SHEA #86197

MULTI-MEDIA SAMPLING REPORT FOR THE BRANDEIS-BARDIN INSTITUTE AND THE SANTA MONICA MOUNTAINS CONSERVANCY

VOLUME II

MARCH 10, 1993

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MCLAREN/HART PROJECT NO. 29403-012

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APPROVED FOR RELEASE

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DOCUMENT 2:
"Department of Health Services Participation in Multi-Media Sampling in the Vicinity of Rocketdyne SSFL". California Department of Health Services. February 19, 1993.

EPA

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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FEB 9 1993

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Dear Dr. Giliberto:

Enclosed please find the "Analytical Results Report, Off-Site Multi-Media Sample Collection at the Santa Susana Field Laboratory."

You and your contractor, McLaren Hart, have permission to duplicate this report for the purposes of an Appendix in the "Multi-Media Sampling Report for the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy."

Sincerely,

Gregg D. Dempsey
Chief, Field Studies Branch

Enclosures

cc: Ann Holbrow, McLaren Hart
Arnold Robbins, EPA Region 9 (w/o)

ANALYTICAL RESULTS REPORT

OFF-SITE, MULTI-MEDIA SAMPLE COLLECTION AT THE SANTA SUSANA FIELD LABORATORY

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January 1993

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1.0 Introduction

The Santa Susana Field Laboratory (SSFL) is located in the Simi Hills of eastern Ventura County, west of Chatsworth, California. The facility, which is operated by Rockwell International Corporation's Rocketdyne Division for the United States Department of Energy (DOE), occupies approximately 2,600 acres. Beginning in the early 1950s, programs including nuclear engineering, research and development, and manufacturing operations have been conducted in Area IV of the facility.

Investigations at the SSFL have indicated that groundwater underlying the property contains volatile organic compounds (GWR91). Radiological contamination has also been found onsite in the soils of areas at one time dedicated to nuclear research activities conducted under contract to DOE. Remediation of some contaminated areas have been completed. Rocketdyne is currently performing remediation or has plans to remediate other areas.

Remediation of the following areas have been completed:

Areas of the Radioactive Materials Disposal Facility Watershed were completed in 1979.

The Sodium Reactor Experimental Facility was completed in 1983.

The Sodium Burn Pit was completed in December of 1992.

Rocketdyne is currently performing radiological remediation of the following areas:

Building 59, Space Nuclear Auxiliary Power System (SNAP), is projected to be completed in 1993.

Building 5, Uranium Carbide Fuel Fabrication Facility, is projected to be completed in 1993.

Building 64, Storage Facility, is projected to be completed in 1993.

Building 20, Hot Lab, is projected for completion in 1995.

Rocketdyne plans to conduct remediation operations of the following areas:

Building 12, Space Nuclear Auxiliary Power System (SNAP), is projected to begin in 1994.

Radioactive Materials Disposal Facility is projected to begin in 1998

Because several areas on the SSFL site were identified as being contaminated with radioactivity and/or volatile organic compounds, the potential for contamination of properties around the SSFL became a concern. To assess this potential the United States Environmental Protection Agency's (EPA) Region IX Office and Office of Radiation and Indoor Air (ORIA), Las Vegas Facility, the State of California's Department of Health Services (CaDHS), and Rockwell International's Rocketdyne Division designed an environmental sampling program to determine if offsite contamination had occurred.

A workplan entitled, "Workplan for Multi-Media Sampling at the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy," was prepared by McLaren/Hart ChemRisk, a contractor to Rocketdyne, which identified the areas and media to be sampled and the analyses to be to be performed. Samples were collected during March and April of 1992 by McLaren/Hart ChemRisk in accordance with this workplan. Field observations were documented on behalf of EPA by an S. Cohen and Associates, Inc. (SC&A) representative who observed sample collection to insure that proper sampling procedures were followed, appropriate locations were sampled, and sample splits, where required, were obtained. These activities are described fully in an SC&A report (SCA92).

Approximately fifteen percent of the samples identified in the McLaren/Hart ChemRisk workplan were collected as split samples and divided between the EPA and McLaren/Hart Chemrisk for analysis. The analytical results from the split samples will be compared to determine if significant differences exist in the results between the EPA laboratory and the McLaren Hart laboratory. McLaren/Hart ChemRisk and Rocketdyne are responsible for performing the comparison and preparing a report detailing the results of that comparison.

Results of the analyses performed on the EPA portion of the split samples are tabulated in this report. A summary regarding methodology and quality control is also provided.

2.0 Analytical Approach

Radiochemical and chemical analyses to be performed were identified in the McLaren/Hart ChemRisk workplan. Additional analyses not specified in the workplan were performed by the EPA for isotopic uranium and tritium. Except for iodine-129 the EPA radiochemical analyses were performed at the National Air and Radiation Environmental Laboratory; iodine-129 and all chemical analyses were performed for the EPA by International Technology (IT) Middlebrook Pike laboratory in Knoxville, Tennessee. The McLaren/Hart ChemRisk laboratory performed their own analyses for chemicals but subcontracted the radiochemical analyses to Teledyne Isotopes in Westwood, New Jersey.

3.0 Sample Custody

Sample custody was conducted in accordance with Contract Laboratory Procedures (CLP), 1988 SOW. Once samples were received and accepted at the designated EPA laboratory, they remained under chain of custody in accordance with procedures including, but not limited to:

1. Identification of the responsible party acting as sample custodian who is authorized to sign for incoming samples, obtain documents of the shipment, and verify the date entered into the sample custody records.

2. Provision for a laboratory sample custody log in which serial numbers were assigned to samples received.

3. Laboratory sample custody procedures for handling, storage, and dispersement of samples for analyses.

4.0 Methodology

4.1. NAREL Radiochemical Analyses

4.1.1 Gross Alpha and Gross Beta

Water samples were prepared for gross alpha and gross beta analysis in accordance with EERF 00-01 (EPA84a). Samples were then counted for 100 minutes on a low-background gas proportional counting system. Results of these analyses are listed in Table 1.

4.1.2 Gamma Spectroscopy

Samples were analyzed for gamma emitting radionuclides by gamma spectroscopy in accordance with EPA 901.1 (EPA80a), using high purity germanium detectors. Prior to analysis, soil samples were dried at 100^0 C and blended to obtain a uniform product. A 400 ml geometry was prepared and counted for 1000 minutes. Water samples were placed in a 1 liter Marinelli beaker and counted for 1000 minutes. Fruit samples were homogenized in a blender; a 400 mL sample was then obtained and counted for 1000 minutes. A summary of the results of these analyses are listed in Tables 2-A, 2-B, and 2-C. The complete gamma spectroscopy results for each sample is compiled in Appendix A, " Gamma Spectroscopy Complete Results."

4.1.3 Tritium

Samples were analyzed for tritium in accordance with EERF H-01 (EPA84b) and EPA 906.0 (EPA80b). The samples were counted for 100 minutes by a liquid scintillation counter. Results of these analyses are listed in Tables 3-A, 3-B, and 3-C.

4.1.4 Isotopic Plutonium

Samples were analyzed for isotopic plutonium in accordance with EERF Pu-01 (EPA84c). In accordance with the procedure, the samples were counted for 1000 minutes by alpha spectroscopy. Results of these analyses are listed in Tables 4-A, 4-B, and 4-C.

4.1.5 Isotopic Uranium

Only soil samples were analyzed for isotopic uranium. Isotopic uranium analyses were performed in accordance with EERF 00-06 (EPA84d). The samples were counted for 1000 minutes by a surface barrier alpha spectroscopy detector. Results of these analyses are listed in Table 5.

4.1.6 Strontium-90

Soil and fruit samples were analyzed for strontium-90 in accordance with EERF Sr-01 (EPA84e). Water samples were analyzed in accordance with EERF Sr-04 (EPA84f). After performing these procedures, the samples were counted for 100 minutes on a multidetector, low-background beta counting system. Results of these analyses are listed in Tables 6-A, 6-B, and 6-C.

4.1.7 Iodine-129

Analysis for iodine-129 in soil and water was performed by International Technology Corporation by column and chemical extraction in accordance with RSL-307 (IT87). After performing this procedure, the samples were counted on a liquid scintillation counter. Fruit samples were analyzed in accordance with RD3219 (IT91) by Low Energy Photon Detector (LEPD). Results of these analyses are listed in Tables 7-A, 7-B, and 7-C.

4.2 Chemical Analysis

International Technology performed all analyses for chemicals. Only soil and water samples were analyzed for chemicals.

4.2.1 Volatile Organic Compounds (VOCs)

Analyses for VOCs were performed in accordance with SW- 846 method 8240 (SW86a). A summary of the results of these analyses are listed in Tables 8-A and 8-B. The analytical results for each compound are compiled in Appendix B, "Chemical Analyses Complete Results." The details of the analyses are contained in the case narratives compiled in Appendix C, "Case Narratives For Chemical Analyses."

4.2.2 Semivolatile Organic Compounds (SVOCs)

Analyses for SVOCs in soils were performed in accordance with SW-846 method 8270 (SW86b). Water analyses were performed in accordance with SW-846 method 8310m (SW86b), and EPA method 610. A summary of the results of these analyses are listed in Tables 9-A and 9-B. The analytical results for each compound are compiled in Appendix B, "Chemical Analysis Complete Results." The details of the analyses are contained in the case narratives compiled in Appendix C, "Case Narratives for Chemical Analyses."

4.2.3 Priority Pollutant Metals (PPM)

Analyses for PPMs were performed in accordance with SW-846 methods 7470 (SW86c), 7471 (SW86d), 7060 (SW86e), 7741 (SW86f), 7841 (SW86g), and 6010 (SW86h). Results of these analyses are listed in Tables 10-A and 10-B.

The details of these analyses are contained in the case narratives and are compiled in Appendix C, "Case Narratives for Chemical Analyses."

5.0 Additional Analyses

When the result of an EPA or Teledyne laboratory analysis was questionable, the analysis was performed again by the EPA to verify the original result. When the Teledyne laboratory produced a questionable result, a laboratory split was prepared from that sample and sent to the EPA for a confirmatory analysis. The results of these analyses are contained in Table 11.

6.0 Quality Control

6.1 Radiochemical Analyses

6.1.1 Radiochemical analyses were performed on the samples by both S. Cohen and Associates, Inc. (SC&A) and EPA personnel who are qualified to perform the approved procedures. Quality control samples were analyzed concurrently with the site samples in order to assure the accuracy and precision of the analytical procedure and instrumentation. Quality control samples were analyzed according to the following schedule:

Duplicate Sample Analysis	1 in 10
Matrix Spike	1 in 20
Matrix Spike Duplicate	1 in 20
Method Blanks	1 in 20

The results of the radiochemical analyses quality control samples are compiled in Appendix D, "Quality Control Samples."

6.2 Chemical Analyses

Analyses for chemicals and iodine-129 was performed by International Technology. International Technology is approved by the EPA as a CLP laboratory and is certified by the State of California. Quality control samples were analyzed concurrently with the site samples in order to assure accuracy and precision of the analytical procedure and instrumentation. Quality control samples were analyzed according to the following schedule:

Matrix Spike	1 in 20
Matrix Spike Duplicate	1 in 20
Method Blanks	1 in 20
Travel Blanks	1 per Shipment Containing Samples For VOCs Analysis

The results of chemical analyses quality control samples are compiled in Appendix D, "Quality Control Samples."

6.3 Accuracy

Accuracy is a measurement of the agreement between an experimental determination and the true value of the parameter being measured. Spiking of reference material into an actual sample matrix is the preferred technique for evaluating accuracy because it provides an indication of the matrix effects on the analytical accuracy. Accuracy, defined as percent accuracy (PA), is calculated by the following equation:

$$PA = \frac{|SSR - SR|}{SA} \times 100\%$$

where:

PA = Percent Accuracy

SSR = Spiked Sample Result

SA = Spike Added

SR = Sample Result

6.4 Precision

Precision is a measure of the degree of repeatability of a set of results obtained from duplicate analyses made under the same conditions. Precision is expressed as relative percent difference (RPD), and is calculated by the following equation:

$$RPD = \frac{(S_1 - S_2)}{\left(\frac{S_1 + S_2}{2}\right)} \times 100\%$$

where:

RPD = Relative Percent Difference

S_1 = Larger of the two measured results

S_2 = Smaller of the two measured results

7.0 Discussion of EPA Results

7.1 Gross Alpha and Gross Beta

The results of all gross alpha and gross beta analyses (Table 1) were less then the minimum detectable activity (MDA) with the exception of two sample areas at the Radioactive Materials Disposal Facility Watershed on the Brandeis-Bardin Institute/Rocketdyne Facility Border Ravine Area. All values in the table greater than the MDA are within safe drinking water limits (CFR91). However, it should be note that these samples were ground water or surface water and were not drinking water. Drinking water standards are cited because they prove the most conservative limits for comparison.

7.2 Gamma Spectroscopy

Cs-137 was the only radionuclide with values greater than the MDA except for those naturally occurring. Cs-137 (Tables 2-A, 2-B, and 2-C) was detected at several locations in near background concentrations. The concentrations detected are consistent with those found in other areas of the Unites States and are thought to be a result of fallout from nuclear weapons testing. An additional analysis for Cs-137 was performed by the EPA on a laboratory split sample with questionable results from the Teledyne laboratory. The additional analysis, (Table 11-A) confirmed the Teledyne result, which was ultimately determined to be consistent with the other Cs-137 values.

A list of Cs-137 concentrations in soil from several areas in the state of California was compiled from the Environmental Radiation Ambient Monitoring System (ERAMS) data base at the NAREL and is included in Appendix E, "Cs-137 in California Soils."

7.3 Tritium

The results of tritium analyses, (Tables 3-A, 3-B, and 3-C), on field split samples were near or below the MDA, approximately 200 pCi/L. However, some of the samples analyzed by Teledyne laboratories that were not collected as split samples indicated the presence of tritium. To confirm these results, the Teledyne laboratory provided a laboratory split of these samples to the EPA for analysis. If the integrity of the laboratory split sample was not acceptable upon arrival at the EPA, or the amount of water recovered during the azeotropic distillation was not sufficient to provide a reasonable and useful detection limit, the analytical value was not reported. The results of the EPA analyses on the laboratory split samples confirmed the presence of slightly elevated levels of tritium in six samples collected from sample areas at the Radioactive Materials Disposal Facility Watershed located at the Brandeis-Bardin Institute/Rocketdyne Facility Border Ravine Area (Table 11-B). In addition, somewhat higher levels of tritium were confirmed in two samples collected from areas at the Building 59 Watershed located at the Brandeis-Bardin Institute/Rocketdyne Facility Border Ravine Area (Table 11-B). All values in the table greater than the MDA are within the safe drinking water limits (CFR91). However, it should be noted that these samples were water that was extracted from soil, and not drinking water. Drinking water standards are cited because they provide the most conservative limits for comparison.

7.4 Isotopic Plutonium

Concentrations of Pu-238 and Pu-239 were identified near or below the MDA in all samples (Tables 4-A, 4-B, and 4-C). The concentrations that were detected are consistent with those levels found in other areas of the United States and are thought to be a result of fallout from nuclear weapons testing and from space generators which have burned on atmospheric reentry.

7.5 Isotopic Uranium

U-234, U-235, and U-238 are naturally occurring radionuclides in the environment. Although uranium analyses were not required by the workplan, the EPA analyzed their field split portion of soil samples for this radionuclide in order to determine if it was present in naturally occurring quantities (Table 5). Its analysis was readily available from the plutonium procedure, and it provided additional characterization of the radionuclide content of the area. Normal concentrations of these radionuclides in the ratio of 1:.05:1 U-238, U-235, and U-234, respectively, were detected.

7.6 Strontium-90

The results of Sr-90 were all less than the MDA with the exception of one water sample (Tables 6-A, 6-B, and 6-C). A concentration of 7.79 pCi/L was detected at the Radioactive Materials Disposal Facility Watershed located at the Brandeis-Bardin Institute/Rocketdyne Facility Border Ravine Area. The sample was reanalyzed three times, and results of 7.80, 7.71 and 7.43 pCi/L were obtained (Table 11-C). Subsequently, a laboratory split sample was received from the Teledyne laboratory and analyzed. The result from this analysis was 6.66 pCi/L.

7.7 Iodine-129

The results of all I-129 analyses were less than the MDA (Tables 7-A, 7-B and 7-C).

7.8 Volatile Organic Compounds (VOCs)

Trace amounts of methylene chloride and acetone were identified in seven samples (Tables 8-A and 8-B). Although these compounds were not identified in the method blanks, it is believed that such small concentrations are the results of laboratory contamination, since they are used routinely in the IT laboratory.

Trichloroethene (TCE) was identified in the Well By The Gate sample from the Santa Monica Mountains Conservancy. A concentration of 13 ppb was identified and is considered to be a significant level. TCE is a common solvent that was frequently used at the SSFL in large volumes.

An additional analysis was performed on a second sample collected at a later date from the Antenna Well, because the first sample collected by McLaren/Hart ChemRisk contained a trace amount of laboratory solvent. The result of the second analysis (Table 11-D) was negative.

7.9 Semivolatile Organic Compounds (SVOCs)

With the exception of one water sample collected at the Radioactive Materials Disposal Facility at the Brandeis-Bardin Institute/Rocketdyne Facility Border Ravine Border, no SVOCs were detected (Tables 9-A and 9-B). Fluoranthrene was detected at a concentration of .33 ppb was reported for this sample. Fluoranthrene is usually a by-product of combustion and is not considered significant at this level.

7.10 Priority Pollutant Metals

The results of all metal analyses were within normal ranges except for one sample (Tables 10-A and 10-B). The lead concentration in a sample collected at the Former Rocketdyne Shooting Range located at the Santa Monica Mountains Conservancy was 225 ppm. Because this area was once used as a shooting range, the elevated lead concentration was not unexpected. This area is currently being remediated.

8.0 Conclusions and Recommendations

A total of five laboratories participated in analyzing split samples collected for this study:

McLaren/Hart

California Department of Public Health

Brandeis-Bardin Consultant

Teledyne

United States Environmental Protection Agency

Although no formal review of the completed data set compiled by McLaren/Hart ChemRisk was performed by SC&A, a review of the results in this study and a comparison of the results from analyses by different laboratories of split samples were made as the study progressed. It is important to note that in almost every sample, no detectable amount or only amounts near the limits of detection were observed for the analytes, except in the specific samples described below.

Several results of the radioanalyses of the EPA split samples do indicate, however, the need for additional study in two areas of the Brandeis-Bardin Institute/Rocketdyne Facility Border. Those areas are identified as follows:

1. Some locations at the watershed area of Building 59 were identified as having tritium concentrations of approximately 10,000 pCi/L (Table 11-B) of water that was extracted from soil. It should be noted that the tritium contamination was identified in water extracted from soil and not from ground water or surface water that could be consumed. Because the tritium is within the water in the soil, exposure, if any, by inhalation is not significant. Also the location of the contamination is in a remote area which is unoccupied and not used for agricultural purposes. Therefore, at this time there is not a potential for exposure by ingestion of food products. Eventhough these were not drinking

water samples, if the conservative safe drinking water limit for tritium of 20,000 pCi/L (CFR91) is used for comparison purposes, the levels of tritium identified do not present a health concern at this point. In addition, drainage areas below this location were also sampled and analyzed with negative results. However, the results do indicate a source of contamination is present somewhere on the SSFL site, and further studies should be conducted to identify that source.

2. The second area that should be studied is the ground water found at the Radioactive Materials Disposal Facility. Both the EPA and the Teledyne laboratory identified the presence of Sr-90 at levels below the safe drinking water limit of 8 pCi/L (CFR91) (Tables 6-B and 11-C). However, there was a wide variation between the results of 7.79 pCi/L attained by the EPA and 1.1 pCi/L attained by Teledyne. Subsequent analysis by the EPA of the remainder of their sample as well as of a laboratory split sample acquired from the Teledyne laboratory all indicate approximately 7 pCi/L of Sr-90 present. Since the results of the EPA quality control sample was outside standard control limits and since all the sample was used during testing by the EPA and Teledyne laboratories, this area should be sampled again to clarify the Sr-90 value. It should be noted that this location is in a remote area and does not represent a health concern at this point. Also, the drainage areas below this location were sampled and analyzed with negative results.

The results of chemical analyses also indicate areas for additional examination:

1. Long term studies should be instituted at the Santa Monica Mountains Conservancy Well by the Gate where Trichloroethene was confirmed to be present in the ground water at levels above the safe drinking water limit (Table 8-B). These studies are already being conducted on the Rocketdyne site where this compound has been identified in the ground water.

2. Upon completion of the remediation of the Former Rocketdyne Shooting Range on the Santa Monica Mountains Conservancy, confirmatory sampling and analysis should be conducted to assure the removal of lead was successful (Table 10-A).

