	base peak, 100% relative abundance.
96	5 to 9% of mass 95
173	less than 2% of mass 174
174	greater than 50% of mass 95
175	5 to 9% of mass 174
176	greater than 95% but less than 101% of mass 174
177	5 to 9% of mass 176

In most cases, the BFB criteria can be met, otherwise some parameter(s) need to be adjusted with the manual tune.

16.0 Initial Calibration and Calibration Verification

16.1 The Tekmar 5010/GC/MSD system background is checked by performing an analysis (see Section 12) with no sorbent tube in the Tekmar 5010 furnace.

16.2 Place a cleaned sorbent tube in the Tekmar 5010 furnace (see Section 16.1). Then analyze the sorbent tube (see Section 12) to determine the sorbent tube blank.

16.3 Calibration standards at four concentration levels are prepared by spiking 50, 100, 150, 200 µl (1 µl gas standard contains about 1 ng compound) of standard vapor mixture onto a sorbent tube (see Section 9.3). Then add 100 ul internal standard vapor mixture and surrogate standard from the static dilution bottles (see Sections 9.4 and 9.5).

16.4 Perform analysis of the calibration standards as described in Section 12).

16.5 Qualitative identification of standard mixture

16.5.1 Press the "DATA EDITOR" soft function key from the TOP LEVEL menu for the HP Chem Station to access data editor program.

16.5.2 Press the "NEW DATA FILE" soft funtion key. Enter the name of the data file of the analysis of the calibration standard with the medium concentration then press "RETURN".

16.5.3 Press the "TOT ION CHROMAT" soft funtion key to display the total ion chromatogram of the data file.

16.5.4 Press the "CHROMAT" soft function key to access the CHROMATOGRAM menu. Press the "RUN INTEG" soft function key to run integration. Press the "LIS INT RESULT" soft function key to display a tabular report of the integration result. Then press the "SEND TO PRINTER" soft function key to print the result. Press the "STOP TABULATE" soft function key and then press the "EXIT" soft function key to leave CHROMATOGRAM menu sets.

16.5.5 Press the "SPECTRUM KEYS" soft function key from the DATA EDITOR menu to access the MASS SPECTRUM menu. The "ZOOM IN" soft function key may be used to expand a selected portion of the total ion current (TIC) display for detail, as necessary.

16.5.6 Press the "SPECTRUM" soft function key, move the highlighted arrow to the top of the first peak, then press "RETURN" key. The mass spectrum of this compound will be displayed on the screen.

16.5.7 Compare the mass spectrum of the peak with the mass spectrum of the standard to identify the compound. Or use the NBS REF library search by pressing the "MORE KEYS" soft function key, then press the "SEARCH" soft function key to perform a library search.

16.5.8 Repeat steps 16.5.6 and 16.5.7 for all of the peaks in the TIC to complete the compound identification.

16.5.9 Press the "QUIT" soft function key (or type "quit") to return to the TOP LEVEL menu.

16.6 Data Editor Macro

16.6.1 Press the "UTILITY" soft function key from the TOPLEVEL menu, then press the "TEXT EDITOR" soft function key to access to the Pascal text editor program.

16.6.2 When the prompt requesting a file appears, type in the macro file name "AIRCAL.", then press the "RETURN" key. The macro AIRCAL will be displayed on the screen, a hardcopy is in Appendix 2.

16.6.3 Edit AIRCAL macro by correcting the integrating time range according to the retention time of each peak. The time window is determined by adding 0.2 minutes to both starting and ending time of each peak in the Total Ion Chromatogram. To do this, you may move the cursor to the position needed to be changed. Press "X" to activate the exchange command. Type in the correct number, then press "SELECT" to store the new change.

16.6.4 Type in "Q" to leave the editor. Type in "O" to overwrite the macro as the same file name; or type "W" and then when the prompt requesting a file appears, type in a new name, then press the "RETURN" key to create a new file to store the macro.

16.6.5 Press the "EXIT" soft function key to return to the TOP LEVEL menu.

16.7 Integration

16.7.1 Press the "DATA EDITOR" soft function key from the TOPLEVEL menu to access to data editor program.

16.7.2 Press the "NEW DATA FILE" soft function key. Type in the file name of the data file of one calibration standard.

16.7.3 Type in "MACRO DATA:AIRCAL" to load the macro file into the computor memory. Type in macro name "AIRCAL" to start the macro. When the prompt requests an integration file name, type in a proper file name, then press the "RETURN" key.

16.7.4 Repeat 16.7.2 and 16.7.3 for all the data files of calibration standards.

16.7.5 Press the "QUIT" soft function key to return to the TOPLEVEL menu.

16.7.6 The procedure in this section (16.7) can also be performed in batch using the sequencing software running integration part in the method only (i.e. no data acquisition or reporting).

16.8 Creation of the Initial Calibration Table

16.8.1 Press the "REPORT" soft function key from the TOPLEVEL menu to display the REPORT menu.

16.8.2 Press the "CALIB PARAMS" soft function key to display the calibration form. Move the highlighted field to the "integration result file" item and type in the name of the integration file. Select "Area" for the "calibrate by" item. Move the highlighted field to the "calibration table file" item, type in the name of the calibration table file, "AIRCAL.Q", then press the "RETURN" key. Then press the "CREATE TABLE" key. The one level calibration table is created and the calibration table edit form is displayed.

16.8.3 Type in the amount of each compound. To do this, you may use the "TAB" key or the cursor control keys to move the cursor to the "AMT" column, then type in amount (ng) of each compound.

16.8.4 Move the cursor to the "Partial Name" column and type in the name of each compound. Move the highlighted field to the "PK-Type" column, type in "1, 2 or 3" for compounds calculated by using the first, second or third internal standard respectively. Select ISTD for each of the internal standards.

16.8.5 Press the "EXIT" soft function key to return to the calibration form. Type in a new integration result file name, then press "RETURN". Move the highlighted field to the "Level Number" item, type in "2", then press "RETURN". Now press the "Add Lvl to Table" soft function key. The calibration table edit form with two levels is displayed. Enter the amount of each compound.

16.8.6 Repeat step 16.8.5 to add levels 3 and 4.

16.8.7 Press the "EXIT" soft function to return to the calibration form. Press the "SAVE CAL TABLE" soft function key. Press the "RETURN" key to save the calibration table file as the same file name as created before or type in a new file name and press the "RETURN" key.

16.8.8 Press the "REPORT PARAMS" soft function key to display the report form. Select "ESTD" for the "Report Type" item; select "Summary" for the "Format" item; type in the calibration table file name (see 16.8.7) to the "Cal. File Name" item; select "Disc File" for the "Destination" item then type in a proper destination file name; type in "DATA:EVALRPT" for the "Sequence macro File" item.

16.8.9 When the form is completed, press the "EXIT" soft function key, then press the "SAVE PARMS" soft function key. When "requesting a new file name" appears, type in "DATA:AIRCAL.P" or the file name you wanted; press "RETURN".

16.9 Tabulate the area response of the characteristic ions (see Table 1) against the concentration for each compound and each internal standard. Calculate relative response factors (RRF) for each compound relative to its designated internal standard. The internal standard selected for the calculation of the RRF for a compound should be the internal standard that has a retention time closest to the compound being measured. The RRF is calculated as follows:

$$RRF = (A_x \cdot C_{is}) / (A_{is} \cdot C_x)$$

where:

A_x = Area of the characteristic ion for the compound being measured.

A_{is} = Area of the characteristic ion for the specific internal standard.

C_x = Concentration of the compound being measured.

C_{is} = Concentration of the internal standard.

16.10 The average RRF_1 must be calculated for each compound. A system performance check should be made before this calibration curve is used. Five compounds (the System Performance Check Compounds, or SPCCs) are checked for a minimum average relative response factor. These compounds are chloromethane, 1,1-dichloroethane, bromoform, 1,1,2,2-tetrachloroethane, and chlorobenzene. The minimum acceptable average RRF_1 (see Section 16.10.4) for these compounds should be 0.300 (0.250 for bromoform). These compounds typically have RRFs of 0.4-0.6 and are used to check compound instability and check for degradation caused by contaminated lines or active sites in the system. Examples of these occurrences are:

16.10.1 Chloromethane - This compound is the most likely compound to be lost if the desorb flow is too fast.

16.10.2 Bromoform - This compound is one of the compounds most likely to be desorbed very poorly if the purge flow is too slow. Cold spots and/or active sites in the transfer lines may adversely affect response. Response of the quantitation ion (m/z 173) is directly affected by the tuning of BFB at ions m/z 174/176. Increasing the m/z 174/176 ratio may improve bromoform response.

