ESC

ENVIRONMENTAL STRATEGIES CORPORATION

11911 Freedom Drive • Reston, Virginia 20190 • (703) 709-6500 • Fax (703) 709-8505

140461

March 24, 1998

Ms. Kate Lose
Remedial Project Manager
U. S. Environmental Protection Agency
Region III
841 Chestnut Street
Philadelphia, PA 19107

Re: Request to Augment the Phase I System with Air Sparging and Soil Vapor Extraction at the Millsboro, Delaware, NPL Site

Dear Ms. Lose:

On behalf of the NCR Corporation (NCR) and the First National Bank of Maryland, Environmental Strategies Corporation (ESC) requests approval by the U. S. Environmental Protection Agency (EPA) to augment the existing groundwater extraction and treatment system on the Phase I parcel at the Millsboro, Delaware, NPL site with an air sparging and soil vapor extraction (AS/SVE) system.

During the week of February 9, 1998, ESC conducted a subsurface investigation on the Phase I parcel to determine the feasibility of augmenting the existing Phase I system with AS/SVE. The results of this investigation are discussed in the enclosed report, "Subsurface Investigation of the Phase I Parcel at the Millsboro, Delaware, NPL Site" (ESC; March 13, 1998). The findings of this investigation delineated the extent of the trichloroethene (TCE) plume and the presence and extent of clay layers and lenses on the Phase I parcel. The results indicate that AS/SVE would be technically and economically feasible to implement on the Phase I parcel.

This letter summarizes the rationale for why ESC, on behalf of NCR, is proposing to augment the Phase I remedial system and evaluates the proposed augmentation against nine criteria in accordance with the requirements of the National Contingency Plan (NCP).

Rationale for Proposed Augmentation

The existing groundwater extraction and treatment system on the Phase I parcel includes: three groundwater extraction wells, an air stripper for the extracted water, vapor phase carbon for the air stripper off-gas, and two onsite infiltration trenches for treated water. This system was designed and constructed in accordance with the Record of Decision (August 12, 1991) and the Administrative Order (Docket No. III-92-14-DC; March 31, 1992) for the site. The system began operation in October 1995 and has significantly reduced the TCE concentration in groundwater on the Phase I parcel.

According to the EPA's Evaluation of Ground Water Extraction Remedies (EPA/540/2-89/054), studies of pump and treat systems have found that the average time to attain steady state of groundwater concentrations is approximately seven years. Therefore, to achieve the performance standard specified in Appendix B of the Administrative Order (5 µg/l of TCE) or to demonstrate that the performance standard is not achievable with pump and treat technology, the existing system will likely have to operate for an additional 4.5 years. Based on the success of the AS/SVE system currently operating on the Phase II parcel, augmenting the Phase I system with AS/SVE has the potential to significantly reduce the timeframe necessary to achieve the performance standard. Shortening the timeframe of remedial action has many benefits, including a reduced cost over the duration of the project. The success of the Phase II AS/SVE system is discussed below.

Start-up of the Phase II AS/SVE system began in September 1996. There are five shallow monitoring wells in the sampling program on the Phase II parcel. The TCE analysis results for samples from these wells collected in October 1996 and January 1998 are compared in the table below.

Well	TCE (µg/l) 10/96	TCE (µg/l) 01/98	Percent Reduction
W-29A	1,800	48	97
W-30A	41	3	93
W-31A	<1	<1	0
W-32A	38	8	79
W-33A	11	2	82

These analysis results indicate that the AS/SVE system is successfully reducing the TCE concentrations in groundwater on the Phase II parcel. For monitoring wells W-30A and W-33A, the TCE concentration has been reduced below the performance standard of 5 µg/l. Based on the data, the performance standard will likely be obtained for all monitoring wells on the Phase II parcel in less than two years of operation.

Previous investigations at the site indicate that the soil lithology on the Phase I and II parcels is similar. Therefore, an AS/SVE system installed on the Phase I parcel has the potential to reduce concentrations below the performance standard over a period of approximately two years. In comparison, by continuing with the groundwater extraction and treatment system alone, steady state will likely not be achieved for at least another five years.

Evaluation of AS/SVE Augmentation against Nine Criteria

Nine evaluation criteria have been defined in the "Guidance for Conducting Remedial Investigations and Feasibility Studies Under [Comprehensive Environmental Response, Compensation, and Liability Act] CERCLA," (OSWER Directive 9355.3-01; October 1988). These criteria have been modified in the NCP Final Rule (55 FR 8667) codified in 40 CFR Part 300 to address the CERCLA requirements adequately. These nine criteria are listed below:

Threshold Criteria

- Overall protection of human health and the environment
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs)

Primary Balancing Criteria

- Long-term effectiveness and permanence
- Reduction of toxicity, mobility, and volume
- Short-term effectiveness
- Implementability
- Cost

Modifying Criteria

- State acceptance
- Community acceptance

The proposed augmentation of the Phase I remedial system with AS/SVE is evaluated against each of these nine criteria in the sections that follow.

Overall protection of human health and the environment

Augmenting the Phase I system with AS/SVE is highly protective of human health and the environment because it has the potential to reduce TCE concentrations in groundwater below the established performance standard in a shorter timeframe than expected for the existing groundwater extraction and treatment system. No unacceptable short-term risks would be created by the implementation of AS/SVE. Previous investigations have indicated that TCE contamination at the site is limited to the saturated zone. Implementation of AS/SVE would involve only minimal exposure of construction workers to contaminated groundwater. This exposure would be controlled through the use of air monitoring and personal protective equipment (PPE). Extracted vapors from the system would be treated in the existing regenerative vapor-phase carbon system located onsite, thereby eliminating the inhalation of extracted TCE as a possible exposure pathway.

Compliance with ARARs

Augmenting the Phase I system with AS/SVE would comply with all ARARs identified in the 1991 ROD and the performance standards set forth in Appendix B of the 1992 Administrative Order. The augmented Phase I system would continue to operate until EPA determines that the performance standards have been achieved. Extracted vapors would be treated in the existing regenerative vapor-phase carbon system located onsite. The treated exhaust from this system would be monitored to ensure that emissions standards are met for volatile organic compounds (VOCs) in non-attainment areas for ozone (15 pounds per day; 56 FR 56738, November 6, 1991) and to ensure that emissions would not result in an excess carcinogenic risk greater than 10^{-6}. In addition, the air emissions would meet the requirements of the State of Delaware Regulations Governing the Control of Air Pollution, Regulation 24, Section 50. Ambient air would be injected into the subsurface via the AS wells. If any gas is injected other than ambient air, the requirements of the State of Delaware Regulations Governing Underground Injection Control would be satisfied.

Long-term effectiveness and permanence

Augmenting the Phase I system with AS/SVE would provide long-term effectiveness by removing TCE from the aquifer until the performance standards set forth in Appendix B of the 1992 Administrative Order are met. By achieving the performance standards no residual risks would remain at the site following completion of the remedial action. Groundwater monitoring would continue for one year after performance standards have been met and the remedial systems have been shut down, to ensure that attainment of the performance standards is permanent.

Reduction of toxicity, mobility, and volume

Augmenting the Phase I system with AS/SVE would increase the rate at which TCE is physically removed from the aquifer, thereby reducing the timeframe necessary to achieve the performance standards set forth in Appendix B of the 1992 Administrative Order. Previous case studies demonstrate that AS/SVE technology is typically capable of reducing the concentrations of VOCs in groundwater to lower levels than those achievable by pump and treat technology. By achieving lower TCE concentrations in groundwater, the overall volume of TCE removed from the aquifer would be increased by augmenting the Phase I system with AS/SVE. The removal of TCE from the aquifer is irreversible. The AS/SVE system would be designed to ensure that TCE mobilized in the vapor phase by the injection of air into the groundwater would be captured by the SVE system. The existing groundwater extraction and treatment system would continue to operate to prevent contaminated groundwater from migrating off the Phase I parcel.

Short-term effectiveness

Augmenting the Phase I system with AS/SVE would not create any unacceptable short-term risks. Implementation of AS/SVE would not involve exposure of construction workers to contaminated groundwater. Air monitoring will be conducted during system installation and appropriate PPE would be implemented. During the construction period, which is estimated to be 6-8 weeks, appropriate measures would be taken to minimize physical hazards and inconveniences typical of a construction site.

Based on the results from the Phase II AS-SVE system, the Phase I system will reach the cleanup goal within 18 months of operation. Therefore, the short-term effectiveness of the system is high.

Implementability

Augmenting the Phase I system with AS/SVE can be implemented with relative ease. The use of AS/SVE on the Phase II parcel has proven successful in removing TCE from the aquifer. Previous investigations indicate that the soil lithology on the Phase I and II parcels is similar. Therefore, additional pilot studies are unnecessary. Design parameters for the Phase I AS/SVE system, such as well spacing and depth, would be similar to the parameters used for the Phase II system. Equipment and material from areas of the Phase II system that have achieved the performance standards would be salvaged for use in the Phase I AS/SVE system. In addition, the existing treatment building and regenerative vapor-phase carbon system on the Phase I parcel would be utilized.

Cost

We estimate that the cost to design, construct, and operate the AS/SVE system for 1.5 years will save approximately $2,000,000 to $3,000,000 over the life of the project.

State acceptance
State acceptance will be determined after receipt of comments on the proposed plan from the State of Delaware.

Community acceptance
The EPA will determine the need and extent of the public notice for this proposed addition.

If you have any questions regarding the contents of this letter, please contact us.

Sincerely yours,

Reynolds B. Renshaw
Project Director

RBR:js
q:\ncr\millsbro\p1as-sve\invreslt.doc

cc/encl: Dr. William S. Brewer, NCR Corp
Mr. David Langseder, Delaware Department of Natural Resources and Environmental Control
Mr. David Richardson, First National Bank of Maryland
Mr. John Mildenberger, Ruth Associates, Inc.

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive ▪ Reston, Virginia 20190 ▪ (703) 709-6500 ▪ Fax (703) 709-8505

SUBSURFACE INVESTIGATION OF THE PHASE I PARCEL AT THE MILLSBORO, DELAWARE, NPL SITE

PREPARED

BY

ENVIRONMENTAL STRATEGIES CORPORATION

MARCH 24, 1998

Contents

List of Figures:

List of Tables:

List of Appendices:

1.0 Introduction

This subsurface investigation report was prepared by Environmental Strategies Corporation (ESC) for the NCR Corporation (NCR) and the First Omni Bank, National Association, for submission to the U.S. Environmental Protection Agency (EPA) Region III and the Delaware Department of Natural Resources and Environmental Control (DNREC). From February 10 through 13, 1998, ESC conducted a subsurface investigation on the Phase I parcel at the Millsboro, Delaware, NPL site to determine the feasibility of augmenting the existing Phase I groundwater extraction and treatment system with an air sparging and soil vapor extraction (AS/SVE) system. The investigation was conducted to locate and identify any subsurface anomalies (clay and gravel layers and lenses) that may be present and to delineate the lateral extent of the trichloroethene (TCE) plume.

2.0 Investigation Activities

2.1 Soil Investigation Activities

From February 10 through 13, 1998, ESC conducted a direct-push soil sampling project to identify subsurface anomalies (clay and gravel layers and lenses) on the Phase I parcel. Twelve boring locations were selected based on historical boring logs and current groundwater quality data. The boring locations, labeled GP-01 through GP-12, are illustrated in Figure 1. Each boring was completed to 30 feet below the ground surface (bgs).

The soil samples were collected with direct-push technology utilizing disposable acetate liners to minimize the decontamination process between sample locations. A 4-foot long, 2-inch outer diameter (OD), 1.75-inch inner diameter (ID) Macro Core sampler was used to collect soil samples from the unsaturated zone. To ensure proper logging of the soils, a 2-foot long, 1.25-inch OD, 1.0-inch ID Large Bore discrete sampler was used once the water table was encountered. The discrete sampler utilizes an inner drive point that prevents soils from entering the sampling device until the point is removed. The sampler was driven into the ground to the appropriate depth. Once the appropriate depth was reached the inner drive point was removed and the sampler was driven an additional two feet to collect the sample. All bore holes were logged continuously by an ESC geologist and were abandoned with bentonite chips and hydrated. The boring logs are presented in Appendix A. Adams-Kemp Associates, Inc. surveyed the boring locations.

2.2 Groundwater Investigation Activities

Upon completion of the soil boring activities, ESC collected 11 discrete groundwater samples from predetermined depths. The sampling locations, labeled HP-01 through HP-11, are illustrated in Figure 1. At each location a discrete groundwater sample was collected from approximately 21-24 feet bgs. At location HP-02 an additional groundwater sample was collected from approximately 31-34 feet bgs. The shallow and deep samples collected from location HP-02 were labeled HP-02a and HP-02b, respectively. All samples were collected on February 13, 1998.

The groundwater samples were collected using Geoprobe's Screen Point 15®. The device utilizes an expendable drive point and sampler sheath to drive the sampler to the desired depth. Once the desired depth is reached, the device is retracted, exposing a 41-inch screen. The

groundwater samples were then collected using disposable polyethylene tubing with a bottom check valve. The tubing was lowered to the bottom of the sampling device, where groundwater from the desired depth flowed into the tubing through the check valve. The tubing was then raised to the surface, the check valve was removed, and the groundwater was placed in laboratory-supplied 40-milliliter bottles.

The Screen Point 15® discrete groundwater sampler is constructed of stainless steel. The sampler was decontaminated between sampling locations by washing with non-phosphate soap and triple rinsing. Distilled water was used for the final rinse. The bore holes were abandoned with bentonite chips and hydrated.

The groundwater samples were analyzed onsite in a mobile laboratory by Vironex Analytical Services (Vironex). Vironex analyzed the samples for TCE using a gas chromatograph and the Headspace Method. Split samples were also collected from 6 sampling locations and sent packed on ice in a cooler via overnight courier to Ceimic Corporation (Ceimic) for analysis of TCE using EPA Method 524.2.

3.0 Investigation Results

3.1 Soil Investigation Results

Twelve borings, labeled GP-01 to GP-12, were advanced to 30 feet bgs and continuously logged by ESC's onsite geologist. The boring logs are presented in Appendix A. Eight geologic cross sections were created based on the boring logs. The locations of the cross sections are illustrated in Figure 2. Cross sections A-A', B-B', and C-C' are presented in Figures 3, 4 and 5. Cross sections 1-1', 2-2', and 3-3' are presented in Figure 6. Cross sections 4-4' and 5-5' are presented in Figure 7. Shown on each of the cross sections is the water table profile. The profile is based on depth to water measurements collected during the July 1996 sampling event. These water table elevations are the most recent data set that has been collected without the influence of the recovery wells on the water table. The elevation of the water table varies from approximately 9-12 feet mean sea level (msl) across the area of interest on the Phase I parcel.

Soils on the Phase I parcel consist predominantly of fine to medium grained sands with interspersed clay layers and lenses and gravel seams. The location of clay layers and lenses are of particular importance to the design of an AS/SVE system. If clay units are not accounted for in the design, because of their low permeability, they may inhibit the desired dispersion of injected air through the saturated zone or the capture of the injected air in the unsaturated zone.

One continuous clay layer was identified during the subsurface soil investigation. The clay layer is up to 4 feet thick and extends over the entire area of interest on the Phase I parcel. This clay layer is located at an elevation of approximately 16-20 feet msl, except in the vicinity of monitoring well W-08A, where the layer dips to approximately 13-17 feet msl. The clay layer is located entirely in the unsaturated zone and several feet above the water table in all areas. Its presence would not inhibit the successful operation of an AS/SVE system. Rather, the clay layer would improve the performance of a SVE system by acting as a cap and inhibiting short circuiting of the SVE system by ambient air from aboveground.

Several discontinuous clay lenses were identified in the area of interest on the Phase I parcel during the subsurface soil investigation. Each of these is discussed below:

- Clay lens between 12-15 feet msl: This clay lens is located in the vicinity of sample locations W-27, GP-03, GP-07, GP-09, and GP-10 and varies in thickness from approximately 3 inches to 2 feet. The clay lens is located entirely in the unsaturated

zone. At location GP-07 the bottom of the clay lens is approximately 1.5 feet above the water table. At the other sample locations the bottom of the lens is at least 2 feet above the water table. The presence of this clay lens will not inhibit the successful operation of an AS/SVE system.

- Clay lenses between 9-11 feet msl: A 1-inch thick clay lens was identified at approximately 11 feet msl at GP-01 and a 2-inch thick clay lens was identified at approximately 9 feet msl at GP-02. These were the only boring locations with clay at these depths, indicating that the clay lenses are discontinuous. These clay lenses are located near the water table interface. However, because the lenses are discontinuous and located in the relative center of the area of interest on the Phase I parcel, their presence should not interfere with the recovery of injected air. If necessary, wells screened across these clay lenses could be installed to transition injected air from the saturated zone to the unsaturated zone. The presence of these clay lenses will not inhibit the successful operation of an AS/SVE system.
- Clay lens between 2-8 feet msl: According to geologic cross sections created during previous investigations, a 6-foot thick clay lens is present from 2-8 feet msl in the vicinity of monitoring well W-08A. The clay lens is located entirely in the saturated zone. ESC did not install this monitoring well, and the original boring log for the well is not available. The boring logs for GP-01 and GP-12, the closest sampling locations to W-08A, do not indicate clay at this elevation. Therefore, this clay unit is discontinuous and its presence should not interfere with the recovery of injected air. If necessary, wells screened across this clay lens could be installed to transition injected air from the saturated zone to the unsaturated zone. The presence of this clay lens will not inhibit the successful operation of an AS/SVE system.
- Clay lens between (-4)-(-2) feet msl: This clay lens is located in the vicinity of sample locations GP-02, GP-09, GP-10, GP-11, and GP-12 and varies in thickness from approximately 2-10 inches. The clay lens is located entirely in the saturated zone. Previous investigations have indicated that the majority of TCE groundwater contamination is confined to the shallow portions of the aquifer above the location of this clay lens. Therefore, air sparge wells potentially located in the vicinity of

this clay lens will be screened above the lens and its presence would not inhibit the successful operation of an AS/SVE system.

- Clay lens between (-8)-(-7) feet msl: An approximately 4-inch thick clay lens was identified between these elevations in boring GP-06. The clay lens is located entirely in the saturated zone. The ground surface at boring GP-06 is at a lower elevation than the ground surfaces at the other boring locations. Therefore, although all 12 borings were installed to depths of 30 feet bgs, soils at the elevation of this clay lens were not logged for any of the other locations. Previous investigations have indicated that the majority of TCE groundwater contamination is confined to the shallow portions of the aquifer above the location of this clay lens. Therefore, air sparge wells potentially located in the vicinity of this clay lens would be screened above the lens and its presence will not inhibit the successful operation of an AS/SVE system.

3.2 Groundwater Investigation Results

Discrete groundwater samples were collected from 11 locations, labeled HP-01 through HP-11. One sample was collected at each location from approximately 21-24 feet bgs. At location HP-02 one additional sample was collected from approximately 31-34 feet bgs. All samples were analyzed for TCE onsite by Vironex using the Headspace Method. Six split samples were also analyzed for TCE offsite by Ceimic using EPA Method 524.2. The analytical results are presented in Table 1. It was not necessary to qualify any of the data reported by Ceimic. The Vironex data package is presented in Appendix B. The Ceimic data package is presented in Appendix C.

The analytical data were used in combination with the January 1998 sampling results to define the areal extent of the TCE plume on the Phase I parcel above the performance standard of 5 µg/l. A TCE isoconcentration contour map for the augmentation area is presented in Figure 8. As illustrated in the figure, the area to be augmented lies between the recovery wells R-2 and R-3. The TCE plume above 5 µg/l on the Phase I parcel covers approximately 147,000 square feet (3.4 acres).

4.0 Conclusions

ESC conducted a subsurface investigation on the Phase I parcel at the Millsboro, Delaware, NPL Site to determine the feasibility of augmenting the existing groundwater extraction and treatment system with an AS/SVE system. The investigation was conducted to delineate any subsurface anomalies that may be present and to delineate the lateral extent of the TCE plume.

Twelve borings were installed to 30 feet bgs and continuously logged. No clay layers or lenses were identified that would inhibit the success of an AS/SVE system on the Phase I parcel.

Twelve discrete groundwater samples were collected from 11 locations on the Phase I parcel and analyzed for TCE. Based on these analysis results and the results from the January 1998 sampling event, the TCE plume above the performance standard of 5 µg/l was defined. On the Phase I parcel between R-2 and R-3, the TCE plume covers approximately 147,000 square feet (3.4 acres).

Figures

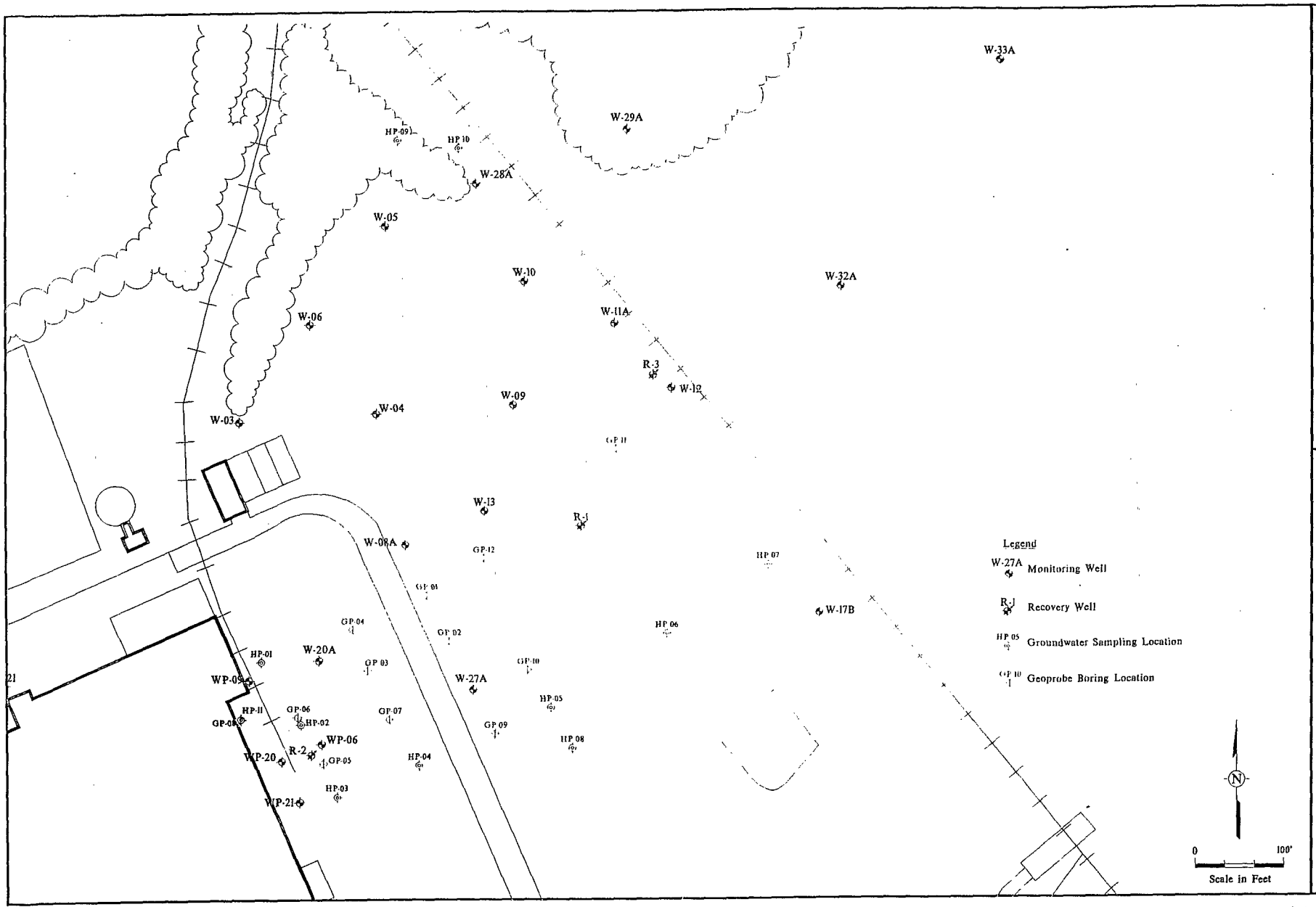
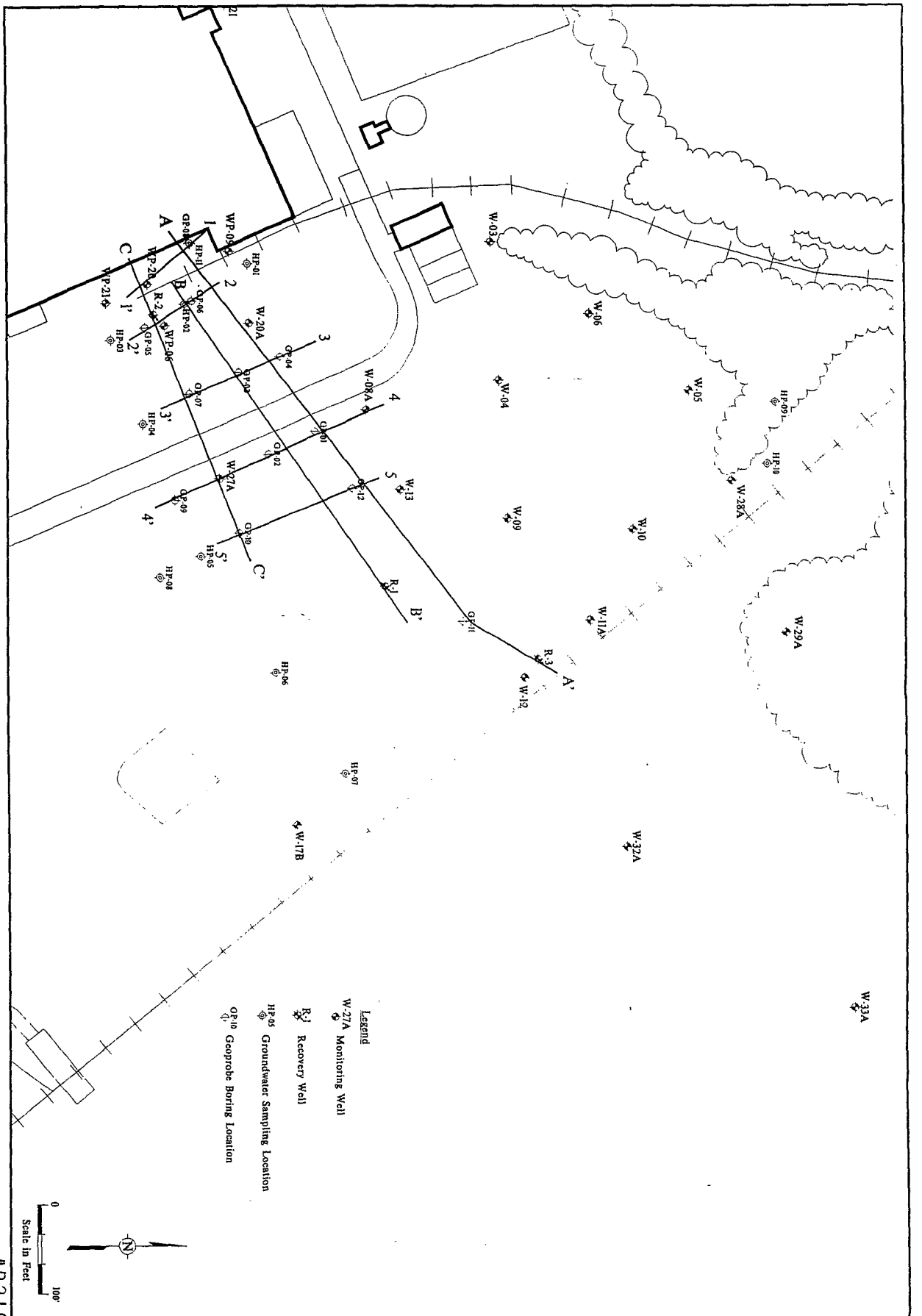