References

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TABLE 1

RADIOANALYTICAL RESULTS
GROSS ALPHA AND GROSS BETA IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Gross Alpha pCi/L	Gross Beta pCi/L
3/17/92	Campsite Area 1	03	01	196745	SSFL92.1879	<2.4	5.2 ± 1.5
3/16/92	Campsite Area 2	04	01	196733	SSFL92.1880	<1.6	4.2 ± 1.5
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197333	SSFL92.3057	2.5 ± 1.6	18.5 ± 2.10
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	197857	SSFL92.3066	2.3 ± 1.5	10.9 ± 1.6

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Gross Alpha pCi/L	Gross Beta pCi/L
3/11/92	Antenna Well	05	01	196709	SSFL92.1759	<3.8	5.5 ± 3.4
3/11/92	Well By The Gate	07	01	170710	SSFL92.1758	<4.4	<5.0
3/18/92	Spring	08	01	171807	SSFL92.1945	<4.6	<4.6

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Gross Alpha pCi/L	Gross Beta pCi/L
3/12/92	Rocky Peak	01	02	196720	SSFL92.1760	<5.2	<5.3

TABLE 2-A

RADIOANALYTICAL RESULTS
CESIUM-137 IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/Gdry
3/18/92	Perimeter of the Playground	01	56	90285	SSFL92.1956	.035 ± .012
3/17/92	Campsite Area 1	03	05	90136	SSFL92.1889	.26 ± .018
3/16/92	Campsite Area 2	04	21	88283	SSFL92.1888	.034 ± .012
3/18/92	Picnic Area	05	77	90034	SSFL92.1955	.086 ± .014
3/17/92	House of the Book	06	92	89183	SSFL92.1887	<.033
3/18/92	Vegetable Garden	11	61	89284	SSFL92.2046	.056 ± .018
3/18/92	Main House Orchard	12	20	90085	SSFL92.1954	.084 ± .017
3/17/92	Avacado Grove	13	24	88936	SSFL92.1890	.030 ± .011
3/16/92	Old Well Campsite	14	79	88415	SSFL92.1891	.015 ± .008
4/22/92	RD-51 Watershed	15	05	89587	SSFL92.3048	.041 ± .013
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89888	SSFL92.3052	<.0171
4/22/92	Radioactive Materials Disposal Facility Watershed	16	03	89883	SSFL92.3051	.008 ± .008
4/22/92	Building 59 Watershed	17	01	89335	SSFL92.3270	.086 ± .016
4/21/92	Sodium Burn Pit Watershed	18	01	89234	SSFL92.3070	.088 ± .018
4/21/92	Sodium Reactor Experimental Watershed	19	03	90436	SSFL92.3079	.055 ± .010

TABLE 2-A (Contd)

RADIOANALYTICAL RESULTS
CESIUM-137 IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/Gdry
3/23/92	The Visitor Center Parking Lot	01	04	88583	SSFL92.2591	.054 ± .017
3/11/92	The Existing Road System	02	19	88384	SSFL92.1775	.12 ± .01
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88336	SSFL92.1774	.17 ± .02

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/Gdry
3/10/92	Santa Susana Park	02	07	88497	SSFL92.1773	.19 ± .013
3/12/92	Bell Canyon	03	59	88344	SSFL 92.1836	.017 ± .018
3/13/92	Western Location	04	29	88240	SSFL92.1837	.15 ± .01

TABLE 2-B

RADIOANALYTICAL RESULTS
CESIUM-127 IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/L
3/17/92	Campsite Area 1	03	01	196774	SSFL92.1881	< 4.3
3/16/92	Campsite Area 2	04	01	196732	SSFL92.1882	< 8.1
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	197329	SSFL92.3055	< 4.7
4/22/92	Radioactive Materials Disposal Facility Watershed RD-30	16	RD-30	197856	SSFL92.3065	<4.8

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/L
3/23/92	Antenna Well	05	01	196708	SSFL92.1755	<5.5
3/11/92	Well Near Gate	07	01	17078	SSFL92.1754	<4.6
3/18/92	Spring	08	01	171806	SSFL92.1946	< 4.3

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/L
3/12/92	Rocky Peak	01	02	196719	SSFL92.1756	<4.7

TABLE 2-C

RADIOANALYTICAL RESULTS
CESIUM-137 IN FRUIT

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/Gwet
3/18/92	Main House Orchard	12	06	Lemons	None	SSFL92.1936	<.013

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/Gwet
3/11/92	The Orange Grove	04	03	Orange	90227	SSFL92.1834	<.013

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	Cs-137 pCi/Gwet
3/13/92	Happy Camp	07	01	Avocados	90245	SSFL92.1833	<.021
3/13/92	Happy Camp	07	04	Lemons	89725	SSFL92.1835	<.013
3/23/92	Supermarket	08	04	Tangerine	89732	SSFL92.2089	<.010

TABLE 3-A

RADIOANALYTICAL RESULTS
TRITIUM IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/18/92	Perimeter of the Playground	01	56	90285	SSFL92.1956	<200
3/17/92	Campsite Area 1	03	05	90136	SSFL92.1889	<209
3/16/92	Campsite Area 2	04	21	88283	SSFL92.1888	<200
3/18/92	Picnic Area	05	77	90034	SSFL92.1955	<200
3/17/92	House of the Book	06	92	89183	SSFL92.1887	<210
3/18/92	Vegetable Garden	11	61	89284	SSFL92.2046	<200
3/18/92	Main House Orchard	12	20	90085	SSFL92.1954	<200
3/17/92	Avocado Grove	13	24	88935	SSFL92.1890	<206
3/16/92	Old Well Campsite	14	79	88415	SSFL92.1891	<200
4/22/92	RD-51 Watershed	15	05	89587	SSFL92.3048	<171
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89888	SSFL92.3052	<190
4/22/92	Building 59 Watershed	17	01	89335	SSFL92.3070	<190
4/21/92	Sodium Burn Pit Watershed	18	01	89234	SSFL92.3073	<200
4/21/92	Sodium Reactor Experimental Watershed	19	03	90436	SSFL92.3079	<200

TABLE 3-A (Contd)

RADIOANALYTICAL RESULTS
TRITIUM IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/23/92	The Visitor Center Parking Lot	01	04	88583	SSFL92.2591	<224
3/11/92	The Existing Road System	02	19	88384	SSFL92.1775	<200
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88336	SSFL92.1774	<200

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/10/92	Santa Susana Park	02	07	88497	SSFL92.1773	<200
3/12/92	Bell Canyon	03	59	88344	SSFL92.1836	<210
3/13/92	Western Location	04	29	88240	SSFL92.1837	<209

TABLE 3-B

RADIOANALYTICAL RESULTS
TRITIUM IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results
						pCi/L
3/17/92	Campsite Area 1	03	01	196746	SSFL92.1885	<200
3/16/92	Campsite Area 2	04	01	196733	SSFL92.1886	<200
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197331	SSFL92.3056	<191
4/22/92	Radioactive Materials Disposal Facility Watershed RD-30	16	RD-30	197860	SSFL92.3069	<191

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results
						pCi/L
3/23/92	Antenna Well	05	01	196710	SSFL92.1767	<200
3/11/92	Well By The Gate	07	01	170729	SSFL92.1766	<200
3/18/92	Spring	08	01	171808	SSFL92.1947	<200

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results
						pCi/L
3/12/92	Rocky Peak	01	02	196725	SSFL92.1768	<200

TABLE 3-C

RADIOANALYTICAL RESULTS
TRITIUM IN FRUIT

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/18/92	Main House Orchard	12	06	Lemon	None	SSFL92.1937	<190

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/11/92	The Orange Grove	04	03	Orange	90227	SSFL92.4045	350 ± 200

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/13/92	Happy Camp	07	01	Avocado	90245	SSFL92.2043	<206
3/13/92	Happy Camp	07	04	Lemon	89725	SSFL92.4033	400 ± 200
3/23/92	Supermarket	08	04	Tangerine	89732	SSFL92.4042	400 ± 200

TABLE 4-A

RADIOANALYTICAL RESULTS
PLUTONIUM IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Pu-238 pCi/Gdry	Pu-239 pCi/Gdry
3/18/92	Perimeter of the Playground	01	56	90284	SSFL92.1950	<.02	<.015
3/17/92	Campsite Area 1	03	05	90135	SSFL92.1898	.04 ± .05	<.023
3/16/92	Campsite Area 2	04	21	88282	SSFL92.1900	.03 ± .02	<.016
3/18/92	Picnic Area	05	77	90033	SSFL92.1948	.03 ± .03	.015 ± .02
3/17/92	House of the Book	06	92	89182	SSFL92.1897	.031 ± .05	<.022
3/18/92	Vegetable Garden	11	61	89283	SSFL92.2047	.02 ± .03	<.008
3/18/92	Main House Orchard	12	20	90084	SSFL92.1949	.03 ± .04	<.019
3/17/92	Avacado Grove	13	24	88935	SSFL92.1896	<.03	<.021
3/16/92	Old Well Campsite	14	79	88414	SSFL92.1899	<.02	<.011
4/22/92	RD-51 Watershed	15	05	89586	SSFL92.3049	<.02	<.011
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	89887	SSFL92.3053	<.02	<.019
4/22/92	Building 59 Watershed	17	01	89339	SSFL92.3071	.027 ±.03	<.008
4/21/92	Soduim Burn Pit Watershed	18	01	89233	SSFL92.3074	<.02	<.015
4/21/92	Sodium Reactor Experimental Watershed	19	03	90435	SSFL92.3080	.03 ± .05	<.020

TABLE 4-A (Contd)

RADIOANALYTICAL RESULTS
PLUTONIUM IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Pu-238 pCi/Gdry	Pu239 pCi/Gdry
3/23/92	The Visitor Center	01	04	88582	SSFL92.2592	.02 ± .03	.010 ± .02
3/11/92	The Existing Road	02	19	88383	SSFL92.1780	<0.43	<.032
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88335	SSFL92.1781	<.03	<.027

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Pu-238 pCi/Gdry	Pu-239 pCi/Gdry
3/10/92	Santa Susana Park	02	07	88496	SSFL92.1779	.05 ± .05	.064± .06
3/12/92	Bell Canyon	03	59	88341	SSFL92.1839	.02 ± .03	<.018
3/13/92	Western Location	04	29	88238	SSFL92.1840	<.04	<.023

TABLE 4-B

RADIOANALYTICAL RESULTS
PLUTONIUM IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Pu-238 pCi/L	Pu-239 pCi/L
3/17/92	Campsite Area 1	03	01	196747	SSFL92.2219	<.02	<.04
3/16/92	Campsite Area 2	04	01	196734	SSFL92.2218	<.027	<.02
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	197337	SSFL92.3059	<.04	<.03
4/22/92	Radioactive Materials Disposal Facility Watershed RD-30	16	RD-30	197858	SSFL92.3069	<.05	<.04

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Pu-238 pCi/L	Pu-239 pCi/L
3/11/92	Antenna Well	05	01	196711	SSFL92.1771	<.06	<.05
3/11/92	Well Near Gate	07	01	170728	SSFL92.1770	<.04	<.03
3/18/92	Spring	08	01	171809	SSFL92.1943	<.08	<.02

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
						Pu-238 pCi/L	Pu-239 pCi/L
3/12/92	Rocky Peak	01	02	196721	SSFL92.1772	<.04	<.03

TABLE 4-C

RADIOANALYTICAL ANALYSES
PLUTONIUM IN FRUIT

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
							Pu-238 pCi/Gwet	Pu-239 pCi/Gwet
3/18/92	Main House Orchard	12	06	Lemon	None	SSFL92.1939	<.00009	<.0007

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
							Pu-238 pCi/ Gwet	Pu-239 pCi/ Gwet
3/11/92	The Orange Grove	04	03	Orange	90227	SSFL92.4044	<.0001	<.0001

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results	
							Pu-238 pCi/Gwet	Pu-239 pCi/Gwet
3/13/92	Happy Camp	07	01	Avocado	90245	SSFL92.2045	<.000618	<.000584
3/13/92	Happy Camp	07	04	Lemon	89725	SSFL92.4032	<.00009	<.00008
3/23/92	Supermarket	08	04	Tangerine	89732	SSFL92.4041	<.0001	<.00009

TABLE 5

RADIOANALYTICAL RESULTS
URANIUM IN SOIL

BRANDEIS BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results		
						U-234 pCi/Gash	U-235 pCi/Gash	U-238 pCi/Gash
3/18/92	Perimeter of the Playground	01	56	90284	SSFL92.1950	.995 ± .23	.0599 ± .05	1.04 ± .24
3/17/92	Campsite Area 1	03	05	90135	SSFL92.1898	1.12 ± .26	.0391 ± .04	.943 ± .24
3/16/92	Campsite Area 2	04	21	88282	SSFL92.1900	1.09 ± .27	.0657 ± .06	.943 ± .24
3/18/92	Picnic Area	05	77	90033	SSFL92.1948	1.15 ± .24	.0452 ± .04	1.20 ± .25
3/17/92	House of the Book	06	92	89182	SSFL92.1897	1.05 ± .25	.0398 ± .04	1.03 ± .25
3/18/92	Vegetable Garden	11	61	89283	SSFL92.2047	1.15 ± .25	.0810 ± .06	1.05 ± .24
3/18/92	ain House Orchard	12	20	90084	SSFL92.1949	.954 ± .21	.0541 ± .04	.916 ± .21
3/17/92	Avacado Grove	13	24	88935	SSFL92.1896	.964 ± .21	.04340 ± .04	.879 ± .20
3/16/92	Old Well Campsite	14	79	88414	SSFL92.1899	1.86 ± .39	.101 ± .07	1.79 ± .38
4/22/92	RD-51 Watershed	15	05	89586	SSFL92.3049	.682 ± .17	.0387 ± .04	.658 ± .17
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89887	SSFL92.3053	.540 ± .16	.0302 ± .04	.588 ± .17
4/22/92	Building 59 Watershed	17	01	89339	SSFL92.3071	1.09 ± .24	.0580 ± .05	1.08 ± .24
4/21/92	Soduim Burn Pit Watershed	18	01	89233	SSFL92.3074	.930 ± .23	.0284 ± .04	.726 ± .20
4/21/92	Sodium Reactor Experimental Watershed	19	03	90435	SSFL92.3080	.731 ± .21	.0429 ± .05	.663 ± .20

TABLE 5 (Contd)

RADIOANALYTICAL RESULTS
URANIUM IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results		
						U-234 pCi/Gash	U-235 pCi/Gash	U-238 pCi/Gash
3/23/92	The Visitor Center Parking Lot	01	04	88582	SSFL92.2592	1.20 ± .24	.0494 ± .04	.953 ± .20
3/11/92	The Existing Road	02	9	8383	SSFL92.1780	1.01 ± .25	.0581 ± .05	.852 ± .23
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88335	SSFL92.1781	.700 ± .24	.0644 ± .07	.827 ± .26

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results		
						U-234 pCi/Gash	U-235 pCi/Gash	U-238 pCi/Gash
3/10/92	Santa Susana Park	02	07	88496	SSFL92.1779	.933 ± .27	.0531 ± .06	1.00 ± .28
3/12/92	Bell Canyon	03	59	88341	SSFL92.1839	2.20 ± .34	.0113 ± .04	2.07 ± .33
3/13/92	Western Location	04	29	88238	SSFL92.1840	1.16 ± .26	3.23 ± .04	1.11 ± .26

TABLE 6-A

RADIOANALYTICAL RESULTS
STRONTIUM-90 IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/GDRY
3/18/92	Perimeter of the Playground	01	56	90283	SSFL92.1952	<.69
3/17/92	Campsite Area 1	03	05	90134	SSFL92.1893	<.66
3/16/92	Campsite Area 2	04	21	88281	SSFL92.1901	<.71
3/18/92	Picnic Area	05	77	90032	SSFL92.1951	<.71
3/17/92	House of The Book	06	92	89181	SSFL92.1892	<.70
3/18/92	Vegetable Garden	11	61	89282	SSFL92.2048	<.68
3/18/92	Main House Orchard	12	20	90083	SSFL92.1953	<.74
3/17/92	Avocado Grove	13	24	88934	SSFL92.1894	<.65
3/16/92	Old Well Campsite	14	79	88434	SSFL92.1895	<.71
4/22/92	RD-51 Watershed	15	05	89584	SSFL92.3050	<.73
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89885	SSFL92.3054	<.63
4/22/92	Building 59 Watershed	17	01	89332	SSFL92.3072	<.66
4/21/92	Sodium Burn Pit Watershed	18	01	89232	SSFL92.3075	<.62
4/23/92	Sodium Reactor Experimental Watershed	19	03	90433	SSFL92.3081	<.74

TABLE 6-A (Contd)

RADIOANALYTICAL RESULTS
STRONTIUM-90 IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/GDRY
3/23/92	The Visitor Center Parking Lot	01	04	88581	SSFL92.2589	<.71
3/11/92	The Existing Road System	02	19	88382	SSFL92.1776	<.75
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88334	SSFL92.1778	<.69

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/GDRY
3/10/92	Santa Susana Park	02	07	88495	SSFL92.1777	<.68
3/12/92	Bell Canyon	03	59	88341	SSFL92.1839	<.72
3/13/92	Western Location	04	29	88238	SSFL92.1838	<.67

TABLE 6-B

RADIOANALYTICAL RESULTS
STRONTIUM-90 IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/17/92	Campsite Area 1	03	01	196748	SSFL92.1883	<.78
3/16/92	Campsite Area 2	04	01	196736	SSFL92.1884	<.99
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197335	SSFL92.3058	7.79 ± .5
4/22/92	Radioactive Materials Disposal Facility Watershed RD-30	16	RD-30	197860	SSFL92.3068	<.53

SANTA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/11/92	Antenna Well	05	01	196712	SSFL92.1762	<.74
3/11/92	Well By The Gate	07	01	170715	SSFL92.1761	<.86
3/18/92	Spring	08	01	171810	SSFL92.1944	<.80

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/12/92	Rocky Peak	01	02	196722	SSFL92.1763	<.87

TABLE 6-C

RADIOANALYTICAL RESULTS
STRONTIUM-90 IN FRUIT

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/GWET
3/18/92	Main House Orchard	12	06	Lemons	None	SSFL92.1938	<.006

SANTA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/GWET
3/11/92	The Orange Grove	04	03	Orange	90227	SSFL92.4043	<.005

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/GWET
3/13/92	Happy Camp	07	01	Avocado	90245	SSFL92.2044	<.023
3/13/92	Happy Camp	07	04	Lemons	89725	SSFL92.4031	<.003
3/23/92	Supermarket	08	04	Tangerine	89732	SSFL92.4040	<.004

TABLE 7-A

RADIOANALYTICAL RESULTS
IODINE-129 IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results
						pCi/g
3/18/92	Perimeter of the Playground	01	56	90289	S20304404A	<.23
3/17/92	Campsite Area 1	03	05	90146	S20303705A	<.28
3/16/92	Campsite Area 2	04	21	88287	S20303703A	<.29
3/18/92	Picnic Area	05	77	90038	S20304402A	<.23
3/17/92	House of The Book	06	92	89187	S20303707A	<.28
3/18/92	Vegetable Garden	11	61	89288	S20305001A	<.16
3/18/92	Main House Orchard	12	20	90089	S20304403A	<.23
3/17/92	Avocado Grove	13	24	88940	S20303706A	<.29
3/16/92	Old Well Campsite	14	79	88440	S20303704A	<.28
4/22/92	RD-51 Watershed	15	05	89585	S20405405A	<.17
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89886	S20406101A	<.17
4/22/92	Building 59 Watershed	17	01	89334	S20404605A	<.17
4/21/92	Sodium Burn Pit Watershed	18	01	89238	S20404601A	<.17
4/23/92	Sodium Reactor Experimintal Watershed	19	03	90434	S20406102A	<.17

TABLE 7-A (Contd)

RADIOANALYTICAL RESULTS
IODINE-129 IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/g
3/23/92	The Visitor Center Parking Lot	01	04	88587	S20305601A	<.16
3/11/92	The Existing Road System	02	19	88388	S20303403A	<.27
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88340	S20303402A	<.27

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/g
3/10/92	Santa Susana Park	02	07	88495	S20303401A	<.37
3/12/92	Bell Canyon	03	59	88342	S20303501A	<.27
3/13/92	Western Location	04	29	88250	S20303502A	<.27

TABLE 7-B (Contd)

RADIOANALYTICAL RESULTS
IODINE-129 IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/l
3/17/92	Campsite Area 1	03	01	196749	S20303702A	<3.3
3/16/92	Campsite Area 2	04	01	196737	S20303701A	<3.3
4/22/92	Radioactive Materials Disposal Faclitiy Watershed	16	01	197339	S20405401A	<2.5

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/l
3/11/92	Antenna Well	05	01	196718	S20303407A	<3.3
3/11/92	Well By The Gate	07	01	196713	S20303406A	<3.3
3/18/92	Spring	08	01	171811	S20304401A	<3.3

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/l
3/12/92	Rocky Peak	01	02	196723	S20303404A	<3.3

TABLE 7-C

RADIOANALYTICAL RESULTS
IODINE-129 IN FRUIT

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/g
3/18/92	Main House Orchard	12	06	Lemon	NONE	W204071	<.079

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/g
3/11/92	The Orange Grove	04	03	Orange	90227	W204071	<.082

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	Media	USEPA Sample Serial Number	I.T. Laboratory Number	I.T. Results pCi/g
3/13/92	Happy Camp	07	01	Avocado	90245	W204071	<.17
3/13/92	Happy Camp	07	04	Lemon	89725	W204071	<.040
3/23/92	Supermarket	08	04	Tangerine	89732	W204071	<.078

TABLE 8-A

CHEMICAL ANALYSES RESULTS
VOLATILE ORGANIC COMPOUNDS IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T Laboratory Number	I.T. Results
3/18/92	Perimeter of the Playground	01	56	90287	SON50985 SS8089	U
3/17/92	Campsite Area 1	03	05	90138	SON50975 SS7876	Acetone 27 ppb
3/16/92	Campsite Area 2	04	21	88285	SON50975 SS7872	U
3/18/92	Picnic Area	05	77	90036	SON50985 SS8088	U
3/17/92	House of the Book	06	92	89185	SS7873	U
3/18/92	Vegetable Garden	11	61	89261	SON50998 SS8331	U
3/18/92	Main House Orchard	12	20	90887	SS8090R	U
3/17/92	Avacodo Grove	13	24	88938	SON50975 SS7874	U
3/16/92	Old Well Campsite	14	79	88438	SON50975 SS7875	U
4/22/92	RD-51 Watershed	15	05	89589	SON51257 K1228	Methylene Chloride 17 ppb Acetone 19 ppb
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89890	SON51263 K1268	Methylene Chloride 7 ppb
4/22/92	Building 59 Watershed	17	01	89337	SON51247 K1228	U
4/21/92	Sodium Burn Pit Watershed	18	01	89236	SON51247 K1229	U
4/23/92	Sodium Reactor Experimental Watershed	19	03	90438	SON51263 K1269	Acetone 30 ppb