16.10.3 Tetrachloroethane and 1,1-dichloroethane - These compounds are degraded by contaminated transfer lines in the desorption system and/or active sites in trapping materials.

16.10.4 Using the RRFs from the initial calibration, calculate the percent relative standard deviation (%RSD) for Calibration Check Compounds (CCCs).

$$\%RSD = SD/RRF_i \times 100$$

where:

RSD = Relative Standard Deviation.
RRF_i = mean of 4 initial RRFs for a compound.
SD = Standard Deviation of mean RRFs for a compound.

16.11 In this method the internal standard method is used for calibration. The function of the internal standards is to improve the reliability of the quantitative determinations for the surrogates and the target analytes.

17.0 Daily Calibration and Sample Analysis

17.1 Analytical Parameters

17.1.1 Press the "SPECIFIC METHOD" soft key from the TOP LEVEL menu to access the method program. Enter the method file name and press the "LOAD METHOD" soft function key.

17.1.2 Activate the the "MSACQ", the "DATAED" and the "REPORT" selection by entering "Y" to each section.

17.1.3 Press the "EDIT DATAFILE" soft function key. Then type in proper name for each file.

17.1.4 Press the "SAVE METHOD" soft function key to save the change of the method. Press the "QUIT" soft function key to return to TOP LEVEL menu.

17.2 Analysis of Laboratory Blank

17.2.1 Leak test the Tekmar 5010/GC/MSD system as described in Section 12.2.3.

17.2.2 Using the procedure described in Section 9.5, spike 100 µl of the internal standard vapor mixture onto a sorbent tube, which has been spiked with surrogate (Section 9.4).

17.2.3 Analyze this sorbent tube by using the analysis procedure described in Section 16. The sequence will automatically produce the report.

17.2.4 If the recovery of the surrogate is in the range of 70% to 130% the system is acceptable.

17.2.5 The 50 ng of 4-bromofluorobenzene surrogate standard mass spectra must meet all of the criteria given in Table 2 (page 35). This criteria must be demonstrated during each 12 hr shift.

17.2.6 The acceptance of the Laboratory Blank will be based on the individual analysis target compound list.

17.3 Analysis of the Initial Calibration Verification Sample

The initial calibration curve (Section 16.0) for each compound of interest must be checked and verified once every 12 hour shift. This is accomplished by analyzing a calibration standard that is at a concentration near the midpoint concentration for the working range of the GC/MS and by checking the SPCC (Section 16.10) and CCC (Section 15.3.2).

17.3.1 System Performance Check Compounds (SPCCs) - A system performance check must be made every 12 hour shift. If the SPCC criteria are met, a comparison of response factors is made for all compounds. This is the same check that is applied during the initial calibration. If the minimum response factors are not met, the system must be evaluated, and corrective action must be taken before sample analysis begins. The minimum response factor for volatile SPCCs is 0.300 (0.250 for Bromoform). Some potential problems are standard mixture degradation, injection port inlet contamination, contamination at the front end of the analytical column, and active sites in the column or chromatographic system.

17.3.2 Calibration Check Compounds (CCCs): After the system performance check is met, CCCs listed in Step 16.11 are used to check the validity of the initial calibration. Calculate the percent difference using:

$$\% \text{ Difference} = \frac{RRF_i - RRF_c}{RRF_i} \times 100$$

where:

RRF_i = average Relative Response Factor from the initial calibration.

RRF_c = Relative Response Factor from check standard.

If the difference for any compound is greater than 20%, the laboratory should consider this a warning limit. If the percent difference for each CCC is less than 25%, the initial calibration is assumed to be valid. If the criterion is not met (> 25% difference), for any one CCC, corrective action must be taken. Problems similar to those listed under SPCCs could affect this criterion. If no source of the problem can be determined after corrective action has been taken, a new four-point calibration must be generated. This criterion must be met before quantitative sample analysis begins.

17.3.3 The internal standard responses and retention times in the calibration check standard must be evaluated immediately after or during data acquisition. If the retention time for any internal standard changes by more than 30 seconds from the last check calibration (12 hours), the chromatographic system must be inspected for malfunctions and corrections must be made, as required. If the EICP area for any of the internal standards deviates by more than -50% to +100% from the last daily calibration standard check, the mass spectrometer must be inspected for malfunctions and corrections must be made, as appropriate. When corrections are made, reanalysis of samples analyzed while the system was malfunctioning are necessary.

17.4 Analysis of NIST calibration gas

17.4.1 Using the procedure described in Section 10.0 spike a certain volume NIST calibration gas onto a sorbent tube, which has been spiked with surrogate (Section 9.4).

17.4.2 Use the procedure described in Section 12 to analyze the sorbent tube.

17.4.3 The recovery of each component in the NBS calibration gas and all the surrogates should be in the range of 70% to 130%.

17.5 Sample analysis

17.5.1 Use the procedure described in Section 12 to analyze each of the field samples.

17.5.2 The recovery of each surrogate should be in the range of 70% to 130%.

18.0 Data reporting and Handling

18.1 Data Report

18.1.1 The report form

18.1.1.1 This analytical report form is to compile the analytical results for target compounds and the tentatively identified compounds and their estimated concentration, the recovery of the surrogate standard and other related information (see attached blank form). The report is to provide the data user a comprehensive, concise and easily readable form.

18.1.1.2 This form is using the computer software, Microsoft Excel for Windows, and an IBM personal computer. The report form is a type of electronic data sheet. All the calculation and concentration unit conversion will be performed by computer following the programmed formula, as eliminated calculation errors. Following step-by-step instruction, a form can be filled out in 10 minutes.

18.1.1.3 The fourth column (ng) is the amount in nanograms of the target compound found in the total volume of sample analyzed. With the data copied from the

GC/MS analytical results, the columns of ng/L and ppbv will be calculated and filled out automatically. The concentrations ng/L and ppbv are calculated using field sample conditions (temperature, pressure volume and humidity), not converted to STP conditions. The following equations are used and programmed in the software to do the concentration calculation:

$$ng/L = \frac{ng}{V_{field}\ (L)} \qquad (1)$$

$$ppbv = \frac{24.45 \times ng}{MW \times V} \times \frac{298.15}{T_{amb.}} \times \frac{P_{amb.}}{760} \qquad (2)$$

Where V - the sample volume in Liter

MW - molecular weight of the compounds

$P_{amb.}$ - field pressure in mmHg

$T_{amb.}$ - field temperature in degrees Kelvin or Celsius temperature plus 273.

18.1.4 The last column is the Qualifier. In this column one or two letters with specific meaning will be used to indicate the condition of the data reported. The Seven EPA defined qualifiers to be used are as follows:

U - Indicates compound was analyzed for but not detected. The sample quantitation limit must be corrected for different sample volumes. The detection limit for this method is based on how much sample was adsorbed on the carbon sorbent tube, the larger sample volume being

analyzed, the lower detection limit can be achieved. For example, the detection limit of the mass spectrometer for benzene is 10 ng, when analyzing 1 liter of air the detection limit for air will be 10 ng/L or 10 $\mu g/m^3$. But if 2 liter air were analyzed, the reported detection limit would be 5 ng/L.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero. For example, if the sample quantitation limit is 10 ng/L, but a concentration of 3 ng/L is calculated a letter "J" should be used to indicate this situation.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS. Single component pesticides ≥ 10 ng in the sample introduced shall be confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination and warns the data user to take appropriate action. This flag must be used for a TIC (Total Ion Chromatogram) as well as for a positively identified TCL (Target Compound List) compound.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis . This flag will not apply to pesticides/PCBs analyzed by GC/EC methods. If one or more compounds have a response greater

than full scale, the sample or extract must be diluted and re-analyzed according to the specifications in the method. All such compounds with a response greater than full scale should have the concentration flagged with an "E" on the Form for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate forms.

D - This flag identifies all compounds identified in an analysis using a secondary dilution factor, as in the "E" flag above, the D suffix is appended to the sample number on the form for the diluted sample, and all concentration values reported on that form are flagged with the "D" flag.

A - This flag indicates that TIC is a suspected aldol-condensation product.

X - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such descriptions attached to the sample data summary package and the case narratives. If more than one is required, use "Y" and "Z", as needed. If more than five qualifiers are required for a sample result, use of the "X" flag combined with the "A', "B", and "D" flags for some sample may be applicable

The combination of flags "BU" or "UB" is expressly prohibited. Blank contaminants are flagged "B" only when they are also detected in the sample. The last row of this part is the recovery of surrogate standard 1,4-Bromofluorobenzene, each carbon sorbent tube being spiked with about 100 ng.