Figure 1
Boring and Groundwater Sample Locations
Millsboro, Delaware, NPL Site

Q:\GISPRO\MILLS\GEO\SECTIONS\XSECLOCS.DWG

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

AR310424

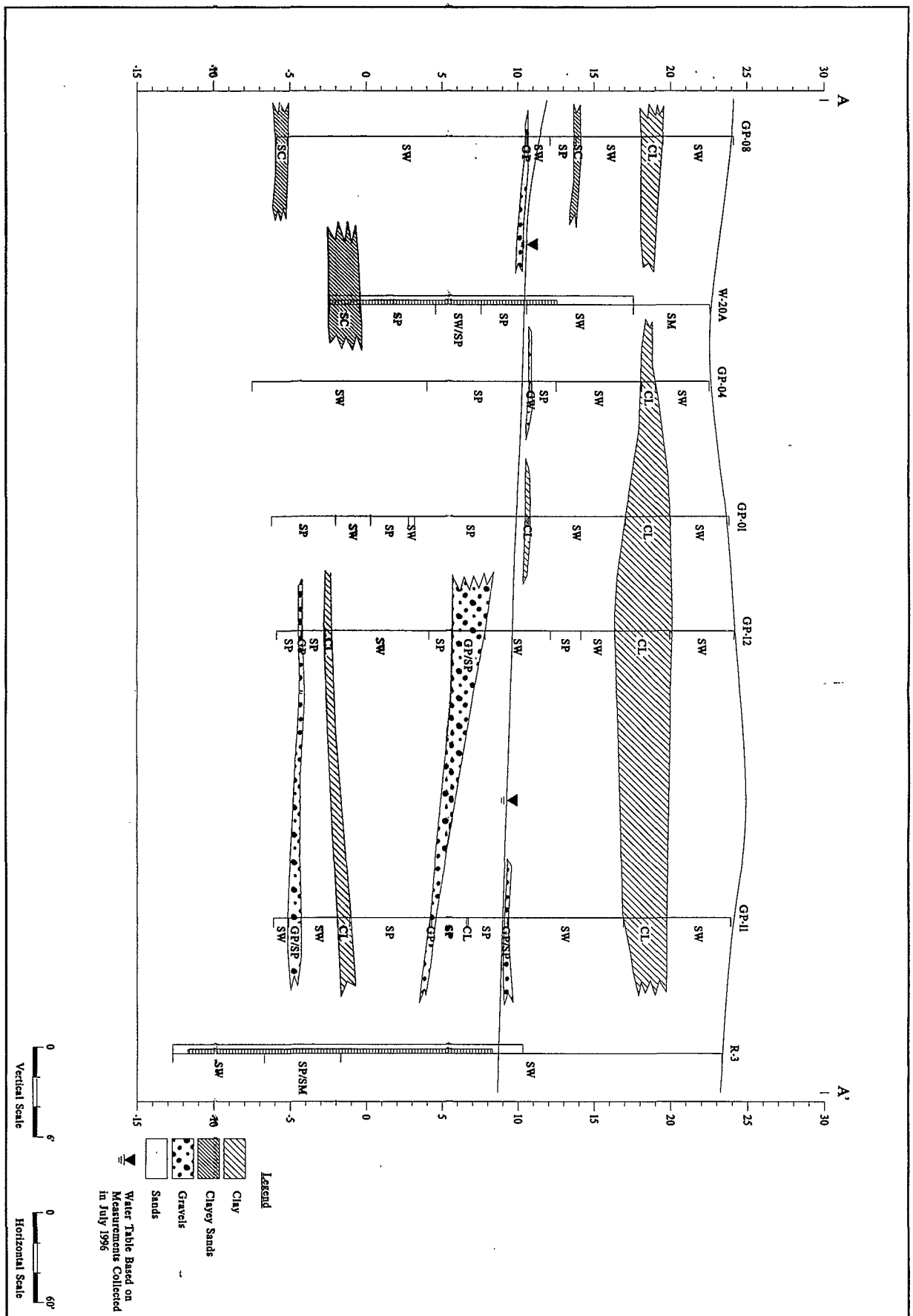


AR310425

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 2
Locations of Geologic Cross Sections
Millsboro, Delaware, NPL Site

Q:\GISPRO\MILLS\GEO\SECTIONS\XSECLOC2.DWG

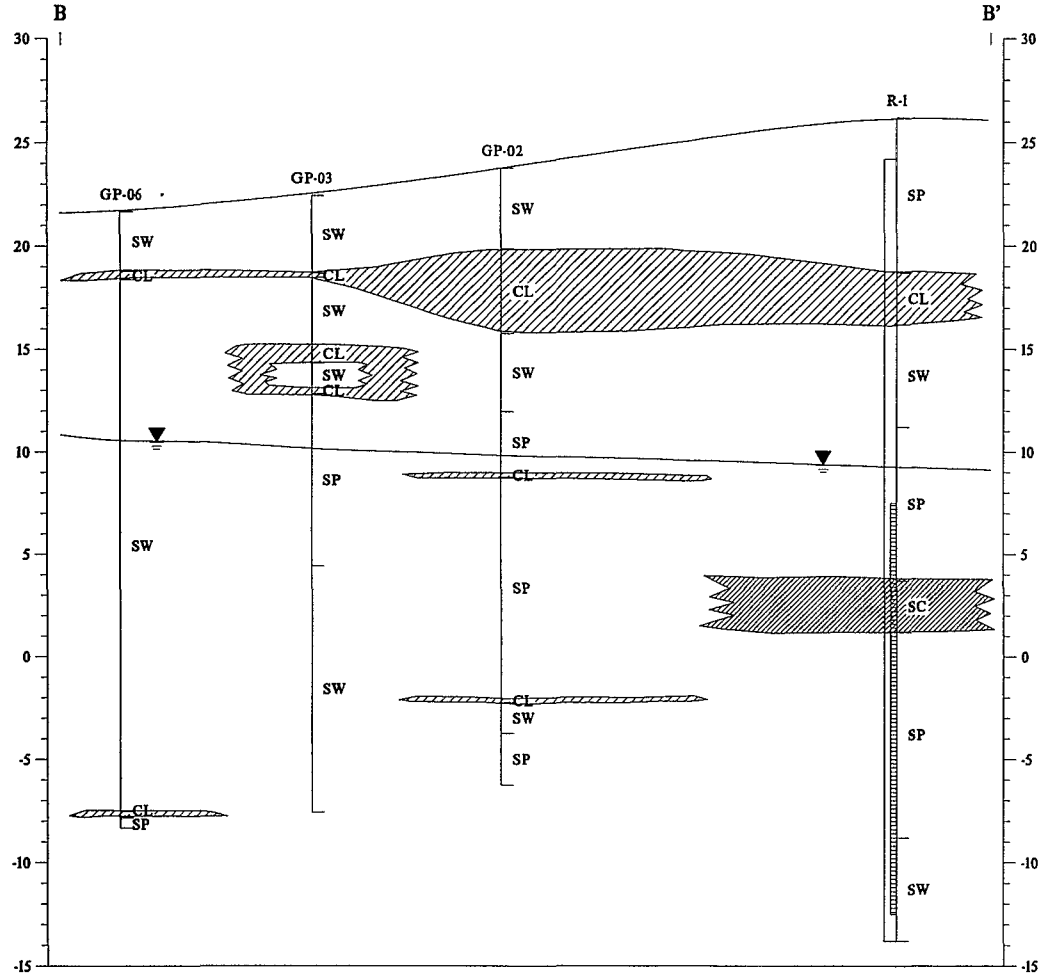


ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Figure 3
Geologic Cross Section A-A'

Millsboro, Delaware, NPL Site

XSEC3.DWG



Legend

- Clay
- Clayey Sands
- Gravels
- Sands
- Water Table Based on Measurements Collected in July 1996

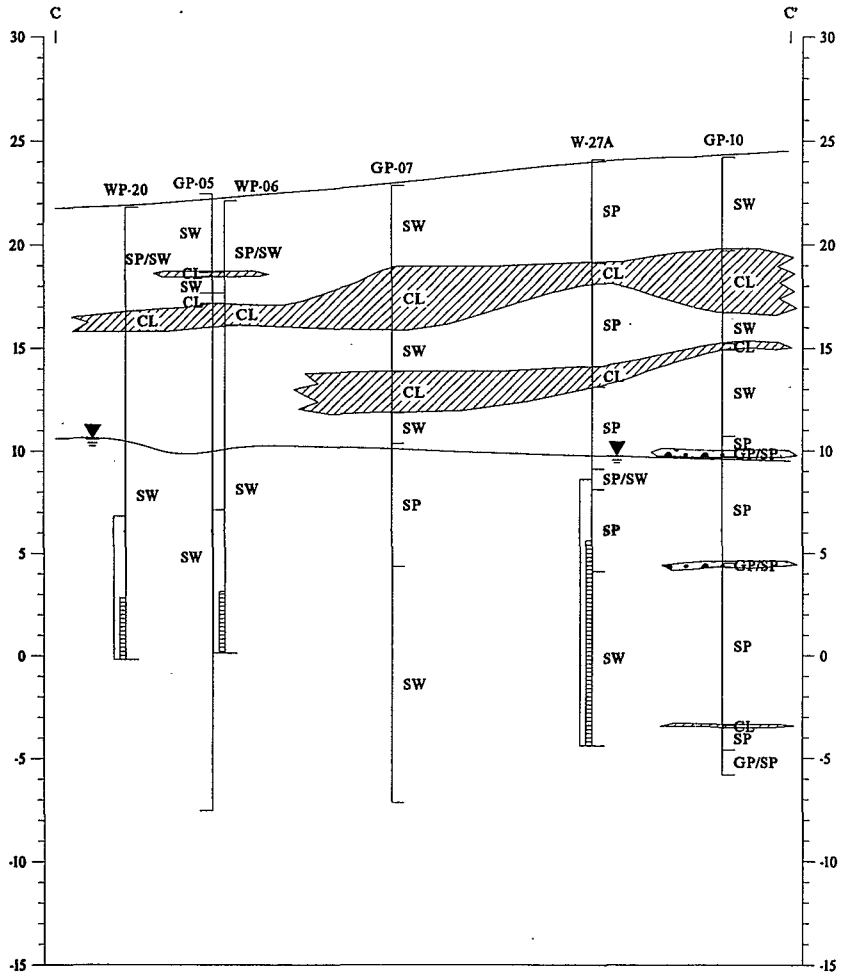
0 6' Vertical Scale

0 60' Horizontal Scale

Figure 4
Geologic Cross Section B-B'
Millsboro, Delaware, NPL Site

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500
ESC

XSECS.DWG



Legend

- Clay
- Clayey Sands
- Gravels
- Sands
- Water Table Based on Measurements Collected in July 1996

0 6' Vertical Scale

0 60' Horizontal Scale

Figure 5
Geologic Cross Section C-C'
Millsboro, Delaware, NPL Site

X5EC4DWG

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

ESC

AR310428

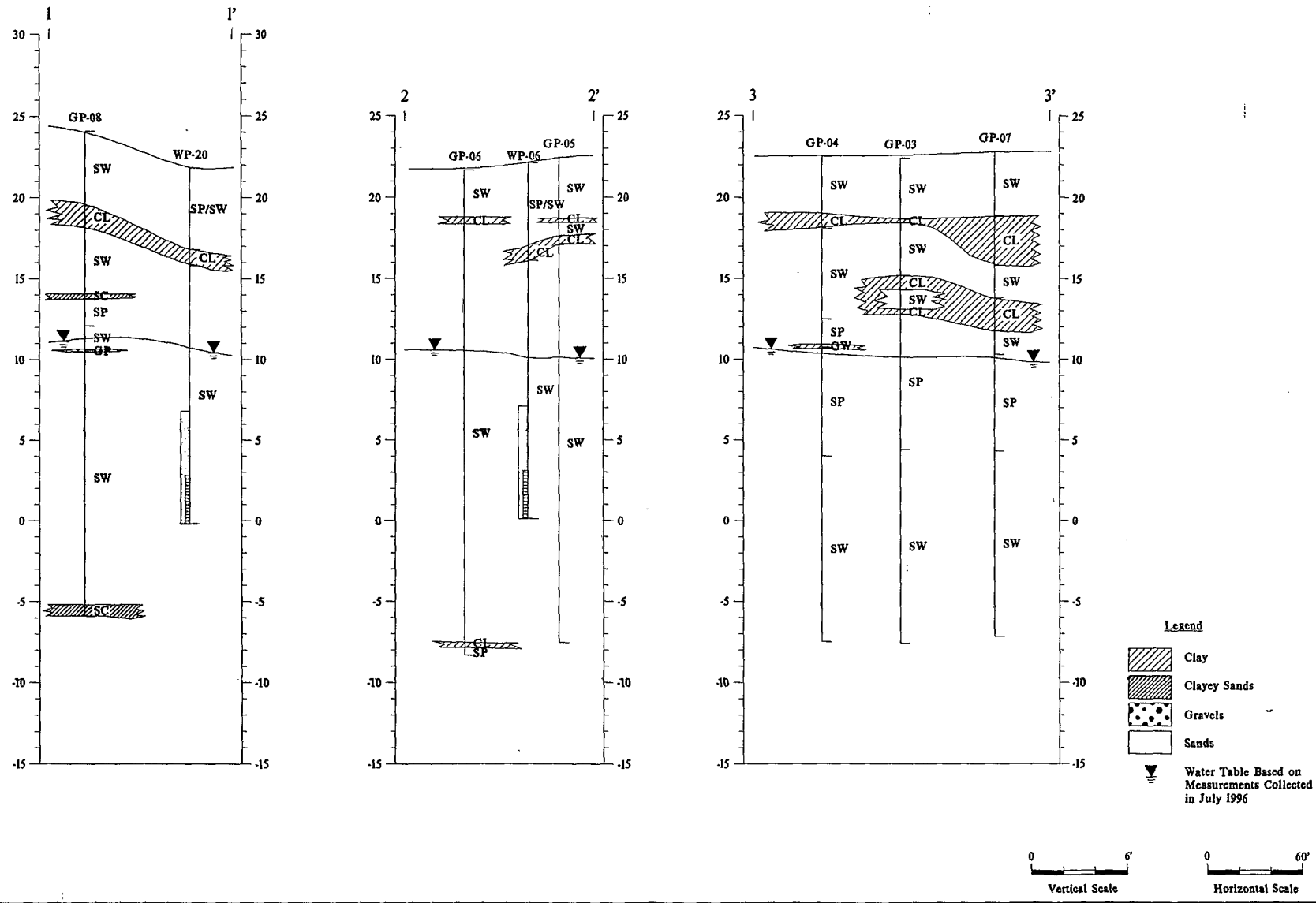


Figure 6
Geologic Cross Sections 1-1', 2-2', and 3-3'
Millsboro, Delaware, NPL Site

XSECS.DWG

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

AR310429

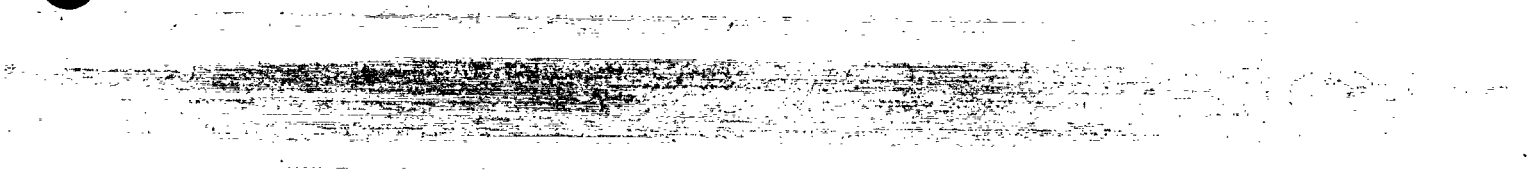


Table 1

Trichloroethene (TCE) Groundwater Sampling Results
Subsurface Investigation of the Phase I Parcel
Millsboro, Delaware, NPL Site
February 13, 1998 (a)

Site ID	Sample Depth (feet bgs)	TCE (µg/l) Vironex Mobile Laboratory Headspace Method	TCE (µg/l) Ceimec Corporation EPA Method 524.2
HP-01	21-24	3	3
HP-02a	21-24	4	NA
HP-02b	31-34	15	NA
HP-03	21-24	<1	NA
HP-04	21-24	2	NA
HP-05	21-24	90	77 D
HP-06	21-24	<1	NA
HP-07	21-24	2	NA
HP-08	21-24	<1	0.9 J
HP-09	21-24	<1	1 U
HP-10	21-24	<1	0.7 J
HP-11	21-24	2	3

(a) NA = not analyzed
U = The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J = The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
D = The compound was found in an analysis at a secondary dilution factor.

Appendix A – Boring Logs

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-01
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/10/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 23.76'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel South of W-08A		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Scott Linglet	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.3			SW	0.0-0.3 Loam with organics. 0.3-0.5 SAND: Gray fine sand, trace silt, moist, well sorted, angular. 0.5-3.8 SAND; Tan fine sand, trace silt, wet, well sorted, angular.
						CL	3.8-6.75 CLAY: Tan, gray, and red brown mottled clay, little fine sand, moist, slightly plastic, soft.
	0	4-8	4.0			SW	6.75-7.8 SAND: Tan to red brown medium to fine sand, trace silt, moist, well sorted, angular. 7.8-13.1 SAND: Gray medium to fine sand, some silt, well sorted, angular, dry, dense, trace coarse sand, trace shell fragments
10	0	8-10	0.6				
	0	10-12	1.8				
	0	12-14	1.8			CL	13.1-13.2 CLAY: Gray clay, little fine sand, hard, non-plastic
	0	14-16	1.8			SP	13.2-20.6 SAND: Gray medium to fine sand, little coarse sand, poorly sorted, wet, trace shell fragments. Grades to medium to coarse sand at 15.0'. Trace gravels at 18.3'.
	0	16-18	1.8				
	0	18-20	2.0				
20	0	20-22	2.0			SW SP	20.6-21.0 SAND: Gray to milky white fine sand, little silt, well sorted, loose, wet. 21.0-23.5 SAND: Gray medium to coarse sand, some medium gravels, trace silt, loose poorly sorted, sub angular.
	0	22-24	0.3			SW	23.5-25.8 SAND: Gray fine sand, trace silt, loose, well sorted, sub angular.
	0	24-26	1.8			SP	25.8-30.0 SAND: Gray and tan fine to medium sand, loose, angular, poorly sorted.
	0	26-28	1.9				
30	0	28-30	1.7				

AR310433

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-02
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/10/98	Borehole Dia.: 1.25in	Site Address: 499 Mithell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 23.75'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel North of W-27A		
Contractor: Vironex		Sampler Method: Direct Push (geoprobe)	
Operator: Scott Linglet		Sampler Type: Large Bore	
Logged By: K. Zielenski		Sampler Length: 2'	Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.7			SW	0.0-0.3 Loam with organics. 0.3-3.9 SAND: Tan fine sand, trace silt, loose, moist, well sorted, angular
						CL	3.9-4.5 CLAY: Tan, gray, and red brown mottled clay, little to trace fine sand, moist, slightly plastic, soft. 4.5-8.0 CLAY: Same as above except non-plastic, hard.
	0	4-8	4.0				
						SW	8.0-11.8 SAND: Tan to red brown medium to fine sand, trace silt, trace clay, wet, well sorted, angular.
10	0	8-12	4.0				
						SP	11.8-14.8 SAND: Gray to milky white medium to coarse sand, loose, angular, poorly sorted, trace medium gravels, wet.
	0	12-14	2.0				
						CL	14.8-15.0 CLAY: Gray clay, some fine sand, soft, slightly plastic, no odor, wet.
	0	14-16	1.8			SP	15.0-23.0 SAND: Gray medium to coarse sand, trace silt, loose, sub angular, poorly sorted, wet, no odor.
	0	16-18	1.4				
	0	18-20	1.8				
20							
	0	20-22	1.7				
	0	22-24	1.8				23.0-25.8 SAND: Tan medium to coarse sand, trace medium gravels, trace silt, poorly sorted, angular, wet, no odor.
	0	24-26	2.0				25.8-26.0 CLAY: Tan to gray clay, little fine sand, hard, slightly plastic, no odor, wet.
						CL	26.0-27.5 SAND: Gray and tan fine sand, loose, well sorted, trace silt, sub angular, wet, no odor.
	0	26-28	1.8			SW	
						SP	27.5-30.0 SAND: Gray medium to coarse sand, loose, poorly sorted, trace silt, angular, wet, no odor.
	0	28-30	1.7				
30							

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-03
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/11/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 22.42'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel SE of W-20A		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Scott Linglet	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.5			SW	0.0-0.3 Loam with organics. 0.3-3.75 SAND: Tan fine sand, trace silt, dense, well sorted, angular, moist, no odor.
						CL	3.75-3.95 CLAY: Tan and gray clay, some fine sand, moist, hard, non-plastic.
						SW	3.95-7.2 SAND: Tan to red brown fine sand, trace silt, dense, well sorted, angular.
	0	4-8	4.0				
						CL	7.2-8.1 CLAY: Gray and tan mottled clay, trace fine sand, hard, non-plastic.
						SW	8.1-9.3 SAND: Tan fine to medium sand, trace silt, dense, well sorted, wet, no odor, angular.
						CL	9.3-9.6 CLAY: Gray clay, hard, non-plastic, trace fine sand, wet, no odor.
10	0	8-12	3.8			SP	9.6-14.0 SAND: Tan and gray fine to medium sand, little silt, loose, poorly sorted, angular, wet, no odor. Grades to medium to coarse sand at 12.5'.
	0	12-14	2.0				14.0-18.0 SAND: Gray to milky white medium to coarse sand, trace silt, poorly sorted, angular, wet, no odor.
	0	14-16	1.0				
	0	16-18	1.5				
	0	18-20	1.2			SW	18.0-21.0 SAND: Tan fine sand, little silt, well sorted, angular, loose, wet, no odor.
20	0	20-22	1.8				21.0-30.0 SAND: Tan and gray fine to medium sand, little silt, well sorted, angular, wet, no odor.
	0	22-24	1.7				
	0	24-26	2.0				
	0	26-28	1.9				
	0	28-30	1.7				
30							

AR310435

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-04
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/11/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 22.51'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel NE of W-20A		
Contractor: Vironex		Sampler Method: Direct Push (geoprobe)	
Operator: Scott Linglet		Sampler Type: Large Bore	
Logged By: K. Zielenski		Sampler Length: 2'	Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.8			SW	0.0-0.3 Loam with organics. 0.3-3.5 SAND: Tan fine sand, trace silt, dense, angular, moist, well sorted, no odor.
							3.5-4.4 CLAY: Tan and gray mottled clay, trace fine sand from 3.5-3.7', moist, hard, non-plastic, no odor.
						CL	
						SW	4.4-10.0 SAND: Tan and gray fine sand, little medium sand, dense, angular, moderately sorted, moist, no odor. Little to trace clay at 7.5-8.7'.
	0	4-8	4.0				
10	0	8-12	4.0			SP	10.0-11.6 SAND: Tan and gray interbedded medium to coarse sand, trace silt, poorly sorted, angular, wet, no odor, dense.
						GW	11.6-11.75 GRAVEL: Medium gravels and shell fragments, some silt.
						SP	11.75-18.5 SAND: Tan and gray medium to coarse sand, poorly sorted, angular, wet, no odor, dense.
	0	12-14	1.9				
	0	14-16	1.8				
	0	16-18	1.5				
	0	18-20	1.8			SW	18.5-26.0 SAND: Gray medium sand, well sorted, angular, wet, no odor, loose. Trace medium gravels at 24.8-25.0'.
20	0	20-22	1.9				
	0	22-24	1.9				
	0	24-26	1.7				
	0	26-28	2.0				26.0-30.0 SAND: Tan and gray fine sand, little silt, loose, well sorted, angular, wet, no odor.
	0	28-30	2.0				
30							

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-05
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/11/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 22.46'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel South of R-2		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Scott Linglet	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.9			SW	0.0-0.3 Loam with organics. 0.3-3.8 SAND: Tan to light brown fine sand, little silt, dense, angular, well sorted, moist.
							3.8-4.0 CLAY: Tan clay, some fine sand, plastic, soft, wet, no odor.
						CL	4.0-4.8 SAND: Tan to brown fine sand, trace silt, dense, angular, well sorted, moist.
						SW	4.8-5.3 CLAY: Tan, red brown, and gray mottled clay, non-plastic, hard, moist, no odor.
						CL	5.3-10.0 SAND: Tan fine sand, some clay, dense, well sorted, angular, no odor, wet.
	0	4-8	4.0			SW	
10	0	8-12	3.0				10.0-30.0 SAND: Gray medium sand, trace silt, dense, angular, well sorted, wet. Grades to medium to coarse sand at 12.0'. Grades back to fine to medium sand at 15.0'.
	0	12-14	2.0				
	0	14-16	1.3				
	0	16-18	1.7				
	0	18-20	1.2				
20	0	20-22	1.6				
	0	22-24	1.8				
	0	24-26	1.9				
	0	26-28	1.7				
	0	28-30	1.8				
30							

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-06
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/11/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 21.68'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel North of R-2		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Scott Linglet	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.9			SW	0.0-0.3 Loam with organics. 0.3-2.9 SAND: Gray to tan fine sand, well sorted, angular, loose, moist, no odor.
						CL	2.9-3.3 CLAY: Gray and red brown clay, some fine sand, slightly plastic, hard, moist, no odor.
						SW	3.3-11.7 SAND: Tan fine sand, trace silt, well sorted, angular, moist, no odor. Trace medium gravels at 8.7-8.8'.
	0	4-8	4.0				
10	0	8-12	4.0				11.7-18.4 SAND: Gray medium sand, moderately sorted, angular, wet, no odor. Trace medium gravels at 13.0-14.2'.
	0	12-14	1.7				
	0	14-16	2.0				
	0	16-18	1.9				18.4-29.2 SAND: Gray fine sand, trace silt, well sorted, angular, wet, no odor.
	0	18-20	2.0				
20	0	20-22	2.0				
	0	22-24	2.0				
	0	24-26	2.0				
	0	26-28	2.0				
	0	28-30	2.0			CL	29.2-29.5 CLAY: Tan sandy clay, slightly plastic, soft, wet, no odor.
30						SP	29.5-30.0 SAND: Gray fine to medium sand, loose, poorly sorted, wet, no odor.