U = Compound Not Detected

TABLE 8-A (Contd)

CHEMICAL ANALYSES RESULTS
VOLATILE ORGANIC COMPOUNDS IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T Laboratory Number	I.T. Results
3/23/92	The Visitor Center Parking Lot	01	04	88585	SON51018 SS8428	Methylene Chloride 6 ppb
3/11/92	The Existing Road System	02	19	88386	SON50938 SS7603	U
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88338	SON50938 SS7604	Acetone 23 ppb

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T Laboratory Number	I.T. Results
3/10/92	Santa Susana Park	02	07	88498	SON50938 SS7602	Acetone 12 ppb
3/12/92	Bell Canyon	03	59	88346	SON50952 SS7704	U
3/13/92	Western Location	04	29	88242	SON50952 SS7707	U

U = Compound Not Detected

TABLE 8-B

CHEMICAL ANALYSES RESULTS
VOLATILE ORGANIC COMPOUNDS IN WATER

BRANDEIS-BARDIN INSTITUTE

	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T Laboratory Number	I.T. Results
3/17/92	Campsite Area 1	03	01	196739	SON50975 SS7886	U
3/16/92	Campsite Area 2	04	01	196727	SON50975 SS7887	U
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197319	SON51257 K1229	U

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T Laboratory Number	I.T. Results
3/23/92	Antenna Well	05	01	196701	SON50938 SS7609	U
3/11/92	Well By The Gate	07	01	170701	SON50938 SS7610	Trichloroethene 13ppb
3/18/92	Spring	08	01	171801	SON50985 SS8084	U

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T Laboratory Number	I.T. Results
3/12/92	Rocky Peak	01	02	196714	SON50938 SS7608	U

U = Compound Not Detected

TABLE 9-A

CHEMICAL ANALYSES RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T Results
3/18/92	Perimeter of the Playground	01	56	90286	SON50985 SS8089	U
3/17/92	Campsite Area 1	03	05	90137	SON50975 SS7876	U
3/16/92	Campsite Area 2	04	21	88284	SON50975 SS7877	U
3/18/92	Picnic Area	05	77	90035	SON50985 SS8091	U
3/17/92	House of the Book	06	92	89184	SS7878	U
3/18/92	Vegetable Garden	11	61	89285	SON50998 SS8332	U
3/18/92	Main House Orchard	12	20	90086	SS8093	U
3/17/92	Avacodo Grove	13	24	88937	SON50975 SS7879	U
3/16/92	Old Well Campsite	14	79	88437	SON50975 SS7880	U
4/22/92	RD-51 Watershed	15	05	89588	SON51257 K1227	U
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	89889	SON51263 K1270	U
4/22/92	Building 59 Watershed	17	01	89336	SON51247 K1131	U
4/21/92	Sodium Burn Pit Watershed	18	01	89235	SON51247 K1132	U
4/23/92	Sodium Reactor Experimental Watershed	19	03	90437	SON51263 K1271	U

U = Compound Not Detected

TABLE 9-A (Contd)

CHEMICAL ANALYSES RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T Results
3/23/92	The Visitor Center Parking Lot	01	04	88584	SON51018 SS8487	U
3/11/92	The Existing Road System	02	19	88385	SON50938 SS7606	U
3/11/92	Former Rocketdyne Employee Shooting Range	03	01	88337	SON50938 SS7607	U

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	I.T Results
3/10/92	Santa Susana Park	02	07	88500	SON50938 SS7605	U
3/12/92	Bell Canyon	03	59	88345	SON50952 SS7709	U
3/13/92	Western Location	04	29	88241	SON50952 SS7712R	U

U = Compound Not Detected

TABLE 9-B

CHEMICAL ANALYSES RESULTS
SEMIVOLATILE ORGANIC COMPOUNDS IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	I.T. Laboratory Number	I.T Results
3/17/92	Campsite Area 1	03	01	196743	SON50975 SS7891	U
3/16/92	Campsite Area 2	04	01	196731	SON50975 SS7892	U
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	197327	SON51257 K1239	Fluoranthene .33 ppb

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	I.T. Laboratory Number	I.T Results
3/23/92	Antenna Well	05	01	196707	SON50938 SS7618	U
3/11/92	Well By The Gate	07	01	1707051	SON50938 SS7619	U
3/18/92	Spring	08	01	171805	SON50985 SS8087	U

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	I.T. Laboratory Number	I.T Results
3/12/92	Rocky Peak	01	02	196718	SON50938 SS7617	U

U = Compound Not Detected

TABLE 10-A

CHEMICAL ANALYSES RESULTS
METALS IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
03/18/92	Perimeter of the Playground	01	56	90285	SON50985 SS8095	6.7	0.7	22.0	20.0	15.8	17.0	<0.2	71.1	<0.5	<0.1	<0.5
03/17/92	Campsite Area 1	03	05	90146	SON50975 SS7881	2.8	0.4	11.0	8.0	13.8	11.0	<0.2	39.7	<0.5	<0.1	<0.5
03/16/92	Campsite Area 2	04	21	88285	SON50975 SS7882	3.7	0.3	7.0	6.0	5.3	5.0	<0.2	36.6	<.5	<.1	<0.5
03/18/92	Picnic Area	05	77	90037	SON50985 SS8094	2.9	0.4	11.0	13.0	14.0	10.0	<0.2	44.1	<0.5	<0.1	<0.5
03/17/92	House of Book	06	92	50975	SON50975 SS7883	6.1	0.7	12.0	18.0	12.6	10.0	<0.2	52.4	<.5	<0.1	1.1
03/18/92	Vegetable Garden	11	61	89287	SON50998 SS8333	2.4	0.5	15.0	23.0	11.4	12.0	<0.2	67.0	<0.5	<0.1	<0.5
03/18/92	Main House Orchard	12	20	90088	SON50985 SS8096	1.8	0.5	15.0	18.0	19.0	11.0	<0.2	72.4	<0.5	<0.1	<0.5
03/17/92	Avocado Grove	13	24	88939	SON50975 SS7884	4.9	0.8	19.0	15.0	10.3	15.0	<0.2	62.8	<0.5	<0.1	<0.5
03/16/92	Old Well Campsite	14	79	88439	SON50975 SS7885	2.8	0.5	13.0	22.0	5.5	9.0	<0.2	45.0	<0.5	<0.1	<0.5

TABLE 10-A (Contd)
CHEMICAL ANALYSES RESULTS
METALS IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
04/22/92	RD-51 Watershed	15	05	89590	SON51257 K1227	1.6	0.2	17.0	5.0	9.3	6.0	<0.2	68.9	<0.5	<0.1	<0.5
04/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	89889	SON51263 K1270	1.2	0.2	5.0	6.0	2.0	3.0	<0.2	21.1	<0.5	<0.1	<0.5
04/22/92	Building 59 Watershed	17	01	89338	SON51247 K1134	2.5	0.4	13.0	6.0	4.5	9.0	<0.2	54.4	<0.5	<0.1	<0.5
04/21/92	Sodium Burn Pit Watershed	18	01	89237	SON51247 K1135	13.8	0.2	7.0	4.0	6.5	5.0	<0.2	22.4	<0.5	0.4	<0.5
04/21/92	Sodium Reactor Experimental Watershed	19	03	90437	SON51263 K1271	1.9	0.2	6.0	6.0	3.5	5.0	<0.2	56.0	<0.5	<0.1	<0.5

TABLE 10-A (Contd.)

CHEMICAL ANALYSES RESULTS
METALS IN SOIL

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
03/23/92	The Visitor Center	01	04	88586	SS8491	5.4	0.8	21.0	22.0	14.0	15.0	<0.2	67.1	<0.5	<0.1	<0.5
03/11/92	The Existing Road	02	19	88387	SON50938 SS7600	4.0	0.5	12.0	10.0	10.8	10.0	<0.2	40.3	<0.5	<0.1	<0.5
03/11/92	Shooting Range	03	01	88339	SON50938 SS7601	5.7	0.3	8.0	7.0	225.0	6.0	<0.2	28.8	<0.5	<0.1	<0.5

BACKGROUND LOCATIONS

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
03/10/92	Santa Susana Park	02	07	88499	SON50938 SS7599	3.6	0.3	9.0	8.0	22.8	6.0	<0.2	37.6	0.5	<0.1	<0.5
03/12/92	Bell Canyon	03	59	88347	SON50952 SS7713	4.8	0.6	62.0	40.0	5.3	70.0	0.6	85.5	1.6	<0.1	5.0
03/13/92	Western Location	04	29	88243	SON50952 SS7716	4.7	1.0	30.0	14.0	10.5	17.0	<0.2	75.0	0.8	<0.1	<0.5

TABLE 10-B
CHEMICAL ANALYSES RESULTS
METALS IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
03/17/92	Campsite Area 1	03	01	196750	SON50975 SS7889	<.002	<.001	<.01	<.01	<.002	<0.2	<.002	.016	<.005	<.001	<.005
03/16/92	Campsite Area 2	04	01	196738	SON50975 SS7890	<.002	<.001	<.01	<.01	<.002	<.02	<.002	.010	<.005	<.001	<.005
04/22 92	Radioactive Materials Disposal Watershed	16	01	197341	SON51257 K1235	<.002	<.001	<.01	<.01	<.002	<.02	<.002	.014	<.005	<.001	<.005

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
03/18/92	Spring	08	01	171812	SON50985 SS8086	<.002	<.001	<.01	<.01	<.002	<.02	<.008	.023	<.005	<.001	<.005

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	USEPA Sample Serial Number	I.T. Laboratory Number	Priority Pollutant Metals ppm										
						As	Be	Cr	Cu	Pb	Ni	Se	Zn	Ag	Hg	Cd
03/12/92	Rocky Peak	01	02	196724	SON50938 SS7614	<.002	<.001	<.01	<.01	<.002	<.02	<.002	.020	<.005	<.001	<.005

TABLE 11-A

ADDITIONAL ANALYSES
GAMMA SPECTROCSOPY
Cs-137 IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/gdry
3/18/92	Main House Orchard	12	23	70872	SSFL192.5414	.125 ± .0162

BACKGROUND LOCATION

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/gdry
3/13/92	Western Location	04	25		SSFL92.5413	.113 ± .0142

TABLE 11-B

ADDITIONAL ANALYSES
TRITIUM IN SOIL

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/16/92	Campsite Area 2	04	97	--	SSFL92.4305	<192
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01	197315	SSFL92.8940	1687 ± 171
4/22/92	Radioactive Materials Disposal Facility Watershed2	16	02SC	89859	SSFL92.6230	873 ± 176
4/22/92	Radioactive Materials Disposal Facility Watershed	16	02SA	89857	SSFL92.6940	1679 ± 913
4/22/92	Radioactive Materials Disposal Facility Watershed	16	03	89863	SSFL92.6941	1845 ± 525
4/22/92	Radioactive Materials Disposal Facility Watershed	16	04SA	89869	SSFL92.6942	1764 ± 173
4/22/92	Building 59 Watershed	16	04SC	74374	SSFL92.6229	1422 ± 172
4/22/92	Building 59 Watershed	17	02	--	SSFL92.5111	<200
4/22/92	Building 59 Watershed	17	03	74329	SSFL92.5415	12380 ± 371
4/22/92	Building 59 Watershed	17	04	74331	SSFL92.5712	9855 ± 325

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
3/11/92	Former Rocketdyne Employee Shooting Range	03	15	SPS1839	SSFL92.8937	<869

TABLE 11-C

ADDITIONAL ANALYSES
STRONTIUM-90 IN WATER

BRANDEIS-BARDIN INSTITUTE

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	NAREL Laboratory Number	NAREL Results pCi/L
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197306	SSFL92.8467	6.66 ± 0.48
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197333	SSFL92.3058A	7.80 ± 0.5
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197329	SSFL92.3058B	7.71 ± 1.08
4/22/92	Radioactive Materials Disposal Facility Watershed	16	01B	197331	SSFL92.3058C	7.43 ± 0.85

TABLE 11-D

ADDITIONAL ANALYSES
VOLATILE ORGANIC COMPOPUNDS IN WATER

SANTA MONICA MOUNTAINS CONSERVANCY

Collection Date	Sample Area	Sample Area Code	Block Number	Sample Serial Number	NAREL Laboratory Number	NAREL Results
						pCi/L
4/23/92	Antenna Well	05	03	197885 - 197888	N/A	U

APPENDIX A

Gamma Spectroscopy Complete Results

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01754
Collection date, time	3/11/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/12/92 13:20
Length of count	1000 min
Sample size	0.958000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
PB-212	3.2900E+00	140.12 %	PCI/L	3/11/92	
RA-226	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=8.23E+01
I-131	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=4.32E+03
BA-140	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=2.30E+03
CS-137	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=4.59E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=1.79E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=5.70E+01

Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/19/92 12:57
Length of count	1000 min
Sample size	0.958000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=8.24E+01
I-131	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=4.30E+03
BA-140	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=3.48E+03
CS-137	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=4.98E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=1.87E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=4.98E+01

Sample Location	
Sample ID	SSFL92.01755
Collection date, time	3/11/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/12/92 13:20
Length of count	1000 min
Sample size	0.947000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=9.89E+01
I-131	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=4.75E+03
BA-140	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=2.42E+03
CS-137	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=5.45E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=1.81E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/11/92	MDA=5.52E+01

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01756
Collection date, time	3/12/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/15/92 14:21
Length of count	1000 min
Sample size	0.974000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	3/12/92	MDA=7.68E+01
I-131	0.0000E+00	0.00 %	PCI/L	3/12/92	MDA=3.94E+03
BA-140	0.0000E+00	0.00 %	PCI/L	3/12/92	MDA=2.22E+03
CS-137	0.0000E+00	0.00 %	PCI/L	3/12/92	MDA=4.70E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/12/92	MDA=1.49E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/12/92	MDA=4.69E+01

Sample Location	
Sample ID	SSFL92.01773
Collection date, time	3/11/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/25/92 14:41
Length of count	1000 min
Sample size	501.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2700E+00	2.27 %	PCI/GDRY	3/13/92
RA-226	2.6400E+00	11.63 %	PCI/GDRY	3/13/92
PB-212	1.6000E+00	2.07 %	PCI/GDRY	3/13/92
TL-208	5.3500E-01	3.18 %	PCI/GDRY	3/13/92
RA-228	1.7000E+00	2.81 %	PCI/GDRY	3/13/92
BI-214	1.1800E+00	2.49 %	PCI/GDRY	3/13/92
CS-137	1.9000E-01	7.05 %	PCI/GDRY	3/13/92
K-40	2.8900E+01	1.29 %	PCI/GDRY	3/13/92

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01774
Collection date, time	3/11/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Length of count	1000 min
Date, time counted	3/25/92 14:42
Length of count	1000 min
Sample size	276.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	7.6900E-01	3.82 %	PCI/GDRY	3/13/92
RA-226	1.5700E+00	18.60 %	PCI/GDRY	3/13/92
PB-212	9.7500E-01	3.36 %	PCI/GDRY	3/13/92
TL-208	3.3800E-01	5.38 %	PCI/GDRY	3/13/92
RA-228	1.0400E+00	5.01 %	PCI/GDRY	3/13/92
CS-137	1.7000E-01	9.65 %	PCI/GDRY	3/13/92
K-40	2.2600E+01	1.92 %	PCI/GDRY	3/13/92

Sample Location	
Sample ID	SSFL92.01775
Collection date, time	3/11/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/26/92 14:56
Length of count	1000 min
Sample size	445.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2100E+00	2.37 %	PCI/GDRY	3/11/92
RA-226	2.6700E+00	11.12 %	PCI/GDRY	3/11/92
BI-214	1.0600E+00	2.94 %	PCI/GDRY	3/11/92
PB-212	1.5100E+00	2.18 %	PCI/GDRY	3/11/92
TL-208	4.7400E-01	3.67 %	PCI/GDRY	3/11/92
RA-228	1.5100E+00	3.12 %	PCI/GDRY	3/11/92
CS-137	1.2100E-01	11.24 %	PCI/GDRY	3/11/92
K-40	2.9000E+01	1.46 %	PCI/GDRY	3/11/92

Gamma Spectroscopy Results

Sample Location
Sample ID SSFL92.01833
Collection date, time 3/13/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 3/25/92 14:41
Length of count 1000 min
Sample size 209.000 GWET

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
K-40	5.4000E+00	5.52 %	PCI/G	3/13/92	
RA-226	0.0000E+00	0.00 %	PCI/G	3/13/92	MDA=3.44E-01
I-131	0.0000E+00	0.00 %	PCI/G	3/13/92	MDA=5.93E-02
BA-140	0.0000E+00	0.00 %	PCI/G	3/13/92	MDA=1.26E-01
CS-137	0.0000E+00	0.00 %	PCI/G	3/13/92	MDA=2.12E-02
RA-228	0.0000E+00	0.00 %	PCI/G	3/13/92	MDA=7.78E-02

Sample Location
Sample ID SSFL92.01834
Collection date, time 3/13/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 5/ 6/92 13:42
Length of count 1000 min
Sample size 318.000 GWET

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
K-40	1.5900E+00	9.18 %	PCI/GWET	3/13/92	
RA-226	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=1.89E-01
I-131	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=1.06E+00
BA-140	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=7.00E-01
CS-137	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=1.29E-02
RA-228	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=4.57E-02

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01835
Collection date, time	3/13/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/ 6/92 13:42
Length of count	1000 min
Sample size	466.000 GWET

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
PB-212	1.2500E-02	88.80 %	PCI/GWET	3/13/92	
K-40	9.1000E-01	14.62 %	PCI/GWET	3/13/92	
RA-226	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=1.91E-01
I-131	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=1.08E+00
BA-140	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=6.77E-01
CS-137	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=1.29E-02
RA-228	0.0000E+00	0.00 %	PCI/GWET	3/13/92	MDA=5.53E-02

Sample Location	
Sample ID	SSFL92.01836
Collection date, time	3/13/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/26/92 14:56
Length of count	1000 min
Sample size	287.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	2.2700E+00	2.36 %	PCI/G	3/13/92
RA-226	5.7400E+00	8.24 %	PCI/G	3/13/92
BI-214	2.2200E+00	3.05 %	PCI/G	3/13/92
PB-212	8.8800E-01	4.49 %	PCI/G	3/13/92
RA-228	9.0800E-01	7.38 %	PCI/G	3/13/92
TL-208	2.7900E-01	10.18 %	PCI/G	3/13/92
K-40	1.3400E+01	4.44 %	PCI/G	3/13/92
CS-137	1.7300E-02	101.16 %	PCI/G	3/13/92

Gamma Spectroscopy Results

Sample Location
Sample ID SSFL92.01837
Collection date, time 3/13/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 3/26/92 14:56
Length of count 1000 min
Sample size 435.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2100E+00	2.39 %	PCI/G	3/13/92
RA-226	3.0700E+00	9.41 %	PCI/G	3/13/92
BI-214	1.0800E+00	2.78 %	PCI/G	3/13/92
PB-212	1.6600E+00	1.95 %	PCI/G	3/13/92
TL-208	5.4300E-01	3.35 %	PCI/G	3/13/92
RA-228	1.6700E+00	2.74 %	PCI/G	3/13/92
CS-137	1.5300E-01	8.89 %	PCI/G	3/13/92
K-40	2.4000E+01	1.64 %	PCI/G	3/13/92

Type of analysis GAMMA SPECTROSCOPY
Date, time counted 6/19/92 12:57
Length of count 1000 min
Sample size 435.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2500E+00	2.78 %	PCI/G	3/13/92
RA-226	3.2900E+00	11.12 %	PCI/G	3/13/92
PB-212	1.7700E+00	2.29 %	PCI/G	3/13/92
TL-208	5.7800E-01	3.72 %	PCI/G	3/13/92
RA-228	1.7700E+00	3.29 %	PCI/G	3/13/92
BI-214	1.0900E+00	3.12 %	PCI/G	3/13/92
CS-137	1.6700E-01	9.40 %	PCI/G	3/13/92
K-40	2.3900E+01	1.74 %	PCI/G	3/13/92

Sample Location
Sample ID SSFL92.01881
Collection date, time 3/17/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 3/24/92 14:45
Length of count 1000 min
Sample size 0.985000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	6.2900E+01	100.48 %	PCI/L	3/17/92	
I-131	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=7.29E+00
BA-140	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=2.07E+01
CS-137	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=4.26E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=1.60E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=6.24E+01
CS-137	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=4.26

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01882
Collection date, time	3/17/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/24/92 14:45
Length of count	1000 min
Sample size	0.980000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=1.12E+02
I-131	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=1.13E+01
BA-140	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=3.34E+01
CS-137	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=8.07E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=2.69E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/17/92	MDA=8.81E+01