18.1.2 Procedure for Filling out the Report Form

18.1.2.1 When the computer is in "C\:" prompt, type in "WIN/R" and ENTER, the windows utility is loaded in.

18.1.2.2 Move the cursor to the WINDOWS directory on the screen with the mouse, and load WINDOW APPLICATION windows.

18.1.2.3 Move the cursor to the ICON of EXCEL and double click the left button of the mouse. The EXCEL software is loaded and ready to be used.

18.1.2.4 Move the cursor to the FILE on the left side of the top of the screen. Keep pressing the left button of the mouse and move the cursor downwards, stop at OPEN line for 2 seconds and release the button of the mouse. A series of files will show in a dialog box.

18.1.2.5 Use the mouse to locate the file "AIRRPT01.XL1" and highlight it, move the cursor to OK and hit the left button. The blank report form is loaded and ready to be filled out.

18.1.2.6 Use the mouse to move the cursor to each blank area, type the information then hit ENTER key through the key board.

18.1.2.6.1 Type date using mm/dd/yy format.

18.1.2.6.2 Use GC/MS file name as both data file name and report file name.

18.1.2.6.3 Copy the GC/MS results into column four (ng).

18.1.2.6.4 Move the cursor on arrow line around the form sheet to scroll the form and fill out next part of the form.

18.1.2.6.5 Type appropriate letter in the qualifier column.

18.1.2.6.6 Proofread all the information in the form.

18.1.2.7 Insert a formatted diskette into the slot of A disk drive. Move the cursor to FILE. Keep pressing the left button of the mouse and move the cursor downwards, stop at SAVE AS line for 2 seconds and release the button of the mouse. A dialog box will be shown on screen. Move the cursor to beginning of file AIRPT01.XL1, keep pressing the left button of the mouse to black out the whole line then type A:\(report file name).XL1, then hit ENTER key. The report file name is the same as that filled in the form. The file is saved on the disk in the A drive.

18.1.2.8 Move the cursor to FILE. Keep pressing the left button of the mouse and move the cursor downwards, stop at PRINT line for 2 seconds and release the button of the mouse. A small window will be shown on screen. Move the cursor to the square next to the PRINT and click the button of the mouse once. The form will be printed out on the printer.

18.1.2.9 To fill out another form repeat Step 4 to step 7.

18.1.2.10 To exit, move the cursor to FILE. Keep pressing the left button of the mouse and move the cursor downwards, stop at EXIT line for 2 seconds and release the button of the mouse.

18.1.2.11 Take out the diskette from drive A. Write note on both disk label and file record note book.

18.1.2.12 The procedure of filling out the report form of tentative identification is similar to the above procedure.

18.2 Data Handling

This section includes: 1. how to handle original data including the lab note and sample log; 2. what data package is sent to QA/QC personnel to verify and review; 3.what data package to sent to the data user and how to prepare it; 4. how data should be archived.

18.2.1 Lab note A dedicated lab note book is used for this method. Although all the operations should strictly follow the Standard Operation Procedure(SOP), modifications of the SOP are sometimes used to deal with the unusual circumstances. Any unusual circumstance must be recorded in the note book. Any measurement which is going to modify the SOP should get the approval of the Lab Manager who is responsible for the SOP; and such action must be recorded in the lab note book. This information will be indicated in the data report for users.

18.2.2 The following data are required for the internal data review producing the final reportand for data archives:

18.2.2.1 Chain of Sample Custody which includes who received sample and when, how many samples were received and sample identifications.

18.2.2.2 Field sampling information which includes sample volume, humidity, temperature, pressure and other necessary information.

18.2.2.3 Sample analysis information which includes how and when the sample is prepared and analyzed. Any unusual circumstance and operation should also be included.

18.2.2.4 The mass spectrum of the mass spectrometer background and the chromatogram and mass spectrum of daily blanks and of the BFB tuning verification run at the beginning of each day.

18.2.2.5 The GC/MS analytical results of daily the calibration check standard.

18.2.2.6 The GC/MS analytical results of samples which includes the Total Ion Chromatogram with retention times on it. The print out of the report file with three or more of the most possible matched mass spectra of the tenatatively identified peaks with estimated amounts if greater than 10 ng. The tentatively indentified peak should be marked on the TIC chromatogram. The amount of the tentatively indentified compound is estimated by comparison of the peak area with the nearest internal standard.

18.2.2.7 The print out of the macro file that was used for integration.

18.2.2.8 The print out of the calibration file.

18.2.2.9 The print out of the the parameter file for data acquisition.

18.2.2.10 Other information related to the batch of samples and analysis of same including notes of phone conversation and memos pertaining to the samples.

18.2.2.11 The GC-MS data file should be backup to the data storage tape after the data has been processed.

18.2.3. The following package is to sent to the users of the data:

18.2.3.1 A cover letter, normally one page, summarizes how the sample has been analyzed and what unusual circumstances were encountered and a list of the package contents.

18.2.3.2 A report form for target compounds (see example form) for each sample.

18.2.3.3 A report form for tentatively identified compounds (see example form) for each sample, if there are any compounds found other than those in Table 1.

19.0 Accuracy and Precision When sufficient field data has been evaluated this Section will be addressed.

Table 1. Target Compounds and Related Data

CAS No. /	Compound	MW	Density	Primary Ion	Secondary Ions
00075-35-4	1,1-Dichloroethene	96.94	1.218	96.0	61.98
00075-15-0	Carbon disulfide	76.14	1.263	76.0	78
00067-64-1	Acetone	58.08	0.791	43.0	58
00075-09-2	Methylene chloride	84.93	1.330	84.0	49.51.86
00156-60-5	trans-1,2-Dichloroethene	96.94	1.260	96.0	61.98
00075-34-3	1,1-Dichloroethane	98.96	1.174	63.0	65.83.85.98.100
00078-93-3	2-Butanone (MEK)	72.14	0.923	72.0	57
00067-66-3	Chloroform	119.39	1.487	83.0	85
00071-55-6	1,1,1-Trichloroethane	133.42	1.350	97.0	99.117.119
00056-23-5	Carbon tetrachloride	153.83	1.590	117.0	119.121
00071-43-2	Benzene	78.11	0.897	78.0	
00107-06-2	1,2-Dichloroethane	98.96	1.174	62.0	64.100.98
00079-01-6	Trichloroethene	131.40	1.460	130.0	95.97.132
00078-87-5	1,2-Dichloropropane	113.00	1.160	63.0	65.114
00108-10-1	4-Methyl-2-pentanone(MIBK)	100.16	0.796	100.0	43.58
00108-88-3	Toluene	92.13	0.867	92.0	91
00127-18-4	Tetrachloroethene	165.85	1.626	164.0	129.131.166
00108-90-7	Chlorobenzene	112.60	1.107	112.0	114
00100-41-4	Ethylbenzene	106.16	0.867	106.0	91
00183-38-3	m-Xylene	106.16	0.868	106.0	91
00106-42-3	p-Xylene	106.16	0.866	106.0	91
00095-47-6	o-Xylene	106.16	0.880	106.0	91
00100-42-5	Styrene	104.10	0.904	104.0	91
00541-73-1	1,3-Dichlorobenzene	147.00	1.288	146.0	148.113
00095-50-1	1,2-Dichlorobenzene	147.00	1.305	146.0	148.113
Bromochloromethane Internal Std. 1		129.39	1.991	128.0	49.130
1,4-Difluorobenzene Internal Std. 2		114.09	1.110	114.0	63.88
Chlorobenzene-D5 Internal Std. 3		117.60	1.157	117.0	82.119
1,4-Bromofluorobenzene Surrogate		175.01	1.593	174.0	95.176

Appendix B (1 of 4)

ACQUISITION PARAMETER FILE

DATA:VOCAIR.A

Miscellaneous

Description	: [illegible] SAMPLES, FOR SPLITLESS. CRYOFOCUSING
Operator	: [illegible]
Date & time	: [illegible]
Inlet	: [illegible]
Configuration file	: DATA:[illegible]
Acquisition mode	: Scan
Electron Multiplier	: [illegible]
EM possible	: FALSE

Temperature Zones

Initial temperature	: [illegible]
Initial time	: [illegible]
Equilibration time	: [illegible]

	Set Points	Soft Limits	Status
Oven	70	250	On
Inj Port A	180	300	On
Inj Port B	180	300	On
Transfer Line	180	300	On
Ion Source	0	0	On
Mass Analyzer	0	0	On
Detector A	0	0	On
Detector B	0		

ACQUISITION PARAMETER FILE

DATA:UCCAIF.A

Plot Parameters

Plotting Active	: TRUE
Plot Start Time	: 0.00
Number of plots	: [illegible]
Time window	: 20.00