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-07
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/12/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 22.84'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel East of WP-06		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Scott Linglet	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.8			SW	0.0-0.3 Loam with organics. 0.3-3.9 SAND: Tan grading to gray fine sand, well sorted, dense, angular, moist, no odor.
						CL	3.9-7.0 CLAY: Gray clay, hard, slightly plastic, moist, no odor.
	0	4-8	4.0			SW	7.0-9.0 SAND: Tan to brown fine sand, little clay, well sorted, dense, angular, dry, no odor.
						CL	9.0-11.0 CLAY: Tan sandy clay, soft, slightly plastic, moist, no odor.
10	0	8-12	4.0			SW	11.0-12.5 SAND: Tan red brown, and gray interbedded fine sand, well sorted, dense, angular, wet no odor.
	0	12-14	1.1			SP	12.5-18.5 SAND: Gray to milky white fine to medium sand, little coarse sand, poorly sorted, angular, wet, no odor.
	0	14-16	1.5				
	0	16-18	1.5				
	0	18-20	2.0			SW	18.5-30.0 SAND: Gray medium sand, trace silt, well sorted, angular, wet, no odor. More dense starting at 28.0'.
20	0	20-22	0.4				
	0	22-24	1.8				
	0	24-26	1.7				
	0	26-28	2.0				
	0	28-30	1.7				
30							

ENVIRONMENTAL STRATEGIES CORPORATION 11911 Freedom Drive Suite 900 ESC Reston, Virginia 20190 703-709-6500		Project Number: 124619-01	Site Id: GP-08
		Project Name: Millsboro, Delaware, NPL Site	
Date Completed: 02/12/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 24.10'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel, By Facilities Door		
Contractor: Vironex		Sampler Method: Direct Push (geoprobe)	
Operator: Steve Weigand		Sampler Type: Large Bore	
Logged By: K. Zielenski		Sampler Length: 2'	Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.7			SW	0.0-0.25 Loam with organics. 0.25-0.83 SAND: Dark brown fine sand, well sorted, angular, moist. 0.83-4.6: SAND: Tan fine sand, well sorted, angular, loose, moist, trace silt.
						CL	4.6-6.0 CLAY: Tan clay, some fine sand, soft, plastic, moist.
	0	4-8	3.9			SW	6.0-10.0 SAND: Tan and gray fine sand, well sorted, angular, dense, wet, trace silt, trace clay.
10	0	8-12	4.0			SC SP	10.0-10.3 CLAYEY SAND: Same as above with some clay. 10.3-12.0 SAND: Tan fine to medium sand, dense, poorly sorted, wet, no odor.
	0	12-14	2.0			SW	12.0-13.5 SAND: Gray medium sand, dense, well sorted, wet, no odor. 13.5-13.6 GRAVEL: Medium gravel.
	0	14-16	2.0			GP SW	13.6-15.8 SAND: Gray medium to coarse sand, dense, well sorted, wet, no odor. Trace gravels at 13.8-14.0'.
	0	16-18	2.0				15.8-29.3 SAND: Gray to milky white fine to medium sand, trace silt, moderately sorted, wet, angular, no odor.
20	0	18-20	1.7				
	0	20-22	1.5				
	0	22-24	1.6				
	0	24-26	0.2				
	0	26-28	2.0				
30	0	28-30	2.0			SC	29.3-30.0 CLAYEY SAND: Milky white clayey fine sand, well sorted, dense, wet, no odor.

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-09
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/12/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 23.96'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel SE of W-27A		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Steve Weigand	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.7			SW	0.0-0.3 Loam with organics. 0.3-0.83 SAND: Dark brown fine sand, well sorted, angular, moist, no odor. 0.83-4.5 SAND: Tan fine sand, well sorted, angular, loose, moist, no odor.
						CL	4.5-7.6 CLAY: Tan, gray, and red brown mottled clay, moist, non-plastic, hard, trace fine sand.
	0	4-8	4.0			SW	7.6-8.5 SAND: Gray fine sand, some to little clay, dense, well sorted, angular, moist, no odor.
						SC	8.5-9.0 CLAYEY SAND: Gray clayey fine sand, well sorted, angular, moist, dense, no odor.
10	0	8-11	3.0			SW	9.0-13.0 SAND: Gray and tan interbedded fine sand, trace silt, well sorted, wet, angular, no odor.
	0	11-14	3.0			SP	13.0-15.7 SAND: Orange brown medium coarse sand, poorly sorted, sub rounded, dense, wet, no odor. Trace medium gravels at 13.2'.
	0	14-16	1.8			SW	15.7-17.0 SAND: Gray to milky white medium sand, loose, well sorted, angular, wet, no odor, trace silt.
	0	16-18	2.0			SC	17.0-17.1 CLAYEY SAND: Gray clayey fine sand, dense, well sorted, angular, wet, no odor.
	0	18-20	1.9			SP	17.1-25.6 SAND: Gray to milky white medium to coarse sand, poorly sorted, angular, wet, no odor. Trace medium gravels at 21.5'.
20	0	20-22	2.0				
	0	22-24	1.8				
	0	24-26	2.0			CL	25.6-25.8 CLAY: Gray to green clay, little to trace fine sand, hard, slightly plastic, wet, no odor.
	0	26-28	1.9			SP	25.8-30.0 SAND: Gray medium to coarse sand, loose, poorly sorted, angular, trace silt, wet, no odor.
30	0	28-30	1.7				

AR310441

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-10
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/12/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 24.20'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel East of W-27A		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Steve Weigand	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.7			SW	0.0-0.3 Loam with organics. 0.3-0.83 SAND: Dark brown fine sand, well sorted, angular, moist, no odor. 0.83-4.5 SAND: Tan fine sand, well sorted, angular, moist, no odor.
							4.5-7.5 CLAY: Gray and brown mottled clay, moist, non-plastic, hard.
						CL	
	0	4-8	4.0				7.5-9.0 SAND: Red brown to tan fine sand, little silt, well sorted, angular, moist, no odor.
						SW	
						CL	9.0-9.3 CLAY: Medium brown sandy clay, moderately plastic, firm, moist, no odor.
10	0	8-11	3.0			SW	9.3-13.5 SAND: Gray and red brown interbedded fine sand, trace silt, well sorted, angular, wet, no odor.
	0	11-14	3.0				13.5-14.2 SAND: Red brown coarse sand, little medium gravels, poorly sorted, sub angular, wet, loose, no odor.
						SP	14.2-14.5 GRAVEL & SAND: Tan medium gravels and coarse sand, angular, pooly
						GP/SP	sorted, loose, wet, no odor.
	0	14-16	2.0			SP	14.5-19.7 SAND: Tan fine to medium sand, loose, angular, moderately sorted, wet, no odor.
	0	16-18	0.3				
	0	18-20	2.0				19.7-19.9 GRAVEL & SAND: Gray medium to coarse gravels and coarse sand, angular, poorly sorted, loose, wet, no odor.
20						GP/SP	19.9-27.6 SAND: Gray to milky white medium to coarse sand, loose, sub angular, wet,
		20-22	0.0			SP	poorly sorted, no odor. Grades to medium sand at 22.5'.
	0	22-24	1.8				
	0	24-26	1.9				
	0	26-28	1.4			CL	27.6-27.7 CLAY: 0.25-inch clay seam at 27.6'.
						SP	27.7-28.8 SAND: Gray to milky white medium to coarse sand, loose, sub angular, wet, poorly sorted, no odor.
	0	28-30	0.3			GP/SP	
30							28.8-30.0 GRAVEL & SAND: Medium gravels and coarse sand.

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
ESC Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-11
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/12/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 23.90'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel Between R-1 and R-3		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Steve Weigand	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.7			SW	0.0-0.3 Loam with organics. 0.3-1.0 SAND: Dark brown fine sand, well sorted, angular, moist, no odor. 1.0-4.2 SAND: Tan fine sand, well sorted, angular, moist, no odor.
						CL	4.2-7.0 CLAY: Gray and red brown mottled clay, hard, non-plastic, moist, no odor.
	0	4-8	4.0			SW	7.0-8.5 SAND: Gray and tan fine sand, angular, well sorted, loose, moist, no odor. 8.5-9.5 SAND: Same as above with fine to medium sand. 9.5-12.5 SAND: Same as above with fine sand.
10	0	8-11	3.0				
	0	11-14	3.0				12.5-13.7 SAND: Same as above with fine to medium sand. 13.7-14.6 SAND: Same as above with coarse sand.
	0	14-16	0.4			GP/SP SP	14.6-14.8 GRAVEL & SAND: Gray coarse sand and medium gravels, poorly sorted, angular, wet, no odor. 14.8-17.2 SAND: Gray to milky white fine, medium, and coarse sand, trace silt, poorly sorted, sub angular, wet, no odor.
	0	16-18	1.8			CL SP	17.2-17.3 CLAY: Gray clay, some fine sand, soft, slightly plastic. 17.3-19.6 SAND: Gray fine to medium sand, little silt, moderately sorted, angular, wet, no odor.
	0	18-20	1.9			GP SP	19.6-19.7 GRAVEL: Gravel seam at 19.6'. Grading to medium sand at 19.7'.
20	0	20-22	2.0				19.7-25.0 SAND: Gray medium sand, little silt, moderately sorted, angular, wet, no odor.
	0	22-24	1.7				
	0	24-26	2.0			CL	25.0-25.8 CLAY: Gray to red brown clay, little fine sand, soft, plastic, wet, no odor.
	0	26-28	1.8			SW	25.8-28.2 SAND: Red brown medium to coarse sand, well to moderately sorted, sub angular, wet, no odor, trace silt.
	0	28-30	2.0			GP/SP SW	28.2-29.0 GRAVEL & SAND: Gray medium to coarse gravels and medium to coarse sand, poorly sorted, loose, sub angular, wet, no odor. 29.0-30.0 SAND: Gray medium to coarse sand, loose, well to moderately sorted, wet, no odor.
30							

AR310443

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive Suite 900
Reston, Virginia 20190
703-709-6500

Project Number: 124619-01			Site Id: GP-12
Project Name: Millsboro, Delaware, NPL Site			
Date Completed: 02/13/98	Borehole Dia.: 1.25in	Site Address: 499 Mitchell St., Millsboro, DE	
Drilling Method: Direct Push (geoprobe)		Elevation: 24.10'	Datum: Mean Sea Level
Completed Depth: 30.00'	Location: Phase I Parcel South of W-13		
Contractor: Vironex	Sampler Method: Direct Push (geoprobe)		
Operator: Steve Weigand	Sampler Type: Large Bore		
Logged By: K. Zielenski	Sampler Length: 2'		Sampler Dia.: 1.0" ID

Depth (feet)	PID (ppm)	Sampling Interval	Recovery (feet)	Sample Number	Graphic Log	USCS Code	Material Description
	0	0-4	3.7			SW	0.0-0.3 Loam with organics. 0.3-1.2 SAND: Brown fine sand, well sorted, angular, loose, moist, no odor. 1.2-4.2 SAND: Tan fine sand, well sorted, angular, loose, moist, no odor.
						CL	4.2-7.8 CLAY: Gray and brown mottled clay, hard, non-plastic, moist, no odor.
	0	4-8	4.0				
						SW	7.8-10.0 SAND: Gray and tan interbedded fine sand, dense, well sorted, angular, trace silt, no odor.
10	0	8-11	3.0			SP	10.0-12.0 SAND: Red brown medium to coarse sand, loose, poorly sorted, angular, wet, no odor.
	0	11-14	3.0			SW	12.0-16.3 SAND: Tan and gay fine sand, well sorted, sub angular, wet, no odor, trace silt.
	0	14-16	1.7				
	0	16-18	1.9			GP/SP	16.3-18.5 GRAVEL & SAND: Gray and tan medium to coarse sand, medium gravel, shell fragments, poorly sorted.
	0	18-20	0.5			SP	18.5-20.0 SAND: Gray to milky white fine to medium sand, little silt, dense, poorly sorted, angular, wet, no odor.
20		20-22	0.0			SW	20.0-26.4 SAND: Gray to milky white medium sand, trace silt, dense, well sorted, angular, wet, no odor.
	0	22-24	2.0				
	0	24-26	1.9				26.4-26.8 CLAY: Tan and gray clay, slightly plastic, firm, wet, no odor.
	0	26-28	1.9			CL SP	26.8-28.3 SAND: Tan medium to coarse sand, loose, poorly sorted, sub angular, wet, no odor.
						GP	28.3-28.4 GRAVEL: Gravel seam at 28.3'.
	0	28-30	2.0			SP	28.4-30.0 SAND: Tan medium to coarse sand, loose, poorly sorted, sub angular, wet, no odor.
30							

Appendix B – Vironex Mobile Laboratory Analysis Data

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE
Sample ID: HP-1 An. #: 6 Time: 918
Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	122	0.191	3.29
Total Unk		0	0.00
Total identified compounds:			3.29

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-2a An. #: 10 Time: 1035

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	124.6	0.2276	3.92
Total Unk		0	0.00
Total identified compounds:			3.92

Unknowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-2b An. #: 8 Time: 1002

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	124.2	0.8986	15.49
Total Unk		0	0.00
Total identified compounds:			15.49

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-3 An. #: 11 Time: 1107

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	123	0.0093	0.16
Total Unk:		0	0.00
Total identified compounds:			0.16

Unknowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-4 An. #: 12 Time: 1139

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	123.6	0.1356	2.34
Total Unk		0	0.00
Total identified compounds:			2.34

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-5 An. #: 14 Time: 1307

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	126.9	5.245	90.43
Total Unk		0	0.00
Total identified compounds:			90.43

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-6 An. #: 16 Time: 1344

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	127.6	0.0047	0.08
Total Unk		0	0.00
Total identified compounds:			0.08

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-7 An. #: 17 Time: 1412

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	127.6	0.1	1.72
Total Unk		0	0.00
Total identified compounds:			1.72

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-96

Sample Location : ESC/Millsboro, DE

Sample ID: HP-8 An. #: 18 Time: 1455

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	127.2	0.042	0.72
Total Unk		0	0.00
Total identified compounds:			0.72

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-9 An. #: 20 Time: 1525

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE		0	0.00
Total Unk		0	0.00

Total identified compounds: 0.00

Unknowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-10 An. #: 21 Time: 1554

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE		0.029	0.50
Total Unk		0	0.00
Total identified compounds:			0.50

Unkowns calculated relative to average standard response.
0.00 indicates non-detection.

Vironex Analytical Services
Water/Air Sample Concentration Calculation 13-Feb-98

Sample Location : ESC/Millsboro, DE

Sample ID: HP-11 An. #: 22 Time: 1629

Injection Volume : 250 uL

Compound	RT (sec)	RA (Vsec)	Concentration (ug/L)
TCE	127.8	0.1333	2.30
Total Unk		0	0.00
Total identified compounds:			2.30

Unknowns calculated relative to average standard response.
0.00 indicates non-detection.

Appendix C – Ceimic Corporation Laboratory Analysis Data

CEIMIC
Corporation
"Analytical Chemistry for Environmental Management"

March 3, 1998

Mr. Reynolds Renshaw
Environmental Strategies Corporation
11911 Freedom Drive, Suite 900
Reston, VA 22090

Dear Mr. Renshaw:

Enclosed are the results for the analyses performed in support of Environmental Strategies Corporation, Millsboro NPL Site Project, Project No. NCR, SDG No. HP1. The 6 aqueous samples were taken from the field on February 13, 1998 and received at Ceimic Corporation on February 19, 1998.

These samples are reported under Ceimic Project Number 980100, which can be referenced when inquiring about this project.

If you have any questions or concerns regarding this data, please call me at the telephone number listed below.

Sincerely,

Neil Pothier, Ph.D.
Laboratory Manager

NP/keg
Enclosures

cc: Jim Sobieraj
Environmental Strategies Corporation
68 Chestnut Street, Suite 1
Albany, NY 12210

10 Dean Knauss Drive, Narragansett, RI 02882 • Tel: (401) 782-8900 • Fax: (401) 782-8905

INDEX

Project Narrative

SDG Narrative

The enclosed data package is in response to Environmental Strategies Corporation, Millsboro NPL Site Project, Project No. NCR, SDG No. HP1. Under this SDG there are 6 VOA analyses for 6 aqueous samples which were received at Ceimic Corporation on February 19, 1998.

This data package includes the analyses for the following samples from SDG No. HP1:

(1)

Client ID	Ceimic ID	Analysis
HP-1	980100-01	VOA
HP-5	980100-06	VOA
HP-8	980100-09	VOA
HP-9	980100-10	VOA
HP-10	980100-11	VOA
HP-11	980100-12	VOA

(2) Sample Receipt

All samples were received intact and properly preserved.

The cooler temperatures upon receipt are annotated on the Chain of Custodies and on the Ceimic Sample Receiving Checklist.

The submitted data covers the analysis of the Volatiles (VOA) fraction and its associated blanks and QA/QC. CEIMIC would like to highlight the following points pertaining to the analyses performed for this case:

(3) Instrumentation and Column Identification

The following instruments were used for the analyses:

GC/MS Analysis

A. VOA

MS6: HP5970B GC/MS using 75 m x 0.53 mm ID x 3 μm HP-624 megabore column.

(4) Sample Information

Additional qualifier: "x"

An "x" qualifier is flagged by Formaster software whenever the data is manually edited.

The letters "M" for GC/MS and "FF" for GC are used on the raw data of the quantitation report whenever a manual integration is performed. These data manipulations are done only to correct for computer integration error.

A. VOA Fraction (Method 524.2) Revision 3.0, 1998

The VOA reconstructed ion chromatograms are labelled as:

IS1	Fluorobenzene	IS
IS2	Chlorobenzene-d5	IS
IS3	1,4-Dichlorobenzene-d4	IS
SS1(SMC1)	Bromofluorobenzene	SMC
SS2(SMC2)	1,2-Dichlorobenzene-d4	SMC

IS = Internal Standard
SMC = System Monitoring Compound

Method Modification

Method 524.2 specifies fluorobenzene as an internal standard (IS) and states that "additional internal standards and surrogate analytes are optional".

Fluorobenzene elutes in the first 1/3 portion of the chromatogram. In order to produce more stable initial and continuing calibrations, Ceimic has added two additional internal standards: Chlorobenzene-d5 at the middle, and 1,4-Dichlorobenzene-d4 at the end of the chromatographic analysis.

As requested by Environmental Strategies, Trichloroethylene (TCE) is the only analyte reported.

Deviations from the SOW

None other than specified above.

End of SDG Narrative

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable datasubmitted on diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature.

Neil Pothier, Laboratory Manager

3/3/98

Date

CEIMIC CORPORATION
VOA Compliance Summary

Client : *Environmental Strategies Corp*
Project: *980100*
Case : NCR 1

Sample compliant with method/project, except where noted with an "X":

SAMPLES		Hold Time	Method Blank	Initial CaL	Continuing CaL	LCS Recovery	MS Recovery	MS RPD	Surrogates	Internal Std
Ceimic ID	**Client ID**									
980100-01	HP-1									
980100-06	HP-5									
980100-09	HP-8									
980100-10	HP-9									
980100-11	HP-10									
980100-12	HP-11									

Approved by: _____

Chain-of-Custody

98:.00

No. 016235

CHAIN OF CUSTODY RECORD

Page 1 of 1

PROJECT NO.	PROJECT NAME AND LOCATION:
	NCR MILLSBORO

SAMPLERS: (Signature)	PRINT NAME:
	KEITH ZIELENSKI

	SAMPLE I.D.	SAMPLE LOCATION	DATE	TIME	MATRIX	NO. OF CONTAINERS	TCE EPA METHOD 524.2						REMARKS
01	HP-1		2/13	0920	AQ	2	✓						
02	HP-2A			1040			✓						HOLD
03	HP-2B			0955			✓						HOLD
04	HP-3			1100			✓						HOLD
05	HP-4			1135			✓						HOLD
06	HP-5			1255			✓						
07	HP-6			1335			✓						HOLD
08	HP-7			1410			✓						HOLD
09	HP-8			1455			✓						
10	HP-9			1520			✓						
11	HP-10			1555			✓						
12	HP-11		↓	1640	↓	↓	✓						

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	LAB NAME: CEMIC
	2/12/98 0530		CITY: RI
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	COURIER: FED EX
			AIRBILL NO.
Received for Laboratory by: (Signature)	PRINT NAME: David Hallwell	Date/Time 2/13/98 10:00	CUSTODY SEAL NOS: 3838/3839
			COOLER NO:

ATTENTION LAB: SEND ANALYTICAL RESULTS TO THE FOLLOWING ESC STAFF MEMBER: John Johnson

ENVIRONMENTAL STRATEGIES CORPORATION
11911 Freedom Drive
Reston, Virginia 20190
(703) 709-6500 • Fax (703) 318-3995
Fax (412) 787-8065

COOLER TEMP 2°

ESC

CA ____ MA ____ PA ____ MN ____ DISTRIBUTION: ORIGINAL ACCOMPANIES SHIPMENT: COPY TO ESC FILES

AR310467

CEIMIC CORPORATION
Sample Receiving Checklist

LIMS # 980100 Cooler Number: _____

Client: ESC Number of Coolers: 1

Project: Millsboro Date Received: 2/19/98

A. PRELIMINARY EXAMINATION PHASE: Date cooler was opened: 2/19/98

1. Have designated person initial here to acknowledge receipt of cooler: DH (date): 2/19/98

2. Did cooler come with a shipping slip (airbill, etc.)? ..... (YES) NO

If YES, enter carrier name & airbill number here: FX 802897440449

3. Were custody seals on outside of cooler? ..... (YES) NO

How many & where: 2 F/S seal date: 2/17/1 seal name: _____

4. Were custody seals unbroken and intact at the date and time of arrival ..... (YES) NO

5. Did you screen samples for radioactivity using a Geiger Counter? .....Reading: ND (YES) NO

6. Chain of Custody #: 016235

7. Were custody papers sealed in a plastic bag & taped inside to the lid? ..... (YES) NO

8. Were custody papers filled out properly (ink, signed, etc.)? ..... (YES) NO

9. Did you sign custody papers in the appropriate place? ..... (YES) NO

10. Was project identifiable from custody papers? ..... (YES) NO

11. If required, was enough ice used? ..... Cooler Temperature: 2 °C Type of ice: CUBED (YES) NO

B. LOG-IN PHASE: Date samples were logged-in: 2/19/98

by (print): DAVID HALLIWELL (sign): David Halliwell

12. Describe type of packing in cooler: _____

13. Were all bottles sealed in separate plastic bags? ..... (YES) NO

14. Did all bottles arrive unbroken and were labels in good condition? ..... (YES) NO

15. Were all bottle labels complete (ID, date, time, signature, preservative, etc.)? ..... (YES) NO

16. Did all bottle labels agree with custody papers? ..... (YES) NO

17. Were correct containers used for the tests indicated? ..... (YES) NO

18. Were samples received at the correct pH? ..... N/A YES NO

19. Was a sufficient amount of sample sent for tests indicated? ..... (YES) NO

20. Were bubbles absent in VOA samples? If NO, list by sample#: _____ (YES) NO

21. Laboratory labelling verified by: (Initials): _____ (date): 1/1

Volatiles

Reviewed by: AK

Date: 2/20/98

Volatiles

a. QC Summary

SURROGATE PERCENT RECOVERY SUMMARY
524.2 WATER

CASE NO NCR_____ LABORATORY CEIMIC CORP___ CONTRACT ESC_____
SAS NO _____ REPORTED 02/26/98 11:38 CUSTOMER ESC_____
LEVEL LOW___ MATRIX WATER_ UNITS ug/L__

CODE	COMPOUND	TYPES	LOW LIMIT	HIGH LIMIT
CI06	1,2-Dichlorobenzene-d4	V	75.000	125.000
CS10	Bromofluorobenzene	V	75.000	125.000

PERCENT RECOVERIES BY COMPOUND CODE

SAMPLE ID	FILE NAME	CI06	CS10
HP-1	FY874	103	100
HP-5	FY875	100	98
HP-9	FY877	111	101
HP-10	FY878	108	100
HP-11	FY879	106	95
VLFBFB	FY889	102	98
HP-5DL	FY891	100	98
HP-8	FY892	98	101
VBLKFA	FY871	102	97
VLFBFA	FY872A	99	100
VBLKFB	FY888	97	94
	FAILING RECOVERIES		

Notes and summary data for this report.
PERCENT RECOVERY = 100 * CONC / SPIKE

V - - - Volatile recoveries outside of QC limits: 0 of 22

Lab Fortified Blank Summary
VOLATILE ORGANIC COMPOUNDS
524.2 water (TCE only)

LAB SAMP ID V60224-LFB SAMPLE ID VLFBFA
LAB QC ID _____ TYPE EPA

DATA RELEASE AUTHORIZED BY

FILE NAME	FY872A	RECEIVED	_____	METHOD	CLP
TUNE	FY869	EXTRACTED	_____	FRACTION	VOA
STANDARD	FY870	ANALYZED	02/24/98 10:47	INST	MS6
BLANK	FY871	VERIFIED	_____	ANALYST	_____
TAPE/POS	_____ ___			BOTTLE	_____

% MOISTURE	_____	pH	_____	LEVEL	LOW
(DECANTED)	_____	CLEANUP	_____	MATRIX	WATER
DIL FACTOR	1.000	EXTRACT METHOD	_____	UNITS	ug/L

SAMPLE:
CONDITIONS:

ODE	CAS NO	COMPOUND	CONC SPIKED	CONC	RECOVERY %	FLGS
C150	79-01-6	Trichloroethene	1.000	0.9892	98.92	

Lab Fortified Blank Summary
VOLATILE ORGANIC COMPOUNDS
524.2 water (TCE only)

LAB SAMP ID V60225-LFB SAMPLE ID VLFBFB
LAB QC ID _____ TYPE EPA
DATA RELEASE AUTHORIZED BY

FILE NAME	FY889	RECEIVED	_____	METHOD	CLP
TUNE	FY886	EXTRACTED	_____	FRACTION	VOA
STANDARD	FY887	ANALYZED	02/25/98 10:26	INST	MS6
BLANK	FY888	VERIFIED	_____	ANALYST	_____
TAPE/POS	_____ ___			BOTTLE	_____

% MOISTURE	_____	pH	_____	LEVEL	LOW
(DECANTED)	_____	CLEANUP	_____	MATRIX	WATER
DIL FACTOR	1.000	EXTRACT METHOD	_____	UNITS	ug/L

SAMPLE:
CONDITIONS:

CODE	CAS NO	COMPOUND	CONC SPIKED	CONC	RECOVERY %	FLGS
C150	79-01-6	Trichloroethene	1.000	1.063	106.3	

4A

VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKFA

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Lab File ID: FY871 Lab Sample ID: V60224-B1

Date Analyzed: 02/24/98 Time Analyzed: 0955

GC Column: HP624 ID: 0.530 (mm) Heated Purge: (Y/N) N

Instrument ID: MS6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	HP-1	980100-01	FY874	1218
02	HP-10	980100-11	FY878	1451
03	HP-11	980100-12	FY879	1530
04	HP-5	980100-06	FY875	1256
05	HP-9	980100-10	FY877	1413
06	VLFBFA	V60224-LFB	FY872A	1047

COMMENTS:

14

4A
VOLATILE METHOD BLANK SUMMARY

EPA SAMPLE NO.