Sample Location	
Sample ID	SSFL92.01887
Collection date, time	3/17/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	4/ 7/92 13:40
Length of count	1000 min
Sample size	622.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
PB-214	1.1000E+00	3.13 %	PCI/G	3/17/92	
RA-226	2.6700E+00	13.97 %	PCI/G	3/17/92	
BI-214	9.3900E-01	3.88 %	PCI/G	3/17/92	
PB-212	1.5800E+00	2.51 %	PCI/G	3/17/92	
TL-208	5.1200E-01	4.08 %	PCI/G	3/17/92	
RA-228	1.5800E+00	3.58 %	PCI/G	3/17/92	
K-40	2.5300E+01	1.75 %	PCI/G	3/17/92	
CS-137	0.0000E+00	0.00 %	PCI/G	3/17/92	MDA=0.0325

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01888
Collection date, time	3/16/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	4/ 7/92 13:39
Length of count	1000 min
Sample size	484.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2200E+00	2.55 %	PCI/G	3/16/92
RA-226	2.6700E+00	11.27 %	PCI/G	3/16/92
BI-214	1.0400E+00	3.04 %	PCI/G	3/16/92
PB-212	1.6900E+00	2.06 %	PCI/G	3/16/92
TL-208	5.7300E-01	3.28 %	PCI/G	3/16/92
RA-228	1.7000E+00	3.00 %	PCI/G	3/16/92
CS-137	3.4100E-02	34.31 %	PCI/G	3/16/92
K-40	2.5200E+01	1.52 %	PCI/G	3/16/92

Sample Location	
Sample ID	SSFL92.01889
Collection date, time	3/17/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	4/ 7/92 13:39
Length of count	1000 min
Sample size	370.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.4300E+00	2.62 %	PCI/G	3/17/92
RA-226	3.5000E+00	10.37 %	PCI/G	3/17/92
PB-212	1.8500E+00	2.19 %	PCI/G	3/17/92
TL-208	5.9700E-01	3.65 %	PCI/G	3/17/92
RA-228	1.8600E+00	3.04 %	PCI/G	3/17/92
BI-214	1.3000E+00	2.78 %	PCI/G	3/17/92
CS-137	2.5600E-01	6.91 %	PCI/G	3/17/92
K-40	3.0500E+01	1.48 %	PCI/G	3/17/92

Gamma Spectroscopy Results

Sample Location
Sample ID SSFL92.01890
Collection date, time 3/17/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 4/ 7/92 13:40
Length of count 1000 min
Sample size 439.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.1400E+00	2.97 %	PCI/GDRY	3/17/92
RA-226	2.2900E+00	15.20 %	PCI/GDRY	3/17/92
PB-212	1.6300E+00	2.34 %	PCI/GDRY	3/17/92
TL-208	5.1800E-01	3.90 %	PCI/GDRY	3/17/92
RA-228	1.6100E+00	3.40 %	PCI/GDRY	3/17/92
BI-214	9.4200E-01	3.52 %	PCI/GDRY	3/17/92
CS-137	2.9900E-02	37.46 %	PCI/GDRY	3/17/92
K-40	2.0800E+01	1.91 %	PCI/GDRY	3/17/92

Type of analysis GAMMA SPECTROSCOPY
Date, time counted 6/17/92 14:09
Length of count 1000 min
Sample size 439.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	9.8300E-01	3.60 %	PCI/GDRY	3/17/92
RA-226	2.5200E+00	15.24 %	PCI/GDRY	3/17/92
BI-214	8.6400E-01	4.65 %	PCI/GDRY	3/17/92
PB-212	1.4000E+00	2.92 %	PCI/GDRY	3/17/92
TL-208	4.5000E-01	4.96 %	PCI/GDRY	3/17/92
RA-228	1.4600E+00	4.29 %	PCI/GDRY	3/17/92
CS-137	4.1200E-02	31.80 %	PCI/GDRY	3/17/92
K-40	1.8200E+01	2.35 %	PCI/GDRY	3/17/92

Sample Location
Sample ID SSFL92.01891
Collection date, time 3/16/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 4/ 8/92 13:51
Length of count 1000 min
Sample size 620.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.0700E+00	2.10 %	PCI/G	3/16/92
RA-226	2.5100E+00	9.64 %	PCI/G	3/16/92
BI-214	9.7500E-01	2.57 %	PCI/G	3/16/92
PB-212	1.4000E+00	1.83 %	PCI/G	3/16/92
TL-208	4.5900E-01	3.22 %	PCI/G	3/16/92
RA-228	1.4300E+00	2.67 %	PCI/G	3/16/92
K-40	2.4700E+01	1.33 %	PCI/G	3/16/92
CS-137	1.5000E-02	50.00 %	PCI/GDRY	3/16/92

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01936
Collection date, time	3/18/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/17/92 14:09
Length of count	1000 min
Sample size	409.000 GWET

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	1.4900E-01	132.21 %	PCI/GWET	3/18/92	
K-40	1.0400E+00	11.92 %	PCI/GWET	3/18/92	
I-131	0.0000E+00	0.00 %	PCI/GWET	3/18/92	MDA=1.10E+01
BA-140	0.0000E+00	0.00 %	PCI/GWET	3/18/92	MDA=5.18E+00
CS-137	0.0000E+00	0.00 %	PCI/GWET	3/18/92	MDA=1.26E-02
RA-228	0.0000E+00	0.00 %	PCI/GWET	3/18/92	MDA=4.18E-02

Sample Location	
Sample ID	SSFL92.01946
Collection date, time	3/18/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/24/92 14:45
Length of count	1000 min
Sample size	0.981000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
K-40	1.8900E+01	175.13 %	PCI/L	3/18/92	
RA-226	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=6.89E+01
I-131	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=6.10E+00
BA-140	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=1.80E+01
CS-137	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=4.33E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=1.42E+01

Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/18/92 14:27
Length of count	1000 min
Sample size	0.981000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=1.19E+02
I-131	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=5.81E+03
BA-140	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=3.28E+03
CS-137	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=7.69E+00
RA-228	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=3.14E+01
K-40	0.0000E+00	0.00 %	PCI/L	3/18/92	MDA=9.22E+01

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.01954
Collection date, time	3/18/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/26/92 14:56
Length of count	1000 min
Sample size	512.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.1100E+00	2.82 %	PCI/G	3/18/92
RA-226	2.2300E+00	15.65 %	PCI/G	3/18/92
PB-212	1.3100E+00	2.40 %	PCI/G	3/18/92
TL-208	4.2800E-01	4.98 %	PCI/G	3/18/92
RA-228	1.3000E+00	4.28 %	PCI/G	3/18/92
BI-214	1.0300E+00	3.49 %	PCI/G	3/18/92
CS-137	8.4100E-02	20.10 %	PCI/G	3/18/92
K-40	2.5100E+01	2.04 %	PCI/G	3/18/92

Sample Location	
Sample ID	SSFL92.01955
Collection date, time	3/18/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	3/26/92 14:56
Length of count	1000 min
Sample size	483.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.3500E+00	2.56 %	PCI/G	3/19/92
RA-226	2.7100E+00	12.18 %	PCI/G	3/19/92
BI-214	1.1600E+00	3.03 %	PCI/G	3/19/92
PB-212	2.1900E+00	1.85 %	PCI/G	3/19/92
TL-208	7.0100E-01	3.10 %	PCI/G	3/19/92
RA-228	2.1300E+00	2.70 %	PCI/G	3/19/92
CS-137	8.6400E-02	15.86 %	PCI/G	3/19/92
K-40	2.9800E+01	1.58 %	PCI/G	3/19/92

Gamma Spectroscopy Results

Sample Location
Sample ID SSFL92.01956
Collection date, time 3/18/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 3/26/92 14:56
Length of count 1000 min
Sample size 443.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.0700E+00	2.86 %	PCI/G	3/17/92
RA-226	2.7100E+00	11.14 %	PCI/G	3/17/92
BI-214	9.6700E-01	3.35 %	PCI/G	3/17/92
PB-212	1.5500E+00	2.23 %	PCI/G	3/17/92
TL-208	5.1300E-01	3.61 %	PCI/G	3/17/92
RA-228	1.5500E+00	3.04 %	PCI/G	3/17/92
CS-137	3.5100E-02	34.47 %	PCI/G	3/17/92
K-40	2.2400E+01	1.71 %	PCI/G	3/17/92

Sample Location
Sample ID SSFL92.02046
Collection date, time 3/18/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 4/ 8/92 13:52
Length of count 1000 min
Sample size 575.000 G

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.0100E+00	3.38 %	PCI/G	3/18/92
RA-226	2.1500E+00	15.44 %	PCI/G	3/18/92
PB-212	1.2800E+00	2.84 %	PCI/G	3/18/92
TL-208	4.1500E-01	5.49 %	PCI/G	3/18/92
RA-228	1.2800E+00	4.71 %	PCI/G	3/18/92
CS-137	5.5600E-02	33.09 %	PCI/G	3/18/92
K-40	2.1600E+01	2.54 %	PCI/G	3/18/92

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.02089
Collection date, time	3/23/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/ 6/92 13:41
Length of count	1000 min
Sample size	451.000 GWET

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
PB-212	1.2500E-02	96.80 %	PCI/GWET	3/23/92	
K-40	1.5400E+00	8.05 %	PCI/GWET	3/23/92	
RA-226	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=1.59E-01
I-131	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=3.96E-01
BA-140	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=3.32E-01
CS-137	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=1.01E-02
RA-228	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=3.60E-02

Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/17/92 14:09
Length of count	1000 min
Sample size	451.000 GWET

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
K-40	1.5500E+00	7.42 %	PCI/GWET	3/23/92	
RA-226	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=1.66E-01
I-131	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=8.06E+00
BA-140	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=3.52E+00
CS-137	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=9.39E-03
RA-228	0.0000E+00	0.00 %	PCI/GWET	3/23/92	MDA=4.19E-02

Sample Location	
Sample ID	SSFL92.02591
Collection date, time	3/23/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/ 6/92 13:41
Length of count	1000 min
Sample size	250.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2900E+00	3.48 %	PCI/GDRY	3/23/92
RA-226	2.2600E+00	20.71 %	PCI/GDRY	3/23/92
BI-214	1.1100E+00	4.54 %	PCI/GDRY	3/23/92
PB-212	1.5700E+00	3.39 %	PCI/GDRY	3/23/92
TL-208	4.9600E-01	5.65 %	PCI/GDRY	3/23/92
RA-228	1.4900E+00	5.28 %	PCI/GDRY	3/23/92
CS-137	5.3400E-02	31.84 %	PCI/GDRY	3/23/92
K-40	2.3600E+01	2.54 %	PCI/GDRY	3/23/92

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.03048
Collection date, time	4/22/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/19/92 12:57
Length of count	1000 min
Sample size	587.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	7.8800E-01	3.83 %	PCI/GDRY	4/22/92
RA-226	1.5000E+00	20.73 %	PCI/GDRY	4/22/92
PB-212	1.0500E+00	3.30 %	PCI/GDRY	4/22/92
TL-208	3.2800E-01	5.52 %	PCI/GDRY	4/22/92
RA-228	1.0000E+00	5.36 %	PCI/GDRY	4/22/92
CS-137	4.0700E-02	30.96 %	PCI/GDRY	4/22/92
K-40	2.4000E+01	1.85 %	PCI/GDRY	4/22/92

Sample Location	
Sample ID	SSFL92.03051
Collection date, time	4/22/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/18/92 14:13
Length of count	1000 min
Sample size	622.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	5.6300E-01	3.71 %	PCI/GDRY	4/22/92
RA-226	1.1200E+00	22.68 %	PCI/GDRY	4/22/92
PB-212	6.6200E-01	3.67 %	PCI/GDRY	4/22/92
TL-208	2.2400E-01	5.67 %	PCI/GDRY	4/22/92
RA-228	7.0900E-01	4.34 %	PCI/GDRY	4/22/92
K-40	2.3600E+01	1.44 %	PCI/GDRY	4/22/92
CS-137	7.8000E-03	103.85 %	PCI/GDRY	4/22/92

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.03052
Collection date, time	4/22/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/18/92 14:13
Length of count	1000 min
Sample size	650.000 GDRY

Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	6/17/92 14:45
Length of count	1000 min
Sample size	650.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
PB-214	6.6300E-01	3.33 %	PCI/GDRY	4/22/92	
RA-226	1.4500E+00	14.62 %	PCI/GDRY	4/22/92	
BI-214	6.0900E-01	3.58 %	PCI/GDRY	4/22/92	
PB-212	8.1800E-01	2.92 %	PCI/GDRY	4/22/92	
TL-208	2.7000E-01	4.70 %	PCI/GDRY	4/22/92	
RA-228	8.2000E-01	3.98 %	PCI/GDRY	4/22/92	
K-40	2.2900E+01	1.35 %	PCI/GDRY	4/22/92	
CS-137	0.0000E+00	0.00 %		4/22/92	MDA=.0171

Sample Location	
Sample ID	SSFL92.03055
Collection date, time	4/22/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/19/92 14:27
Length of count	1000 min
Sample size	0.977000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=7.69E+01
RA-228	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=1.60E+01
CS-137	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=4.65

Gamma Spectroscopy Results

Sample Location
Sample ID SSFL92.03065
Collection date, time 4/22/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 5/19/92 14:27
Length of count 1000 min
Sample size 0.983000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=8.35E+01
I-131	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=4.17E+01
BA-140	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=6.49E+01
CS-137	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=4.85E+00
RA-228	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=1.64E+01
K-40	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=5.84E+01

Type of analysis GAMMA SPECTROSCOPY
Date, time counted 6/19/92 12:57
Length of count 1000 min
Sample size 0.983000 L

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE	
RA-226	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=7.65E+01
I-131	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=5.79E+02
BA-140	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=3.23E+02
CS-137	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=4.80E+00
RA-228	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=1.64E+01
K-40	0.0000E+00	0.00 %	PCI/L	4/22/92	MDA=5.99E+01

Sample Location
Sample ID SSFL92.03070
Collection date, time 4/21/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 6/12/92 13:21
Length of count 1000 min
Sample size 518.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.1800E+00	2.71 %	PCI/GDRY	4/21/92
RA-226	2.7500E+00	13.93 %	PCI/GDRY	4/21/92
PB-212	1.4400E+00	2.33 %	PCI/GDRY	4/21/92
TL-208	4.5800E-01	4.63 %	PCI/GDRY	4/21/92
RA-228	1.4800E+00	3.86 %	PCI/GDRY	4/21/92
BI-214	1.0400E+00	3.61 %	PCI/GDRY	4/21/92
CS-137	8.5700E-02	18.55 %	PCI/GDRY	4/21/92
K-40	2.3900E+01	2.08 %	PCI/GDRY	4/21/92

Gamma Spectroscopy Results

Sample Location
Sample ID SSFL92.03070X
Collection date, time 4/21/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 5/18/92 14:13
Length of count 1000 min
Sample size 518.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.1500E+00	2.71 %	PCI/GDRY	4/21/92
RA-226	2.6200E+00	12.94 %	PCI/GDRY	4/21/92
PB-212	1.4200E+00	2.29 %	PCI/GDRY	4/21/92
TL-208	4.6500E-01	4.67 %	PCI/GDRY	4/21/92
RA-228	1.4400E+00	3.88 %	PCI/GDRY	4/21/92
BI-214	1.0400E+00	3.68 %	PCI/GDRY	4/21/92
CS-137	8.6700E-02	19.26 %	PCI/GDRY	4/21/92
K-40	2.4000E+01	2.07 %	PCI/GDRY	4/21/92

Type of analysis GAMMA SPECTROSCOPY
Date, time counted 6/11/92 14:10
Length of count 1000 min
Sample size 518.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.1700E+00	2.52 %	PCI/GDRY	4/21/92
RA-226	2.5100E+00	13.11 %	PCI/GDRY	4/21/92
BI-214	1.0600E+00	3.06 %	PCI/GDRY	4/21/92
PB-212	1.4100E+00	2.24 %	PCI/GDRY	4/21/92
TL-208	4.7000E-01	3.91 %	PCI/GDRY	4/21/92
RA-228	1.4700E+00	3.16 %	PCI/GDRY	4/21/92
CS-137	9.9500E-02	13.27 %	PCI/GDRY	4/21/92
K-40	2.4500E+01	1.69 %	PCI/GDRY	4/21/92

Sample Location
Sample ID SSFL92.03073
Collection date, time 4/21/92 0:00
Type of analysis GAMMA SPECTROSCOPY
Date, time counted 5/18/92 14:13
Length of count 1000 min
Sample size 397.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	1.2800E+00	4.23 %	PCI/GDRY	4/21/92
RA-226	3.1500E+00	20.25 %	PCI/GDRY	4/21/92
PB-212	1.5700E+00	3.87 %	PCI/GDRY	4/21/92
TL-208	5.0000E-01	6.58 %	PCI/GDRY	4/21/92
RA-228	1.5600E+00	4.91 %	PCI/GDRY	4/21/92
CS-137	8.0300E-02	21.92 %	PCI/GDRY	4/21/92
K-40	2.6200E+01	2.33 %	PCI/GDRY	4/21/92

Gamma Spectroscopy Results

Sample Location	
Sample ID	SSFL92.03079
Collection date, time	4/21/92 0:00
Type of analysis	GAMMA SPECTROSCOPY
Date, time counted	5/18/92 14:30
Length of count	1000 min
Sample size	583.000 GDRY

NUCLIDE	ACTIVITY	2 SIG ERROR	UNITS	DATE
PB-214	8.0100E-01	3.52 %	PCI/GDRY	4/23/92
RA-226	1.6400E+00	16.89 %	PCI/GDRY	4/23/92
BI-214	6.8300E-01	4.32 %	PCI/GDRY	4/23/92
PB-212	9.4500E-01	3.26 %	PCI/GDRY	4/23/92
TL-208	3.0600E-01	5.16 %	PCI/GDRY	4/23/92
RA-228	9.9700E-01	4.45 %	PCI/GDRY	4/23/92
CS-137	5.4600E-02	17.45 %	PCI/GDRY	4/23/92
K-40	2.3900E+01	1.45 %	PCI/GDRY	4/23/92

APPENDIX B

Chemical Analyses Complete Results

Section 1.

a. Volatile Organic Compounds In Soil
   Brandeis-Bardin Institute
   Santa Monica Mountains Conservancy
   Background Locations

b. Volatile Organic Compounds In Water
   Brandeis-Bardin Institute
   Santa Monica Mountains Conservancy
   Background Locations

Section 2.

a. Semivolatile Organic Compounds In Soil
   Brandeis-Bardin Institute
   Santa Monica Mountains Conservancy
   Background Locations

b. Semivolatile Organic Compounds In Water
   Brandeis-Bardin Institute
   Santa Monica Mountains Conservancy
   Background Locations

Section 1. a. Volatile Organic Compounds In Soil
Brandeis-Bardin Institute

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB01056SE/90287
Lab Sample ID: SS8089

Compound	Concentration		Compound	Concentration	
chloromethane	12	U	1,2-dichloropropane	6	U
bromomethane	12	U	cis-1,3-dichloropropene	6	U
vinyl chloride	12	U	trichloroethene	6	U
chloroethane	12	U	dibromochloromethane	6	U
methylene chloride	10	B	1,1,2-trichloroethane	6	U
acetone	12	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	12	U
1,2-dichloroethene (total)	6	U	2-hexanone	12	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	12	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	12	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/26/92
Dilution Factor: 1.00
% Moisture: 17

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB03005SE/90138
Lab Sample ID: SS7871

Compound	Concentration		Compound	Concentration	
chloromethane	13	U	1,2-dichloropropane	6	U
bromomethane	13	U	cis-1,3-dichloropropene	6	U
vinyl chloride	13	U	trichloroethene	6	U
chloroethane	13	U	dibromochloromethane	6	U
methylene chloride	73	B	1,1,2-trichloroethane	6	U
acetone	27		benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	13	U
1,2-dichloroethene (total)	6	U	2-hexanone	13	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	13	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	13	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 22

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB04021SE/88285
Lab Sample ID: SS7872

Compound	Concentration		Compound	Concentration	
chloromethane	11	U	1,2-dichloropropane	5	U
bromomethane	11	U	cis-1,3-dichloropropene	5	U
vinyl chloride	11	U	trichloroethene	5	U
chloroethane	11	U	dibromochloromethane	5	U
methylene chloride	10	B	1,1,2-trichloroethane	5	U
acetone	11	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	11	U
1,2-dichloroethene (total)	5	U	2-hexanone	11	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	11	U	toluene	2	J
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	11	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 9

Sanford, Cohen and Associates
April 21, 1992

Brandeis-Bardin Institute
Picnic Area
0577

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50985

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB05077SE/90036
Lab Sample ID: SS8088

Compound	Concentration		Compound	Concentration	
chloromethane	11	U	1,2-dichloropropane	6	U
bromomethane	11	U	cis-1,3-dichloropropene	6	U
vinyl chloride	11	U	trichloroethene	6	U
chloroethane	11	U	dibromochloromethane	6	U
methylene chloride	5	BJ	1,1,2-trichloroethane	6	U
acetone	12	B	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	11	U
1,2-dichloroethene (total)	6	U	2-hexanone	11	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	11	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	11	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/26/92
Dilution Factor: 1.00
% Moisture: 12

Sanford, Cohen and Associates
April 10, 1992

Brandeis-Bardin Institute
House of the Book
0692

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB06092SE/89185
Lab Sample ID: SS7873

Compound	Concentration		Compound	Concentration	
chloromethane	11	U	1,2-dichloropropane	6	U
bromomethane	11	U	cis-1,3-dichloropropene	6	U
vinyl chloride	11	U	trichloroethene	6	U
chloroethane	11	U	dibromochloromethane	6	U
methylene chloride	6	B	1,1,2-trichloroethane	6	U
acetone	11	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	11	U
1,2-dichloroethene (total)	6	U	2-hexanone	11	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	11	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	11	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 11

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB11061SE/89261
Lab Sample ID: SS8331

Compound	Concentration		Compound	Concentration	
chloromethane	12	U	1,2-dichloropropane	6	U
bromomethane	12	U	cis-1,3-dichloropropene	6	U
vinyl chloride	12	U	trichloroethene	6	U
chloroethane	12	U	dibromochloromethane	6	U
methylene chloride	3	J	1,1,2-trichloroethane	6	U
acetone	12	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	12	U
1,2-dichloroethene (total)	6	U	2-hexanone	12	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	12	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	12	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92
Dilution Factor: 1.00
% Moisture: 14

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB12020SE/90087
Lab Sample ID: SS8090R

Compound	Concentration		Compound	Concentration	
chloromethane	11	U	1,2-dichloropropane	6	U
bromomethane	11	U	cis-1,3-dichloropropene	6	U
vinyl chloride	11	U	trichloroethene	6	U
chloroethane	11	U	dibromochloromethane	6	U
methylene chloride	3	BJ	1,1,2-trichloroethane	6	U
acetone	11	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	11	U
1,2-dichloroethene (total)	6	U	2-hexanone	11	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	11	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	11	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blanks as well as the sample.