Display

Low mass	: 10.00
High mass	: 500.00
Scale	: 5000000.00
Plot type	: Total Ion

Ala control

Number of Sample Pumps	: 0
Number of Sample washes	: 0
Number of A washes	: 0
Number of B washes	: 0
Pre-wash bottle	: [illegible]
Post-wash bottle	: 0
Stroke	: Half
Viscosity	:
Injector mode	: Fast
Injection mode	: MANUAL

Appendix B (3 of 4)

ACQUISITION PARAMETER FILE

DATA: CHAP.A

Run Table entries

Run table 1

Time : 0.00
Class : Group
Number : 1

Run table 2

Time : 0.00
Class : Open program
Ramp Rate : 40
Final Temp : 140
Hold time : 0.00

Run table 3

Time : 0.00
Class : Valves
Type : Split.Splitless
State : Off

Run table 4

Time : 1.00
Class : Mass Spec
State : On

Run table 5

Time : 5.00
Class : Group
Number : 2

Run table 6

Time : 31.00
Class : Stop run

Appendix B (4 of 4)

ACQUISITION PARAMETER FILE

DATA:VOCAIR.A

Group Entries

Number of Groups : 2

Group 1

Channel 1

Low mass	: 35.00
High mass	: 200.00
Number of samples	: 4
Peak threshold	: 1000

Group 2

Channel 1

Low mass	: 45.00
High mass	: 200.00
Number of samples	: 4
Peak threshold	: 1000

Appendix

Macro for Integration of Primary Ion

```
NAME AIRCAL

TIC
DRAW 1
INITT 20
INT X
PAGE 1
DRAW PRINTER:,X,0:31,0:1E7

STARTSET

CH 3.8:5,0.96
MESSAGE "1,1-DICHLOROETHENE"
INITT 10
INITW 0.2
INT

CH 4.3:5.7,76
MESSAGE CARBON DISULFIDE
INITT 15
INITW 0.2
INT

CH 4.3:5.8,43
MESSAGE ACETONE
INITT 15
INITW 0.2
INT

CH 5.0:6.1,84
MESSAGE METHYLENE CHLORIDE
INITT 10
INITW 0.2
INT

CH 5.6:6.7,96
MESSAGE "TRANS-1,2-DICHLOROETHENE"
INITT 13
INITW 0.3
INT
```

```
CH 6.5:7.6,63
MESSAGE "1,1-DICHLOROETHANE"
INITT 16
INITW 0.3
INT

CH 7.8:9.1,72
MESSAGE MEK
INITT 14
INITW 0.2
INT

CH 8.2:9.5,128
MESSAGE BROMOCHLOROMETHANE
INITT 18
INITW 0.2
INT

CH 8.6:9.9,83
MESSAGE CHLOROFORM
INITT 16
INITW 0.2
INT

CH 8.8:10.2,97
MESSAGE "1,1,1-TRICHLOROETHANE
INITT 16
INITW 0.3
INT

CH 9.0:10.8,117
MESSAGE CARBONTETRACHLORIDE
INITT 16
INITW 0.2
INT

CH 9.7:10.9,78
MESSAGE BENZENE
INITT 16
INITW 0.2
INT
```

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CH 9.7:11.2,62
MESSAGE "1,2-DICHLOROETHANE"
INITT 16
INITW 0.2
INT

CH 11.0:11.9,114
MESSAGE DIFLUOROBENZENE
INITT 17
INITW 0.2
INT

CH 11.5:12.5,130
MESSAGE TRICHLOROETHENE
INITT 16
INITW 0.2
INT

CH 12.2:13.2,63
MESSAGE "1,2-DICHLOROPROPANE"
INITT 16
INITW 0.2
INT

CH 14.3:15.3,100
MESSAGE MIBK
INITT 14
INITW 0.2
INT

CH 14.7:16.4,91
MESSAGE TOLUENE
INITT 16
INITW 0.2
INT

CH 16.3:17.9,164
MESSAGE TETRACHLOROETHENE
INITT 16
INITW 0.2
INT

CH 18.8:20.3,117
MESSAGE "CHLOROBENZENE-d5"
INITT 16
INITW 0.2
INT
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CH 18.8:20.3,112
MESSAGE CHLOROBENZENE
INITT 16
INITW 0.2
INT