VBLKFB

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: SDG No.: HP1

Lab File ID: FY888 Lab Sample ID: V60225-B1

Date Analyzed: 02/25/98 Time Analyzed: 0942

GC Column: HP624 ID: 0.530 (mm) Heated Purge: (Y/N) N

Instrument ID: MS6

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
01	HP-5DL	980100-06DL	FY891	1156
02	HP-8	980100-09	FY892	1233
03	VLFBFB	V60225-LFB	FY889	1026

COMMENTS:

15

5A

VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Lab File ID: FY859 BFB Injection Date: 02/23/98

Instrument ID: MS6 BFB Injection Time: 1001

GC Column: HP624 ID: 0.530 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15 to 40% of mass 95	20.6
75	30 to 80% of mass 95	47.4
95	Base peak, 100% relative abundance	100.0
96	5 to 9% of mass 95	6.6
173	<2% of mass 95	0.0 (0.0)1
174	>50% of mass 95	59.3
175	5 to 9% of mass 174	4.6 (7.7)1
176	>95% and <101% of mass 174	58.8 (99.2)1
177	5 to 9% of mass 176	3.6 (6.2)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005F2	VSTD005F2	FY862	02/23/98	1243
02	VSTD010F2	VSTD010F2	FY863	02/23/98	1320
03	VSTD050F2	VSTD050F2	FY864	02/23/98	1357
04	VSTD020F2	VSTD020F2	FY866	02/23/98	1513
05	VSTD001F2	VSTD001F2	FY867	02/23/98	1620

16

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Lab File ID: FY869 BFB Injection Date: 02/24/98

Instrument ID: MS6 BFB Injection Time: 0812

GC Column: HP624 ID: 0.530 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15 to 40% of mass 95	21.6
75	30 to 80% of mass 95	46.6
95	Base peak, 100% relative abundance	100.0
96	5 to 9% of mass 95	6.8
173	<2% of mass 95	0.0 (0.0)1
174	>50% of mass 95	63.7
175	5 to 9% of mass 174	4.4 (6.9)1
176	>95% and <101% of mass 174	62.7 (98.4)1
177	5 to 9% of mass 176	4.4 (7.0)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005FA	VSTD005FA	FY870	02/24/98	0847
02	VBLKFA	V60224-B1	FY871	02/24/98	0955
03	VLFBFA	V60224-LFB	FY872A	02/24/98	1047
04	HP-1	980100-01	FY874	02/24/98	1218
05	HP-5	980100-06	FY875	02/24/98	1256
06	HP-9	980100-10	FY877	02/24/98	1413
07	HP-10	980100-11	FY878	02/24/98	1451
08	HP-11	980100-12	FY879	02/24/98	1530

17

5A
VOLATILE ORGANIC INSTRUMENT PERFORMANCE CHECK
BROMOFLUOROBENZENE (BFB)

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Lab File ID: FY886 BFB Injection Date: 02/25/98

Instrument ID: MS6 BFB Injection Time: 0748

GC Column: HP624 ID: 0.530 (mm) Heated Purge: (Y/N) N

m/e	ION ABUNDANCE CRITERIA	% RELATIVE ABUNDANCE
50	15 to 40% of mass 95	22.9
75	30 to 80% of mass 95	50.1
95	Base peak, 100% relative abundance	100.0
96	5 to 9% of mass 95	7.3
173	<2% of mass 95	0.0 (0.0)1
174	>50% of mass 95	61.4
175	5 to 9% of mass 174	4.4 (7.2)1
176	>95% and <101% of mass 174	61.2 (99.7)1
177	5 to 9% of mass 176	3.9 (6.3)2

1-Value is % mass 174 2-Value is % mass 176

THIS CHECK APPLIES TO THE FOLLOWING SAMPLES, MS, MSD, BLANKS, AND STANDARDS:

	EPA SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED	TIME ANALYZED
01	VSTD005FB	VSTD005FB	FY887	02/25/98	0834
02	VBLKFB	V60225-B1	FY888	02/25/98	0942
03	VLFBFB	V60225-LFB	FY889	02/25/98	1026
04	HP-5DL	980100-06DL	FY891	02/25/98	1156
05	HP-8	980100-09	FY892	02/25/98	1233

17A

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: ~~CIEMIC~~ Laboratories Contract: HSC.

Lab Code: CIEMIC Case No: NCR SAS no: _____ SDG no: HP1.

Lab File ID (Standard): >FY870::D6 Date Analyzed: 02/24/98

Instrument ID: F Time Analyzed: 08:47

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) ~~PACK~~ D

	IS 1 AREA	#	RT	IS 2 AREA	#	RT	IS 3 AREA	#	RT
12 Hour Std	8645		9.50	5471		16.53	3129		22.11
UPPER LIMIT	17290		10.00	10942		17.03	6258		22.61
LOWER LIMIT	4323		9.00	2736		16.03	1565		21.61
SAMPLE NO									
1 >FY871::D6	8207		9.52	4939		16.52	2759		22.12
2 >FY872::D6	8475		9.52	5097		16.50	2883		22.11
~~3 >FY873::D6~~	~~7852~~		~~9.50~~	~~4825~~		~~16.52~~	~~2581~~		~~22.12~~
4 >FY874::D6	7628		9.52	4748		16.50	2717		22.10
5 >FY875::D6	8377		9.51	5331		16.51	2926		22.11
~~6 >FY876::D6~~	~~6687~~		~~9.52~~	~~4353~~		~~16.50~~	~~2432~~		~~22.10~~
7 >FY877::D6	8190		9.50	4970		16.50	2604		22.10
8 >FY878::D6	7831		9.52	4966		16.50	2822		22.10
9 >FY879::D6	7520		9.50	5017		16.52	2735		22.10
~~10 >FY880::D6~~	~~6875~~		~~9.50~~	~~4480~~		~~16.52~~	~~2445~~		~~22.10~~
~~11 >FY881::D6~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~
~~12 >FY882::D6~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~
~~13 >FY883::D6~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~
~~14 >FY884::D6~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~
~~15 >FY885::D6~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~	~~0~~	*	~~0.00~~
16									
17									
18									
19									
20									

IS 1 = CI25 Fluorobenzene
IS 2 = CI20 Chlorobenzene-d5
IS 3 = CI07 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = -50% of internal standard area.

Column used to flag internal standard area values with an asterisk

13
02/25/98

VOLATILE INTERNAL STANDARD AREA SUMMARY

Lab Name: CHEMIC Laboratories Contract: ESC.

Lab Code: CHEMIC Case No: NCR SAS no: _____ SDG no: HP1.

Lab File ID (Standard): >FY887::D6 Date Analyzed: 02/25/98

Instrument ID: F Time Analyzed: 08:34

Matrix:(soil/water) WATER Level:(low/med) LOW Column:(pack/cap) PACK

	IS 1 AREA #	RT	IS 2 AREA #	RT	IS 3 AREA #	RT
12 Hour Std	7604	9.53	4833	16.51	2744	22.10
UPPER LIMIT	15208	10.03	9666	17.01	5488	22.60
LOWER LIMIT	3802	9.03	2417	16.01	1372	21.60
SAMPLE NO						
1 >FY888::D6	6764	9.52	3864	16.52	2086	22.12
2 >FY889::D6	7386	9.50	4342	16.50	2315	22.11
~~3 >FY890::D6~~	~~5087~~	~~9.51~~	~~3076~~	~~16.51~~	~~1489~~	~~22.12~~
4 >FY891::D6	6141	9.50	3795	16.52	2115	22.13
5 >FY892::D6	6652	9.49	4244	16.49	2453	22.10
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

IS 1 = CI25 Fluorobenzene
IS 2 = CI20 Chlorobenzene-d5
IS 3 = CI07 1,4-Dichlorobenzene-d4

UPPER LIMIT = +100% of internal standard area.
LOWER LIMIT = -50% of internal standard area.

Column used to flag internal standard area values with an asterisk

Volatiles

b. Sample Data

1X

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-1

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-01

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY874

Level: (low/med) LOW Date Received: 02/19/98

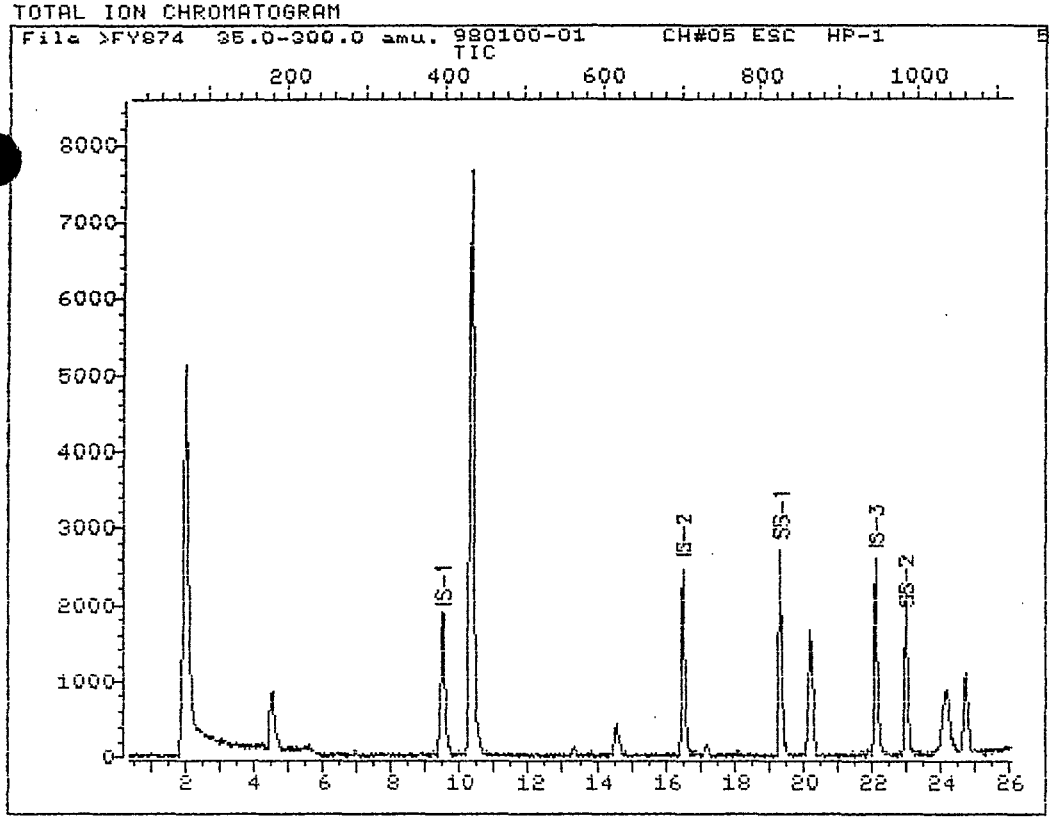
% Moisture: not dec. ____ Heated Purge: N Date Analyzed: 02/24/98

GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	3	

TOTAL ION CHROMATOGRAM



Data File: >FY874::D6 Quant Output File: ^FY874::D5
Name: 980100-01 CH#05 Instrument ID: MS6
Misc: ESC HP-1 524.2 25.0ML+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980224 12:45
Injected at: 980224 12:18

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 12:45
Output File: ^FY874::D5 Injected at: 980224 12:18
Data File: >FY874::D6 Dilution Factor: 1.00000
Name: 980100-01 CH#05 Instrument ID: MS6
Misc: ESC HP-1 524.2 25.0ML+QC VW02-36CM

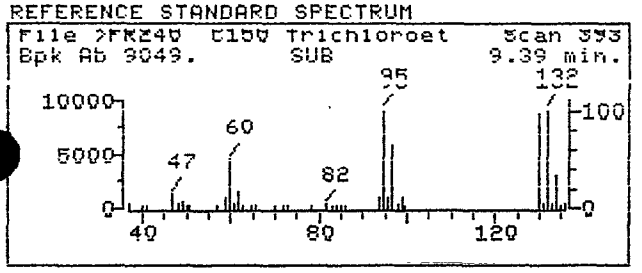
ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

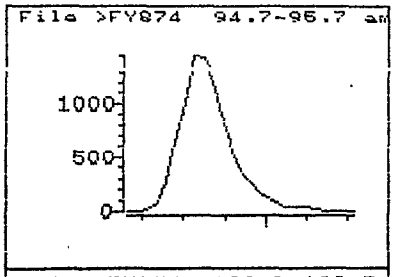
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.52	96.0	7628	1.00	UG/L	94
11)	C030 Methylene Chloride	4.54	84.0	1760	1.09	UG/L	83
28)	C150 Trichloroethene	10.32	95.0	11931	3.46	UG/L	96
41)	*CI20 Chlorobenzene-d5	16.50	117.0	4748	1.00	UG/L	98
46)	C240 Ethylbenzene	17.19	91.0	579	.0563	UG/L	96
52)	CS10 Bromofluorobenzene	19.32	95.0	4502	1.00	UG/L 100%	59
64)	*CI07 1,4-Dichlorobenzene-d4	22.10	152.0	2717	1.00	UG/L	97
65)	CI06 1,2-Dichlorobenzene-d4	22.98	152.0	1907	1.03	UG/L 103%	95

* Compound is ISTD

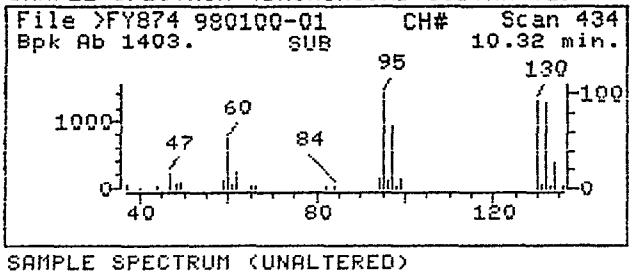
02/24/98

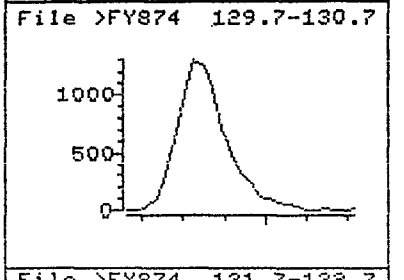
REFERENCE STANDARD SPECTRUM



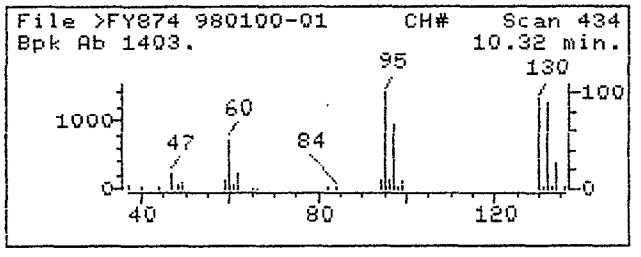


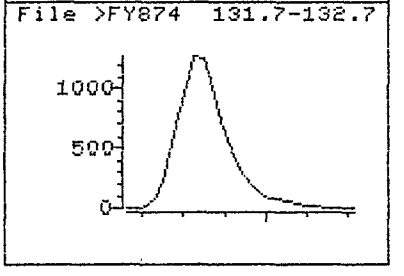
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)





SAMPLE SPECTRUM (UNALTERED)





Data File: >FY874::D6 Quant Output File: ^FY874::D5
Name: 980100-01 CH#05 Instrument ID: MS6
Misc: ESC HP-1 524.2 25.0ML+QC VW02-36CM
Quant Time: 980224 12:45 Quant ID File: I524.F::D1
Injected at: 980224 12:18 Last Calibration: 980224 08:16
Last Qcal Time: <none>

Compound No : 28
Compound Name : C150 Trichloroethene
Scan Number : 434
Retention Time: 10.32 min.
Quant Ion : 95.0
Area : 11931
Concentration : 3.46 UG/L
q-value : 96

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-10

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-11

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY878

Level: (low/med) LOW Date Received: 02/19/98

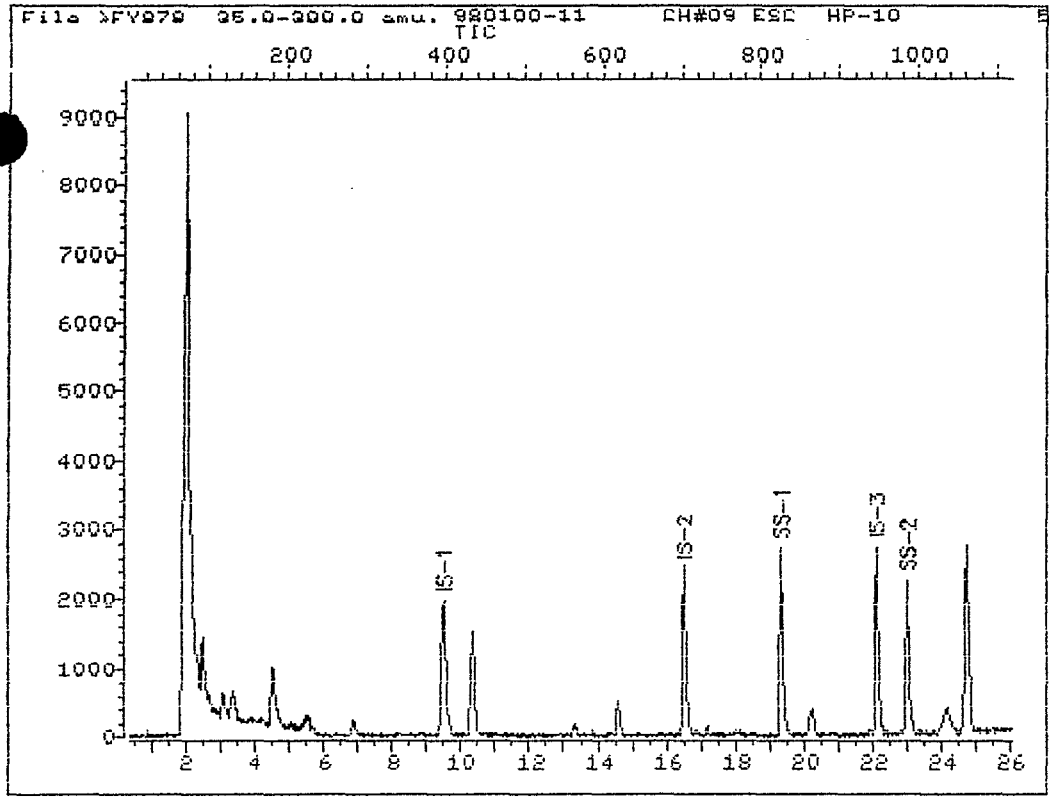
% Moisture: not dec. ____ Heated Purge: N Date Analyzed: 02/24/98

GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	0.7	J

TOTAL ION CHROMATOGRAM



Data File: >FY878::D6 Quant Output File: ^FY878::D5
Name: 980100-11 CH#09 Instrument ID: MS6
Misc: ESC HP-10 524.2 25.0ML+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980224 15:18
Injected at: 980224 14:51

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 15:18
Output File: ^FY878::D5 Injected at: 980224 14:51
Data File: >FY878::D6 Dilution Factor: 1.00000
Name: 980100-11 CH#09 Instrument ID: MS6
Misc: ESC HP-10 524.2 25.0ML+QC VW02-36CM

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.52	96.0	7831	1.00	UG/L	95
11)	C030 Methylene Chloride	4.51	84.0	1756	1.06	UG/L	88
13)	C040 Carbon Disulfide	4.22	76.0	581	.133	UG/L	100
28)	C150 Trichloroethene	10.35	95.0	2342	.661	UG/L	93
37)	C220 Tetrachloroethene	14.59	166.0	600	.151	UG/L	87
41)	*CI20 Chlorobenzene-d5	16.50	117.0	4966	1.00	UG/L	90
52)	CS10 Bromofluorobenzene	19.32	95.0	4700	1.00	UG/L	65
64)	*CI07 1,4-Dichlorobenzene-d4	22.10	152.0	2822	1.00	UG/L	95
65)	CI06 1,2-Dichlorobenzene-d4	23.00	152.0	2071	1.08	UG/L	96

100%
108%

* Compound is ISTD

02/25/98

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-11

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-12

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY879

Level: (low/med) LOW Date Received: 02/19/98

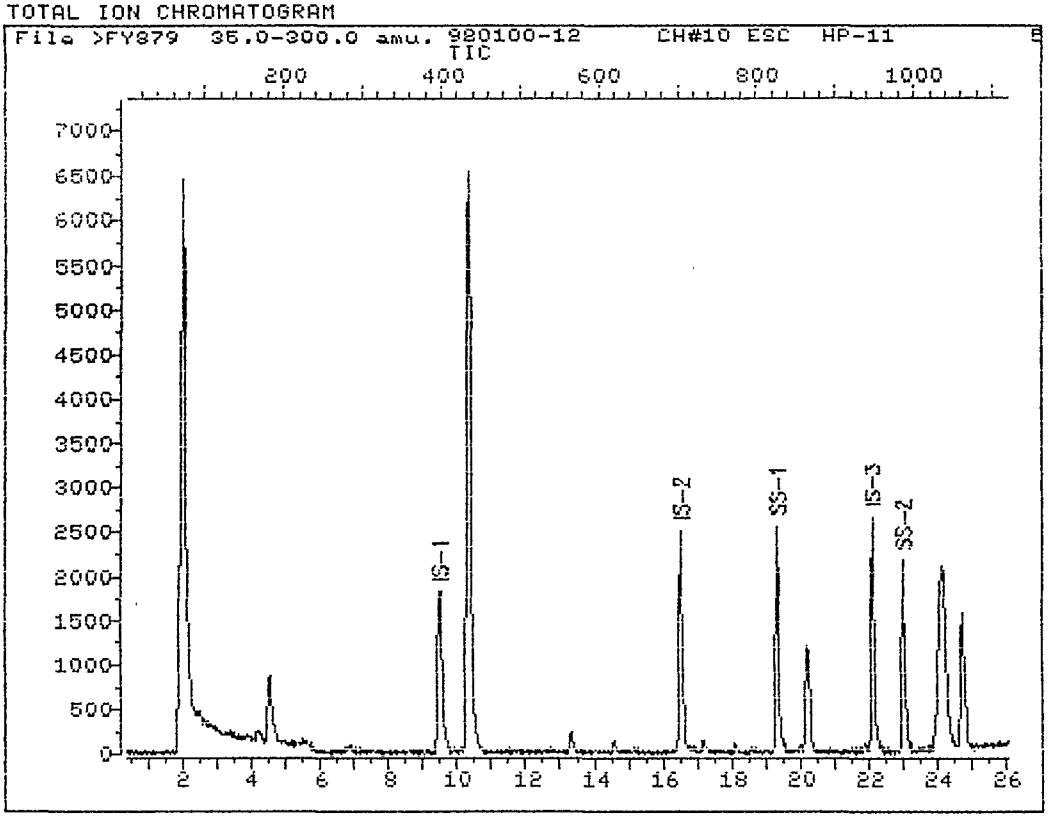
% Moisture: not dec. _____ Heated Purge: N Date Analyzed: 02/24/98

GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	3	

TOTAL ION CHROMATOGRAM



Data File: >FY879::D6 Quant Output File: ^FY879::D5
Name: 980100-12 CH#10 Instrument ID: MS6
Misc: ESC HP-11 524.2 25.0ML+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980224 15:57
Injected at: 980224 15:30

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 15:57
Output File: ^FY879::D5 Injected at: 980224 15:30
Data File: >FY879::D6 Dilution Factor: 1.00000
Name: 980100-12 CH#10 Instrument ID: MS6
Misc: ESC HP-11 524.2 25.0ML+QC VW02-36CM

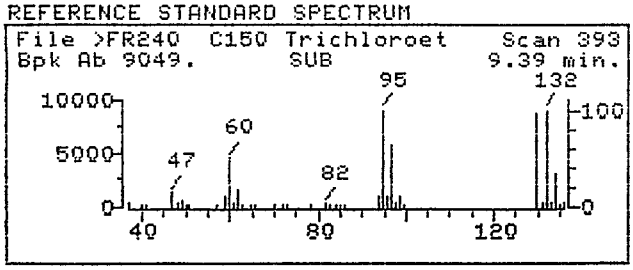
ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.50	96.0	7520	1.00	UG/L	99
11)	C030 Methylene Chloride	4.51	84.0	1563	.983	UG/L	85
28)	C150 Trichloroethene	10.34	95.0	9733	2.86	UG/L	92
41)	*CI20 Chlorobenzene-d5	16.52	117.0	5017	1.00	UG/L	93
46)	C240 Ethylbenzene	17.19	91.0	566	.0521	UG/L	97
52)	CS10 Bromofluorobenzene	19.34	95.0	4533	.955	UG/L	96 59
64)	*CI07 1,4-Dichlorobenzene-d4	22.10	152.0	2735	1.00	UG/L	94
65)	CI06 1,2-Dichlorobenzene-d4	22.99	152.0	1975	1.06	UG/L	94