Date of Analysis: 03/26/92
Dilution Factor: 1.00
% Moisture: 12

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB13024SE/88938
Lab Sample ID: SS7874

Compound	Concentration		Compound	Concentration	
chloromethane	12	U	1,2-dichloropropane	6	U
bromomethane	12	U	cis-1,3-dichloropropene	6	U
vinyl chloride	12	U	trichloroethene	6	U
chloroethane	12	U	dibromochloromethane	6	U
methylene chloride	19	B	1,1,2-trichloroethane	6	U
acetone	12	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	12	U
1,2-dichloroethene (total)	6	U	2-hexanone	12	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	12	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	12	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 18

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB14079SE/88438
Lab Sample ID: SS7875

Compound	Concentration		Compound	Concentration	
chloromethane	11	U	1,2-dichloropropane	6	U
bromomethane	11	U	cis-1,3-dichloropropene	6	U
vinyl chloride	11	U	trichloroethene	6	U
chloroethane	11	U	dibromochloromethane	6	U
methylene chloride	10	B	1,1,2-trichloroethane	6	U
acetone	11	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	11	U
1,2-dichloroethene (total)	6	U	2-hexanone	11	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	11	U	toluene	2	J
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	11	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 11

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB15005SE/89589
Lab Sample ID: K1228

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	17		1,1,2-trichloroethane	5	U
acetone	19		benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	2	J
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 1

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51263

VOLATILE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB16001BSE/89890
Lab Sample ID: K1268

Compound	Concentration		Compound	Concentration	
chloromethane	13	U	1,2-dichloropropane	6	U
bromomethane	13	U	cis-1,3-dichloropropene	6	U
vinyl chloride	13	U	trichloroethene	6	U
chloroethane	13	U	dibromochloromethane	6	U
methylene chloride	7		1,1,2-trichloroethane	6	U
acetone	10	J	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	13	U
1,2-dichloroethene (total)	6	U	2-hexanone	13	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	13	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	13	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 21

Sanford, Cohen and Associates
June 23, 1992

Brandeis-Bardin Institute
Building 59 Watershed
1701

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB017001SE/89337
Lab Sample ID: K1128

Compound	Concentration		Compound	Concentration	
chloromethane	12	U	cis-1,3-dichloropropene	6	U
bromomethane	12	U	trichloroethene	6	U
vinyl chloride	12	U	dibromochloromethane	6	U
chloroethane	12	U	1,1,2-trichloroethane	6	U
methylene chloride	7	B	benzene	6	U
acetone	3	J	trans-1,3-dichloropropene	6	U
carbon disulfide	6	U	bromoform	6	U
1,1-dichloroethene	6	U	4-methyl-2-pentanone	12	U
1,1-dichloroethane	6	U	2-hexanone	12	U
1,2-dichloroethene (total)	6	U	tetrachloroethene	6	U
chloroform	6	U	1,1,2,2-tetrachloroethane	6	U
1,2-dichloroethane	6	U	toluene	6	U
2-butanone	12	U	chlorobenzene	6	U
1,1,1-trichloroethane	6	U	ethylbenzene	6	U
carbon tetrachloride	6	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
1,2-dichloropropane	6	U	1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 04/27/92
Dilution Factor: 1.0
% Moisture: 18

Sanford, Cohen and Associates
June 23, 1992

Brandeis-Bardin Institute
Sodium Burn Pit Watershed
1801

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

VOLATILE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB180001SE/89236
Lab Sample ID: K1129

Compound	Concentration		Compound	Concentration	
chloromethane	14	U	cis-1,3-dichloropropene	7	U
bromomethane	14	U	trichloroethene	7	U
vinyl chloride	14	U	dibromochloromethane	7	U
chloroethane	14	U	1,1,2-trichloroethane	7	U
methylene chloride	16	B	benzene	7	U
acetone	14	U	trans-1,3-dichloropropene	7	U
carbon disulfide	7	U	bromoform	7	U
1,1-dichloroethene	7	U	4-methyl-2-pentanone	14	U
1,1-dichloroethane	7	U	2-hexanone	14	U
1,2-dichloroethene (total)	7	U	tetrachloroethene	7	U
chloroform	7	U	1,1,2,2-tetrachloroethane	7	U
1,2-dichloroethane	7	U	toluene	7	U
2-butanone	14	U	chlorobenzene	7	U
1,1,1-trichloroethane	7	U	ethylbenzene	7	U
carbon tetrachloride	7	U	styrene	7	U
bromodichloromethane	7	U	xylenes (total)	7	U
1,2-dichloropropane	7	U	1,1,2-trichlorotrifluoroethane	7	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 04/27/92
Dilution Factor: 1.0
% Moisture: 29

VOLATILE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB19003SE/90438
Lab Sample ID: K1269

Compound	Concentration		Compound	Concentration	
chloromethane	14	U	1,2-dichloropropane	7	U
bromomethane	14	U	cis-1,3-dichloropropene	7	U
vinyl chloride	14	U	trichloroethene	7	U
chloroethane	14	U	dibromochloromethane	7	U
methylene chloride	4	J	1,1,2-trichloroethane	7	U
acetone	30		benzene	7	U
carbon disulfide	7	U	trans-1,3-dichloropropene	7	U
1,1-dichloroethene	7	U	bromoform	7	U
1,1-dichloroethane	7	U	4-methyl-2-pentanone	14	U
1,2-dichloroethene (total)	7	U	2-hexanone	14	U
chloroform	7	U	tetrachloroethene	7	U
1,2-dichloroethane	7	U	1,1,2,2-tetrachloroethane	7	U
2-butanone	14	U	toluene	7	U
1,1,1-trichloroethane	7	U	chlorobenzene	7	U
carbon tetrachloride	7	U	ethylbenzene	7	U
vinyl acetate	14	U	styrene	4	J
bromodichloromethane	7	U	xylenes (total)	7	U
			1,1,2-trichlorotrifluoroethane	7	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 29

Section 1. a. Volatile Organic Compounds In Soil
Santa Monica Mountains Conservancy

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: ESM01004SE/88585
Lab Sample ID: SS8482

Compound	Concentration		Compound	Concentration	
chloromethane	11	U	1,2-dichloropropane	6	U
bromomethane	11	U	cis-1,3-dichloropropene	6	U
vinyl chloride	11	U	trichloroethene	6	U
chloroethane	11	U	dibromochloromethane	6	U
methylene chloride	6		1,1,2-trichloroethane	6	U
acetone	11	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	11	U
1,2-dichloroethene (total)	6	U	2-hexanone	11	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	11	U	toluene	4	J
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	11	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92
Dilution Factor: 1.00
% Moisture: 10

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in $\mu g/kg$ (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: ESM02019SE/88386
Lab Sample ID: SS7603

Compound	Concentration		Compound	Concentration	
chloromethane	12	U	1,2-dichloropropane	6	U
bromomethane	12	U	cis-1,3-dichloropropene	6	U
vinyl chloride	12	U	trichloroethene	6	U
chloroethane	12	U	dibromochloromethane	6	U
methylene chloride	5	BJ	1,1,2-trichloroethane	6	U
acetone	12	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	12	U
1,2-dichloroethene (total)	6	U	2-hexanone	12	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	12	U	toluene	1	BJ
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	1	J
vinyl acetate	12	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/17/92
Dilution Factor: 1.00
% Moisture: 15

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: ~~E~~SXM03001SE/88338
Lab Sample ID: SS7604

Compound	Concentration		Compound	Concentration	
chloromethane	13	U	1,2-dichloropropane	6	U
bromomethane	13	U	cis-1,3-dichloropropene	6	U
vinyl chloride	13	U	trichloroethene	6	U
chloroethane	13	U	dibromochloromethane	6	U
methylene chloride	5	BJ	1,1,2-trichloroethane	6	U
acetone	23		benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	13	U
1,2-dichloroethene (total)	6	U	2-hexanone	13	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	13	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	2	J
vinyl acetate	13	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/17/92
Dilution Factor: 1.00
% Moisture: 22

Section 1. a. Volatile Organic Compounds In Soil Background Locations

Sanford, Cohen and Associates
April 8, 1992

Background Location
Santa Susana Park
0207

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in $\mu g/kg$ (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG02007SE/88498
Lab Sample ID: SS7602

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	BJ	1,1,2-trichloroethane	5	U
acetone	12		benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	1	BJ
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	1	J
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/17/92
Dilution Factor: 1.00
% Moisture: 4

Sanford, Cohen and Associates
April 16, 1992

Background Location
Bell Canyon
0359

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG03059SE/88346
Lab Sample ID: SS7704

Compound	Concentration		Compound	Concentration	
chloromethane	15	U	1,2-dichloropropane	7	U
bromomethane	15	U	cis-1,3-dichloropropene	7	U
vinyl chloride	15	U	trichloroethene	7	U
chloroethane	15	U	dibromochloromethane	7	U
methylene chloride	3	J	1,1,2-trichloroethane	7	U
acetone	7	J	benzene	7	U
carbon disulfide	7	U	trans-1,3-dichloropropene	7	U
1,1-dichloroethene	7	U	bromoform	7	U
1,1-dichloroethane	7	U	4-methyl-2-pentanone	15	U
1,2-dichloroethene (total)	7	U	2-hexanone	15	U
chloroform	7	U	tetrachloroethene	7	U
1,2-dichloroethane	7	U	1,1,2,2-tetrachloroethane	7	U
2-butanone	15	U	toluene	7	U
1,1,1-trichloroethane	7	U	chlorobenzene	7	U
carbon tetrachloride	7	U	ethylbenzene	7	U
vinyl acetate	15	U	styrene	7	U
bromodichloromethane	7	U	xylenes (total)	7	U
			1,1,2-trichlorotrifluoroethane	7	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/19/92
Dilution Factor: 1.00
% Moisture: 32

Sanford, Cohen and Associates
April 16, 1992

Background Location
Western Location
0429

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: EBG04029SE/88242
Lab Sample ID: SS7707

Compound	Concentration		Compound	Concentration	
chloromethane	13	U	1,2-dichloropropane	6	U
bromomethane	13	U	cis-1,3-dichloropropene	6	U
vinyl chloride	13	U	trichloroethene	6	U
chloroethane	13	U	dibromochloromethane	6	U
methylene chloride	2	J	1,1,2-trichloroethane	6	U
acetone	13	U	benzene	6	U
carbon disulfide	6	U	trans-1,3-dichloropropene	6	U
1,1-dichloroethene	6	U	bromoform	6	U
1,1-dichloroethane	6	U	4-methyl-2-pentanone	13	U
1,2-dichloroethene (total)	6	U	2-hexanone	13	U
chloroform	6	U	tetrachloroethene	6	U
1,2-dichloroethane	6	U	1,1,2,2-tetrachloroethane	6	U
2-butanone	13	U	toluene	6	U
1,1,1-trichloroethane	6	U	chlorobenzene	6	U
carbon tetrachloride	6	U	ethylbenzene	6	U
vinyl acetate	13	U	styrene	6	U
bromodichloromethane	6	U	xylenes (total)	6	U
			1,1,2-trichlorotrifluoroethane	6	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/19/92
Dilution Factor: 1.00
% Moisture: 21

Section 1. b. Volatile Organic Compounds In Water
Brandeis-Bardin Institute

Sanford, Cohen and Associates
April 10, 1992

Brandeis-Bardin Institute
Campsite Area 1
0301

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBB03001WH/196739
Lab Sample ID: SS7886

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	100	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	50	U
1,2-dichloroethene (total)	5	U	2-hexanone	50	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	100	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/26/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
April 10, 1992

Brandeis-Bardin Institute
Campsite Area 2
0401

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBB04001WH/196727
Lab Sample ID: SS7887

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	7	BJ	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	50	U
1,2-dichloroethene (total)	5	U	2-hexanone	50	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	100	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/26/92
Dilution Factor: 1.00

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBB16001BWH/197319
Lab Sample ID: K1229

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/30/92
Dilution Factor: 1.00

Section 1. b. Volatile Organic Compounds In Water
Santa Monica Mountains Conservancy

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM05001GH/196701
Lab Sample ID: SS7609

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/18/92
Dilution Factor: 1.00

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM05003WH/197885
Lab Sample ID: K1266

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/30/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
April 8, 1992

Santa Monica Mountains Conservancy
Well By The Gate
0701

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM07001GH/170701
Lab Sample ID: SS7610

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	13	
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/18/92
Dilution Factor: 1.00

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50985

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM08001WH/171801
Lab Sample ID: SS8084

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/26/92
Dilution Factor: 1.00

Section 1. b. Volatile Organic Compounds In Water
Background Locations

Sanford, Cohen and Associates
April 8, 1992

Background Location
Rocky Peak
0102

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBG01002WH/196714
Lab Sample ID: SS7608

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	BJ	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 03/18/92
Dilution Factor: 1.00

Section 2. a. Semivolatile Organic Compounds In Soil
Brandeis-Bardin Institute

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB01056SD/90286
Lab Sample ID: SS8092

Compound	Concentration		Compound	Concentration	
acenaphthene	780	U	bis(2-chloroisopropyl)ether	780	U
acenaphthylene	780	U	bis(2-ethylhexyl)phthalate	520	JB
anthracene	780	U	4-bromophenyl phenyl ether	780	U
benzidine	3,900	U	2-chloronaphthalene	780	U
benzo(a)anthracene	780	U	4-chlorophenyl phenyl ether	780	U
benzo(b)fluoranthene	780	U	chrysene	780	U
benzo(k)fluoranthene	780	U	dibenz(a,h)anthracene	780	U
benzo(a)pyrene	780	U	di-n-butylphthalate	780	U
benzo(g,h,i)perylene	780	U	1,2-dichlorobenzene	780	U
butylbenzylphthalate	780	U	1,3-dichlorobenzene	780	U
bis(2-chloroethoxy)methane	780	U	1,4-dichlorobenzene	780	U
bis(2-chloroethyl)ether	780	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB01056SD/90286
Lab Sample ID: SS8092

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	1,600	U	hexachloroethane	780	U
diethylphthalate	780	U	indeno(1,2,3-cd)pyrene	780	U
dimethyl phthalate	780	U	isophorone	780	U
2,4-dinitrotoluene	780	U	naphthalene	780	U
2,6-dinitrotoluene	780	U	nitrobenzene	780	U
di-n-octyl phthalate	780	U	n-nitroso-di-n-propylamine	780	U
1,2-diphenylhydrazine(1)	780	U	n-nitrosodimethylamine	780	U
fluoranthene	780	U	n-nitrosodiphenylamine(2)	780	U
fluorene	780	U	phenanthrene	780	U
hexachlorobenzene	780	U	pyrene	780	U
hexachlorobutadiene	780	U	1,2,4-trichlorobenzene	780	U
hexachlorocyclopentadiene	780	U			

(1) Screened for as azobenzene
(2) Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB01056SD/90286
Lab Sample ID: SS8092

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	780	U	2-nitrophenol	780	U
2-chlorophenol	780	U	4-nitrophenol	3,900	U
2,4-dichlorophenol	780	U	pentachlorophenol	3,900	U
2,4-dimethylphenol	780	U	phenol	780	U
2,4-dinitrophenol	3,900	U	2,4,6-trichlorophenol	780	U
2-methyl-4,6-dinitrophenol	3,900	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB03005SD/90137
Lab Sample ID: SS7876

Compound	Concentration		Compound	Concentration	
phenol	400	U	bis(2-chloroethoxy)methane	400	U
bis(2-chloroethyl)ether	400	U	2,4-dichlorophenol	400	U
2-chlorophenol	400	U	1,2,4-trichlorobenzene	400	U
1,3-dichlorobenzene	400	U	naphthalene	400	U
1,4-dichlorobenzene	400	U	4-chloroaniline	400	U
benzyl alcohol	400	U	hexachlorobutadiene	400	U
1,2-dichlorobenzene	400	U	4-chloro-3-methylphenol	400	U
2-methylphenol	400	U	2-methylnaphthalene	400	U
bis(2-chloroisopropyl)ether	400	U	hexachlorocyclopentadiene	400	U
4-methylphenol	400	U	2,4,6-trichlorophenol	400	U
n-nitroso-di-n-propylamine	400	U	2,4,5-trichlorophenol	1,900	U
hexachloroethane	400	U	2-chloronaphthalene	400	U
nitrobenzene	400	U	2-nitroaniline	1,900	U
isophorone	400	U	dimethyl phthalate	400	U
2-nitrophenol	400	U	acenaphthylene	400	U
2,4-dimethylphenol	400	U	2,6-dinitrotoluene	400	U
benzoic acid	1,900	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 17

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB03005SD/90137
Lab Sample ID: SS7876

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,900	U	anthracene	400	U
acenaphthene	400	U	di-n-butylphthalate	400	U
2,4-dinitrophenol	1,900	U	fluoranthene	400	U
4-nitrophenol	1,900	U	pyrene	400	U
dibenzofuran	400	U	butylbenzylphthalate	400	U
2,4-dinitrotoluene	400	U	3,3'-dichlorobenzidine	790	U
diethylphthalate	400	U	benzo(a)anthracene	400	U
4-chlorophenyl-phenylether	400	U	chrysene	400	U
fluorene	400	U	bis(2-ethylhexyl)phthalate	70	BJ
4-nitroaniline	1,900	U	di-n-octylphthalate	400	U
4,6-dinitro-2-methylphenol	1,900	U	benzo(b)fluoranthene	400	U
n-nitrosodiphenylamine[1]	400	U	benzo(k)fluoranthene	400	U
4-bromophenyl-phenylether	400	U	benzo(a)pyrene	400	U
hexachlorobenzene	400	U	indeno(1,2,3-cd)pyrene	400	U
pentachlorophenol	1,900	U	dibenzo(a,h)anthracene	400	U
phenanthrene	400	U	benzo(g,h,i)perylene	400	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.
1 - Detected as diphenylamine.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 17

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB04021SD/88284
Lab Sample ID: SS7877

Compound	Concentration		Compound	Concentration	
phenol	370	U	bis(2-chloroethoxy)methane	370	U
bis(2-chloroethyl)ether	370	U	2,4-dichlorophenol	370	U
2-chlorophenol	370	U	1,2,4-trichlorobenzene	370	U
1,3-dichlorobenzene	370	U	naphthalene	370	U
1,4-dichlorobenzene	370	U	4-chloroaniline	370	U
benzyl alcohol	370	U	hexachlorobutadiene	370	U
1,2-dichlorobenzene	370	U	4-chloro-3-methylphenol	370	U
2-methylphenol	370	U	2-methylnaphthalene	370	U
bis(2-chloroisopropyl)ether	370	U	hexachlorocyclopentadiene	370	U
4-methylphenol	370	U	2,4,6-trichlorophenol	370	U
n-nitroso-di-n-propylamine	370	U	2,4,5-trichlorophenol	1,800	U
hexachloroethane	370	U	2-chloronaphthalene	370	U
nitrobenzene	370	U	2-nitroaniline	1,800	U
isophorone	370	U	dimethyl phthalate	370	U
2-nitrophenol	370	U	acenaphthylene	370	U
2,4-dimethylphenol	370	U	2,6-dinitrotoluene	370	U
benzoic acid	1,800	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 11

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB04021SD/88284
Lab Sample ID: SS7877

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,800	U	anthracene	370	U
acenaphthene	370	U	di-n-butylphthalate	370	U
2,4-dinitrophenol	1,800	U	fluoranthene	370	U
4-nitrophenol	1,800	U	pyrene	370	U
dibenzofuran	370	U	butylbenzylphthalate	39	J
2,4-dinitrotoluene	370	U	3,3'-dichlorobenzidine	740	U
diethylphthalate	370	U	benzo(a)anthracene	370	U
4-chlorophenyl-phenylether	370	U	chrysene	370	U
fluorene	370	U	bis(2-ethylhexyl)phthalate	79	BJ
4-nitroaniline	1,800	U	di-n-octylphthalate	370	U
4,6-dinitro-2-methylphenol	1,800	U	benzo(b)fluoranthene	370	U
n-nitrosodiphenylamine[1]	370	U	benzo(k)fluoranthene	370	U
4-bromophenyl-phenylether	370	U	benzo(a)pyrene	370	U
hexachlorobenzene	370	U	indeno(1,2,3-cd)pyrene	370	U
pentachlorophenol	1,800	U	dibenzo(a,h)anthracene	370	U
phenanthrene	370	U	benzo(g,h,i)perylene	370	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.
1 - Detected as diphenylamine.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 11