CH 19.3:22.6,106
MESSAGE ETHYLBENZENE AND XYLENES
INITT 16
INITW 0.2
INT

CH 21.3:22.8,104
MESSAGE STYRENE
INITT 16
INITW 0.2
INT

CH 22.9:24.3,174
MESSAGE "4-BROMOFLUORO BENZENE"
INITT 16
INITW 0.2
INT

CH 26.5:30.0,146
MESSAGE DICHLOROBENZENES
INITT 16
INITW 0.2
INT

ENDSET

QUIT
```

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID :	Sorbent Tube No.				
DATE RECEIVED :	Humidity (%):				
DATE ANALYZED:	Dry Purge Vol. (L):				
ANANLYTICAL METHODS:	Field Sample Vol. (L			10.0	
GC/MS DATA FILE:	Field Temp.(C°)			30.0	
REPORT FILE:	Field Pres. (mmHg)			776.0	
DATE REPORTED:					
		CONCENTRATION			
CAS No. / Compound	MW	ng	ng/L	ppb	Q
00067-64-1 Acetone	58.08				
00075-05-8 Acetonitrile	41.05				
00107-02-8 Acrolein	56.10				
00107-13-1 Acrylonitrile	56.06				
00107-05-1 Allyl chloride	76.53				
00071-43-2 Benzene	78.11				
00075-27-4 Bromodichloromethane	163.83				
00075-25-2 Bromoform	252.30				
00074-83-9 Bromomethane	94.94				
00078-93-3 2-Butanone (MEK)	72.14				
00075-15-0 Carbon disulfide	76.14				
00056-23-5 Carbon tetrachloride	153.83				
00108-90-7 Chlorobenzene	112.60				
00075-00-3 Chloroethane	64.51				
00110-75-8 2-Chloroethyl vinyl ether	106.55				
00067-66-3 Chloroform	119.39				
00074-87-3 Chloromethane	50.09				
00124-48-1 Dibromochloromethane	208.28				
00074-95-3 Dibromomethane	173.83				
00096-12-8 1,2-Dibromo-3-chloropropane	236.36				
00106-93-4 1,2-Dibromoethane	187.86				
00095-50-1 1,2-Dichlorobenzene	147.00				
00541-73-1 1,3-Dichlorobenzene	147.00				
00106-46-7 1,4-Dichlorobenzene	147.00				

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS

TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE ID :

GC/MS DATA FILE:

REPORT FILE:

DATE REPORTED:

Sorbent Tube No.

Field Temperature °C

Field Sample Vol. (L)

Field Pres. (mmHg):

CAS No. / Compound	MW	RT(MIN)	EST. CONC. ng	ng/L	ppb
00593-75-9 Acetonitrile	41.03				
00110-86-1 Pyridine	79.00				
00120-92-3 cyclopentanone	84.00				

Comments:

NBS GAS STANDARDS

:t Limit s for Different Sample Volumes to be Analyzed for Method 1400

			On Col.	1000 ml		100 ml		50 ml		20 ml	
S No. /	Compound	MW	ng	ng/L	ppb	ng/L	ppb	ng/L	ppb	ng/L	ppb
75-35-4	1,1-Dichloroethene	96.94	1.0	1.0	0.2	10	2.5	20	5.0	50	12
75-15-0	Carbon disulfide	76.14	1.0	1.0	0.3	10	3.2	20	6.3	50	16
67-64-1	Acetone	58.08	1.0	1.0	0.4	10	4.1	20	8.3	50	21
75-09-2	Methylene chloride	84.93	1.0	1.0	0.3	10	2.8	20	5.7	50	14
07-13-1	Acrylonitrile	53.03	1.0	1.0	0.5	10	4.5	20	9.1	50	23
56-60-5	trans-1,2-Dichloroethene	96.94	1.0	1.0	0.2	10	2.5	20	5.0	50	12
75-34-3	1,1-Dichloroethane	98.96	1.0	1.0	0.2	10	2.4	20	4.9	50	12
78-93-3	2-Butanone (MEK)	72.14	1.0	1.0	0.3	10	3.3	20	6.7	50	17
67-66-3	Chloroform	119.39	1.0	1.0	0.2	10	2.0	20	4.0	50	10
71-55-6	1,1,1-Trichloroethane	133.42	1.0	1.0	0.2	10	1.8	20	3.6	50	9
56-23-5	Carbon tetrachloride	153.83	1.0	1.0	0.2	10	1.6	20	3.1	50	8
71-43-2	Benzene	78.11	1.0	1.0	0.3	10	3.1	20	6.2	50	15
07-06-2	1,2-Dichloroethane	98.96	1.0	1.0	0.2	10	2.4	20	4.9	50	12
79-01-6	Trichloroethene	131.40	1.0	1.0	0.2	10	1.8	20	3.7	50	9
78-87-5	1,2-Dichloropropane	113.00	1.0	1.0	0.2	10	2.1	20	4.3	50	11
80-62-6	Methyl methacrylate	100.05	1.0	1.0	0.2	10	2.4	20	4.8	50	12
08-10-1	4-Methyl-2-pentanone (MIBK)	100.16	1.0	1.0	0.2	10	2.4	20	4.8	50	12
08-88-3	Toluene	92.13	1.0	1.0	0.3	10	2.6	20	5.2	50	13
27-18-4	Tetrachloroethene	165.85	1.0	1.0	0.1	10	1.4	20	2.9	50	7
08-90-7	Chlorobenzene	112.60	1.0	1.0	0.2	10	2.1	20	4.3	50	11
00-41-4	Ethylbenzene	106.16	1.0	1.0	0.2	10	2.3	20	4.5	50	11
330-20-7	m-Xylene and/or p-Xylene	106.16	1.0	1.0	0.2	10	2.3	20	4.5	50	11
095-47-6	o-Xylene	106.16	1.0	1.0	0.2	10	2.3	20	4.5	50	11
100-42-5	Styrene	104.10	1.0	1.0	0.2	10	2.3	20	4.6	50	12
541-73-1	1,3-Dichlorobenzene	147.00	1.0	1.0	0.2	10	1.6	20	3.3	50	8
095-50-1	1,2-Dichlorobenzene	147.00	1.0	1.0	0.2	10	1.6	20	3.3	50	8

AR14A14A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : NBS GAS	Sorbent Tube Number:			3-299	
TIME RECEIVED: 11-26-91	Relative Humidity(%):				
TIME ANALYZED: 11-26-91	Dry Purge Volume (L):			2.0	
ANALYTICAL METHODS: Method 1000	Field Sample Volume(L):			3.20	
GC/MS DATA FILE: AR14A14A.D	Field Tmperature(C°):			22.0	
REPORT FILE: AR14A14A	Field Press. (mmHg):			760.0	
DATE REPORTED: 12-04-91	Calibration (Int/Ext):			Int.	
		CONCENTRATION			
CAS No. / Compound	MW	ng	ng/L	ppb	Q
00075-35-4 1,1-Dichloroethene	96.94				U
00075-15-0 Carbon disulfide	76.14	0.8	0.2	0.1	J
00067-64-1 Acetone	58.08	24.5	7.7	3.2	B
00075-09-2 Methylene chloride	84.93	66.5	20.8	5.9	B
00107-13-1 Acrylonitrile	53.03	1.7	0.5	0.2	BJ
00156-60-5 trans-1,2-Dichloroethene	96.94				U
00075-34-3 1,1-Dichloroethane	98.96				U
00078-93-3 2-Butanone (MEK)	72.14	1.8	0.6	0.2	J
00067-66-3 Chloroform	119.39	87.6	27.4	5.6	
00071-55-6 1,1,1-Trichloroethane	133.42	100.9	31.5	5.7	
00056-23-5 Carbon tetrachloride	153.83	91.0	28.4	4.5	
00071-43-2 Benzene	78.11	43.6	13.6	4.2	B
00107-06-2 1,2-Dichloroethane	98.96	76.9	24.0	5.9	
00079-01-6 Trichloroethene	131.40	97.4	30.4	5.6	
00078-87-5 1,2-Dichloropropane	113.00	86.0	26.9	5.8	
00080-62-6 Methyl methacrylate	100.05	1.0	0.3	0.1	BJ
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	65.5	20.5	5.4	B
00127-18-4 Tetrachloroethene	165.85	115.2	36.0	5.3	
00108-90-7 Chlorobenzene	112.60	81.2	25.4	5.5	
00100-41-4 Ethylbenzene	106.16	73.9	23.1	5.3	B
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.5	0.5	0.1	B
00095-47-6 o-Xylene	106.16	90.6	28.3	6.5	
00100-42-5 Styrene	104.10	1.3	0.4	0.1	BJ
00541-73-1 1,3-Dichlorobenzene	147.00				U
00095-50-1 1,2-Dichlorobenzene	147.00				U
Surrogate Standards Recoveries			Rec(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		119.3	151.4	126.9%	
Surrogate 2 Toluene-d8		94.5	123.1	130.3%	

AR14A22A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : LS-016 NBS GAS	Sorbent Tube Number:			3-309	
TIME RECEIVED: 11-26-91	Relative Humidity(%):				
TIME ANALYZED: 11-26-91	Dry Purge Volume (L):			2.0	
ANALYTICAL METHODS: Method 1000	Field Sample Volume(L):			1.99	
GC/MS DATA FILE: AR14A22A.D	Field Tmperature(C°):			22.0	
REPORT FILE: AR14A22A	Field Press. (mmHg):			760.0	
DATE REPORTED: 12-04-91	Calibration (Int/Ext):			Int.	
		CONCENTRATION			
CAS No. / Compound	MW	ng	ng/L	ppb	Q
00075-35-4 1,1-Dichloroethene	96.94				U
00075-15-0 Carbon disulfide	76.14				U
00067-64-1 Acetone	58.08	49.7	24.9	10.4	B
00075-09-2 Methylene chloride	84.93	20.5	10.3	2.9	B
00107-13-1 Acrylonitrile	53.03	1.7	0.9	0.4	BJ
00156-60-5 trans-1,2-Dichloroethene	96.94				U
00075-34-3 1,1-Dichloroethane	98.96				U
00078-93-3 2-Butanone (MEK)	72.14	1.9	0.9	0.3	J
00067-66-3 Chloroform	119.39	54.0	27.1	5.5	
00071-55-6 1,1,1-Trichloroethane	133.42	59.5	29.8	5.4	
00056-23-5 Carbon tetrachloride	153.83	63.6	31.9	5.0	
00071-43-2 Benzene	78.11	23.3	11.7	3.6	B
00107-06-2 1,2-Dichloroethane	98.96	45.2	22.7	5.5	
00079-01-6 Trichloroethene	131.40	56.4	28.3	5.2	
00078-87-5 1,2-Dichloropropane	113.00	48.2	24.2	5.2	
00080-62-6 Methyl methacrylate	100.05	0.8	0.4	0.1	BJ
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	39.5	19.8	5.2	B