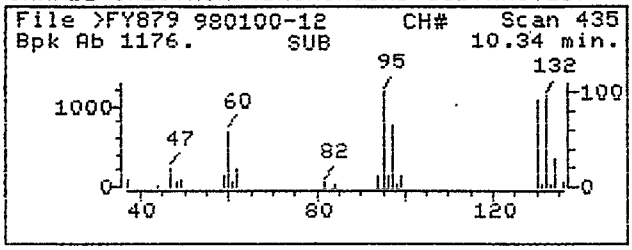
* Compound is ISTD

02/25/98

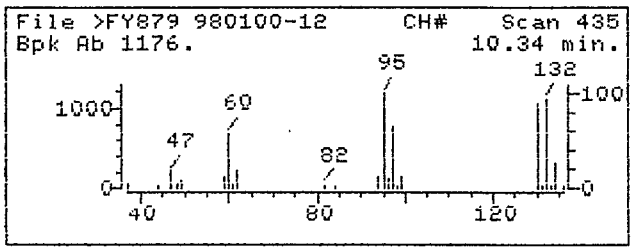
REFERENCE STANDARD SPECTRUM

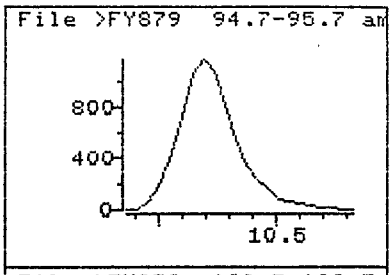


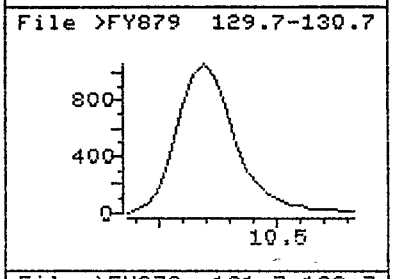
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

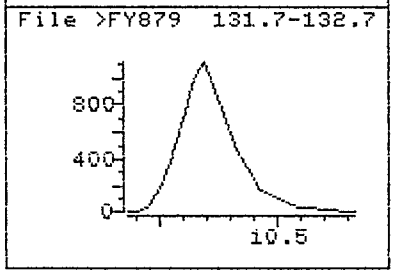


SAMPLE SPECTRUM (UNALTERED)









Data File: >FY879::D6 Quant Output File: ^FY879::D5
Name: 980100-12 CH#10 Instrument ID: MS6
Misc: ESC HP-11 524.2 25.0ML+QC VW02-36CM
Quant Time: 980224 15:57 Quant ID File: I524.F::D1
Injected at: 980224 15:30 Last Calibration: 980224 08:16
Last Qcal Time: <none>

Compound No : 28
Compound Name : C150 Trichloroethene
Scan Number : 435
Retention Time: 10.34 min.
Quant Ion : 95.0
Area : 9733
Concentration : 2.86 UG/L
q-value : 92

1X

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-5

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-06

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY875

Level: (low/med) LOW Date Received: 02/19/98

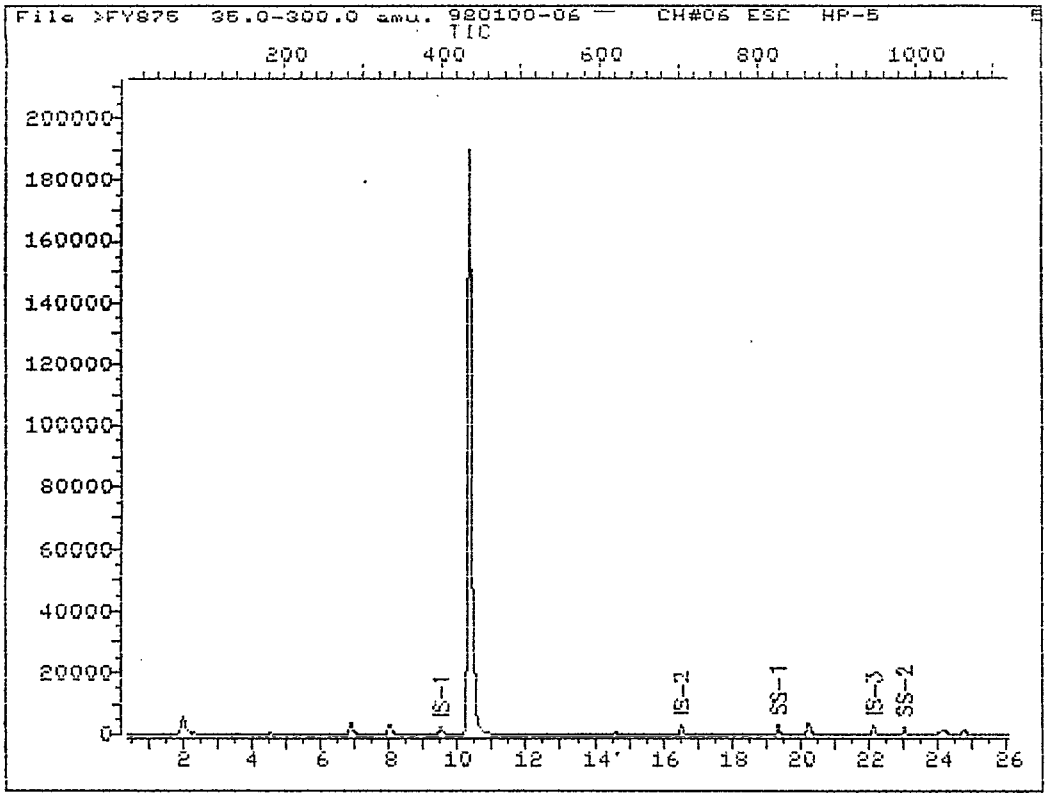
% Moisture: not dec. ____ Heated Purge: N Date Analyzed: 02/24/98

GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	77	

TOTAL ION CHROMATOGRAM



Data File: >FY875::D6 Quant Output File: ^FY875::D5
Name: 980100-06 CH#06 Instrument ID: MS6
Misc: ESC HP-5 524.2 25.0ML+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980224 13:23
Injected at: 980224 12:56

out of cal

CA

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 13:23
Output File: ^FY875::D5 Injected at: 980224 12:56
Data File: >FY875::D6 Dilution Factor: 1.00000
Name: 980100-06 CH#06 Instrument ID: MS6
Misc: ESC HP-5 524.2 25.0ML+QC VW02-36CM

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

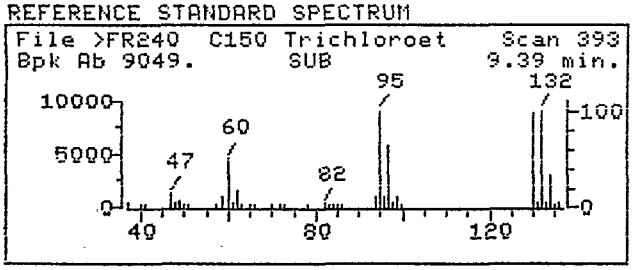
	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.51	96.0	8377	1.00	UG/L	98
11)	C030 Methylene Chloride	4.52	84.0	1585	.895	UG/L	87
18)	C054 cis-1,2-Dichloroethene	6.89	96.0	6963	2.69	UG/L	97
22)	C115 1,1,1-Trichloroethane	8.01	97.0	9915	1.64	UG/L	97
23)	C120 Carbon Tetrachloride	8.04	117.0	1164	.206	UG/L	90
28)	C150 Trichloroethene	10.36	95.0	291476	76.92	UG/L	96
37)	C220 Tetrachloroethene	14.58	166.0	688	.162	UG/L	90
41)	*CI20 Chlorobenzene-d5	16.51	117.0	5331	1.00	UG/L	94
46)	C240 Ethylbenzene	17.20	91.0	504	.0436	UG/L	89
52)	CS10 Bromofluorobenzene	19.33	95.0	4968	.985	UG/L	60
64)	*CI07 1,4-Dichlorobenzene-d4	22.11	152.0	2926	1.00	UG/L	99
65)	CI06 1,2-Dichlorobenzene-d4	23.01	152.0	2006	1.01	UG/L	93

985 60
1016

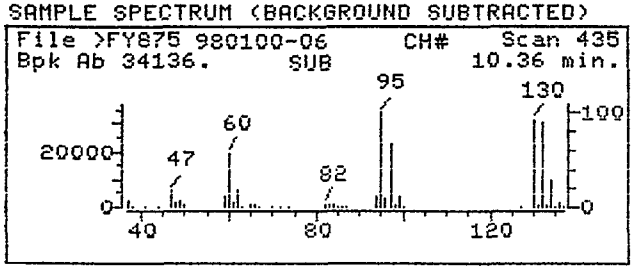
* Compound is ISTD

CL 02/25/98

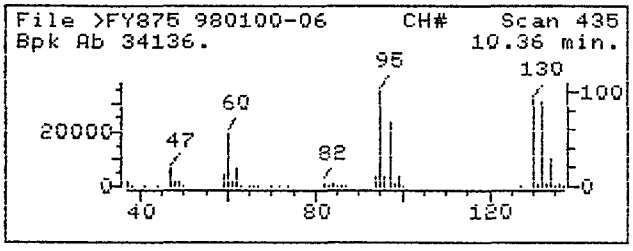
REFERENCE STANDARD SPECTRUM

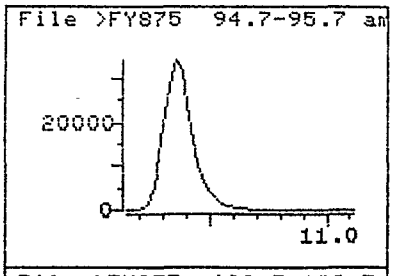


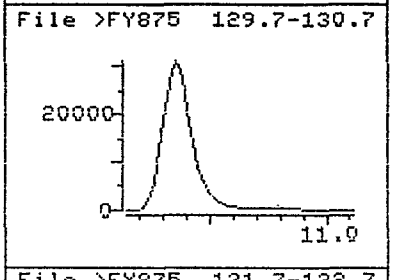
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

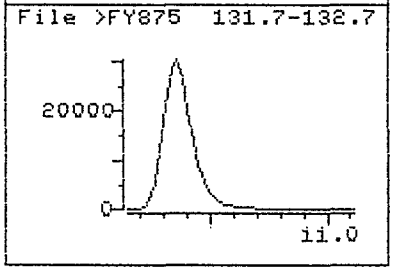


SAMPLE SPECTRUM (UNALTERED)









Data File: >FY875::D6 Quant Output File: ^FY875::D5
Name: 980100-06 CH#06 Instrument ID: MS6
Misc: ESC HP-5 524.2 25.0ML+QC VW02-36CM
Quant Time: 980224 13:23 Quant ID File: I524.F::D1
Injected at: 980224 12:56 Last Calibration: 980224 08:16
Last Qcal Time: <none>

Compound No : 28
Compound Name : C150 Trichloroethene
Scan Number : 435
Retention Time: 10.36 min.
Quant Ion : 95.0
Area : 291476
Concentration : 76.92 UG/L
q-value : 96

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-5DL

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-06DL

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY891

Level: (low/med) LOW Date Received: 02/19/98

% Moisture: not dec. ____ Heated Purge: N Date Analyzed: 02/25/98

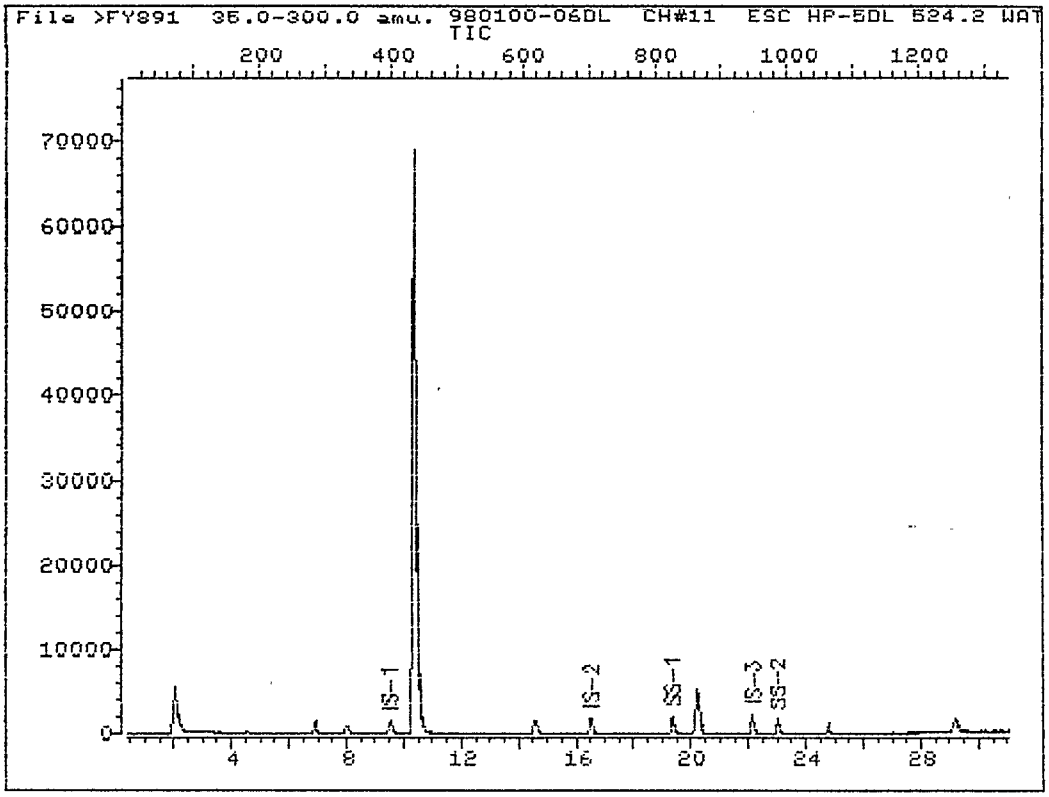
GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 2.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	74	D

CL 02/26/98

TOTAL ION CHROMATOGRAM



Data File: >FY891::D6 Quant Output File: ^FY891::D5
Name: 980100-06DL CH#11 Instrument ID: MS6
Misc: ESC HP-5DL 524.2 WATER 12.5ml/25.0ml+QC VW02-36 CT

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980225 12:28
Injected at: 980225 11:56

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980225 12:28
Output File: ^FY891::D5 Injected at: 980225 11:56
Data File: >FY891::D6 Dilution Factor: 1.00000
Name: 980100-06DL CH#11 Instrument ID: MS6
Misc: ESC HP-5DL 524.2 WATER 12.5ml/25.0ml+QC VW02-36 CT

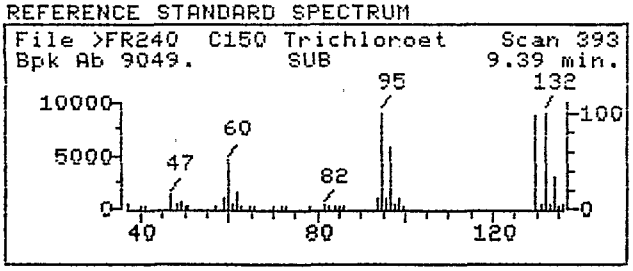
ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.50	96.0	6141	1.00	UG/L	93
18)	C054 cis-1,2-Dichloroethene	6.86	96.0	2583	1.36	UG/L	94
22)	C115 1,1,1-Trichloroethane	8.00	97.0	2930	.663	UG/L	98
28)	C150 Trichloroethene	10.35	95.0	103324	37.20	UG/L	95
41)	*CI20 Chlorobenzene-d5	16.52	117.0	3795	1.00	UG/L	98
46)	C240 Ethylbenzene	17.19	91.0	857	.104	UG/L	99
52)	CS10 Bromofluorobenzene	19.35	95.0	3512	.978	UG/L	98% 65
64)	*CI07 1,4-Dichlorobenzene-d4	22.13	152.0	2115	1.00	UG/L	96
65)	CI06 1,2-Dichlorobenzene-d4	23.00	152.0	1448	1.00	UG/L	100% 94

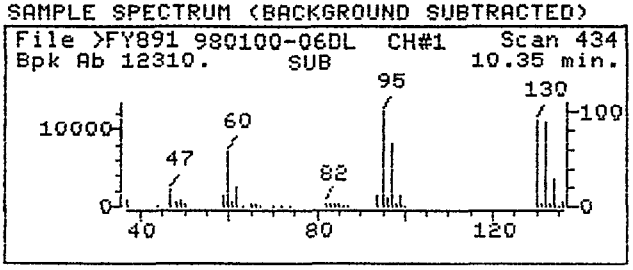
* Compound is ISTD

CJ 2/25/98

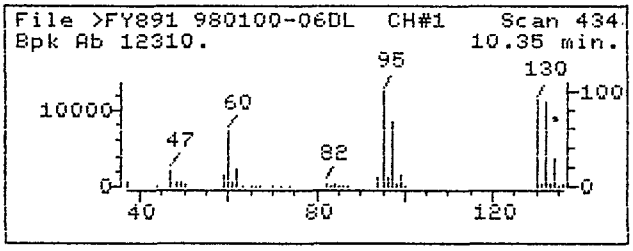
REFERENCE STANDARD SPECTRUM

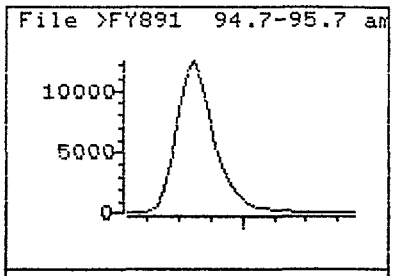


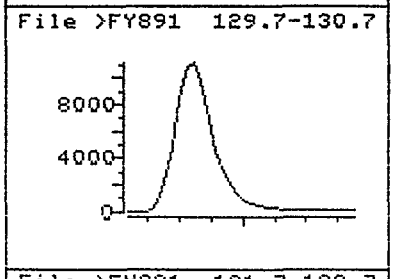
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

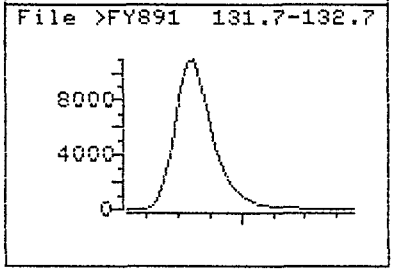


SAMPLE SPECTRUM (UNALTERED)









Data File: >FY891::D6 Quant Output File: ^FY891::D5
Name: 980100-06DL CH#11 Instrument ID: MS6
Misc: ESC HP-5DL 524.2 WATER 12.5ml/25.0ml+QC VW02-36 CT
Quant Time: 980225 12:28 Quant ID File: I524.F::D1
Injected at: 980225 11:56 Last Calibration: 980224 08:16
Last Qcal Time: <none>

Compound No : 28
Compound Name : C150 Trichloroethene
Scan Number : 434
Retention Time: 10.35 min.
Quant Ion : 95.0
Area : 103324
Concentration : 37.20 UG/L
q-value : 95

1X

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-8

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-09

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY892

Level: (low/med) LOW Date Received: 02/19/98

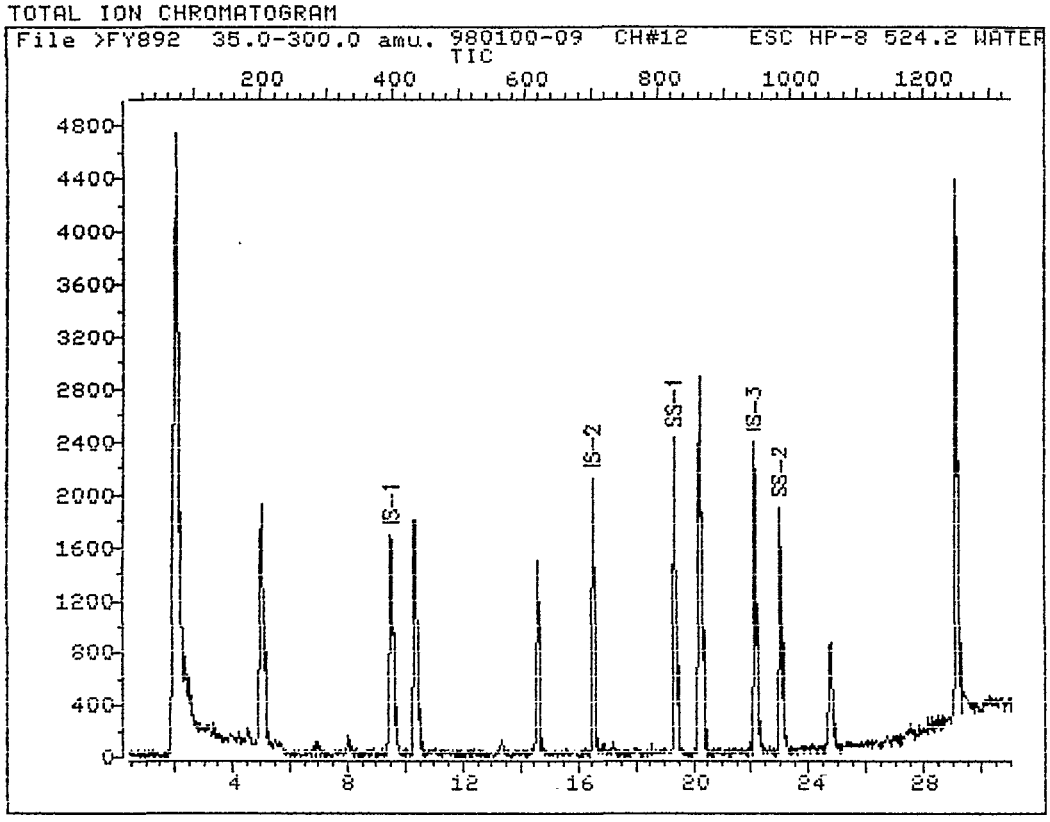
% Moisture: not dec. _____ Heated Purge: N Date Analyzed: 02/25/98

GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	0.9	J

TOTAL ION CHROMATOGRAM



Data File: >FY892::D6 Quant Output File: ^FY892::D5
Name: 980100-09 CH#12 Instrument ID: MS6
Misc: ESC HP-8 524.2 WATER 25.0ml+QC VW02-36 CT

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980225 13:05
Injected at: 980225 12:33

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980225 13:05
Output File: ^FY892::D5 Injected at: 980225 12:33
Data File: >FY892::D6 Dilution Factor: 1.00000
Name: 980100-09 CH#12 Instrument ID: MS6
Misc: ESC HP-8 524.2 WATER 25.0ml+QC VW02-36 CT

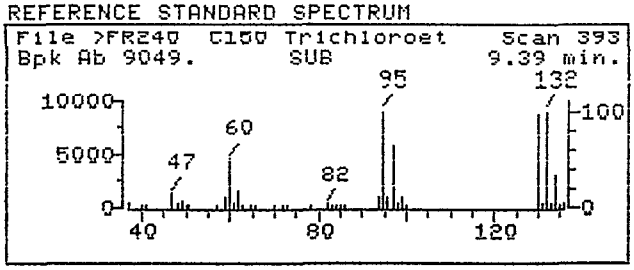
ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.49	96.0	6652	1.00	UG/L	99
15)	V023 Methyl tert-butyl ether	4.99	73.0	7438	4.18	UG/L	91
22)	C115 1,1,1-Trichloroethane	8.02	97.0	536	.112	UG/L	89
28)	C150 Trichloroethene	10.32	95.0	2779	.924	UG/L	90
37)	C220 Tetrachloroethene	14.59	166.0	1360	.402	UG/L	81
41)	*CI20 Chlorobenzene-d5	16.49	117.0	4244	1.00	UG/L	95
52)	CS10 Bromofluorobenzene	19.32	95.0	4039	1.01	UG/L	63
64)	*CI07 1,4-Dichlorobenzene-d4	22.10	152.0	2453	1.00	UG/L	98
65)	CI06 1,2-Dichlorobenzene-d4	22.99	152.0	1645	.983	UG/L	92

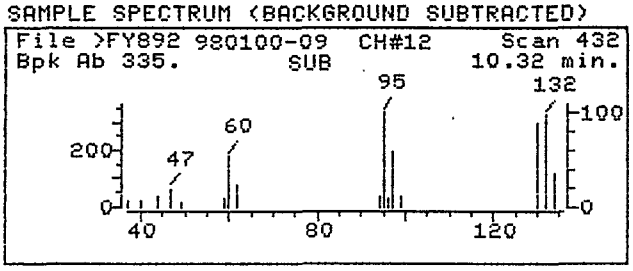
* Compound is ISTD

12/25/98

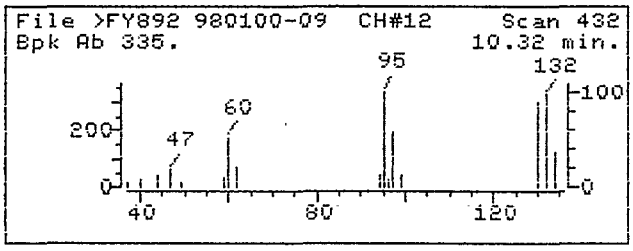
REFERENCE STANDARD SPECTRUM

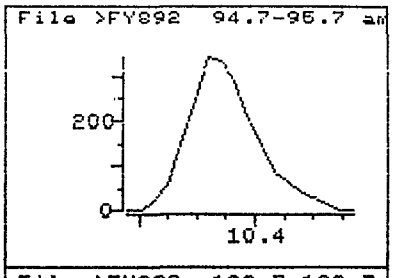


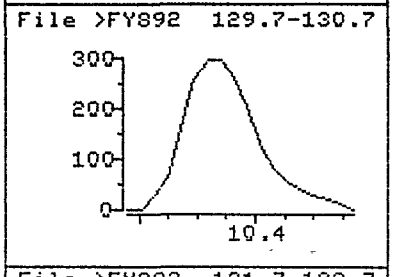
SAMPLE SPECTRUM (BACKGROUND SUBTRACTED)

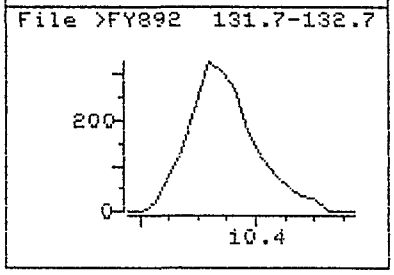


SAMPLE SPECTRUM (UNALTERED)









Data File: >FY892::D6 Quant Output File: ^FY892::D5
Name: 980100-09 CH#12 Instrument ID: MS6
Misc: ESC HP-8 524.2 WATER 25.0ml+QC VW02-36 CT
Quant Time: 980225 13:05 Quant ID File: I524.F::D1
Injected at: 980225 12:33 Last Calibration: 980224 08:16
Last Qcal Time: <none>