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB05077SD/90035
Lab Sample ID: SS8091

Compound	Concentration		Compound	Concentration	
acenaphthene	750	U	bis(2-chloroisopropyl)ether	750	U
acenaphthylene	750	U	bis(2-ethylhexyl)phthalate	750	U
anthracene	750	U	4-bromophenyl phenyl ether	750	U
benzidine	3,700	U	2-chloronaphthalene	750	U
benzo(a)anthracene	750	U	4-chlorophenyl phenyl ether	750	U
benzo(b)fluoranthene	750	U	chrysene	750	U
benzo(k)fluoranthene	750	U	dibenz(a,h)anthracene	750	U
benzo(a)pyrene	750	U	di-n-butylphthalate	750	U
benzo(g,h,i)perylene	750	U	1,2-dichlorobenzene	750	U
butylbenzylphthalate	750	U	1,3-dichlorobenzene	750	U
bis(2-chloroethoxy)methane	750	U	1,4-dichlorobenzene	750	U
bis(2-chloroethyl)ether	750	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC PRIORITY POLLUTANT ANALYSIS
(continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB05077SD/90035
Lab Sample ID: SS8091

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	1,500	U	hexachloroethane	750	U
diethylphthalate	750	U	indeno(1,2,3-cd)pyrene	750	U
dimethyl phthalate	750	U	isophorone	750	U
2,4-dinitrotoluene	750	U	naphthalene	750	U
2,6-dinitrotoluene	750	U	nitrobenzene	750	U
di-n-octyl phthalate	750	U	n-nitroso-di-n-propylamine	750	U
1,2-diphenylhydrazine(1)	750	U	n-nitrosodimethylamine	750	U
fluoranthene	750	U	n-nitrosodiphenylamine(2)	750	U
fluorene	750	U	phenanthrene	750	U
hexachlorobenzene	750	U	pyrene	750	U
hexachlorobutadiene	750	U	1,2,4-trichlorobenzene	750	U
hexachlorocyclopentadiene	750	U			

(1) Screened for as azobenzene
(2) Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB05077SD/90035
Lab Sample ID: SS8091

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	750	U	2-nitrophenol	750	U
2-chlorophenol	750	U	4-nitrophenol	3,700	U
2,4-dichlorophenol	750	U	pentachlorophenol	3,700	U
2,4-dimethylphenol	750	U	phenol	750	U
2,4-dinitrophenol	3,700	U	2,4,6-trichlorophenol	750	U
2-methyl-4,6-dinitrophenol	3,700	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB06092SD/89184
Lab Sample ID: SS7878

Compound	Concentration		Compound	Concentration	
phenol	370	U	bis(2-chloroethoxy)methane	370	U
bis(2-chloroethyl)ether	370	U	2,4-dichlorophenol	370	U
2-chlorophenol	370	U	1,2,4-trichlorobenzene	370	U
1,3-dichlorobenzene	370	U	naphthalene	370	U
1,4-dichlorobenzene	370	U	4-chloroaniline	370	U
benzyl alcohol	370	U	hexachlorobutadiene	370	U
1,2-dichlorobenzene	370	U	4-chloro-3-methylphenol	370	U
2-methylphenol	370	U	2-methylnaphthalene	370	U
bis(2-chloroisopropyl)ether	370	U	hexachlorocyclopentadiene	370	U
4-methylphenol	370	U	2,4,6-trichlorophenol	370	U
n-nitroso-di-n-propylamine	370	U	2,4,5-trichlorophenol	1,800	U
hexachloroethane	370	U	2-chloronaphthalene	370	U
nitrobenzene	370	U	2-nitroaniline	1,800	U
isophorone	370	U	dimethyl phthalate	370	U
2-nitrophenol	370	U	acenaphthylene	370	U
2,4-dimethylphenol	370	U	2,6-dinitrotoluene	370	U
benzoic acid	1,800	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 10

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB06092SD/89184
Lab Sample ID: SS7878

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,800	U	anthracene	370	U
acenaphthene	370	U	di-n-butylphthalate	370	U
2,4-dinitrophenol	1,800	U	fluoranthene	370	U
4-nitrophenol	1,800	U	pyrene	370	U
dibenzofuran	370	U	butylbenzylphthalate	370	U
2,4-dinitrotoluene	370	U	3,3'-dichlorobenzidine	730	U
diethylphthalate	370	U	benzo(a)anthracene	370	U
4-chlorophenyl-phenylether	370	U	chrysene	370	U
fluorene	370	U	bis(2-ethylhexyl)phthalate	48	BJ
4-nitroaniline	1,800	U	di-n-octylphthalate	370	U
4,6-dinitro-2-methylphenol	1,800	U	benzo(b)fluoranthene	370	U
n-nitrosodiphenylamine[1]	370	U	benzo(k)fluoranthene	370	U
4-bromophenyl-phenylether	370	U	benzo(a)pyrene	370	U
hexachlorobenzene	370	U	indeno(1,2,3-cd)pyrene	370	U
pentachlorophenol	1,800	U	dibenzo(a,h)anthracene	370	U
phenanthrene	370	U	benzo(g,h,i)perylene	370	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.
1 - Detected as diphenylamine.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 10

SEMIVOLATILE ORGANICS ANALYSIS
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB11061SD/89285
Lab Sample ID: SS8332

Compound	Concentration		Compound	Concentration	
phenol	750	U	bis(2-chloroethoxy)methane	750	U
bis(2-chloroethyl)ether	750	U	2,4-dichlorophenol	750	U
2-chlorophenol	750	U	1,2,4-trichlorobenzene	750	U
1,3-dichlorobenzene	750	U	naphthalene	750	U
1,4-dichlorobenzene	750	U	4-chloroaniline	750	U
benzyl alcohol	750	U	hexachlorobutadiene	750	U
1,2-dichlorobenzene	750	U	4-chloro-3-methylphenol	750	U
2-methylphenol	750	U	2-methylnaphthalene	750	U
bis(2-chloroisopropyl)ether	750	U	hexachlorocyclopentadiene	750	U
4-methylphenol	750	U	2,4,6-trichlorophenol	750	U
n-nitroso-di-n-propylamine	750	U	2,4,5-trichlorophenol	3,600	U
hexachloroethane	750	U	2-chloronaphthalene	750	U
nitrobenzene	750	U	2-nitroaniline	3,600	U
isophorone	750	U	dimethyl phthalate	750	U
2-nitrophenol	750	U	acenaphthylene	750	U
2,4-dimethylphenol	750	U	2,6-dinitrotoluene	750	U
benzoic acid	3,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/31/92
Dilution Factor: 2.0
% Moisture: 12

SEMIVOLATILE ORGANICS ANALYSIS (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB11061SD/89285
Lab Sample ID: SS8332

Compound	Concentration		Compound	Concentration	
3-nitroaniline	3,600	U	anthracene	750	U
acenaphthene	750	U	di-n-butylphthalate	750	U
2,4-dinitrophenol	3,600	U	fluoranthene	750	U
4-nitrophenol	3,600	U	pyrene	750	U
dibenzofuran	750	U	butylbenzylphthalate	750	U
2,4-dinitrotoluene	750	U	3,3'-dichlorobenzidine	1,500	U
diethylphthalate	750	U	benzo(a)anthracene	750	U
4-chlorophenyl-phenylether	750	U	chrysene	750	U
fluorene	750	U	bis(2-ethylhexyl)phthalate	3,500	U
4-nitroaniline	3,600	U	di-n-octylphthalate	750	U
4,6-dinitro-2-methylphenol	3,600	U	benzo(b)fluoranthene	750	U
n-nitrosodiphenylamine[1]	750	U	benzo(k)fluoranthene	750	U
4-bromophenyl-phenylether	750	U	benzo(a)pyrene	750	U
hexachlorobenzene	750	U	indeno(1,2,3-cd)pyrene	750	U
pentachlorophenol	3,600	U	dibenzo(a,h)anthracene	750	U
phenanthrene	750	U	benzo(g,h,i)perylene	750	U

(1) Detected as diphenylamine.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/31/92
Dilution Factor: 2.0
% Moisture: 12

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB12020SD/90086
Lab Sample ID: SS8093

Compound	Concentration		Compound	Concentration	
acenaphthene	740	U	bis(2-chloroisopropyl)ether	740	U
acenaphthylene	740	U	bis(2-ethylhexyl)phthalate	220	JB
anthracene	740	U	4-bromophenyl phenyl ether	740	U
benzidine	3,700	U	2-chloronaphthalene	740	U
benzo(a)anthracene	740	U	4-chlorophenyl phenyl ether	740	U
benzo(b)fluoranthene	740	U	chrysene	740	U
benzo(k)fluoranthene	740	U	dibenz(a,h)anthracene	740	U
benzo(a)pyrene	740	U	di-n-butylphthalate	740	U
benzo(g,h,i)perylene	740	U	1,2-dichlorobenzene	740	U
butylbenzylphthalate	740	U	1,3-dichlorobenzene	740	U
bis(2-chloroethoxy)methane	740	U	1,4-dichlorobenzene	740	U
bis(2-chloroethyl)ether	740	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB12020SD/90086
Lab Sample ID: SS8093

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	1,500	U	hexachloroethane	740	U
diethylphthalate	740	U	indeno(1,2,3-cd)pyrene	740	U
dimethyl phthalate	740	U	isophorone	740	U
2,4-dinitrotoluene	740	U	naphthalene	740	U
2,6-dinitrotoluene	740	U	nitrobenzene	740	U
di-n-octyl phthalate	740	U	n-nitroso-di-n-propylamine	740	U
1,2-diphenylhydrazine(1)	740	U	n-nitrosodimethylamine	740	U
fluoranthene	740	U	n-nitrosodiphenylamine(2)	740	U
fluorene	740	U	phenanthrene	740	U
hexachlorobenzene	740	U	pyrene	740	U
hexachlorobutadiene	740	U	1,2,4-trichlorobenzene	740	U
hexachlorocyclopentadiene	740	U			

(1) Screened for as azobenzene
(2) Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

ACID EXTRACTABLE ORGANIC PRIORITY POLLUTANT ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBB12020SD/90086
Lab Sample ID: SS8093

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	740	U	2-nitrophenol	740	U
2-chlorophenol	740	U	4-nitrophenol	3,700	U
2,4-dichlorophenol	740	U	pentachlorophenol	3,700	U
2,4-dimethylphenol	740	U	phenol	740	U
2,4-dinitrophenol	3,700	U	2,4,6-trichlorophenol	740	U
2-methyl-4,6-dinitrophenol	3,700	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB13024SD/88937
Lab Sample ID: SS7879

Compound	Concentration		Compound	Concentration	
phenol	400	U	bis(2-chloroethoxy)methane	400	U
bis(2-chloroethyl)ether	400	U	2,4-dichlorophenol	400	U
2-chlorophenol	400	U	1,2,4-trichlorobenzene	400	U
1,3-dichlorobenzene	400	U	naphthalene	400	U
1,4-dichlorobenzene	400	U	4-chloroaniline	400	U
benzyl alcohol	400	U	hexachlorobutadiene	400	U
1,2-dichlorobenzene	400	U	4-chloro-3-methylphenol	400	U
2-methylphenol	400	U	2-methylnaphthalene	400	U
bis(2-chloroisopropyl)ether	400	U	hexachlorocyclopentadiene	400	U
4-methylphenol	400	U	2,4,6-trichlorophenol	400	U
n-nitroso-di-n-propylamine	400	U	2,4,5-trichlorophenol	1,900	U
hexachloroethane	400	U	2-chloronaphthalene	400	U
nitrobenzene	400	U	2-nitroaniline	1,900	U
isophorone	400	U	dimethyl phthalate	400	U
2-nitrophenol	400	U	acenaphthylene	400	U
2,4-dimethylphenol	400	U	2,6-dinitrotoluene	400	U
benzoic acid	1,900	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 17

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB13024SD/88937
Lab Sample ID: SS7879

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,900	U	anthracene	400	U
acenaphthene	400	U	di-n-butylphthalate	400	U
2,4-dinitrophenol	1,900	U	fluoranthene	400	U
4-nitrophenol	1,900	U	pyrene	400	U
dibenzofuran	400	U	butylbenzylphthalate	400	U
2,4-dinitrotoluene	400	U	3,3'-dichlorobenzidine	790	U
diethylphthalate	400	U	benzo(a)anthracene	400	U
4-chlorophenyl-phenylether	400	U	chrysene	400	U
fluorene	400	U	bis(2-ethylhexyl)phthalate	280	BJ
4-nitroaniline	1,900	U	di-n-octylphthalate	400	U
4,6-dinitro-2-methylphenol	1,900	U	benzo(b)fluoranthene	400	U
n-nitrosodiphenylamine[1]	400	U	benzo(k)fluoranthene	400	U
4-bromophenyl-phenylether	400	U	benzo(a)pyrene	400	U
hexachlorobenzene	400	U	indeno(1,2,3-cd)pyrene	400	U
pentachlorophenol	1,900	U	dibenzo(a,h)anthracene	400	U
phenanthrene	400	U	benzo(g,h,i)perylene	400	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.
1 - Detected as diphenylamine.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 17

Sanford, Cohen and Associates
April 10, 1992

Brandeis-Bardin Institute
Old Well Campsite
1479

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

Analysis Sheet 1 of 2

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB14079SD/88437
Lab Sample ID: SS7880

Compound	Concentration		Compound	Concentration	
phenol	370	U	bis(2-chloroethoxy)methane	370	U
bis(2-chloroethyl)ether	370	U	2,4-dichlorophenol	370	U
2-chlorophenol	370	U	1,2,4-trichlorobenzene	370	U
1,3-dichlorobenzene	370	U	naphthalene	370	U
1,4-dichlorobenzene	370	U	4-chloroaniline	370	U
benzyl alcohol	370	U	hexachlorobutadiene	370	U
1,2-dichlorobenzene	370	U	4-chloro-3-methylphenol	370	U
2-methylphenol	370	U	2-methylnaphthalene	370	U
bis(2-chloroisopropyl)ether	370	U	hexachlorocyclopentadiene	370	U
4-methylphenol	370	U	2,4,6-trichlorophenol	370	U
n-nitroso-di-n-propylamine	370	U	2,4,5-trichlorophenol	1,800	U
hexachloroethane	370	U	2-chloronaphthalene	370	U
nitrobenzene	370	U	2-nitroaniline	1,800	U
isophorone	370	U	dimethyl phthalate	370	U
2-nitrophenol	370	U	acenaphthylene	370	U
2,4-dimethylphenol	370	U	2,6-dinitrotoluene	370	U
benzoic acid	1,800	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 12

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

lient Sample ID: EBB14079SD/88437
ab Sample ID: SS7880

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,800	U	anthracene	370	U
acenaphthene	370	U	di-n-butylphthalate	370	U
2,4-dinitrophenol	1,800	U	fluoranthene	370	U
4-nitrophenol	1,800	U	pyrene	370	U
dibenzofuran	370	U	butylbenzylphthalate	97	J
2,4-dinitrotoluene	370	U	3,3'-dichlorobenzidine	750	U
diethylphthalate	370	U	benzo(a)anthracene	370	U
4-chlorophenyl-phenylether	370	U	chrysene	370	U
fluorene	370	U	bis(2-ethylhexyl)phthalate	110	BJ
4-nitroaniline	1,800	U	di-n-octylphthalate	370	U
4,6-dinitro-2-methylphenol	1,800	U	benzo(b)fluoranthene	370	U
n-nitrosodiphenylamine[1]	370	U	benzo(k)fluoranthene	370	U
4-bromophenyl-phenylether	370	U	benzo(a)pyrene	370	U
hexachlorobenzene	370	U	indeno(1,2,3-cd)pyrene	370	U
pentachlorophenol	1,800	U	dibenzo(a,h)anthracene	370	U
phenanthrene	370	U	benzo(g,h,i)perylene	370	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.
1 - Detected as diphenylamine.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00
% Moisture: 12

Sanford, Cohen and Associates
June 1, 1992

Brandeis-Bardin Institute
RD 51 Watershed
1505

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

Analysis Sheet 1 of 2

SEMIVOLATILE ORGANIC ANALYSIS
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB15005SD/89588
Lab Sample ID: K1227

Compound	Concentration		Compound	Concentration	
phenol	670	U	bis(2-chloroethoxy)methane	670	U
bis(2-chloroethyl)ether	670	U	2,4-dichlorophenol	670	U
2-chlorophenol	670	U	1,2,4-trichlorobenzene	670	U
1,3-dichlorobenzene	670	U	naphthalene	670	U
1,4-dichlorobenzene	670	U	4-chloroaniline	670	U
benzyl alcohol	670	U	hexachlorobutadiene	670	U
1,2-dichlorobenzene	670	U	4-chloro-3-methylphenol	670	U
2-methylphenol	670	U	2-methylnaphthalene	670	U
bis(2-chloroisopropyl)ether	670	U	hexachlorocyclopentadiene	670	U
4-methylphenol	670	U	2,4,6-trichlorophenol	670	U
n-nitroso-di-n-propylamine	670	U	2,4,5-trichlorophenol	3,200	U
hexachloroethane	670	U	2-chloronaphthalene	670	U
nitrobenzene	670	U	2-nitroaniline	3,200	U
isophorone	670	U	dimethyl phthalate	670	U
2-nitrophenol	670	U	acenaphthylene	670	U
2,4-dimethylphenol	670	U	2,6-dinitrotoluene	670	U
benzoic acid	3,200	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92
Dilution Factor: 2.0
% Moisture: 1

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in $\mu g/kg$ (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB15005SD/89588
Lab Sample ID: K1227

Compound	Concentration		Compound	Concentration	
3-nitroaniline	3,200	U	anthracene	670	U
acenaphthene	670	U	di-n-butylphthalate	670	U
2,4-dinitrophenol	3,200	U	fluoranthene	670	U
4-nitrophenol	3,200	U	pyrene	670	U
dibenzofuran	670	U	butylbenzylphthalate	670	U
2,4-dinitrotoluene	670	U	3,3'-dichlorobenzidine	1,300	U
diethylphthalate	670	U	benzo(a)anthracene	670	U
4-chlorophenyl-phenylether	670	U	chrysene	670	U
fluorene	670	U	bis(2-ethyihexyl)phthalate	670	U
4-nitroaniline	3,200	U	di-n-octylphthalate	670	U
4,6-dinitro-2-methylphenol	3,200	U	benzo(b)fluoranthene	670	U
n-nitrosodiphenylamine[1]	670	U	benzo(k)fluoranthene	670	U
4-bromophenyl-phenylether	670	U	benzo(a)pyrene	670	U
hexachlorobenzene	670	U	indeno(1,2,3-cd)pyrene	670	U
pentachlorophenol	3,200	U	dibenzo(a,h)anthracene	670	U
phenanthrene	670	U	benzo(g,h,i)perylene	670	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92
Dilution Factor: 2.0
% Moisture: 1

SEMIVOLATILE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb)

Sample Matrix: Soil

Client Sample ID: EBB16001BSD/89889
Lab Sample ID: K1270

Compound	Concentration		Compound	Concentration	
phenol	420	U	bis(2-chloroethoxy)methane	420	U
bis(2-chloroethyl)ether	420	U	2,4-dichlorophenol	420	U
2-chlorophenol	420	U	1,2,4-trichlorobenzene	420	U
1,3-dichlorobenzene	420	U	naphthalene	420	U
1,4-dichlorobenzene	420	U	4-chloroaniline	420	U
benzyl alcohol	420	U	hexachlorobutadiene	420	U
1,2-dichlorobenzene	420	U	4-chloro-3-methylphenol	420	U
2-methylphenol	420	U	2-methylnaphthalene	420	U
bis(2-chloroisopropyl)ether	420	U	hexachlorocyclopentadiene	420	U
4-methylphenol	420	U	2,4,6-trichlorophenol	420	U
n-nitroso-di-n-propylamine	420	U	2,4,5-trichlorophenol	2,000	U
hexachloroethane	420	U	2-chloronaphthalene	420	U
nitrobenzene	420	U	2-nitroaniline	2,000	U
isophorone	420	U	dimethyl phthalate	420	U
2-nitrophenol	420	U	acenaphthylene	420	U
2,4-dimethylphenol	420	U	2,6-dinitrotoluene	420	U
benzoic acid	2,000	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/30/92
Date of Analysis: 05/05/92
Dilution Factor: 1.0
% Moisture: 21

SEMIVOLATILE ORGANIC ANALYSIS (continued)

Results in $\mu g/kg$ (ppb)

Sample Matrix: Soil

Client Sample ID: EBB16001BSD/89889
Lab Sample ID: K1270

Compound	Concentration		Compound	Concentration	
3-nitroaniline	2,000	U	anthracene	420	U
acenaphthene	420	U	di-n-butylphthalate	420	U
2,4-dinitrophenol	2,000	U	fluoranthene	420	U
4-nitrophenol	2,000	U	pyrene	420	U
dibenzofuran	420	U	butylbenzylphthalate	57	BJ
2,4-dinitrotoluene	420	U	3,3'-dichlorobenzidine	830	U
diethylphthalate	420	U	benzo(a)anthracene	420	U
4-chlorophenyl-phenylether	420	U	chrysene	420	U
fluorene	420	U	bis(2-ethylhexyl)phthalate	150	J
4-nitroaniline	2,000	U	di-n-octylphthalate	420	U
4,6-dinitro-2-methylphenol	2,000	U	benzo(b)fluoranthene	420	U
n-nitrosodiphenylamine[1]	420	U	benzo(k)fluoranthene	420	U
4-bromophenyl-phenylether	420	U	benzo(a)pyrene	420	U
hexachlorobenzene	420	U	indeno(1,2,3-cd)pyrene	420	U
pentachlorophenol	2,000	U	dibenzo(a,h)anthracene	420	U
phenanthrene	420	U	benzo(g,h,i)perylene	420	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.
1 - Detected as diphenylamine.