00127-18-4 Tetrachloroethene	165.85	68.7	34.4	5.0	
00108-90-7 Chlorobenzene	112.60	49.1	24.6	5.3	
00100-41-4 Ethylbenzene	106.16	44.5	22.3	5.1	B
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.7	0.9	0.2	BJ
00095-47-6 o-Xylene	106.16	49.8	25.0	5.7	
00100-42-5 Styrene	104.10	1.6	0.8	0.2	BJ
00541-73-1 1,3-Dichlorobenzene	147.00				U
00095-50-1 1,2-Dichlorobenzene	147.00				U
Surrogate Standards Recoveries			Rec(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		119.3	144.5	121.1%	
Surrogate 2 Toluene-d8		94.5	120.7	127.7%	

AR14A26A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : NBS GAS	Sorbent Tube Number:			3-317	
TIME RECEIVED: 11-27-91	Relative Humidity(%):				
TIME ANALYZED: 11-27-91	Dry Purge Volume (L):			2.0	
ANALYTICAL METHODS: Method 1000	Field Sample Volume(L):			3.20	
GC/MS DATA FILE: AR14A26A.D	Field Tmperature(C°):			22.0	
REPORT FILE: AR14A26A	Field Press. (mmHg):			760.0	
DATE REPORTED: 12-04-91	Calibration (Int/Ext):			Int.	
		CONCENTRATION			
CAS No. / Compound	MW	ng	ng/L	ppb	Q
00075-35-4 1,1-Dichloroethene	96.94				U
00075-15-0 Carbon disulfide	76.14				U
00067-64-1 Acetone	58.08	28.6	8.9	3.7	B
00075-09-2 Methylene chloride	84.93	28.0	8.8	2.5	B
00107-13-1 Acrylonitrile	53.03	2.2	0.7	0.3	BJ
00156-60-5 trans-1,2-Dichloroethene	96.94				U
00075-34-3 1,1-Dichloroethane	98.96				U
00078-93-3 2-Butanone (MEK)	72.14				U
00067-66-3 Chloroform	119.39	78.9	24.7	5.0	
00071-55-6 1,1,1-Trichloroethane	133.42	92.3	28.8	5.2	
00056-23-5 Carbon tetrachloride	153.83	102.5	32.0	5.0	
00071-43-2 Benzene	78.11	45.1	14.1	4.4	B
00107-06-2 1,2-Dichloroethane	98.96	69.9	21.9	5.3	
00079-01-6 Trichloroethene	131.40	92.4	28.9	5.3	
00078-87-5 1,2-Dichloropropane	113.00	78.0	24.4	5.2	
00080-62-6 Methyl methacrylate	100.05	2.0	0.6	0.2	BJ
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	58.3	18.2	4.8	B
00127-18-4 Tetrachloroethene	165.85	114.5	35.8	5.2	
00108-90-7 Chlorobenzene	112.60	81.1	25.4	5.4	
00100-41-4 Ethylbenzene	106.16	70.6	22.1	5.0	B
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.6	0.5	0.1	BJ
00095-47-6 o-Xylene	106.16	84.4	26.4	6.0	
00100-42-5 Styrene	104.10	2.5	0.8	0.2	BJ
00541-73-1 1,3-Dichlorobenzene	147.00				U
00095-50-1 1,2-Dichlorobenzene	147.00				U
Surrogate Standards Recoveries			Rec(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		119.3	146.7	123.0%	
Surrogate 2 Toluene-d8		94.5	121.1	128.1%	

AR14A37A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : NBS GAS	Sorbent Tube Number:			3-305	
TIME RECEIVED: 12-05-91	Relative Humidity(%):				
TIME ANALYZED: 12-05-91	Dry Purge Volume (L):			2.0	
ANALYTICAL METHODS: Method 1000	Field Sample Volume(L):			3.20	
GC/MS DATA FILE: AR14A37A.D	Field Tmperature(C°):			22.0	
REPORT FILE: AR14A37A	Field Press. (mmHg):			760.0	
DATE REPORTED: 12-10-91	Calibration (Int/Ext):			Int.	
		CONCENTRATION			
CAS No. / Compound	MW	ng	ng/L	ppb	Q
00075-35-4 1,1-Dichloroethene	96.94	0.9	0.3	0.1	J
00075-15-0 Carbon disulfide	76.14				U
00067-64-1 Acetone	58.08	49.7	15.5	6.5	B
00075-09-2 Methylene chloride	84.93	46.3	14.5	4.1	B
00107-13-1 Acrylonitrile	53.03	2.1	0.6	0.3	BJ
00156-60-5 trans-1,2-Dichloroethene	96.94				U
00075-34-3 1,1-Dichloroethane	98.96				U
00078-93-3 2-Butanone (MEK)	72.14	3.0	0.9	0.3	BJ
00067-66-3 Chloroform	119.39	81.0	25.3	5.1	
00071-55-6 1,1,1-Trichlorcethane	133.42	92.1	28.8	5.2	B
00056-23-5 Carbon tetrachloride	153.83	87.0	27.2	4.3	
00071-43-2 Benzene	78.11	50.1	15.7	4.9	B
00107-06-2 1,2-Dichloroethane	98.96	73.6	23.0	5.6	
00079-01-6 Trichloroethene	131.40	96.0	30.0	5.5	
00078-87-5 1,2-Dichloropropane	113.00	77.7	24.3	5.2	
00080-62-6 Methyl methacrylate	100.05	1.6	0.5	0.1	BJ
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	63.5	19.9	5.2	B
00127-18-4 Tetrachloroethene	165.85	118.3	37.0	5.4	
00108-90-7 Chlorobenzene	112.60	80.4	25.1	5.4	
00100-41-4 Ethylbenzene	106.16	71.1	22.2	5.1	B
01330-20-7 m-Xylene and/or p-Xylene	106.16	2.1	0.7	0.2	BJ
00095-47-6 o-Xylene	106.16	84.5	26.4	6.0	
00100-42-5 Styrene	104.10	4.7	1.5	0.3	BJ
00541-73-1 1,3-Dichlorobenzene	147.00				U
00095-50-1 1,2-Dichlorobenzene	147.00				U
Surrogate Standards Recoveries			Rec(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		119.3	150.4	126.1%	
Surrogate 2 Toluene-d8		94.5	117.4	124.2%	

AR14A44A.XLS

AMBIENT AIR VOLATILE ORGANICS ANALYSIS RESULTS					
SAMPLE ID : NBS GAS	Sorbent Tube Number:			3-317	
TIME RECEIVED: 12-06-91	Relative Humidity(%):				
TIME ANALYZED: 12-06-91	Dry Purge Volume (L):			2.0	
ANALYTICAL METHODS: Method 1000	Field Sample Volume(L):			3.20	
GC/MS DATA FILE: AR14A44A.D	Field Temperature(C°):			22.0	
REPORT FILE: AR14A44A	Field Press. (mmHg):			760.0	
DATE REPORTED: 12-10-91	Calibration (Int/Ext):			Int.	
		CONCENTRATION			
CAS No. / Compound	MW	ng	ng/L	ppb	Q
00075-35-4 1,1-Dichloroethene	96.94				J
00075-15-0 Carbon disulfide	76.14				U
00067-64-1 Acetone	58.08	32.7	10.2	4.3	B
00075-09-2 Methylene chloride	84.93	23.3	7.3	2.1	B
00107-13-1 Acrylonitrile	53.03	1.7	0.5	0.2	BJ
00156-60-5 trans-1,2-Dichloroethene	96.94				U
00075-34-3 1,1-Dichloroethane	98.96				U
00078-93-3 2-Butanone (MEK)	72.14	3.7	1.2	0.4	BJ
00067-66-3 Chloroform	119.39	83.3	26.0	5.3	
00071-55-6 1,1,1-Trichloroethane	133.42	94.9	29.6	5.4	B
00056-23-5 Carbon tetrachloride	153.83	111.5	34.8	5.5	
00071-43-2 Benzene	78.11	62.3	19.5	6.0	B
00107-06-2 1,2-Dichloroethane	98.96	74.9	23.4	5.7	
00079-01-6 Trichloroethene	131.40	98.3	30.7	5.7	
00078-87-5 1,2-Dichloropropane	113.00	81.6	25.5	5.5	
00080-62-6 Methyl methacrylate	100.05	1.6	0.5	0.1	BJ
00108-10-1 4-Methyl-2-pentanone (MIBK)	100.16				U
00108-88-3 Toluene	92.13	65.2	20.4	5.4	B
00127-18-4 Tetrachloroethene	165.85	122.7	38.3	5.6	
00108-90-7 Chlorobenzene	112.60	85.0	26.5	5.7	
00100-41-4 Ethylbenzene	106.16	73.9	23.1	5.3	B
01330-20-7 m-Xylene and/or p-Xylene	106.16	1.5	0.5	0.1	BJ
00095-47-6 o-Xylene	106.16	90.1	28.2	6.4	
00100-42-5 Styrene	104.10	4.0	1.3	0.3	BJ
00541-73-1 1,3-Dichlorobenzene	147.00				U
00095-50-1 1,2-Dichlorobenzene	147.00				U
Surrogate Standards Recoveries			Rec(ng)	Rec(%)	
Surrogate 1 1,2-Dichloroethane-d4		119.3	111.5	93.5%	
Surrogate 2 Toluene-d8		94.5	114.5	121.2%	

SUMMARY OF METHOD FOR CRYOGENIC TRAP AND GC/MS ANALYSIS

Method No.: Method 1400

Title: Standard Operating Procedure for the Determination of Volatile Organic Compounds in Syringe and/or Summa Canister Ambient Air Samples by Cryogenic Preconcentration and Gas Chromatography/Mass Spectrometry (GC/MS).

Reference Method: EPA T014

Last Update: October 22, 1991

Prepared by: Organic Lab.

Summary of the Method:

This method is based on EPA Method T014 to determine the volatile organic compounds in lower ppbv level for analytes including aromatic and halogenated compounds and oxygenated solvents in Summa canister. In this method either a gas tight syringe or a 6 or 8 liter Summa Canisters are used for the sample container. A Tekmar 5010 automatic thermal desorber interfaced with a Hewlett Packard 5890/5970 - GC/MSD is used to analyze samples. The GC/MSD is equipped with a J&W DB-624 0.32 mm x 60 m capillary column using a capillary direct interface to a mass selective detector (MSD). The MSD is controlled with a Pascal ChemStation data system. This procedure is optimized to share the same analytical system with Method 1000 (a Tekmar 5010 thermal desorber interfaced with a Hewlett Packard 5890/5970 - GC/MSD for sorbent tube analysis). This procedure is not limited to the analysis of samples from a cannister and is able to analyze samples introduced into the cryogenic trap with a syringe. The practical quantitation limit (PQL) for an individual compound is approximately 20 ug/m3 based on a 500 ml aliquot of the whole air sample. PQLs will be proportionately lower for larger sample volumes. The method is described more fully in the attached Standard Operating Procedure (55 pages) and the Addendum to the SOP (1 page) which describes the introduction of samples using a syringe only. The analytes in Table 1 of the SOP can be expanded to a much wider range as needed.

APPENDIX G

RESULTS OF TOC ANALYSES

ENVIROGEN
New Solutions to Hazardous Waste Problems

Princeton Research Center
4101 Quakerbridge Road
Lawrenceville, New Jersey 08648

Tel: 609/936-9300
Fax. 609/936-9221

MEMORANDUM

TO: Vapex - Jon Polonsky

FROM: Gene Bowlen

DATE: March 3, 1993

RE: Total Carbon Analysis

The following data was obtained from the American Chemical Site soils utilized by Vapex/ERI and Envirogen to conduct the vapor extraction and bioventing treatability tests for Warzyn. The analysis was conducted utilizing a Dohrmann Model DC-190 Total Carbon Analyzer with the boat sampler option for solids. Manufacturer recommendations limit sample size to less than 40 mg. ENVIROGEN personnel utilized 20 mg samples for generation of the data included in the table. The amount of carbon dioxide released during combustion of the samples was considerably beyond the linear range of the instrument. Reductions in sample size to 10 and 5 mg did not bring the response within the linear range. We were unable to reduce the sample size below 5 mg because of the grain size of the material. We provide the data for your information but are unable to verify its accuracy.

SAMPLE	TOTAL CARBON (PPM)	STANDARD DEVIATION
ENVIROGEN SAMPLES		
Killed: Time 0	3088	875
Control: Time 0	2254	790
Nutrient: Time 0	2377	241
Killed: Final	3802	602
Control: Final	2877	1108
Nutrient: Final	2766	240
VAPEX/ERI SAMPLES		
Column I: 1/12/93	3495	875
Column II: 1/13/93	3930	145
Column III: 1/14/93	2896	600
Column I: 2/23/93	4926	587
Column II: 2/23/93	4593	225
Column III: 2/23/93	2442	496

ENVIROGEN is an innovative environmental biotechnology company dedicated to the business of discovering, developing, and applying new and effective solutions to the task of degrading or transforming toxic and hazardous wastes.

APPENDIX H

LIST OF TARGET VOCs AND SVOCs
(supplied by WARZYN, Inc.)

Table 1
Summary of Sitewide Soil Remediation Levels and Concentrations
American Chemical Services NPL Site
Griffith, Indiana

= Conc. > Rem. Level

Compound	Rem. Level (mg/kg)	Minimum (mg/kg)	Maximum (mg/kg)	Average Concentration (mg/kg) at: On-Site Cont.	Still Bot. Trtmt Lag.	Off-Site Cont	Kapica/ Pazmey	Positive Detects
Volatiles (135 samples)								
Vinyl Chloride	0.031	2.9	2.9	nd	nd	2.9	nd	1
Chloroethane	2,700	0.001	2	0.0015	nd	0.95	0.012	6
Methylene Chloride	6.2	0.012	260	nd	136	31.5	0.106	13
Acetone	2,400	0.018	34,000	2.9	10	1,549	2.70	33
1,1-Dichloroethene	0.098	0.003	390	nd	nd	117	nd	4
1,2-Dichloroethene (cis)	250	0.002	120	0.606	21.9	5.55	7.26	55
Chloroform	9.5	0.001	2,800	0.97	286	223	0.004	49
1,2-Dichloroethane	0.64	0.001	440	0.486	15.8	34.6	0.044	23
2-Butanone	620	0.004	99,000	0.102	59.5	3,760	30	63
1,1,1-Trichloroethane	2,300	0.001	150,000	885	1,093	5,679	0.217	76
Carbon Tetrachloride	0.38	530	3,600	nd	2,065	nd	nd	2
1,2-Dichloropropane	0.42	0.001	23	nd	nd	3.04	0.027	13
Trichloroethene	5.3	0.003	19,000	5.3	184	927	70.9	71
1,1,2-Trichloroethane	0.51	0.001	400	0.035	2.71	94.6	nd	13
Benzene	1	0.001	7,100	205	39	97.3	4.1	95
4-Methyl-2-pentanone	630	0.002	61,000	0.119	235	2,536	68.6	64
Tetrachloroethene	1.1	0.002	46,000	431	266	2,161	115	90
1,1,2,2-Tetrachloroethane	0.28	0.002	3.9	0.779	nd	0.017	nd	8
Toluene	5,000	0.001	200,000	5,293	1,704	3,957	1,390	125
Chlorobenzene	150	0.002	1,000	0.104	0.002	177	6.67	19
Ethylbenzene	1,300	0.002	23,000	194	751	943	312	123
Styrene	1.7	0.001	310	3.1	54	87	71.1	15
Xylenes (mixed)	26,000	0.002	100,000	791	1,978	3,735	1,433	127
Semi-Volatiles (85 samples)								
bis (2-chloroethyl) ether	0.027	0.099	200	nd	13.7	48	nd	32
1,4-Dichlorobenzene	2.4	0.046	11	0.85	nd	3.15	nd	14
Isophorone	7.2	0.041	3,600	46	314	443	35.5	57
1,2,4-Trichlorobenzene	16	0.054	79	nd	1,882	13.5	nd	14
Napthalene	82	0.054	2,400	19.5	97	282	23	73
Hexachlorobutadiene	0.36	0.055	150	3.7	7.68	33	nd	23
2,6-Dinitrotoluene	0.044	3.5	3.5	nd	nd	3.5	nd	1
2,4-Dinitrotoluene	0.044	0.84	0.84	nd	nd	nd	0.84	1
n-Nitrosodiphenylamine	12	0.18	53	nd	13	11.1	3.1	11
Hexachlorobenzene	0.018	0.25	11	nd	0.982	5.97	nd	6
Pentachlorophenol	0.43	0.045	180	0.16	14	44.3	5.8	29
bis (2-ethylhexyl) Phthalate	1.1	0.039	14,000	13.5	375	1,526	185.5	77
di-n-butylphthalate	2,300	0.039	3,400	10.99	87.6	327	20.4	70
cPAHs	0.0026	0.254	75.3	0.254	1.93	22.8	9.37	12

APPENDIX I

RESULTS OF PRELIMINARY SOIL SAMPLE ANALYSES

PHOENIX
Environmental Laboratories, Inc.
587 East Middle Turnpike, P.O. Box 418, Manchester, CT 06040
Tel. (203) 645-1102 Fax (203) 645-0823

January 4, 1993

Vapex Environmental Technology
480 Neponset Street
Canton, MA. 02021

Attn: Mr. Bruce Cliff

SAMPLE ID: AA20272 to AA20273

This laboratory is in compliance with the QA/QC procedure outlined in EPA 600/4-79-019, Handbook for Analytical Quality Control in Water and Waste Water, March 1979, and QA/QC requirements of procedures used.

If you have any questions concerning this testing, please do not hesitate to contact me.

Sincerely yours,

Sohail Jahani
Laboratory Director

CT Lab. Registration #PH-0618
MA Lab. Registration #CT-007
NY Lab. Registration #11301

Enc.

From: Phoenix Environmental Laboratories Inc.
587 E. Middle Turnpike, Box 418
Manchester, Ct. 06045-0418
(203) 645-1102 Fax 645-0823

January 4, 1993

To: VAPEX ENVIRONMENTAL TECHNOLOGY
480 Neponset Street
Canton, MA 02021
Att: Mr. Bruce Cliff

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory:

Sample I.D. AA20272 Location code: VAPEX
Purchase order number: 1307 Project account code: RUSH
Location Description: ACS #20007001 I.D.#COOFF01-02
Sample collection date: 12/21/92
Lab submittal date: 12/30/92 Time: 13:00
Received by: MK Validated by: RJ

Parameter: Semivolatiles-Solid Matrix
Method reference: SW 8270
Result: see below
Date started: 01/04/93 Date finished: 01/04/93
Time started: 11:41 Analyst: DLS

Parameter: Sonication Ext. for Semi-Vol
Method reference: sw846-3550
Result: Completed MDL or sensitivity:
Date started: 12/31/92 Date finished: 12/31/92