Compound No : 28
Compound Name : C150 Trichloroethene
Scan Number : 432
Retention Time: 10.32 min.
Quant Ion : 95.0
Area : 2779
Concentration : .924 UG/L
q-value : 90

1X

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

HP-9

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: 980100-10

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY877

Level: (low/med) LOW Date Received: 02/19/98

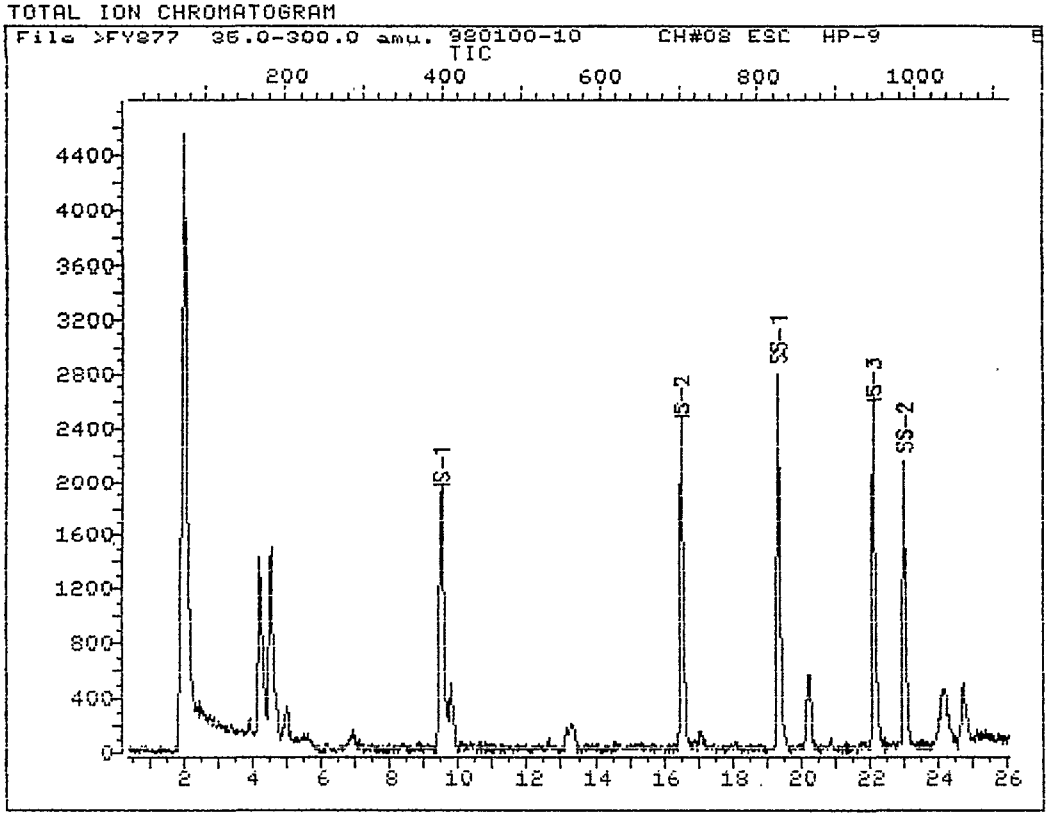
% Moisture: not dec. _____ Heated Purge: N Date Analyzed: 02/24/98

GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	1	U

TOTAL ION CHROMATOGRAM



Data File: >FY877::D6 Quant Output File: ^FY877::D5
Name: 980100-10 CH#08 Instrument ID: MS6
Misc: ESC HP-9 524.2 25.0ML+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980224 14:40
Injected at: 980224 14:13

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 14:40
Output File: ^FY877::D5 Injected at: 980224 14:13
Data File: >FY877::D6 Dilution Factor: 1.00000
Name: 980100-10 CH#08 Instrument ID: MS6
Misc: ESC HP-9 524.2 25.0ML+QC VW02-36CM

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.50	96.0	8190	1.00	UG/L	93
11)	C030 Methylene Chloride	4.54	84.0	2730	1.58	UG/L	77
13)	C040 Carbon Disulfide	4.22	76.0	8835	1.93	UG/L	100
15)	V023 Methyl tert-butyl ether	5.00	73.0	961	.439	UG/L	100
41)	*CI20 Chlorobenzene-d5	16.50	117.0	4970	1.00	UG/L	91
52)	CS10 Bromofluorobenzene	19.32	95.0	4763	1.01	UG/L	68
64)	*CI07 1,4-Dichlorobenzene-d4	22.10	152.0	2604	1.00	UG/L	96
65)	CI06 1,2-Dichlorobenzene-d4	23.00	152.0	1975	1.11	UG/L	92

* Compound is ISTD

02/25/98

Volatiles

c. Standards Data

Initial Calibration Data
HSL Compounds

SLEVEL

V6022398L

MS6

524.2

WATER

Case No: Instrument ID: MS6

Contractor: CEIMIC CORPORATION Calibration Date: 02/24/98

Contract No: C524.F ver 4.0

Minimum $\overline{RF}$ for SPCC is Maximum % RSD for CCC is 20.00%

Compound	Laboratory ID: >FY867 RF 1.00	>FY862 RF 5.00	>FY863 RF 10.00	>FY866 RF 20.00	>FY864 RF 50.00	$\overline{RF}$	% RSD	CCC	SPCC	
V105 Dichlorodifluoromethane	.54342	.57981	.57909	.55493	.52870	.55719	4.011			
C010 Chloromethane	.15257	.20699	.21450	.17534	.19361	.18860	13.278			
C020 Vinyl Chloride	.23907	.26019	.26742	.25888	.24761	.25463	4.408			
C015 Bromomethane	.37794	.23636	.24170	.33637	.20127	.27873	26.806			
C025 Chloroethane	.16537	.16734	.16881	.16438	.14924	.16303	4.844			
V100 Trichlorofluoromethane	.76868	.81228	.80352	.78047	.73341	.77967	4.002			
V017 Trichlorotrifluoroethane	-	-	-	-	-	-	-			
V115 Diethyl ether	-	-	-	-	-	-	-			(Conc=5.00,25.0,50.0,100.0,250.0)
C045 1,1-Dichloroethene	.28772	.28343	.28884	.28365	.25761	.28025	4.597			
C030 Methylene Chloride	.24750	.20529	.20190	.20790	.19474	.21147	9.808			
C035 Acetone	.01917	.01478	.01317	.01222	.01141	.01415	21.732			(Conc=5.00,25.0,50.0,100.0,250.0)
C040 Carbon Disulfide	.52028	.53580	.55144	.59399	.58864	.55803	5.802			
C055 trans-1,2-Dichloroethene	.31210	.30571	.32102	.31498	.28899	.30856	3.969			
V023 Methyl tert-butyl ether	.32277	.26907	.25254	.25123	.24060	.26724	12.225			
C050 1,1-Dichloroethane	.63150	.66497	.64573	.63243	.59117	.63316	4.279			
V045 2,2-Dichloropropane	.66116	.73221	.70945	.69857	.64701	.68968	5.082			
C054 cis-1,2-Dichloroethene	.32053	.32681	.31022	.30733	.28115	.30921	5.670			
C060 Chloroform	.61858	.66611	.63486	.62002	.58878	.62567	4.494			
C056 Bromochloromethane	.11313	.11860	.10895	.10756	.10323	.11030	5.292			
V110 Tetrahydrofuran	-	-	-	-	-	-	-			(Conc=5.00,25.0,50.0,100.0,250.0)
C115 1,1,1-Trichloroethane	.70509	.75179	.73120	.72695	.68348	.71968	3.633			
C120 Carbon Tetrachloride	.63982	.70958	.70348	.68704	.63189	.67436	5.370			
V050 1,1-Dichloropropene	.59027	.62995	.60691	.60097	.54786	.59519	5.971			
C165 Benzene	.86058	.88075	.83744	.84952	.78960	.84358	4.045			
C065 1,2-Dichloroethane	.31862	.31165	.27664	.27290	.25908	.28778	9.011			
C110 2-Butanone	.03600	.02646	.02088	.01935	.01801	.02414	30.518			(Conc=5.00,25.0,50.0,100.0,250.0)
C150 Trichloroethene	.44995	.46401	.46293	.45678	.42794	.45232	3.259			
C140 1,2-Dichloropropane	.26536	.27846	.25905	.26660	.25124	.26414	3.809			
C130 Bromodichloromethane	.39984	.44716	.41600	.42624	.41317	.42048	4.194			
C175 2-Chloroethylvinyl ether	-	-	-	-	-	-	-			(Conc=5.00,25.0,50.0,100.0,250.0)
V024 Dibromomethane	.13201	.14254	.12758	.12668	.12253	.13027	5.866			
C143 cis-1,3-Dichloropropene	.29693	.32800	.30446	.31860	.30445	.31049	4.039			

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: MS6

Contractor: CEIMIC CORPORATION Calibration Date: 02/24/98

Contract No: C524.F ver 4.0

Minimum $\overline{RF}$ for SPCC is _____ Maximum % RSD for CCC is 20.00%

Laboratory ID:	>FY867	>FY862	>FY863	>FY866	>FY864				
Compound	RF 1.00	RF 5.00	RF 10.00	RF 20.00	RF 50.00	$\overline{RF}$	% RSD	CCC	SPCC
C230 Toluene	.57847	.57998	.55580	.56375	.51835	.55927	4.474		
C172 trans-1,3-Dichloropropene	.19616	.22378	.20581	.21514	.20821	.20982	4.932		
C160 1,1,2-Trichloroethane	.09819	.10951	.09826	.09944	.09517	.10011	5.479		
C220 Tetrachloroethene	.52421	.53331	.51207	.51055	.46003	.50803	5.591		
V055 1,3-Dichloropropane	.22211	.21814	.19004	.19299	.17934	.20052	9.301		
C155 Dibromochloromethane	.20402	.23543	.21430	.22656	.21986	.22004	5.420		
V030 1,2-Dibromoethane	.15448	.16427	.14721	.15253	.14591	.15288	4.773		
C210 2-Hexanone	.05995	.06908	.06253	.06235	.06325	.06343	5.350		(Conc=5.00,25.0,50.0,100.0,250.0)
C205 4-Methyl-2-Pentanone	.11034	.11045	.09778	.09810	.09869	.10307	6.494		(Conc=5.00,25.0,50.0,100.0,250.0)
C235 Chlorobenzene	1.02326	1.04933	1.03651	1.03393	.99058	1.02673	2.165		
V034 1,1,1,2-Tetrachloroethane	.42788	.47951	.46091	.45723	.45051	.45521	4.104		
C240 Ethylbenzene	2.12706	2.21024	2.21197	2.19274	2.09485	2.16737	2.458		
C251 m,p-Xylenes	.72038	.74097	.72659	.71029	.66638	.71292	3.969		(Conc=2.00,10.0,20.0,40.0,100.0)
C252 o-Xylene	.62151	.64582	.63394	.61861	.58007	.61999	4.000		
C245 Styrene	.87241	.94236	.91504	.93096	.87436	.90702	3.552		
C180 Bromoform	.16446	.18802	.17684	.19000	.19788	.18344	7.089		
V060 Isopropylbenzene	2.23712	2.33888	2.38432	2.35680	2.19998	2.30342	3.483		
CS10 Bromofluorobenzene	.94721	.90690	.96770	.93147	.97753	.94616	2.992		(Conc=1.00,1.00,1.00,1.00,1.00)
V065 Bromobenzene	.45168	.47012	.45445	.44908	.42913	.45089	3.251		
C225 1,1,2,2-Tetrachloroethane	.20884	.22442	.20134	.20519	.20065	.20809	4.662		
V036 1,2,3-Trichloropropane	.17860	.16519	.15244	.15103	.14822	.15909	7.983		
V070 n-Propylbenzene	2.59610	2.81766	2.99467	2.94876	2.70050	2.81154	5.929		
V075 2-Chlorotoluene	1.85039	1.83129	1.77278	1.76692	1.54869	1.75402	6.862		
V080 1,3,5-Trimethylbenzene	1.89191	1.95244	1.97844	1.90797	1.76148	1.89845	4.423		
V085 4-Chlorotoluene	2.00805	2.03670	2.04590	2.01621	1.85485	1.99234	3.933		
V090 tert-Butylbenzene	1.91875	1.94816	2.00265	1.95126	1.79524	1.92321	4.038		
V095 1,2,4-Trimethylbenzene	1.76235	1.81217	1.82189	1.80559	1.67914	1.77623	3.314		
V120 sec-Butylbenzene	2.75573	2.74804	2.89356	2.82757	2.63005	2.77099	3.557		
V125 p-Isopropyltoluene	2.13117	2.18976	2.30539	2.20492	1.94619	2.15549	6.158		
CI06 1,2-Dichlorobenzene-d4	.70777	.69198	.66898	.66501	.67698	.68214	2.589		(Conc=1.00,1.00,1.00,1.00,1.00)
C335 1,3-Dichlorobenzene	1.63365	1.67016	1.55436	1.52625	1.52527	1.58194	4.185		
C340 1,4-Dichlorobenzene	1.72581	1.62652	1.52009	1.45696	1.36243	1.53836	9.240		

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Initial Calibration Data
HSL Compounds

Case No: _____ Instrument ID: MS6

Contractor: CEIMIC CORPORATION Calibration Date: 02/24/98

Contract No: C524.F ver 4.0

Minimum $\overline{RF}$ for SPCC is _____ Maximum % RSD for CCC is 20.00%

Laboratory ID:	>FY867	>FY862	>FY863	>FY866	>FY864				
Compound	RF 1.00	RF 5.00	RF 10.00	RF 20.00	RF 50.00	$\overline{RF}$	% RSD	CCC	SPCC
V130 n-Butylbenzene	3.94457	4.33768	4.36194	4.34654	4.24257	4.24666	4.126		
C350 1,2-Dichlorobenzene	1.29452	1.25098	1.14265	1.08824	1.07806	1.17089	8.318		
C182 1,2Dibromo3chloropropane	.07707	.08100	.07094	.07151	.08029	.07616	6.234		
V135 1,2,4-Trichlorobenzene	.88586	.98139	.90379	.88815	.91017	.91387	4.280		
V140 Hexachlorobutadiene	1.88586	1.56135	1.58290	1.56350	1.41146	1.60102	10.835		
V145 Naphthalene	.59069	.53626	.44502	.42099	.43375	.48534	15.321		
V150 1,2,3-Trichlorobenzene	.69662	.69084	.65793	.66242	.64288	.67014	3.404		

RF - Response Factor (Subscript is amount in UG/L)

$\overline{RF}$ - Average Response Factor

%RSD - Percent Relative Standard Deviation

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 02/24/98

Contractor: CEIMIC CORPORATION Time: 08:47

Contract No: C524.F ver 4.0 Laboratory ID: >FY870

Instrument ID: MS6 Initial Calibration Date: 02/24/98

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
V105 Dichlorodifluoromethane	.55719	.56470	1.35			
C010 Chloromethane	.18860	.14195	24.73			
C020 Vinyl Chloride	.25463	.24264	4.71			
C015 Bromomethane	.27873	.38112	36.74			
C025 Chloroethane	.16303	.17194	5.46			
V100 Trichlorofluoromethane	.77967	.85550	9.73			
V017 Trichlorotrifluoroethane	-	-	-			
V115 Diethyl ether	-	-	-			(Conc=25.00)
C045 1,1-Dichloroethene	.28025	.29707	6.00			
C030 Methylene Chloride	.21147	.24761	17.09			
C035 Acetone	.01415	.01396	1.32			(Conc=25.00)
C040 Carbon Disulfide	.55803	.55121	1.22			
C055 trans-1,2-Dichloroethene	.30856	.30610	.80			
V023 Methyl tert-butyl ether	.26724	.29291	9.60			
C050 1,1-Dichloroethane	.63316	.59014	6.79			
V045 2,2-Dichloropropane	.68968	.64521	6.45			
C054 cis-1,2-Dichloroethene	.30921	.31403	1.56			
C060 Chloroform	.62567	.63628	1.70			
C056 Bromochloromethane	.11030	.11581	5.00			
V110 Tetrahydrofuran	-	-	-			(Conc=25.00)
C115 1,1,1-Trichloroethane	.71968	.71019	1.32			
C120 Carbon Tetrachloride	.67436	.67563	.19			
V050 1,1-Dichloropropene	.59519	.56141	5.68			
C165 Benzene	.84358	.81749	3.09			
C065 1,2-Dichloroethane	.28778	.29784	3.50			
C110 2-Butanone	.02414	.02202	8.80			(Conc=25.00)
C150 Trichloroethene	.45232	.44634	1.32			
C140 1,2-Dichloropropane	.26414	.25837	2.19			
C130 Bromodichloromethane	.42048	.44366	5.51			
C175 2-Chloroethylvinyl ether	-	-	-			(Conc=25.00)
V024 Dibromomethane	.13027	.13691	5.10			
C143 cis-1,3-Dichloropropene	.31049	.32030	3.16			

RF - Response Factor from daily standard file at 5.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

MS6
524.2
WATER
TCE ONLY
CL
02/24/98

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 02/24/98

Contractor: CEIMIC CORPORATION Time: 08:47

Contract No: C524.F ver 4.0 Laboratory ID: >FY870

Instrument ID: MS6 Initial Calibration Date: 02/24/98

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C230 Toluene	.55927	.56423	.89			
C172 trans-1,3-Dichloropropene	.20982	.22633	7.87			
C160 1,1,2-Trichloroethane	.10011	.11246	12.33			
C220 Tetrachloroethene	.50803	.52754	3.84			
V055 1,3-Dichloropropane	.20052	.21437	6.90			
C155 Dibromochloromethane	.22004	.24604	11.82			
V030 1,2-Dibromoethane	.15288	.16629	8.77			
C210 2-Hexanone	.06343	.06641	4.69			(Conc=25.00)
C205 4-Methyl-2-Pentanone	.10307	.10574	2.59			(Conc=25.00)
C235 Chlorobenzene	1.02673	1.00058	2.55			
V034 1,1,1,2-Tetrachloroethane	.45521	.47001	3.25			
C240 Ethylbenzene	2.16737	2.04782	5.52			
C251 m,p-Xylenes	.71292	.69260	2.85			(Conc=10.00)
C252 o-Xylene	.61999	.60172	2.95			
C245 Styrene	.90702	.88631	2.28			
C180 Bromoform	.18344	.19137	4.32			
V060 Isopropylbenzene	2.30342	2.17024	5.78			
CS10 Bromofluorobenzene	.94616	.95778	1.23			(Conc=1.00)
V005 Bromobenzene	.45089	.46500	3.13			
C225 1,1,2,2-Tetrachloroethane	.20809	.21619	3.90			
V036 1,2,3-Trichloropropane	.15909	.16812	5.67			
V070 n-Propylbenzene	2.81154	2.56794	8.66			
V075 2-Chlorotoluene	1.75402	1.81385	3.41			
V080 1,3,5-Trimethylbenzene	1.89845	1.80881	4.72			
V085 4-Chlorotoluene	1.99234	1.92144	3.56			
V090 tert-Butylbenzene	1.92321	1.81502	5.63			
V095 1,2,4-Trimethylbenzene	1.77623	1.68551	5.11			
V120 sec-Butylbenzene	2.77099	2.60208	6.10			
V125 p-Isopropyltoluene	2.15549	2.08755	3.15			
C106 1,2-Dichlorobenzene-d4	.68214	.69607	2.04			(Conc=1.00)
C335 1,3-Dichlorobenzene	1.58194	1.51595	4.17			
C340 1,4-Dichlorobenzene	1.53836	1.54222	.25			

RF - Response Factor from daily standard file at 5.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 02/24/98

Contractor: CEIMIC CORPORATION Time: 08:47

Contract No: C524.F ver 4.0 Laboratory ID: >FY870

Instrument ID: MS6 Initial Calibration Date: 02/24/98

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
V130 n-Butylbenzene	4.24666	3.72662	12.25		
C350 1,2-Dichlorobenzene	1.17089	1.18472	1.18		
C182 1,2Dibromo3chloropropane	.07616	.07519	1.39		
V135 1,2,4-Trichlorobenzene	.91387	.81547	10.77		
V140 Hexachlorobutadiene	1.60102	1.47983	7.57		
V145 Naphthalene	.48534	.17661	63.61		
V150 1,2,3-Trichlorobenzene	.67014	.59438	11.31		

RF - Response Factor from daily standard file at 5.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 02/25/98

Contractor: CEIMIC CORPORATION Time: 08:34

Contract No: C524.F ver 4.0 Laboratory ID: >FY887

Instrument ID: MS6 Initial Calibration Date: 02/24/98

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
V105 Dichlorodifluoromethane	.55719	.59963	7.62			
C010 Chloromethane	.18860	.17012	9.80			
C020 Vinyl Chloride	.25463	.25071	1.54			
C015 Bromomethane	.27873	.30329	8.81			
C025 Chloroethane	.16303	.18190	11.58			
V100 Trichlorofluoromethane	.77967	.91262	17.05			
V017 Trichlorotrifluoroethane	-	-	-			
V115 Diethyl ether	-	-	-			(Conc=25.00)
C045 1,1-Dichloroethene	.28025	.30760	9.76			
C030 Methylene Chloride	.21147	.21273	.60			
C035 Acetone	.01415	.01539	8.77			(Conc=25.00)
C040 Carbon Disulfide	.55803	.55050	1.35			
C055 trans-1,2-Dichloroethene	.30856	.31781	3.00			
V023 Methyl tert-butyl ether	.26724	.29540	10.54			
C050 1,1-Dichloroethane	.63316	.59503	6.02			
C045 2,2-Dichloropropane	.68968	.67767	1.74			
C054 cis-1,2-Dichloroethene	.30921	.31636	2.31			
C060 Chloroform	.62567	.65865	5.27			
C056 Bromochloromethane	.11030	.12183	10.46			
V110 Tetrahydrofuran	-	-	-			(Conc=25.00)
C115 1,1,1-Trichloroethane	.71968	.75623	5.08			
C120 Carbon Tetrachloride	.67436	.71352	5.81			
V050 1,1-Dichloropropene	.59519	.58693	1.39			
C165 Benzene	.84358	.83372	1.17			
C065 1,2-Dichloroethane	.28778	.31857	10.70			
C110 2-Butanone	.02414	.02379	1.46			(Conc=25.00)
C150 Trichloroethene	.45232	.45984	1.66			
C140 1,2-Dichloropropane	.26414	.25584	3.14			
C130 Bromodichloromethane	.42048	.45947	9.27			
C175 2-Chloroethylvinyl ether	-	-	-			(Conc=25.00)
V024 Dibromomethane	.13027	.13943	7.03			
C143 cis-1,3-Dichloropropene	.31049	.32357	4.21			

RF - Response Factor from daily standard file at 5.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

MS6 cb 02/25/98

MS6

524.2

WATER

TCE ONLY

cb 02/25/98

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 02/25/98

Contractor: CEIMIC CORPORATION Time: 08:34

Contract No: C524.F ver 4.0 Laboratory ID: >FY887

Instrument ID: MS6 Initial Calibration Date: 02/24/98

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC	
C230 Toluene	.55927	.57775	3.30			
C172 trans-1,3-Dichloropropene	.20982	.22538	7.42			
C160 1,1,2-Trichloroethane	.10011	.10850	8.37			
C220 Tetrachloroethene	.50803	.54558	7.39			
V055 1,3-Dichloropropane	.20052	.21476	7.10			
C155 Dibromochloromethane	.22004	.24829	12.84			
V030 1,2-Dibromoethane	.15288	.16589	8.51			
C210 2-Hexanone	.06343	.06411	1.07			(Conc=25.00)
C205 4-Methyl-2-Pentanone	.10307	.10615	2.98			(Conc=25.00)
C235 Chlorobenzene	1.02673	1.02384	.28			
V034 1,1,1,2-Tetrachloroethane	.45521	.47912	5.25			
C240 Ethylbenzene	2.16737	2.08032	4.02			
C251 m,p-Xylenes	.71292	.69986	1.83			(Conc=10.00)
C252 o-Xylene	.61999	.61308	1.11			
C245 Styrene	.90702	.88396	2.54			
C180 Bromoform	.18344	.18667	1.76			
V060 Isopropylbenzene	2.30342	2.23232	3.09			
CS10 Bromofluorobenzene	.94616	.89717	5.18			(Conc=1.00)
V065 Bromobenzene	.45089	.46638	3.43			
C225 1,1,2,2-Tetrachloroethane	.20809	.20641	.80			
V036 1,2,3-Trichloropropane	.15909	-	-			
V070 n-Propylbenzene	2.81154	2.58734	7.97			
V075 2-Chlorotoluene	1.75402	1.63675	6.69			
V080 1,3,5-Trimethylbenzene	1.89845	1.91285	.76			
V085 4-Chlorotoluene	1.99234	1.98448	.39			
V090 tert-Butylbenzene	1.92321	1.91761	.29			
V095 1,2,4-Trimethylbenzene	1.77623	1.78270	.36			
V120 sec-Butylbenzene	2.77099	2.67920	3.31			
V125 p-Isopropyltoluene	2.15549	2.16478	.43			
CI06 1,2-Dichlorobenzene-d4	.68214	.68076	.20			(Conc=1.00)
C335 1,3-Dichlorobenzene	1.58194	1.52398	3.66			
C340 1,4-Dichlorobenzene	1.53836	1.56385	1.66			

RF - Response Factor from daily standard file at 5.00 UG/L

$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Continuing Calibration Check
HSL Compounds

Case No: Calibration Date: 02/25/98

Contractor: CEIMIC CORPORATION Time: 08:34

Contract No: C524.F ver 4.0 Laboratory ID: >FY887

Instrument ID: MS6 Initial Calibration Date: 02/24/98

Minimum $\overline{RF}$ for SPCC is Maximum % Diff for CCC is %

Compound	$\overline{RF}$	RF	%Diff	CCC	SPCC
V130 n-Butylbenzene	4.24666	3.90991	7.93		
C350 1,2-Dichlorobenzene	1.17089	1.20700	3.08		
C182 1,2Dibromo3chloropropane	.07616	.07041	7.56		
V135 1,2,4-Trichlorobenzene	.91387	.89898	1.63		
V140 Hexachlorobutadiene	1.60102	1.56902	2.00		
V145 Naphthalene	.48534	.21939	54.80		
V150 1,2,3-Trichlorobenzene	.67014	.63134	5.79		