Date of Extraction: 04/30/92
Date of Analysis: 05/05/92
Dilution Factor: 1.0
% Moisture: 21

SEMIVOLATILE ORGANIC ANALYSIS
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB017001SD/89336
Lab Sample ID: K1131

Compound	Concentration		Compound	Concentration	
phenol	400	U	bis(2-chloroethoxy)methane	400	U
bis(2-chloroethyl)ether	400	U	2,4-dichlorophenol	400	U
2-chlorophenol	400	U	1,2,4-trichlorobenzene	400	U
1,3-dichlorobenzene	400	U	naphthalene	400	U
1,4-dichlorobenzene	400	U	4-chloroaniline	400	U
benzyl alcohol	400	U	hexachlorobutadiene	400	U
1,2-dichlorobenzene	400	U	4-chloro-3-methylphenol	400	U
2-methylphenol	400	U	2-methylnaphthalene	400	U
bis(2-chloroisopropyl)ether	400	U	hexachlorocyclopentadiene	400	U
4-methylphenol	400	U	2,4,6-trichlorophenol	400	U
n-nitroso-di-n-propylamine	400	U	2,4,5-trichlorophenol	2,000	U
hexachloroethane	400	U	2-chloronaphthalene	400	U
nitrobenzene	400	U	2-nitroaniline	2,000	U
isophorone	400	U	dimethyl phthalate	400	U
2-nitrophenol	400	U	acenaphthylene	400	U
2,4-dimethylphenol	400	U	2,6-dinitrotoluene	400	U
benzoic acid	2,000	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 18

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

lient Sample ID: EBB017001SD/89336
ab Sample ID: K1131

Compound	Concentration		Compound	Concentration	
3-nitroaniline	2,000	U	anthracene	400	U
acenaphthene	400	U	di-n-butylphthalate	86	J
2,4-dinitrophenol	2,000	U	fluoranthene	400	U
4-nitrophenol	2,000	U	pyrene	400	U
dibenzofuran	400	U	butylbenzylphthalate	61	J
2,4-dinitrotoluene	400	U	3,3'-dichlorobenzidine	810	U
diethylphthalate	400	U	benzo(a)anthracene	400	U
4-chlorophenyl-phenylether	400	U	chrysene	400	U
fluorene	400	U	bis(2-ethylhexyl)phthalate	110	J
4-nitroaniline	2,000	U	di-n-octylphthalate	400	U
4,6-dinitro-2-methylphenol	2,000	U	benzo(b)fluoranthene	400	U
n-nitrosodiphenylamine[1]	400	U	benzo(k)fluoranthene	400	U
4-bromophenyl-phenylether	400	U	benzo(a)pyrene	400	U
hexachlorobenzene	400	U	indeno(1,2,3-cd)pyrene	400	U
pentachlorophenol	2,000	U	dibenzo(a,h)anthracene	400	U
phenanthrene	400	U	benzo(g,h,i)perylene	400	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 18

SEMIVOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB180001SD/89235
Lab Sample ID: K1132

Compound	Concentration		Compound	Concentration	
phenol	460	U	bis(2-chloroethoxy)methane	460	U
bis(2-chloroethyl)ether	460	U	2,4-dichlorophenol	460	U
2-chlorophenol	460	U	1,2,4-trichlorobenzene	460	U
1,3-dichlorobenzene	460	U	naphthalene	460	U
1,4-dichlorobenzene	460	U	4-chloroaniline	460	U
benzyl alcohol	460	U	hexachlorobutadiene	460	U
1,2-dichlorobenzene	460	U	4-chloro-3-methylphenol	460	U
2-methylphenol	460	U	2-methylnaphthalene	460	U
bis(2-chloroisopropyl)ether	460	U	hexachlorocyclopentadiene	460	U
4-methylphenol	460	U	2,4,6-trichlorophenol	460	U
n-nitroso-di-n-propylamine	460	U	2,4,5-trichlorophenol	2,200	U
hexachloroethane	460	U	2-chloronaphthalene	460	U
nitrobenzene	460	U	2-nitroaniline	2,200	U
isophorone	460	U	dimethyl phthalate	460	U
2-nitrophenol	460	U	acenaphthylene	460	U
2,4-dimethylphenol	460	U	2,6-dinitrotoluene	460	U
benzoic acid	52	J			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 29

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBB180001SD/89235
Lab Sample ID: K1132

Compound	Concentration		Compound	Concentration	
3-nitroaniline	2,200	U	anthracene	460	U
acenaphthene	460	U	di-n-butylphthalate	460	U
2,4-dinitrophenol	2,200	U	fluoranthene	460	U
4-nitrophenol	2,200	U	pyrene	460	U
dibenzofuran	460	U	butylbenzylphthalate	120	J
2,4-dinitrotoluene	460	U	3,3'-dichlorobenzidine	920	U
diethylphthalate	460	U	benzo(a)anthracene	460	U
4-chlorophenyl-phenylether	460	U	chrysene	460	U
fluorene	460	U	bis(2-ethylhexyl)phthalate	240	J
4-nitroaniline	2,200	U	di-n-octylphthalate	460	U
4,6-dinitro-2-methylphenol	2,200	U	benzo(b)fluoranthene	460	U
n-nitrosodiphenylamine[1]	460	U	benzo(k)fluoranthene	460	U
4-bromophenyl-phenylether	460	U	benzo(a)pyrene	460	U
hexachlorobenzene	460	U	indeno(1,2,3-cd)pyrene	460	U
pentachlorophenol	2,200	U	dibenzo(a,h)anthracene	460	U
phenanthrene	460	U	benzo(g,h,i)perylene	460	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92
Dilution Factor: 1.00
% Moisture: 29

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Job Number: SON 51263

lient Project ID: Sanford, Cohen and Associates

SEMIVOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

lient Sample ID: EBB19003SD/90437
ab Sample ID: K1271

Compound	Concentration		Compound	Concentration	
phenol	460	U	bis(2-chloroethoxy)methane	460	U
bis(2-chloroethyl)ether	460	U	2,4-dichlorophenol	460	U
2-chlorophenol	460	U	1,2,4-trichlorobenzene	460	U
1,3-dichlorobenzene	460	U	naphthalene	460	U
1,4-dichlorobenzene	460	U	4-chloroaniline	460	U
benzyl alcohol	460	U	hexachlorobutadiene	460	U
1,2-dichlorobenzene	460	U	4-chloro-3-methylphenol	460	U
2-methylphenol	460	U	2-methylnaphthalene	460	U
bis(2-chloroisopropyl)ether	460	U	hexachlorocyclopentadiene	460	U
4-methylphenol	150	J	2,4,6-trichlorophenol	460	U
n-nitroso-di-n-propylamine	460	U	2,4,5-trichlorophenol	2,300	U
hexachloroethane	460	U	2-chloronaphthalene	460	U
nitrobenzene	460	U	2-nitroaniline	2,300	U
isophorone	460	U	dimethyl phthalate	460	U
2-nitrophenol	460	U	acenaphthylene	460	U
2,4-dimethylphenol	460	U	2,6-dinitrotoluene	460	U
benzoic acid	2,300	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92
Dilution Factor: 1.00
% Moisture: 29

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SEMIVOLATILE ORGANIC ANALYSIS (continued)

Results in µg/kg (ppb)

Sample Matrix: Soil

lient Sample ID: EBB19003SD/90437
ab Sample ID: K1271

Compound	Concentration		Compound	Concentration	
3-nitroaniline	2,300	U	anthracene	460	U
acenaphthene	460	U	di-n-butylphthalate	460	U
2,4-dinitrophenol	2,300	U	fluoranthene	460	U
4-nitrophenol	2,300	U	pyrene	460	U
dibenzofuran	460	U	butylbenzylphthalate	220	J
2,4-dinitrotoluene	460	U	3,3'-dichlorobenzidine	930	U
diethylphthalate	460	U	benzo(a)anthracene	460	U
4-chlorophenyl-phenylether	460	U	chrysene	460	U
fluorene	460	U	bis(2-ethylhexyl)phthalate	210	J
4-nitroaniline	2,300	U	di-n-octylphthalate	460	U
4,6-dinitro-2-methylphenol	2,300	U	benzo(b)fluoranthene	460	U
n-nitrosodiphenylamine[1]	460	U	benzo(k)fluoranthene	460	U
4-bromophenyl-phenylether	460	U	benzo(a)pyrene	460	U
hexachlorobenzene	460	U	indeno(1,2,3-cd)pyrene	460	U
pentachlorophenol	2,300	U	dibenzo(a,h)anthracene	460	U
phenanthrene	460	U	benzo(g,h,i)perylene	460	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92
Dilution Factor: 1.00
% Moisture: 29

Section 2. a. Semivolatile Organic Compounds In Soil
Santa Monica Mountains Conservancy

SEMIVOLATILE ORGANIC ANALYSIS
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: ESM01004SD/88584
Lab Sample ID: SS8487

Compound	Concentration		Compound	Concentration	
phenol	760	U	bis(2-chloroethoxy)methane	760	U
bis(2-chloroethyl)ether	760	U	2,4-dichlorophenol	760	U
2-chlorophenol	760	U	1,2,4-trichlorobenzene	760	U
1,3-dichlorobenzene	760	U	naphthalene	760	U
1,4-dichlorobenzene	760	U	4-chloroaniline	760	U
benzyl alcohol	760	U	hexachlorobutadiene	760	U
1,2-dichlorobenzene	760	U	4-chloro-3-methylphenol	760	U
2-methylphenol	760	U	2-methylnaphthalene	760	U
bis(2-chloroisopropyl)ether	760	U	hexachlorocyclopentadiene	760	U
4-methylphenol	760	U	2,4,6-trichlorophenol	760	U
n-nitroso-di-n-propylamine	760	U	2,4,5-trichlorophenol	3,700	U
hexachloroethane	760	U	2-chloronaphthalene	760	U
nitrobenzene	760	U	2-nitroaniline	3,700	U
isophorone	760	U	dimethyl phthalate	760	U
2-nitrophenol	760	U	acenaphthylene	760	U
2,4-dimethylphenol	760	U	2,6-dinitrotoluene	760	U
benzoic acid	3,700	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/30/92
Date of Analysis: 04/02/92
Dilution Factor: 2.0
% Moisture: 13

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in $\mu g/kg$ (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: ESM01004SD/88584
Lab Sample ID: SS8487

Compound	Concentration		Compound	Concentration	
3-nitroaniline	3,700	U	anthracene	760	U
acenaphthene	760	U	di-n-butylphthalate	760	U
2,4-dinitrophenol	3,700	U	fluoranthene	760	U
4-nitrophenol	3,700	U	pyrene	760	U
dibenzofuran	760	U	butylbenzylphthalate	760	U
2,4-dinitrotoluene	760	U	3,3'-dichlorobenzidine	1,500	U
diethylphthalate	760	U	benzo(a)anthracene	760	U
4-chlorophenyl-phenylether	760	U	chrysene	760	U
fluorene	760	U	bis(2-ethylhexyl)phthalate	180	J
4-nitroaniline	3,700	U	di-n-octylphthalate	760	U
4,6-dinitro-2-methylphenol	3,700	U	benzo(b)fluoranthene	760	U
n-nitrosodiphenylamine[1]	760	U	benzo(k)fluoranthene	760	U
4-bromophenyl-phenylether	760	U	benzo(a)pyrene	760	U
hexachlorobenzene	760	U	indeno(1,2,3-cd)pyrene	760	U
pentachlorophenol	3,700	U	dibenzo(a,h)anthracene	760	U
phenanthrene	760	U	benzo(g,h,i)perylene	760	U

(1) Detected as diphenylamine.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/30/92
Date of Analysis: 04/02/92
Dilution Factor: 2.0
% Moisture: 13

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: ESM02019SD/88385
Lab Sample ID: SS7606

Compound	Concentration		Compound	Concentration	
phenol	390	U	bis(2-chloroethoxy)methane	390	U
bis(2-chloroethyl)ether	390	U	2,4-dichlorophenol	390	U
2-chlorophenol	390	U	1,2,4-trichlorobenzene	390	U
1,3-dichlorobenzene	390	U	naphthalene	390	U
1,4-dichlorobenzene	390	U	4-chloroaniline	390	U
benzyl alcohol	390	U	hexachlorobutadiene	390	U
1,2-dichlorobenzene	390	U	4-chloro-3-methylphenol	390	U
2-methylphenol	390	U	2-methylnaphthalene	390	U
bis(2-chloroisopropyl)ether	390	U	hexachlorocyclopentadiene	390	U
4-methylphenol	390	U	2,4,6-trichlorophenol	390	U
n-nitroso-di-n-propylamine	390	U	2,4,5-trichlorophenol	1,900	U
hexachloroethane	390	U	2-chloronaphthalene	390	U
nitrobenzene	390	U	2-nitroaniline	1,900	U
isophorone	390	U	dimethyl phthalate	390	U
2-nitrophenol	390	U	acenaphthylene	390	U
2,4-dimethylphenol	390	U	2,6-dinitrotoluene	390	U
benzoic acid	1,900	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 15

IT AN... L SERVICES
5815 MIL... OOK PIKE
KNOXVILLE

Client Project ID: Sanford, Cohen and Associates Job Number: SON 50938

Analysis Sheet 2 of 2

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: ESM02019SD/88385
Lab Sample ID: SS7606

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,900	U	anthracene	390	U
acenaphthene	390	U	di-n-butylphthalate	390	U
2,4-dinitrophenol	1,900	U	fluoranthene	390	U
4-nitrophenol	1,900	U	pyrene	390	U
dibenzofuran	390	U	butylbenzylphthalate	390	U
2,4-dinitrotoluene	390	U	3,3'-dichlorobenzidine	770	U
diethylphthalate	390	U	benzo(a)anthracene	390	U
4-chlorophenyl-phenylether	390	U	chrysene	390	U
fluorene	390	U	bis(2-ethylhexyl)phthalate	59	J
4-nitroaniline	1,900	U	di-n-octylphthalate	390	U
4,6-dinitro-2-methylphenol	1,900	U	benzo(b)fluoranthene	390	U
n-nitrosodiphenylamine[1]	390	U	benzo(k)fluoranthene	390	U
4-bromophenyl-phenylether	390	U	benzo(a)pyrene	390	U
hexachlorobenzene	390	U	indeno(1,2,3-cd)pyrene	390	U
pentachlorophenol	1,900	U	dibenzo(a,h)anthracene	390	U
phenanthrene	390	U	benzo(g,h,i)perylene	390	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 15

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

Analysis Sheet 1 of 2

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: ESM03001SD/88337
Lab Sample ID: SS7607

Compound	Concentration		Compound	Concentration	
phenol	420	U	bis(2-chloroethoxy)methane	420	U
bis(2-chloroethyl)ether	420	U	2,4-dichlorophenol	420	U
2-chlorophenol	420	U	1,2,4-trichlorobenzene	420	U
1,3-dichlorobenzene	420	U	naphthalene	420	U
1,4-dichlorobenzene	420	U	4-chloroaniline	420	U
benzyl alcohol	420	U	hexachlorobutadiene	420	U
1,2-dichlorobenzene	420	U	4-chloro-3-methylphenol	46	J
2-methylphenol	420	U	2-methylnaphthalene	420	U
bis(2-chloroisopropyl)ether	420	U	hexachlorocyclopentadiene	420	U
4-methylphenol	420	U	2,4,6-trichlorophenol	420	U
n-nitroso-di-n-propylamine	420	U	2,4,5-trichlorophenol	2,000	U
hexachloroethane	420	U	2-chloronaphthalene	420	U
nitrobenzene	420	U	2-nitroaniline	2,000	U
isophorone	420	U	dimethyl phthalate	420	U
2-nitrophenol	420	U	acenaphthylene	420	U
2,4-dimethylphenol	420	U	2,6-dinitrotoluene	420	U
benzoic acid	2,000	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 22

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: ESM03001SD/88337
Lab Sample ID: SS7607

Compound	Concentration		Compound	Concentration	
3-nitroaniline	2,000	U	anthracene	66	J
acenaphthene	420	U	di-n-butylphthalate	420	U
2,4-dinitrophenol	2,000	U	fluoranthene	240	J
4-nitrophenol	2,000	U	pyrene	240	J
dibenzofuran	420	U	butylbenzylphthalate	420	U
2,4-dinitrotoluene	420	U	3,3'-dichlorobenzidine	840	U
diethylphthalate	420	U	benzo(a)anthracene	70	J
4-chlorophenyl-phenylether	420	U	chrysene	95	J
fluorene	420	U	bis(2-ethylhexyl)phthalate	50	J
4-nitroaniline	2,000	U	di-n-octylphthalate	420	U
4,6-dinitro-2-methylphenol	2,000	U	benzo(b)fluoranthene	68	J
n-nitrosodiphenylamine[1]	420	U	benzo(k)fluoranthene	420	U
4-bromophenyl-phenylether	420	U	benzo(a)pyrene	420	U
hexachlorobenzene	420	U	indeno(1,2,3-cd)pyrene	420	U
pentachlorophenol	100	J	dibenzo(a,h)anthracene	420	U
phenanthrene	210	J	benzo(g,h,i)perylene	420	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 22

Section 2. a. Semivolatile Organic Compounds In Soil Background Locations

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBG02007SD/88500
Lab Sample ID: SS7605

Compound	Concentration		Compound	Concentration	
phenol	340	U	bis(2-chloroethoxy)methane	340	U
bis(2-chloroethyl)ether	340	U	2,4-dichlorophenol	340	U
2-chlorophenol	340	U	1,2,4-trichlorobenzene	340	U
1,3-dichlorobenzene	340	U	naphthalene	340	U
1,4-dichlorobenzene	340	U	4-chloroaniline	340	U
benzyl alcohol	340	U	hexachlorobutadiene	340	U
1,2-dichlorobenzene	340	U	4-chloro-3-methylphenol	340	U
2-methylphenol	340	U	2-methylnaphthalene	340	U
bis(2-chloroisopropyl)ether	340	U	hexachlorocyclopentadiene	340	U
4-methylphenol	340	U	2,4,6-trichlorophenol	340	U
n-nitroso-di-n-propylamine	340	U	2,4,5-trichlorophenol	1,700	U
hexachloroethane	340	U	2-chloronaphthalene	340	U
nitrobenzene	340	U	2-nitroaniline	1,700	U
isophorone	340	U	dimethyl phthalate	340	U
2-nitrophenol	340	U	acenaphthylene	340	U
2,4-dimethylphenol	340	U	2,6-dinitrotoluene	340	U
benzoic acid	1,700	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 4

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb) dry weight
Sample Matrix: Soil

Client Sample ID: EBG02007SD/88500
Lab Sample ID: SS7605

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,700	U	anthracene	340	U
acenaphthene	340	U	di-n-butylphthalate	340	U
2,4-dinitrophenol	1,700	U	fluoranthene	340	U
4-nitrophenol	1,700	U	pyrene	340	U
dibenzofuran	340	U	butylbenzylphthalate	340	U
2,4-dinitrotoluene	340	U	3,3'-dichlorobenzidine	680	U
diethylphthalate	340	U	benzo(a)anthracene	340	U
4-chlorophenyl-phenylether	340	U	chrysene	340	U
fluorene	340	U	bis(2-ethylhexyl)phthalate	36	J
4-nitroaniline	1,700	U	di-n-octylphthalate	340	U
4,6-dinitro-2-methylphenol	1,700	U	benzo(b)fluoranthene	340	U
n-nitrosodiphenylamine[1]	340	U	benzo(k)fluoranthene	340	U
4-bromophenyl-phenylether	340	U	benzo(a)pyrene	340	U
hexachlorobenzene	340	U	indeno(1,2,3-cd)pyrene	340	U
pentachlorophenol	1,700	U	dibenzo(a,h)anthracene	340	U
phenanthrene	340	U	benzo(g,h,i)perylene	340	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00
% Moisture: 4

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG03059SD/88345
Lab Sample ID: SS7709

Compound	Concentration		Compound	Concentration	
acenaphthene	980	U	bis(2-chloroisopropyl)ether	980	U
acenaphthylene	980	U	bis(2-ethylhexyl)phthalate	980	U
anthracene	980	U	4-bromophenyl phenyl ether	980	U
benzidine	4,900	U	2-chloronaphthalene	980	U
benzo(a)anthracene	980	U	4-chlorophenyl phenyl ether	980	U
benzo(b)fluoranthene	980	U	chrysene	980	U
benzo(k)fluoranthene	980	U	dibenz(a,h)anthracene	980	U
benzo(a)pyrene	980	U	di-n-butylphthalate	980	U
benzo(g,h,i)perylene	980	U	1,2-dichlorobenzene	980	U
butylbenzylphthalate	980	U	1,3-dichlorobenzene	980	U
bis(2-chloroethoxy)methane	980	U	1,4-dichlorobenzene	980	U
bis(2-chloroethyl)ether	980	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG03059SD/88345
Lab Sample ID: SS7709

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	2,000	U	hexachloroethane	980	U
diethylphthalate	980	U	indeno(1,2,3-cd)pyrene	980	U
dimethyl phthalate	980	U	isophorone	980	U
2,4-dinitrotoluene	980	U	naphthalene	980	U
2,6-dinitrotoluene	980	U	nitrobenzene	980	U
di-n-octyl phthalate	980	U	n-nitroso-di-n-propylamine	980	U
1,2-diphenylhydrazine(1)	980	U	n-nitrosodimethylamine	980	U
fluoranthene	980	U	n-nitrosodiphenylamine(2)	980	U
fluorene	980	U	phenanthrene	980	U
hexachlorobenzene	980	U	pyrene	980	U
hexachlorobutadiene	980	U	1,2,4-trichlorobenzene	980	U
hexachlorocyclopentadiene	980	U			