Time started: 08:30 Analyst: EA

Parameter: Quotation for Services - Total
Method reference:
Result: Completed MDL or sensitivity:
Date started: 12/31/92 Date finished: 12/31/92
Time started: 07:33 Analyst: MJC

Data for Semivolatiles-Solid Matrix ug/Kg:

Component Name	Result	Component MDL
Acenaphthene	Not detected	9900
Acenaphthylene	Not detected	9900
Anthracene	Not detected	9900
Benzidine	Not detected	9900
Benzoic acid	Not detected	48000
Benz(a)anthracene	Not detected	9900
Benzo(b)fluoranthene	Not detected	9900
Benzo(k)fluoranthene	Not detected	9900
Benzo(g,h,i)perylene	Not detected	9900
Benz(a)pyrene	Not detected	9900

Data for Semivolatiles-Solid Matrix (continued):

Component Name	Result	Component MDL
Benzyl alcohol	Not detected	19800
Bis(2-chloroethoxy)methane	Not detected	9900
Bis(2-chloroethyl)ether	Not detected	9900
Bis(2-chloroisopropyl)ether	Not detected	9900
Bis(2-ethylhexyl)phthalate	28,000	9900
4-Bromophenyl phenyl ether	Not detected	9900
Butyl benzyl phthalate	Not detected	9900
4-Chloroaniline	Not detected	19800
2-Chloronaphthalene	Not detected	9900
4-Chloro-3-methylphenol	Not detected	19800
2-Chlorophenol	Not detected	9900
4-Chlorophenyl phenyl ether	Not detected	9900
Chrysene	Not detected	9900
Dibenz(a,h)anthracene	Not detected	9900
Dibenzofuran	Not detected	9900
Di-n-butylphthalate	53,400	9900
1,2-Dichlorobenzene	Not detected	9900
1,3-Dichlorobenzene	Not detected	9900
1,4-Dichlorobenzene	Not detected	9900
3,3'-Dichlorobenzidine	Not detected	19800
2,4-Dichlorophenol	Not detected	9900
2,6-Dichlorophenol	Not detected	9900
Diethyl phthalate	Not detected	9900
2,4-Dimethylphenol	Not detected	9900
Dimethyl phthalate	13,200	9900
4,6-Dinitro-2-methylphenol	Not detected	48000
2,4-Dinitrophenol	Not detected	48000
2,4-Dinitrotoluene	Not detected	9900
2,6-Dinitrotoluene	Not detected	9900
1,2-Diphenylhydrazine	Not detected	9900
Di-n-octyl phthalate	Not detected	9900
Fluoranthene	Not detected	9900
Fluorene	Not detected	9900
Hexachlorobenzene	Not detected	9900
Hexachlorobutadiene	Not detected	9900
Hexachlorocyclopentadiene	Not detected	9900
Hexachloroethane	Not detected	9900
Indeno(1,2,3-cd)pyrene	Not detected	9900
Isophorone	33,500	9900
2-Methylnaphthalene	25,900	9900
2-Methylphenol (o-cresol)	Not detected	9900
4-Methylphenol (p-cresol)	Not detected	9900
Naphthalene	63,800	9900
2-Nitroaniline	Not detected	48000
3-Nitroaniline	Not detected	48000
4-Nitroaniline	Not detected	48000
Nitrobenzene	Not detected	9900
2-Nitrophenol	Not detected	9900
4-Nitrophenol	Not detected	48000
N-Nitrosodimethylamine	Not detected	9900
N-Nitrosodiphenylamine	Not detected	9900

Data for Semivolatiles-Solid Matrix (continued):

Component Name	Result	Component MDL
Pentachlorophenol	Not detected	9900
Phenanthrene	Not detected	9900
Phenol	Not detected	9900
Pyrene	Not detected	9900
1,2,4-Trichlorobenzene	Not detected	9900
2,4,5-Trichlorophenol	Not detected	9900
2,4,6-Trichlorophenol	Not detected	9900

Sample comments:

Not Det = Not detected.

If there are any questions regarding this data, please call.

Sohail Jahani
Laboratory Director

From: Phoenix Environmental Laboratories Inc.
587 E. Middle Turnpike, Box 418
Manchester, Ct. 06045-0418
(203) 645-1102 Fax 645-0823

January 4, 1993

To: VAPEX ENVIRONMENTAL TECHNOLOGY
480 Neponset Street
Canton, MA 02021
Att: Mr. Bruce Cliff

The following analytical results have been obtained for the indicated sample which was submitted to this laboratory:

Sample I.D. AA20273 Location code: VAPEX
Purchase order number: 1307 Project account code: RUSH
Location Description: ACS #20007001 ID #COTREAT01-01
Sample collection date: 12/18/92
Lab submittal date: 12/30/92 Time: 13:00
Received by: MK Validated by: RJ

Parameter: Semivolatiles-Solid Matrix
Method reference: SW 8270
Result: see below
Date started: 12/31/92 Date finished: 12/31/92
Time started: 11:05 Analyst: DLS

Parameter: Sonication Ext. for Semi-Vol
Method reference: sw846-3550
Result: Completed MDL or sensitivity:
Date started: 12/31/92 Date finished: 12/31/92
Time started: 08:30 Analyst:

Parameter: Quotation for Services - Total
Method reference:
Result: Completed MDL or sensitivity:
Date started: 12/31/92 Date finished: 12/31/92
Time started: 07:33 Analyst: MJC

Data for Semivolatiles-Solid Matrix ug/Kg:

Component Name	Result	Component MDL
Acenaphthene	Not detected	330
Acenaphthylene	Not detected	330
Anthracene	Not detected	330
Benzidine	Not detected	330
Benzoic acid	Not detected	1600
Benz(a)anthracene	Not detected	330
Benzo(b)fluoranthene	Not detected	330
Benzo(k)fluoranthene	Not detected	330
Benzo(g,h,i)perylene	Not detected	330
Benz(a)pyrene	Not detected	330

Data for Semivolatiles-Solid Matrix (continued):

Component Name	Result	Component MDL
Benzyl alcohol	Not detected	660
Bis(2-chloroethoxy)methane	Not detected	330
Bis(2-chloroethyl)ether	290	330
Bis(2-chloroisopropyl)ether	Not detected	330
Bis(2-ethylhexyl)phthalate	7800	330
4-Bromophenyl phenyl ether	Not detected	330
Butyl benzyl phthalate	690	330
4-Chloroaniline	Not detected	660
2-Chloronaphthalene	Not detected	330
4-Chloro-3-methylphenol	Not detected	660
2-Chlorophenol	Not detected	330
4-Chlorophenyl phenyl ether	Not detected	330
Chrysene	Not detected	330
Dibenz(a,h)anthracene	Not detected	330
Dibenzofuran	Not detected	330
Di-n-butylphthalate	920	330
1,2-Dichlorobenzene	Not detected	330
1,3-Dichlorobenzene	Not detected	330
1,4-Dichlorobenzene	Not detected	330
3,3'-Dichlorobenzidine	Not detected	660
2,4-Dichlorophenol	Not detected	330
2,6-Dichlorophenol	Not detected	330
Diethyl phthalate	Trace	330
2,4-Dimethylphenol	Not detected	330
Dimethyl phthalate	385	330
4,6-Dinitro-2-methylphenol	Not detected	1600
2,4-Dinitrophenol	Not detected	1600
2,4-Dinitrotoluene	Not detected	330
2,6-Dinitrotoluene	Not detected	330
1,2-Diphenylhydrazine	Not detected	330
Di-n-octyl phthalate	Not detected	330
Fluoranthene	Not detected	330
Fluorene	Not detected	330
Hexachlorobenzene	Not detected	330
Hexachlorobutadiene	Not detected	330
Hexachlorocyclopentadiene	Not detected	330
Hexachloroethane	Not detected	330
Indeno(1,2,3-cd)pyrene	Not detected	330
Isophorone	2780	330
2-Methylnaphthalene	390	330
2-Methylphenol (o-cresol)	Not detected	330
4-Methylphenol (p-cresol)	Not detected	330
Naphthalene	860	330
2-Nitroaniline	Not detected	1600
3-Nitroaniline	Not detected	1600
4-Nitroaniline	Not detected	1600
Nitrobenzene	Not detected	330
2-Nitrophenol	Not detected	330
4-Nitrophenol	Not detected	1600
N-Nitrosodimethylamine	Not detected	330
N-Nitrosodiphenylamine	Not detected	330

Data for Semivolatiles-Solid Matrix (continued):

Component Name	Result	Component MDL
Pentachlorophenol	Not detected	330
Phenanthrene	Not detected	330
Phenol	Not detected	330
Pyrene	Not detected	330
1,2,4-Trichlorobenzene	Not detected	330
2,4,5-Trichlorophenol	Not detected	330
2,4,6-Trichlorophenol	Not detected	330

Sample comments:

Not Det = Not detected.

If there are any questions regarding this data, please call.

Sohail Jahani
Laboratory Director