RF - Response Factor from daily standard file at 5.00 UG/L

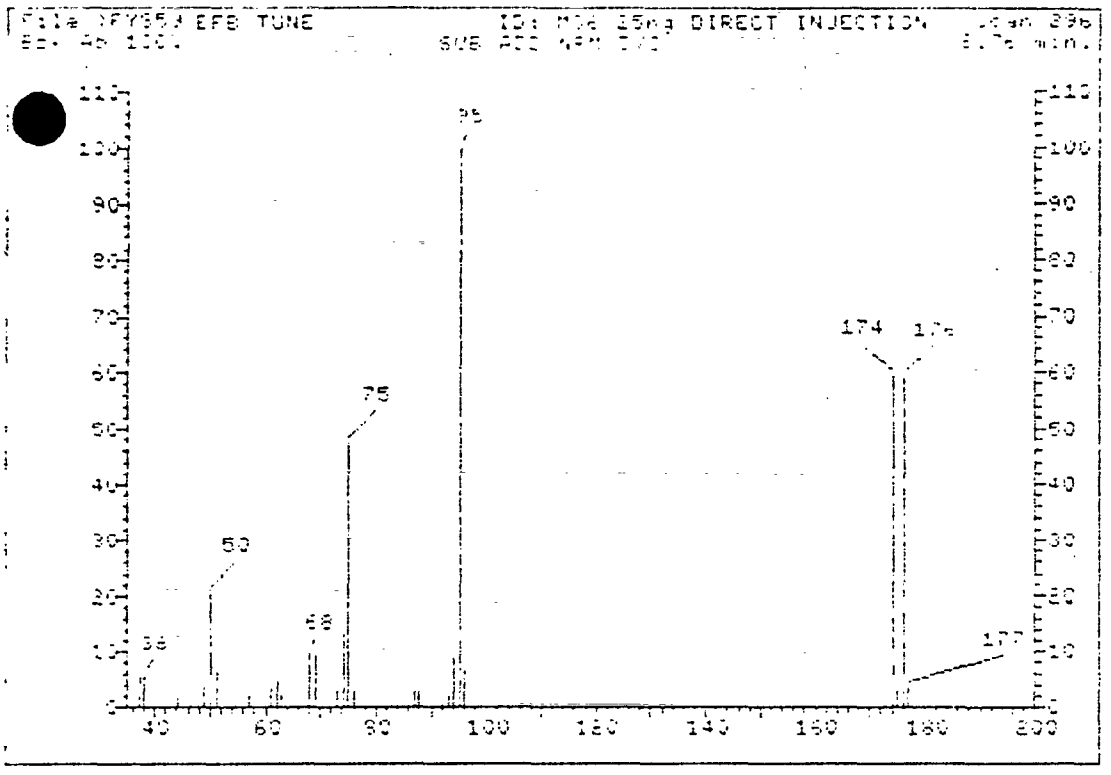
$\overline{RF}$ - Average Response Factor from Initial Calibration Form VI

%Diff - % Difference from original average or curve

CCC - Calibration Check Compounds (*) SPCC - System Performance Check Compounds (**)

Volatiles

d. Raw QC Data



MS data file header from : >FY859::D6

Sample: BFB TUNE Operator: VOA7 SUPER GRP. 2/23/98 10:01
Misc : ID: MS6 25ng DIRECT INJECTION CM
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 0 Equip ID: MS6
Method file: MS6A Tuning file: TUNEF No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	105.	107.	0.	0.	0.
Chromatographic times, min. :	8.0	1.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	1.5	0.0

>FY859 BFB TUNE ID: MS6 25ng DIRECT INJECTION CM
296 SUB ADD DVC

File: >FY859 Scan #: 296 Retn. time: 8.76

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	68.33	57.00	22.33	73.00	32.00	88.00	32.33	96.10	80.00
38.10	70.00	61.00	41.67	74.10	168.67	92.00	8.67	174.00	721.33
44.10	21.00	62.10	55.67	75.10	576.67	93.10	26.67	175.00	55.67
49.10	54.00	63.10	23.67	76.10	33.33	94.00	107.00	176.00	715.33
50.10	250.00	68.00	119.33	87.00	36.00	95.10	1215.67	177.00	44.33
51.10	75.33	69.10	118.67						

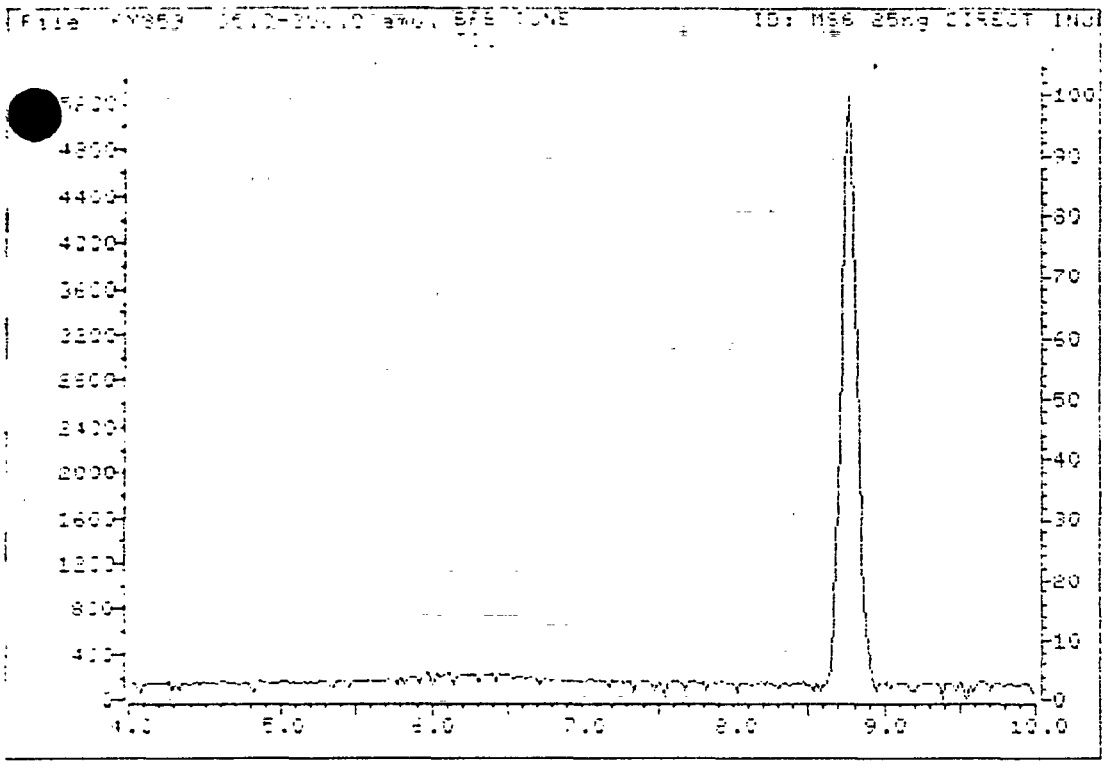
GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	20.56	20.56	Ok
75	30-80% of mass 95	47.44	47.44	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.58	6.58	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	59.34	59.34	Ok
175	5-9% of mass 174	4.58	7.72	Ok
176	95-101% of mass 174	58.84	99.17	Ok
177	5-9% of mass 176	3.65	6.20	Ok

Injection Date: 02/23/98
Injection Time: 10:01
Data File: >FY859
Scan: 296

CA 59



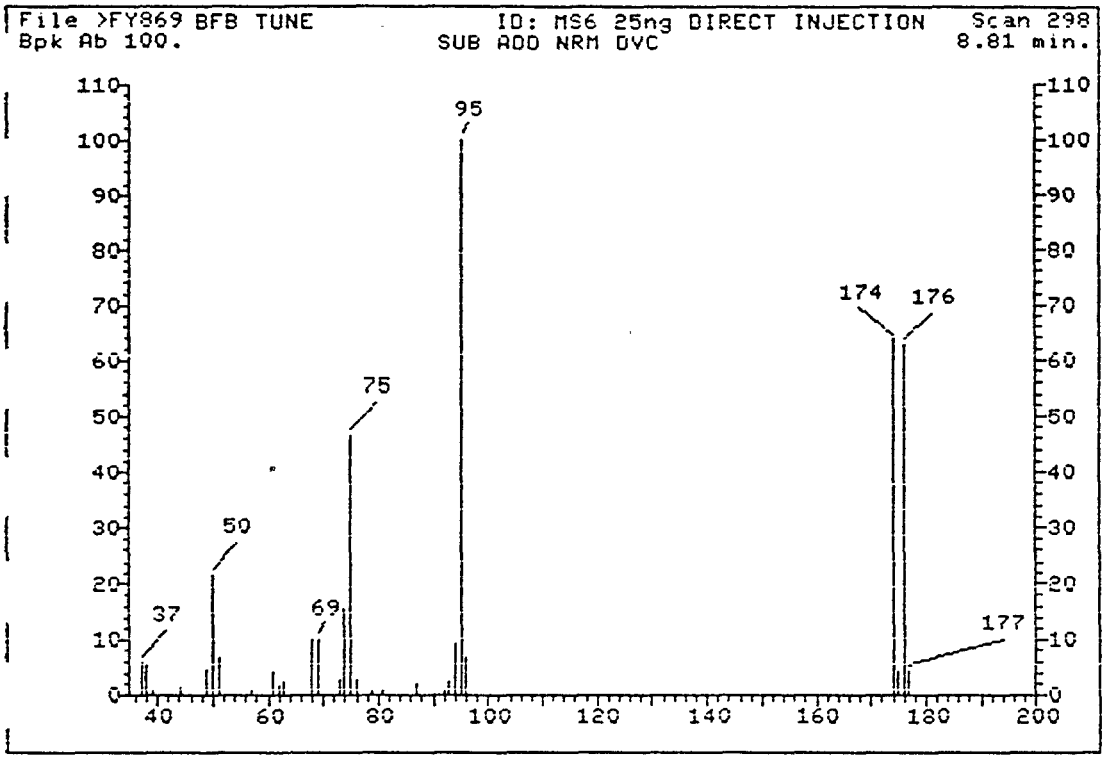
MS data file header from : >FY859::D6

Sample: BFB TUNE Operator: VOA7 SUPER GRP. 2/23/98 10:01
Misc : ID: MS6 25ng DIRECT INJECTION CM
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 0 Equip ID: MS6
Method file: MS6A Tuning file: TUNEF No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	105.	107.	0.	0.	0.
Chromatographic times, min. :	8.0	1.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	1.5	0.0

SCAN TIME = 1.38 SEC/SCAN

60



MS data file header from : >FY869::D6

Sample: BFB TUNE Operator: VOAH SUPER GRP. 2/24/98 8:12
Misc : ID: MS6 25ng DIRECT INJECTION CM
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 0 Equip ID: MS6
Method file: MS6A Tuning file: TUNEF No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	105.	107.	0.	0.	0.
Chromatographic times, min. :	8.0	1.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	1.5	0.0

>FY869 BFB TUNE ID: MS6 25ng DIRECT INJECTION CM
298 SUB ADD DVC

File: >FY869 Scan #: 298 Retn. time: 8.81

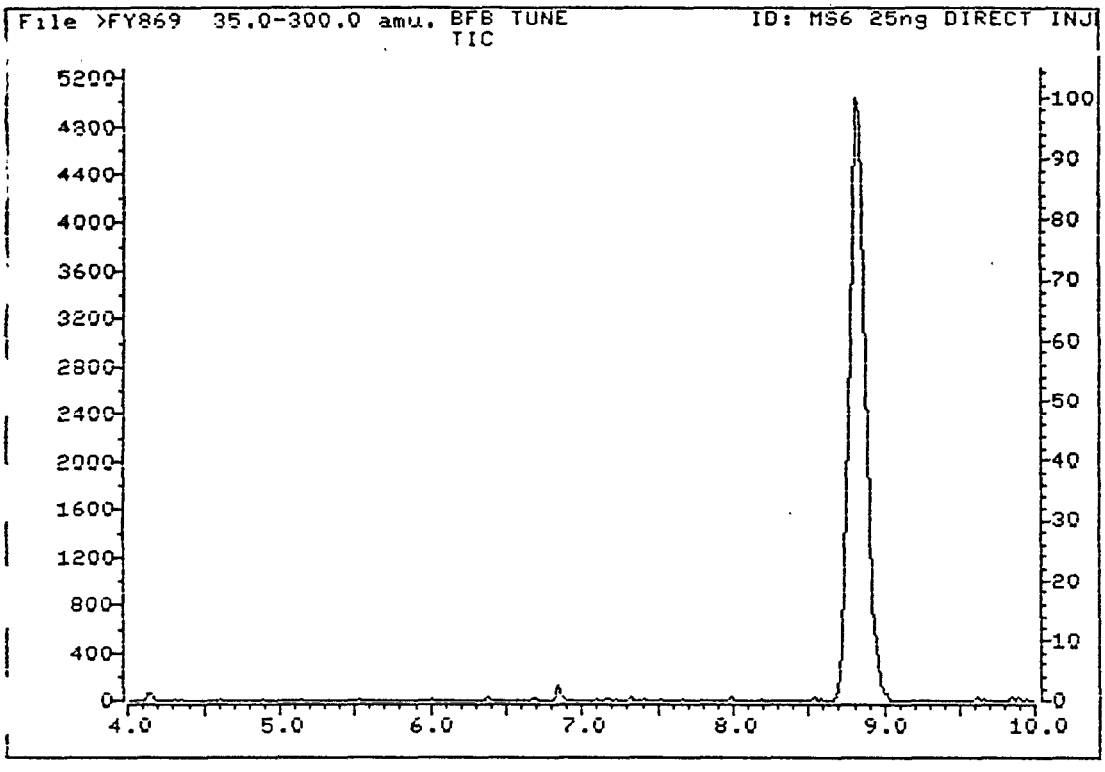
m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	69.00	51.10	75.00	69.10	116.67	80.90	9.00	96.00	77.67
38.10	61.67	57.00	11.33	73.00	32.00	86.90	24.00	174.00	728.67
39.00	8.33	61.00	48.67	74.00	175.33	92.00	12.00	175.00	50.00
44.10	14.67	62.00	18.00	75.00	532.67	93.00	27.67	176.00	717.00
49.00	53.67	63.00	26.33	76.10	33.33	94.10	107.33	177.00	50.33
50.10	247.33	68.00	116.33	78.90	9.33	95.10	1144.00		

GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	21.62	21.62	Ok
75	30-80% of mass 95	46.56	46.56	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	6.79	6.79	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	63.69	63.69	Ok
175	5-9% of mass 174	4.37	6.86	Ok
176	95-101% of mass 174	62.67	98.40	Ok
177	5-9% of mass 176	4.40	7.02	Ok

Injection Date: 02/24/98
Injection Time: 08:12
Data File: >FY869
Scan: 298

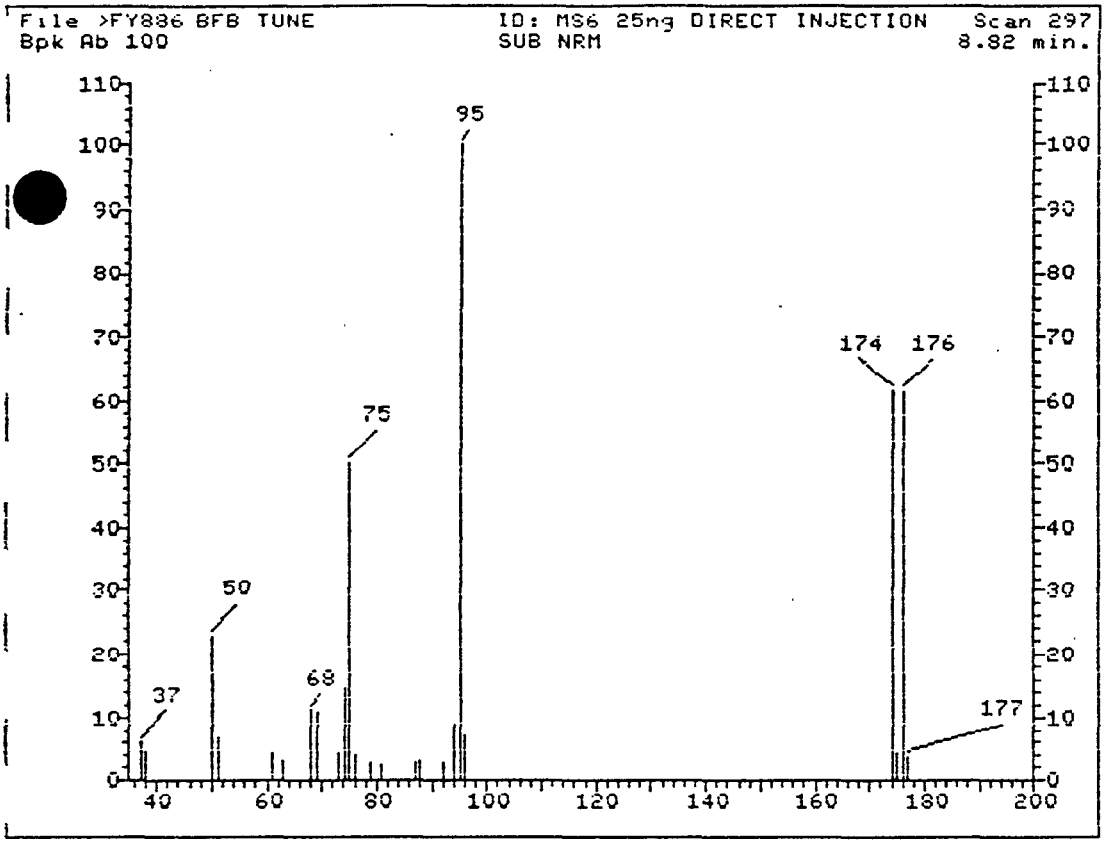


MS data file header from : >FY869::D6

Sample: BFB TUNE Operator: VOAH SUPER GRP. 2/24/98 8:12
Misc : ID: MS6 25ng DIRECT INJECTION CM
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 0 Equip ID: MS6
Method file: MS6A Tuning file: TUNEF No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	105.	107.	0.	0.	0.
Chromatographic times, min. :	8.0	1.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	1.5	0.0

SCAN TIME = 1.38 SEC/SCAN



MS data file header from : >FY886::D6

Sample: BFB TUNE Operator: VOAH SUPER GRP. 2/25/98 7:48
Misc : ID: MS6 25ng DIRECT INJECTION CM
Evs. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 0 Equip ID: MS6
Method file: MS6A Tuning file: TUNEF No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	105.	107.	0.	0.	0.
Chromatographic times, min. :	8.0	1.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	1.5	0.0

FMGR : TAB

>FY886 BFB TUNE ID: MS6 25ng DIRECT INJECTION CM
297 SUB

File: >FY886 Scan #: 297 Retn. time: 8.82

m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.	m/z	Int.
37.10	75.00	63.10	39.00	75.00	620.00	88.00	37.00	174.00	760.00
38.10	59.00	68.00	138.00	76.00	51.00	92.00	35.00	175.00	55.00
50.10	283.00	69.10	135.00	78.90	34.00	94.10	109.00	176.00	758.00
51.10	83.00	73.00	57.00	80.90	30.00	95.10	1237.00	177.00	48.00
61.10	57.00	74.10	179.00	87.00	34.00	96.00	90.00		

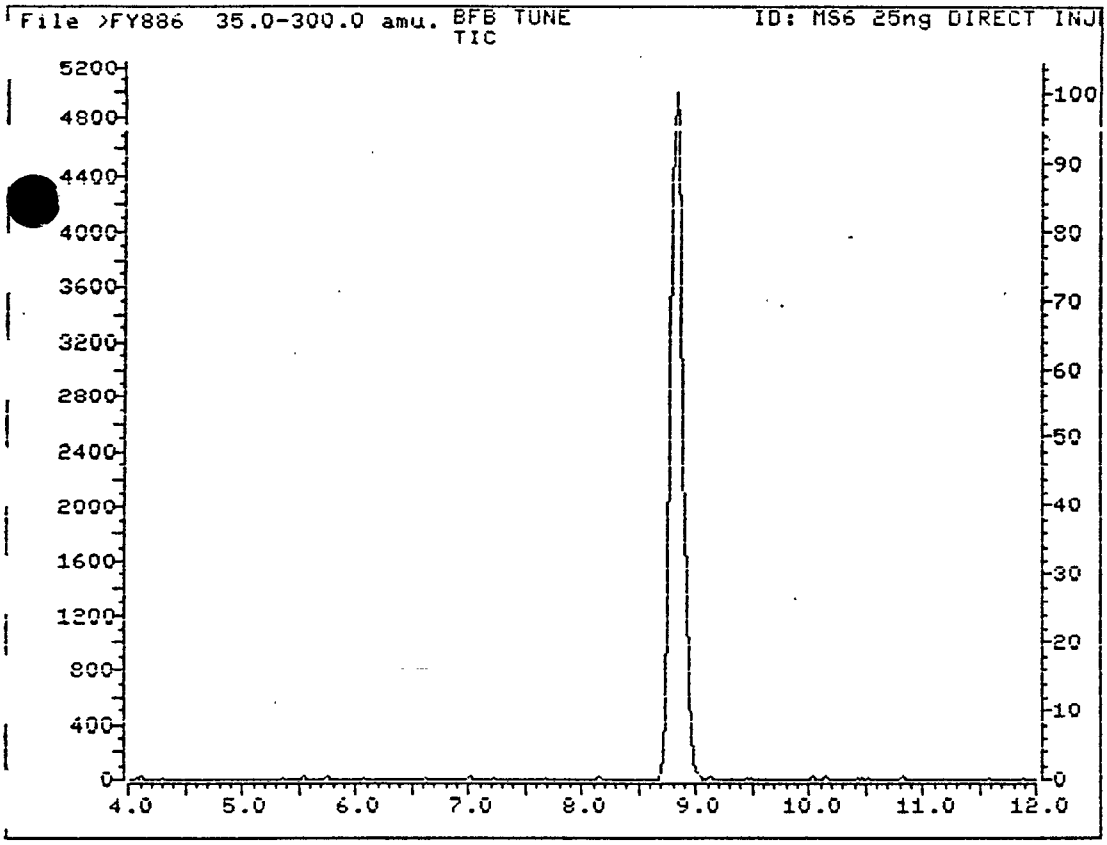
GC/MS PERFORMANCE STANDARD

Bromofluorobenzene (BFB)

m/z	Ion Abundance Criteria	% Relative Abundance Base Peak	% Relative Abundance Appropriate Peak	Status
50	15-40% of mass 95	22.88	22.88	Ok
75	30-80% of mass 95	50.12	50.12	Ok
95	Base peak, 100% relative abundance	100.00	100.00	Ok
96	5-9% of mass 95	7.28	7.28	Ok
173	Less than 2% of mass 174	0.00	0.00	Ok
174	Greater than 50% of mass 95	61.44	61.44	Ok
175	5-9% of mass 174	4.45	7.24	Ok
176	95-101% of mass 174	61.28	99.74	Ok
177	5-9% of mass 176	3.88	6.33	Ok

Injection Date: 02/25/98
Injection Time: 07:48
Data File: >FY886
Scan: 297

::



MS data file header from : >FY886::D6

Sample: BFB TUNE Operator: VOAH SUPER GRP. 2/25/98 7:48
Misc : ID: MS6 25ng DIRECT INJECTION CM
Sys. #: 2 MS model: 70 SW/HW rev.: LF ALS # : 0 Equip ID: MS6
Method file: MS6A Tuning file: TUNEF No. of extra records: 2
Source temp.: N/A Analyzer temp.: N/A Transfer line temp. : 0

Chromatographic temperatures :	105.	107.	0.	0.	0.
Chromatographic times, min. :	8.0	1.0	0.0	0.0	0.0
Chromatographic rate, deg/min:	1.0	0.0	0.0	1.5	0.0

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VBLKFA

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: V60224-B1

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY871

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Heated Purge: N Date Analyzed: 02/24/98

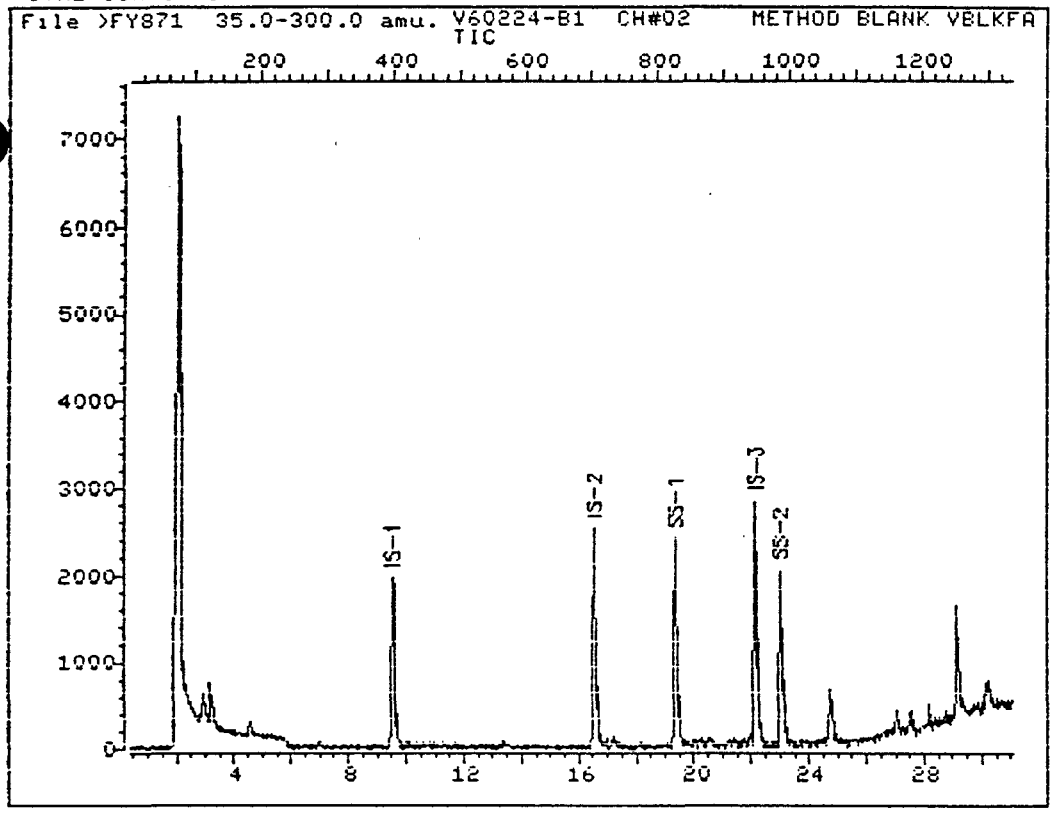
GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	1	U

67

TOTAL ION CHROMATOGRAM



Data File: >FY871::D6 Quant Output File: ^FY871::D5
Name: V60224-B1 CH#02 Instrument ID: MS6
Misc: METHOD BLANK VBLKFA 524.2 WATER 25.0ml+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: VOA7
Quant Time : 980224 10:26
Injected at: 980224 09:55

Operator ID: VOA7 Quant Rev: 7 Quant Time: 980224 10:26
Output File: ^FY871::D5 Injected at: 980224 09:55
Data File: >FY871::D6 Dilution Factor: 1.00000
Name: V60224-B1 CH#02 Instrument ID: MS6
Misc: METHOD BLANK VBLKFA 524.2 WATER 25.0ml+QC VW02-36CM

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.52	96.0	8207	1.00	UG/L	98
41)	*CI20 Chlorobenzene-d5	16.52	117.0	4939	1.00	UG/L	97
46)	C240 Ethylbenzene	17.21	91.0	571	~~.0533~~	UG/L	91
52)	CS10 Bromofluorobenzene	19.34	95.0	4525	.968	UG/L 97%	63
64)	*CI07 1,4-Dichlorobenzene-d4	22.12	152.0	2759	1.00	UG/L	98
65)	CI06 1,2-Dichlorobenzene-d4	22.99	152.0	1913	1.02	UG/L 102%	93

* Compound is ISTD

02/24/98

69

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VBLKFB

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: V60225-B1

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY888

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. _____ Heated Purge: N Date Analyzed: 02/25/98

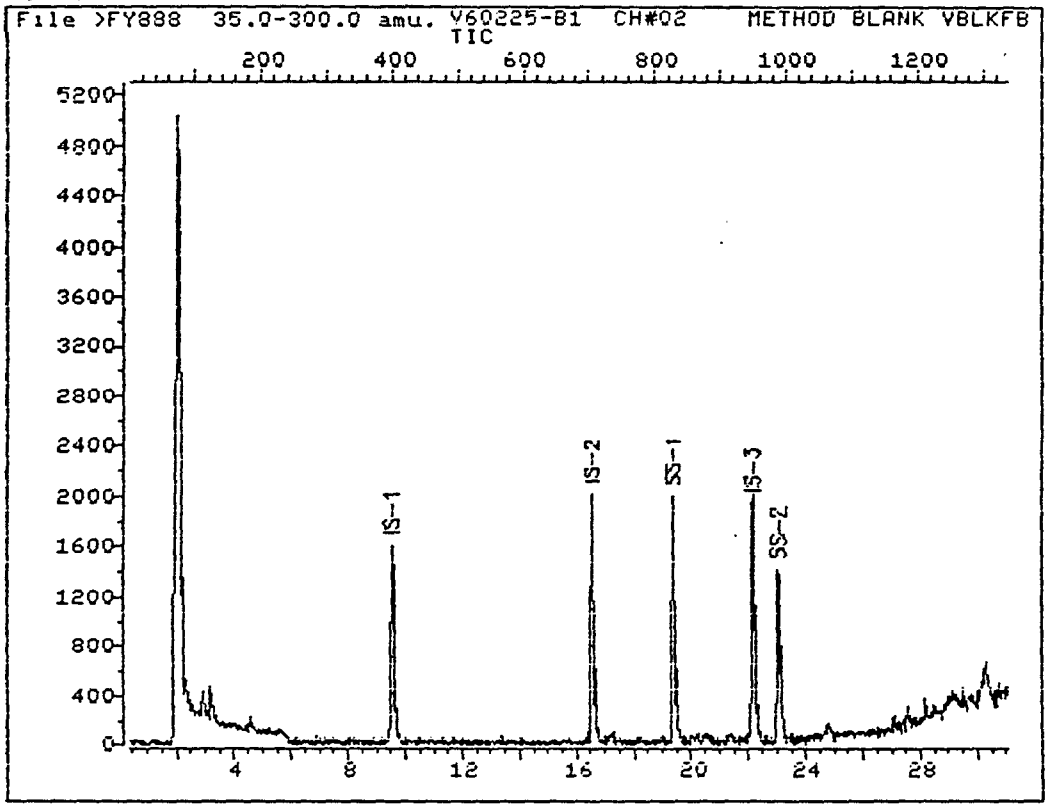
GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	1	U

70

TOTAL ION CHROMATOGRAM



Data File: >FY888::D6 Quant Output File: ^FY888::D5
Name: V60225-B1 CH#02 Instrument ID: MS6
Misc: METHOD BLANK VBLKFB 524.2 WATER 25.0ml+QC VW02-36CM

Id File: I524.F%::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980225 10:14
Injected at: 980225 09:42

71

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980225 10:14
Output File: ^FY888::D5 Injected at: 980225 09:42
Data File: >FY888::D6 Dilution Factor: 1.00000
Name: V60225-B1 CH#02 Instrument ID: MS6
Misc: METHOD BLANK VBLKFB 524.2 WATER 25.0ml+QC VW02-36CM

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.52	96.0	6764	1.00	UG/L	95
41)	*CI20 Chlorobenzene-d5	16.52	117.0	3864	1.00	UG/L	98
52)	CS10 Bromofluorobenzene	19.35	95.0	3430	.938	UG/L	85
64)	*CI07 1,4-Dichlorobenzene-d4	22.12	152.0	2086	1.00	UG/L	91
65)	CI06 1,2-Dichlorobenzene-d4	23.02	152.0	1382	.971	UG/L	96

* Compound is ISTD

CI 02/25/98

72

1X
ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VLFBFA

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: V60224-LFB

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY872A

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Heated Purge: N Date Analyzed: 02/24/98

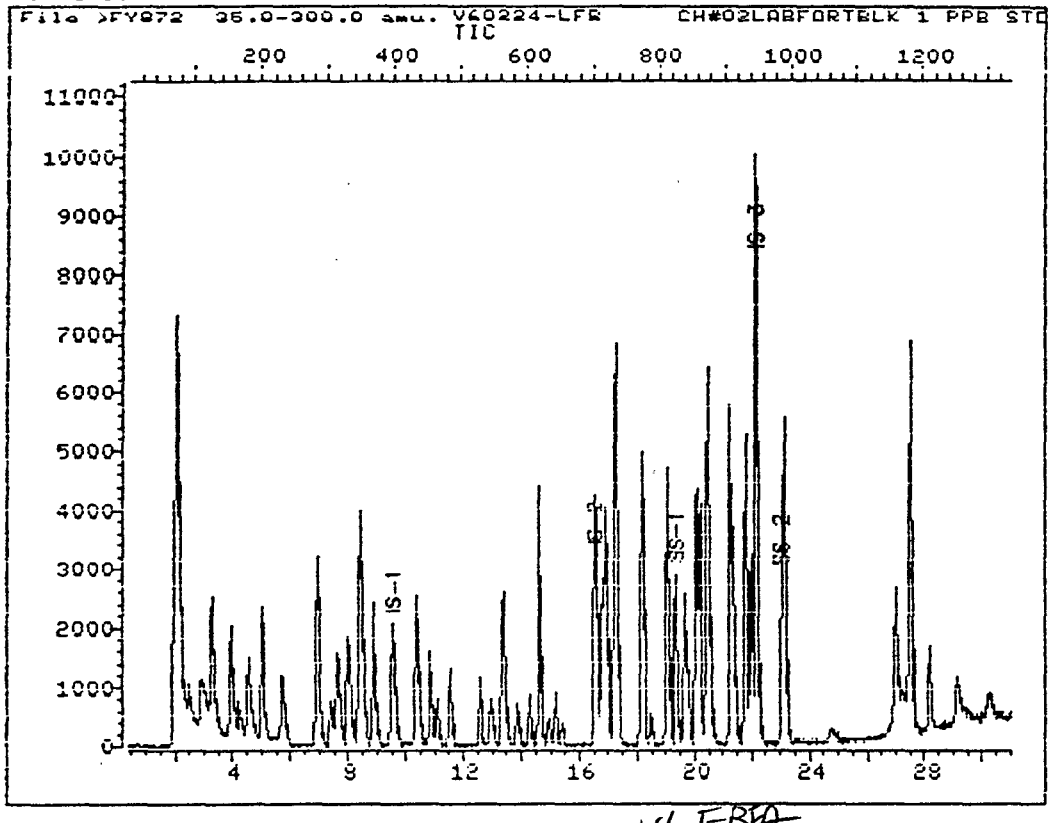
GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	1	

73

TOTAL ION CHROMATOGRAM



VC T-BFA

Data File: >FY872::D6 Quant Output File: ^FY872::D5
Name: V60224-LFB CH#02 Instrument ID: MS6
Misc: LABFORTBLK 1 PPB STD 524.2 25.0ml+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: MANAGER1
Quant Time : 980224 11:19
Injected at: 980224 10:47

74

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 11:19
Output File: ^FY872::D5 Injected at: 980224 10:47
Data File: >FY872::D6 Dilution Factor: 1.00000
Name: V60224-LFB CH#02 Instrument ID: MS6
Misc: LABFORTBLK 1 PPB STD 524.2 25.0ml+QC VW02-36CM

VLFBA

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.52	96.0	8475	1.00	UG/L	99
2)	V105 Dichlorodifluoromethane	2.17	85.0	4880	1.03	UG/L	91
3)	C010 Chloromethane	2.47	50.0	1279	.800	UG/L	87
4)	C020 Vinyl Chloride	2.47	62.0	2288	1.06	UG/L	97
5)	C015 Bromomethane	2.86	94.0	3088	1.31	UG/L	93
6)	C025 Chloroethane	2.95	64.0	1450	1.05	UG/L	92
7)	V100 Trichlorofluoromethane	3.28	101.0	7219	1.09	UG/L	98
10)	C045 1,1-Dichloroethene	3.90	96.0	2793	1.18	UG/L	81
11)	C030 Methylene Chloride	4.52	84.0	2819	1.57	UG/L	83
12)	C035 Acetone	3.92	43.0	502M	4.19	UG/L	
13)	C040 Carbon Disulfide	4.22	76.0	4344	.919	UG/L	100
14)	C055 trans-1,2-Dichloroethene	4.98	96.0	2716	1.04	UG/L	96
15)	V023 Methyl tert-butyl ether	4.98	73.0	2481	1.10	UG/L	91
16)	C050 1,1-Dichloroethane	5.66	63.0	5067	.944	UG/L	[illegible]
17)	V045 2,2-Dichloropropane	6.90	77.0	5259	.900	UG/L	[illegible]
18)	C054 cis-1,2-Dichloroethene	6.88	96.0	2563	.978	UG/L	89
19)	C060 Chloroform	7.59	83.0	5369	1.01	UG/L	97
20)	C056 Bromochloromethane	7.36	128.0	912	.976	UG/L	86
22)	C115 1,1,1-Trichloroethane	8.01	97.0	5879	.964	UG/L	92
23)	C120 Carbon Tetrachloride	8.40	117.0	5517	.965	UG/L	87
24)	V050 1,1-Dichloropropene	8.42	75.0	4917	.975	UG/L	95
25)	C165 Benzene	8.86	78.0	7168	1.00	UG/L	100
26)	C065 1,2-Dichloroethane	8.86	62.0	2543M	1.04	UG/L	
27)	C110 2-Butanone	6.90	43.0	1353	6.61	UG/L	69
28)	C150 Trichloroethene	10.35	95.0	3792	.989	UG/L	97
29)	C140 1,2-Dichloropropane	10.83	63.0	2327M	1.04	UG/L	
31)	C130 Bromodichloromethane	11.47	83.0	3382	.949	UG/L	99
32)	V024 Dibromomethane	11.08	93.0	1131	1.02	UG/L	95
33)	C143 cis-1,3-Dichloropropene	12.55	75.0	2447	.930	UG/L	95
34)	C230 Toluene	13.33	92.0	4974	1.05	UG/L	99
35)	C172 trans-1,3-Dichloropropene	13.86	75.0	1636	.920	UG/L	90
36)	C160 1,1,2-Trichloroethane	14.25	83.0	883	1.04	UG/L	97
37)	C220 Tetrachloroethene	14.60	166.0	4505	1.05	UG/L	87
38)	V055 1,3-Dichloropropane	14.62	76.0	1752	1.03	UG/L	97
39)	C155 Dibromochloromethane	15.15	129.0	1759	.943	UG/L	98
40)	V030 1,2-Dibromoethane	15.36	107.0	1213	.936	UG/L	97
41)	*CI20 Chlorobenzene-d5	16.50	117.0	5097	1.00	UG/L	94
42)	C210 2-Hexanone	14.92	43.0	1456	4.50	UG/L	94
43)	C205 4-Methyl-2-Pentanone	12.94	43.0	2612	4.97	UG/L	[illegible]
44)	C235 Chlorobenzene	16.57	112.0	5455	1.04	UG/L	[illegible]

75

AR310536

02/24/98

Operator ID: MANAGER1 Quant Rev: 7 Quant Time: 980224 11:19
Output File: ^FY872::D5 Injected at: 980224 10:47
Data File: >FY872::D6 Dilution Factor: 1.00000
Name: V60224-LFB CH#02 Instrument ID: MS6
Misc: LABFORTBLK 1 PPB STD 524.2 25.0ml+QC VW02-36CM

VLFBA

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
45)	V034 1,1,1,2-Tetrachloroethane	16.78	131.0	2289	.987	UG/L	92
46)	C240 Ethylbenzene	16.89	91.0	11442	1.04	UG/L	84
47)	C251 m,p-Xylenes	17.17	106.0	7429	2.04	UG/L	85
48)	C252 o-Xylene	18.09	106.0	3209	1.02	UG/L	81
49)	C245 Styrene	18.13	104.0	4357	.942	UG/L	10
50)	C180 Bromoform	18.50	173.0	797M	.852	UG/L	
51)	V060 Isopropylbenzene	19.01	105.0	11662	.993	UG/L	97
52)	CS10 Bromofluorobenzene	19.33	95.0	4846	1.00	UG/L	64
53)	V065 Bromobenzene	19.63	156.0	2280	.992	UG/L	81
54)	C225 1,1,2,2-Tetrachloroethane	19.72	83.0	971M	.916	UG/L	
55)	V036 1,2,3-Trichloropropane	19.76	75.0	949M	1.17	UG/L	
56)	V070 n-Propylbenzene	19.99	91.0	14158	.988	UG/L	85
57)	V075 2-Chlorotoluene	20.16	91.0	9324	1.04	UG/L	80
58)	V080 1,3,5-Trimethylbenzene	20.45	105.0	9964	1.03	UG/L	91
59)	V085 4-Chlorotoluene	20.43	91.0	10428	1.03	UG/L	84
60)	V090 tert-Butylbenzene	21.21	119.0	10050	1.03	UG/L	93
61)	V095 1,2,4-Trimethylbenzene	21.35	105.0	9131	1.01	UG/L	80
62)	V120 sec-Butylbenzene	21.74	105.0	14261	1.01	UG/L	76
63)	V125 p-Isopropyltoluene	22.13	119.0	11366	1.03	UG/L	87
64)	*CI07 1,4-Dichlorobenzene-d4	22.11	152.0	2883	1.00	UG/L	98
65)	CI06 1,2-Dichlorobenzene-d4	22.98	152.0	1956	.995	UG/L	94
66)	C335 1,3-Dichlorobenzene	21.95	146.0	4557	.999	UG/L	95
67)	C340 1,4-Dichlorobenzene	22.15	146.0	4753	1.07	UG/L	88
68)	V130 n-Butylbenzene	23.14	91.0	11481	.938	UG/L	77
69)	C350 1,2-Dichlorobenzene	23.03	146.0	3538	1.05	UG/L	97
70)	C182 1,2Dibromo3chloropropane	24.93	75.0	144M	.656	UG/L	
71)	V135 1,2,4-Trichlorobenzene	26.98	180.0	2478	.941	UG/L	93
72)	V140 Hexachlorobutadiene	27.46	225.0	4870	1.06	UG/L	99
73)	V145 Naphthalene	27.55	128.0	369M	.264	UG/L	
74)	V150 1,2,3-Trichlorobenzene	28.15	180.0	1778	.920	UG/L	98

* Compound is ISTD

02/24/98

1X

ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

VLFBFB

Lab Name: CEIMIC CORP Contract: ESC

Lab Code: CEIMIC Case No.: NCR SAS No.: _____ SDG No.: HP1

Matrix: (soil/water) WATER Lab Sample ID: V60225-LFB

Sample wt/vol: 25.0 (g/mL) ML Lab File ID: FY889

Level: (low/med) LOW Date Received: _____

% Moisture: not dec. ____ Heated Purge: N Date Analyzed: 02/25/98

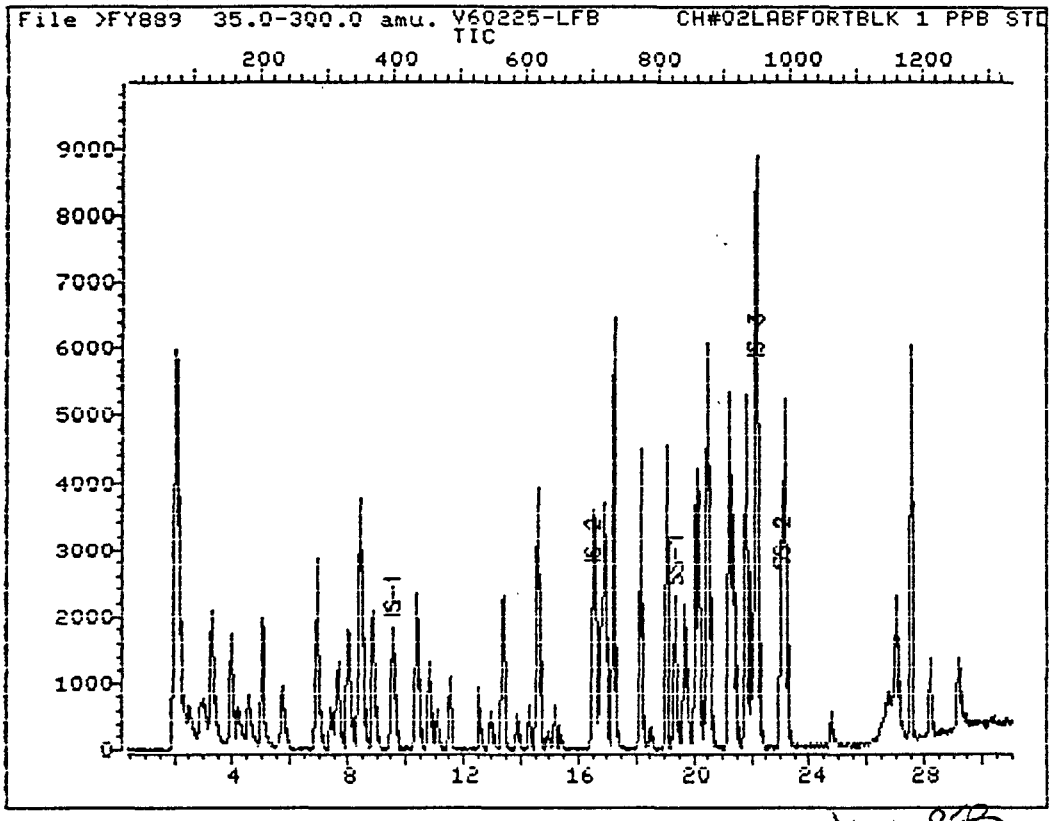
GC Column: HP624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
79-01-6	Trichloroethene	1	

77

TOTAL ION CHROMATOGRAM



VLFBFB

Data File: >FY889::D6 Quant Output File: ^FY889::D5
Name: V60225-LFB CH#02 Instrument ID: MS6
Misc: LABFORTBLK 1 PPB STD 524.2 25.0ml+QC VW02-36CM

Id File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

Operator ID: VOAH
Quant Time : 980225 10:58
Injected at: 980225 10:26

Operator ID: VOAH Quant Rev: 7 Quant Time: 980225 10:58
Output File: ^FY889::D5 Injected at: 980225 10:26
Data File: >FY889::D6 Dilution Factor: 1.00000
Name: V60225-LFB CH#02 Instrument ID: MS6
Misc: LABFORTBLK 1 PPB STD 524.2 25.0ml+QC VW02-36CM

VCFBB

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
1)	*CI25 Fluorobenzene	9.50	96.0	7386	1.00	UG/L	96
2)	V105 Dichlorodifluoromethane	2.20	85.0	4694	1.14	UG/L	88
3)	C010 Chloromethane	2.38	50.0	1296	.930	UG/L	83
4)	C020 Vinyl Chloride	2.50	62.0	1995	1.06	UG/L	94
5)	C015 Bromomethane	2.86	94.0	2356	1.14	UG/L	93
6)	C025 Chloroethane	2.98	64.0	1394	1.16	UG/L	84
7)	V100 Trichlorofluoromethane	3.28	101.0	6978	1.21	UG/L	99
10)	C045 1,1-Dichloroethene	3.90	96.0	2411	1.16	UG/L	77
11)	C030 Methylene Chloride	4.52	84.0	1595	1.02	UG/L	97
13)	C040 Carbon Disulfide	4.19	76.0	3951	.959	UG/L	100
14)	C055 trans-1,2-Dichloroethene	4.98	96.0	2474	1.09	UG/L	91
15)	V023 Methyl tert-butyl ether	5.00	73.0	1754	.889	UG/L	98
16)	C050 1,1-Dichloroethane	5.69	63.0	4501	.962	UG/L	93
17)	V045 2,2-Dichloropropane	6.90	77.0	4969	.975	UG/L	74
18)	C054 cis-1,2-Dichloroethene	6.88	96.0	2260	.990	UG/L	[illegible]
19)	C060 Chloroform	7.62	83.0	4652	1.01	UG/L	[illegible]
20)	C056 Bromochloromethane	7.39	128.0	646	.793	UG/L	82
22)	C115 1,1,1-Trichloroethane	8.01	97.0	5729	1.08	UG/L	94
23)	C120 Carbon Tetrachloride	8.40	117.0	5109	1.03	UG/L	93
24)	V050 1,1-Dichloropropene	8.40	75.0	4614	1.05	UG/L	95
25)	C165 Benzene	8.86	78.0	6432	1.03	UG/L	100
28)	C150 Trichloroethene	10.35	95.0	3552	1.06	UG/L	97
31)	C130 Bromodichloromethane	11.47	83.0	2828	.911	UG/L	98
32)	V024 Dibromomethane	11.08	93.0	791	.822	UG/L	94
33)	C143 cis-1,3-Dichloropropene	12.55	75.0	1984	.865	UG/L	90
34)	C230 Toluene	13.31	92.0	4348	1.05	UG/L	98
35)	C172 trans-1,3-Dichloropropene	13.86	75.0	1300	.839	UG/L	92
36)	C160 1,1,2-Trichloroethane	14.25	83.0	635	.859	UG/L	91
37)	C220 Tetrachloroethene	14.60	166.0	4137	1.10	UG/L	87
38)	V055 1,3-Dichloropropane	14.62	76.0	1411	.953	UG/L	93
39)	C155 Dibromochloromethane	15.15	129.0	1275	.785	UG/L	98
40)	V030 1,2-Dibromoethane	15.38	107.0	868	.769	UG/L	93
41)	*CI20 Chlorobenzene-d5	16.50	117.0	4342	1.00	UG/L	95
42)	C210 2-Hexanone	14.92	43.0	1065	3.87	UG/L	91
43)	C205 4-Methyl-2-Pentanone	12.94	43.0	1854	4.14	UG/L	85
44)	C235 Chlorobenzene	16.57	112.0	4643	1.04	UG/L	80
45)	V034 1,1,1,2-Tetrachloroethane	16.78	131.0	1850	.936	UG/L	94
46)	C240 Ethylbenzene	16.89	91.0	10060	1.07	UG/L	86
47)	C251 m,p-Xylenes	17.19	106.0	6737	2.18	UG/L	83
48)	C252 o-Xylene	18.11	106.0	2805	1.04	UG/L	[illegible]

79

AR310540

02/25/98

Operator ID: VOAH Quant Rev: 7 Quant Time: 980225 10:58
Output File: ^FY889::D5 Injected at: 980225 10:26
Data File: >FY889::D6 Dilution Factor: 1.00000
Name: V60225-LFB CH#02 Instrument ID: MS6
Misc: LABFORTBLK 1 PPB STD 524.2 25.0ml+QC VW02-36CM

VLFBB

ID File: I524.F::D1
Title: 524.2 VER 4.0 DRINKING WATER HP624 75mx0.53mmIDx3um ID: MS6
Last Calibration: 980224 08:16 Last Qcal Time: <none>

	Compound	R.T.	Q ion	Area	Conc	Units	q
49)	C245 Styrene	18.16	104.0	3662	.930	UG/L	12
51)	V060 Isopropylbenzene	19.01	105.0	10791	1.08	UG/L	96
52)	CS10 Bromofluorobenzene	19.33	95.0	4018	.978	UG/L	98 60
53)	V065 Bromobenzene	19.65	156.0	1882	.961	UG/L	82
56)	V070 n-Propylbenzene	20.02	91.0	13738	1.13	UG/L	89
57)	V075 2-Chlorotoluene	20.16	91.0	7947	1.04	UG/L	81
58)	V080 1,3,5-Trimethylbenzene	20.48	105.0	8853	1.07	UG/L	88
59)	V085 4-Chlorotoluene	20.43	91.0	9432	1.09	UG/L	85
60)	V090 tert-Butylbenzene	21.24	119.0	9269	1.11	UG/L	90
61)	V095 1,2,4-Trimethylbenzene	21.37	105.0	8130	1.05	UG/L	78
62)	V120 sec-Butylbenzene	21.77	105.0	13263	1.10	UG/L	76
63)	V125 p-Isopropyltoluene	22.16	119.0	10347	1.11	UG/L	89
64)	*CI07 1,4-Dichlorobenzene-d4	22.11	152.0	2315	1.00	UG/L	98
65)	CI06 1,2-Dichlorobenzene-d4	23.01	152.0	1604	1.02	UG/L	102 95
66)	C335 1,3-Dichlorobenzene	21.95	146.0	3784	1.03	UG/L	93
67)	C340 1,4-Dichlorobenzene	22.18	146.0	3923	1.10	UG/L	98
68)	V130 n-Butylbenzene	23.14	91.0	10781	1.10	UG/L	78
69)	C350 1,2-Dichlorobenzene	23.05	146.0	2771	1.02	UG/L	97
71)	V135 1,2,4-Trichlorobenzene	27.00	180.0	1998	.944	UG/L	100
72)	V140 Hexachlorobutadiene	27.48	225.0	4463	1.20	UG/L	94
74)	V150 1,2,3-Trichlorobenzene	28.17	180.0	1360	.877	UG/L	81

* Compound is ISTD

2/25/98