(1)-Screened for as azobenzene
(2)-Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

Sanford, Cohen and Associates
April 16, 1992

Background Location
Bell Canyon
03599

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE. TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

Analysis Sheet 3 of 3

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG03059SD/88345
Lab Sample ID: SS7709

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	980	U	2-nitrophenol	980	U
2-chlorophenol	980	U	4-nitrophenol	4,900	U
2,4-dichlorophenol	980	U	pentachlorophenol	4,900	U
2,4-dimethylphenol	980	U	phenol	980	U
2,4-dinitrophenol	4,900	U	2,4,6-trichlorophenol	980	U
2-methyl-4,6-dinitrophenol	4,900	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

Sanford, Cohen and Associates
April 16, 1992

Background Location
Western Location
0429

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

Analysis Sheet 1 of 3

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG04029SD/88241
Lab Sample ID: SS7712R

Compound	Concentration		Compound	Concentration	
acenaphthene	840	U	bis(2-chloroisopropyl)ether	840	U
acenaphthylene	840	U	bis(2-ethylhexyl)phthalate	840	U
anthracene	840	U	4-bromophenyl phenyl ether	840	U
benzidine	4,200	U	2-chloronaphthalene	840	U
benzo(a)anthracene	840	U	4-chlorophenyl phenyl ether	840	U
benzo(b)fluoranthene	840	U	chrysene	840	U
benzo(k)fluoranthene	840	U	dibenz(a,h)anthracene	840	U
benzo(a)pyrene	840	U	di-n-butylphthalate	840	U
benzo(g,h,i)perylene	840	U	1,2-dichlorobenzene	840	U
butylbenzylphthalate	840	U	1,3-dichlorobenzene	840	U
bis(2-chloroethoxy)methane	840	U	1,4-dichlorobenzene	840	U
bis(2-chloroethyl)ether	840	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 04/06/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG04029SD/88241
Lab Sample ID: SS7712R

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	1,700	U	hexachloroethane	840	U
diethylphthalate	840	U	indeno(1,2,3-cd)pyrene	840	U
dimethyl phthalate	840	U	isophorone	840	U
2,4-dinitrotoluene	840	U	naphthalene	840	U
2,6-dinitrotoluene	840	U	nitrobenzene	840	U
di-n-octyl phthalate	840	U	n-nitroso-di-n-propylamine	840	U
1,2-diphenylhydrazine(1)	840	U	n-nitrosodimethylamine	840	U
fluoranthene	840	U	n-nitrosodiphenylamine(2)	840	U
fluorene	840	U	phenanthrene	840	U
hexachlorobenzene	840	U	pyrene	840	U
hexachlorobutadiene	840	U	1,2,4-trichlorobenzene	840	U
hexachlorocyclopentadiene	840	U			

(1)-Screened for as azobenzene
(2)-Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 04/06/92

Sanford, Cohen and Associates
April 16, 1992

Background Location
Western Location
0429

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

Analysis Sheet 3 of 3

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: EBG04029SD/88241
Lab Sample ID: SS7712R

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	840	U	2-nitrophenol	840	U
2-chlorophenol	840	U	4-nitrophenol	4,200	U
2,4-dichlorophenol	840	U	pentachlorophenol	4,200	U
2,4-dimethylphenol	840	U	phenol	840	U
2,4-dinitrophenol	4,200	U	2,4,6-trichlorophenol	840	U
2-methyl-4,6-dinitrophenol	4,200	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 04/06/92

Section 2. b. Semivolatile Organic Compounds In Water
Brandeis-Bardin Institute

Sanford, Cohen and Associates
April 10, 1992

Brandeis-Bardin Institute
Campsite Area 1
Campsite Area 2
0301/0401
Analysis Sheet 1 of 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

POLYNUCLEAR AROMATIC HYDROCARBON ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID:	Method Blank		EBB03001WF/196743		EBB04001WF/196731	
Lab Sample ID:	H0107		SS7891		SS7892	
naphthalene	0.016	U	0.16	U	0.16	U
acenaphthylene	0.016	U	0.16	U	0.16	U
acenaphthene	0.0080	U	0.080	U	0.080	U
fluorene	0.0080	U	0.080	U	0.080	U
phenanthrene	0.0080	U	0.080	U	0.080	U
anthracene	0.0080	U	0.080	U	0.080	U
fluoranthene	0.0080	U	0.080	U	0.080	U
pyrene	0.0080	U	0.080	U	0.080	U
benzo(a)anthracene	0.0080	U	0.080	U	0.080	U
chrysene	0.0080	U	0.080	U	0.080	U
benzo(b)fluoranthene	0.0080	U	0.080	U	0.080	U
benzo(k)fluoranthene	0.0080	U	0.080	U	0.080	U
benzo(a)pyrene	0.0080	U	0.080	U	0.080	U
dibenzo(a,h)anthracene	0.016	U	0.16	U	0.16	U
benzo(g,h,i)perylene	0.0080	U	0.080	U	0.080	U
indeno(1,2,3-c,d)pyrene	0.0080	U	0.080	U	0.080	U

Extraction Date: 03/23/92
Analysis Date: 03/31/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Sanford, Cohen and Associates
June 1, 1992

Brandeis-Bardin Institute
Radioactive Materials Disposal Facili
Watershed
1601
Analysis Sheet 1 of 1

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

POLYNUCLEAR AROMATIC HYDROCARBON ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID:	Method Blank		EBB16001BWF/197327	
Lab Sample ID:	H0448		K1239	
naphthalene	0.016	U	0.16	U*
acenaphthylene	0.016	U	0.16	U*
acenaphthene	0.016	U	0.16	U*
fluorene	0.080	U*	0.0080	U
phenanthrene	0.0080	U	0.0080	U
anthracene	0.0080	U	0.0080	U
fluoranthene	0.0080	U	0.33	
pyrene	0.0080	U	0.0080	U
benzo(a)anthracene	0.0080	U	0.0080	U
chrysene	0.0080	U	0.0080	U
benzo(b)fluoranthene	0.0080	U	0.0080	U
benzo(k)fluoranthene	0.080	U*	0.080	U*
benzo(a)pyrene	0.0080	U	0.0080	U
dibenzo(a,h)anthracene	0.0080	U	0.0080	U
benzo(g,h,i)perylene	0.0080	U	0.0080	U
indeno(1,2,3-c,d)pyrene	0.0080	U	0.0080	U

Extraction Date: 04/29/92
Analysis Date: 05/22/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
* - Detection limit higher than normal due to sample matrix interferences.

Section 2. b. Semivolatile Organic Compounds In Water
Santa Monica Mountains Conservancy

Sanford, Cohen and Associates
April 8, 1992

Santa Monica Mountains Conservancy
Antenna Well
0501

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

Analysis Sheet 1 of 1

SEMIVOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM05001GG/196707
Lab Sample ID: SS7618

Compound	Concentration	
naphthalene	10	U
acenaphthylene	10	U
acenaphthene	10	U
fluorene	10	U
phenanthrene	10	U
anthracene	10	U
fluoranthene	10	U
pyrene	10	U
benzo(a)anthracene	10	U
chrysene	10	U
benzo(b)fluoranthene	10	U
benzo(k)fluoranthene	10	U
benzo(a)pyrene	10	U
indeno(1,2,3-cd)pyrene	10	U
dibenz(a,h)anthracene	10	U
benzo(g,h,i)perylene	10	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/26/92
Dilution Factor: 1.0

Sanford, Cohen and Associates
April 8, 1992

Santa Monica Mountains Conservancy
Well Near The Gate
0701

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

Analysis Sheet 1 of 1

SEMIVOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM07001GG/170705
Lab Sample ID: SS7619

Compound	Concentration	
naphthalene	10	U
acenaphthylene	10	U
acenaphthene	10	U
fluorene	10	U
phenanthrene	10	U
anthracene	10	U
fluoranthene	10	U
pyrene	10	U
benzo(a)anthracene	10	U
chrysene	10	U
benzo(b)fluoranthene	10	U
benzo(k)fluoranthene	10	U
benzo(a)pyrene	10	U
indeno(1,2,3-cd)pyrene	10	U
dibenz(a,h)anthracene	10	U
benzo(g,h,i)perylene	10	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/26/92
Dilution Factor: 1.0

Sanford, Cohen and Associates
April 21, 1992

Santa Monica Mountains Conservancy
Spring
0801

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50985

Analysis Sheet 1 of 1

POLYNUCLEAR AROMATIC HYDROCARBONS ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: ESM08001WF/171805
Lab Sample ID: SS8087

Compound	Concentration	
naphthalene	0.16	U
acenaphthylene	0.080	U
acenaphthene	0.16	U
fluorene	0.080	U
phenanthrene	0.080	U
anthracene	0.080	U
fluoranthene	0.080	U
pyrene	0.080	U
benzo(a)anthracene	0.080	U
chrysene	0.080	U
benzo(b)fluoranthene	0.080	U
benzo(k)fluoranthene	0.080	U
benzo(a)pyrene	0.080	U
dibenzo(a,h)anthracene	0.16	U
benzo(g,h,i)perylene	0.16	U
indeno(1,2,3-cd)pyrene	0.080	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/31/92

Section 2. b. Semivolatile Organic Compounds In Water Background Locations

Sanford, Cohen and Associates
April 8, 1992

Background Location
Rocky Peak
0102

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

Analysis Sheet 1 of 1

SEMIVOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBG01002WH/196718
Lab Sample ID: SS7617

Compound	Concentration
naphthalene	10 U
acenaphthylene	10 U
acenaphthene	10 U
fluorene	10 U
phenanthrene	10 U
anthracene	10 U
fluoranthene	10 U
pyrene	10 U
benzo(a)anthracene	10 U
chrysene	10 U
benzo(b)fluoranthene	10 U
benzo(k)fluoranthene	10 U
benzo(a)pyrene	10 U
indeno(1,2,3-cd)pyrene	10 U
dibenz(a,h)anthracene	10 U
benzo(g,h,i)perylene	10 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/26/92
Dilution Factor: 1.0

APPENDIX C

Case Narratives for Chemical Analyses

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

April 7, 1992

Job Number: SON 50938

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	03/16/92
Number of Samples:	Six (6)
Sample Type:	Water - three (3), Soil - three (3)

I. Introduction

On 03/16/92, three (3) water samples and three (3) soil samples arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy, and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

Reviewed and Approved:

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681-1-85

II. Analytical Results/Methodology (continued)

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. A single point calibration was used for 1,1,2-trichlorotrifluoroethane. The sample runs went well. MS/MSD analysis was performed for water samples using sample ESM07001GH with acceptable results. Associated QC samples for soil samples were analyzed with ITAS project SON 50952, sample EBG03059SE. The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan INCOS-XL GC/MS/DS. The sample runs went well. Due to a confusion on sample receipt, the water samples were extracted for polynuclear aromatic hydrocarbons for analysis by method 8270 instead of the requested 8310 method. Joe Stinson was notified and the samples were processed by method 8270. MS/MSD analysis was performed for water samples using sample ESM07001GG. Associated QC samples for soil samples were analyzed with ITAS project SON 50952, sample EBG03059SD. There were no other problems seen in final data review.

The samples were digested on 03/25/92 for ICP and 03/25 and 03/27 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 03/26/92; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 03/26 to 03/29/92; the remaining metals were analyzed by ICP on 03/30/92. All run QC was acceptable. A duplicate/spike pair was prepared using sample number EBG01002WG. All results were within acceptable limits. Associated QC samples for soils were analyzed with ITAS project SON 50952, sample EBG03059SF. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

April 10, 1992

Job Number: SON 50975

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	03/19/92
Number of Samples:	Nine (9)
Sample Type:	Soil - Five (5), Water - Two (2), Trip Blank - (2)

I. Introduction

On 03/19/92, five (5) soil samples, two (2) water samples and two (2) trip blanks arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

The samples were analyzed for polynuclear aromatic hydrocarbons based on modified EPA method 8310.

Reviewed and Approved:

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681 1 89

II. Analytical Results/Methodology (continued)

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The sample runs went well. The water samples were run by heated purge and referenced against Method Blank, a soil blank. The listed values for VBLK1 can be read directly as μg/liter or μg/kg. Acetonitrile was seen in Method Blank 1 and Method Blank 2 at about scan 95, and was due to solvent carryover from the continuing calibration standard. Associated QC samples were analyzed with ITAS project SON 50952, sample EBG03059JE for soils and SON 50958, sample ESM07001GH for waters. The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan INCOS-XL GC/MS/DS. The sample runs went well. Associated QC samples were analyzed with ITAS project SON 50952, sample EBG03059SD. There were no problems seen in final data review.

The samples were analyzed for PNAs by method 8310 on 03/31/92. No problems were encountered. Associated QC samples were submitted with ITAS project SON 50938 and were analyzed by method 8270.

The samples were digested on 03/25/92 for ICP and 03/25/92 and 03/27/92 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 03/26/92; the GFAA analyses for arsenic, lead, selenium, and thallium were performed from 03/27 to 03/29/92; the remaining metals were analyzed by ICP on 03/30/92. All run QC was acceptable. Associated QC samples were analyzed with ITAS project SON 50952, sample EBG03059SF for soils and SON 50938, sample EBG01002WH for waters. Dilutions were necessary to put the sample results within the instrument's linear range or to dilute matrix interferences. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

April 16, 1992

Job Number: SON 50952

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	03/17/92
Number of Samples:	Three (3)
Sample Type:	Soil - Two (2), Trip Blank - One (1)

I. Introduction

On 03/17/92, two (2) soil samples and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

Reviewed and Approved:

Robyn M. Wagner

Robyn M. Wagner
Operations Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

II. Analytical Results/Methodology (continued)

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The sample runs went well. A single point calibration curve was used for the freon-113. MS/MSD analysis was performed on sample EBG03059SE with acceptable results. The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. The sample runs generally went well, however, surrogate and spike recoveries in EBD03059SD MS indicated an inefficient extraction for this sample. Reextractions were immediately ordered and analyzed. Reextraction results showed good surrogate and spike recoveries. Only the original matrix spike extraction had low recoveries; the original extraction, matrix spike duplicate and reextractions of the sample, matrix spike and matrix spike duplicate showed acceptable recoveries. Since the reextraction was outside sample holding times and apparently not due to sample matrix, both the original and reextraction data were submitted for comparison. There were no problems seen in final data review.

The samples were digested on 03/23/92 for ICP and 03/20/92 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 03/24/92; the GFAA analyses for arsenic, lead, selenium, and thallium were performed from 03/25 through 03/30/92; the remaining metals were analyzed by ICP on 03/24/92. All run QC was acceptable. A duplicate/spike pair was prepared using sample number EBG03059SF. Spike recovery (accuracy) results were within acceptance limits for all parameters by ICP analysis except for antimony and cadmium. The cadmium spike recovery is just outside acceptance limits on the low side (74.0% recovery). Poor spike recovery for antimony on soil samples is well documented in chemical literature. Spike recovery results by GFAA and CVAA were within acceptance limits for all parameters except lead by GFAA. Sample nonhomogeneity, as well as matrix interferences, may be a contributing factor for this. Lead on sample EBG03059SF was reported by method of standard additions due to matrix interferences. Duplicate RPD (precision) results were within acceptance limits for all requested parameters by ICP. Duplicate RPD (precision) results by GFAA and CVAA were within acceptance limits for all parameters except for selenium and thallium by GFAA, which exhibited a slight variation. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

April 21, 1992

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

Job Number: SON 50998

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	03/24/92
Number of Samples:	Two (2)
Sample Type:	Soil - One (1), Trip Blank - One (1)

I. Introduction

On 03/24/92, one (1) soil sample and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. The soil sample is reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

Reviewed and Approved:

Robyn M. Wagner

Robyn M. Wagner
Operations Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681-1-8

II. Analytical Results/Methodology (continued)

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The sample runs went well. The travel blank was analyzed by heated purge allowing the results to be read as μg/liter or μg/kg. A single point calibration curve was used for 1,1,2-trichlorotrifluoroethane. Associated QC samples were analyzed with ITAS project SON 50938, sample ESM07001GH. The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. The sample runs went well. A moderate 1:2 dilution was performed by the analyst at the bench based on the appearance of the extract. Associated QC samples were analyzed with ITAS project SON 50952, sample EBG03059SD. There were no problems seen in final data review.

The samples were digested on 04/01/92 for ICP and 04/06/92 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 04/07/92; the GFAA analyses for arsenic, lead, selenium, and thallium were performed on 04/06/92; the remaining metals were analyzed by ICP on 04/02/92. All run QC was acceptable. Associated QC samples were analyzed with ITAS project SON 50952, sample EBG03059SF. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

April 21, 1992

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

Job Number: SON 51018

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	03/26/92
Number of Samples:	Three (3)
Sample Type:	Soil - Two (2), Trip Blank - One (1)

I. Introduction

On 03/26/92, two (2) soil samples and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

Reviewed and Approved:

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

II. Analytical Results/Methodology (continued)

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The sample runs went well. A single point calibration was used for Freon-113. The travel blank was analyzed by heated purge and the results can be read directly as μg/liter or μg/kg. An MS/MSD was performed using sample ESM01007SE with acceptable results.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. The sample runs went well. ESM01004SD and ESM01007SB were spiked at twice the normal surrogate concentration; however, recoveries were within acceptable limits. An MS/MSD was performed using sample ESM01007SB with acceptable results. There were no problems seen in final data review.

The samples were digested on 04/01/92 for ICP and 04/06/92 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 04/07/92; the GFAA analyses for arsenic, lead, selenium, and thallium were performed from 04/06/92 to 04/08/92; the remaining metals were analyzed by ICP on 04/02/92. All run QC was acceptable. A duplicate/spike pair was prepared using sample number ESM01007SF. Spike recovery (accuracy) results were outside of control limits for antimony and selenium. A post digestion spike was performed and was outside of control limits for selenium, which indicates a matrix interference for selenium. Poor spike recovery for antimony is well documented in literature. Duplicate RPD (precision) results were acceptable for all parameters. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

April 21, 1992

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

Job Number: SON 50985

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	03/20/92
Number of Samples:	Five (5)
Sample Type:	Soil - Three (3), Water - One (1), Trip Blank - One (1)

I. Introduction

On 03/20/92, three (3) soil samples, one (1) water sample and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

The samples were analyzed for polynuclear aromatic hydrocarbons based on modified EPA method 8310.

Reviewed and Approved:

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681-1-89

II. Analytical Results/Methodology (continued)

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS. The sample runs went well. A single point calibration curve was used for Freon-113; however, this target compound was not seen. The water samples were analyzed using a heated purge technique. Associated QC samples were analyzed with ITAS project SON 50938, sample ESM07001GH for waters and SON 50952, sample EBG03059JE for soils. The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Finnigan 4500 GC/MS/DS. The sample runs went well; however, a moderate dilution was applied by the analyst based on the appearance of the extracts. Associated QC samples were analyzed with ITAS project SON 50952, sample EBG03059SD. There were no other problems seen in final data review.

The samples were analyzed for PNAs by method 8310 on 03/31/92. Associated QC samples were analyzed with ITAS project SON 50938, sample ESM07001GG. No major problems were encountered.

The samples were digested on 03/26/92 and 03/27/92 for ICP and 03/26/92 for GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 03/30/92; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 03/29 to 04/01/92; the remaining metals were analyzed by ICP on 03/30/92. All run QC was acceptable. Associated QC samples were analyzed with ITAS project SON 50938, sample EBG01002WH for waters and SON 50952, sample EBG03059SF for soils. No problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

May 29, 1992

Job Number: SON 51263

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	04/27/92
Number of Samples:	Four (4)
Sample Type:	Soil - two (2), Water - one (1), Trip Blank - one (1)

I. Introduction

On 04/27/92, two (2) soil samples, one (1) water sample and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

Reviewed and Approved:

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681-1 89

II. Analytical Results/Methodology (continued)

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on two Finnigan OWA GC/MS/DS units. The samples runs went well. Associated QC samples were analyzed with ITAS project SON 51247, sample EMBB18001 for soils and SON 51257, sample EMBB16001 for waters.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Fison VG TRIO-1 GC/MS/DS. The sample runs went well. The sample extract was lost in the initial extraction of EBB16001BSE, and a reextraction was done within sample holding times. Method QC was acceptable. Associated QC samples were analyzed with ITAS project SON 51247, sample EMBB18001.

The samples were digested on 05/01/92 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 05/14/92; the GFAA analyses for arsenic, cadmium, lead, silver, selenium and thallium were performed from 05/04/92 to 05/06/92; the remaining metals were analyzed by ICP on 05/06/92. All run QC was acceptable. Associated QC samples were analyzed with ITAS project SON 51247, sample EMBB18001. The soil samples were screened for radioactivity as level II. Due to the amount of soil in the container for metals analysis, ITAS-Knoxville could not receive the containers. Therefore, the analyses were performed from the container designated for semivolatiles. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

June 1, 1992

Job Number: SON 51257

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	04/24/92
Number of Samples:	Three (3)
Sample Type:	Soil - one (1), Water - one (1), Trip Blank - one (1)

I. Introduction

On 04/24/92, one (1) soil sample, one (1) water sample and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

Reviewed and Approved:

Alyce R. Moore

Alyce R. Moore
Laboratory Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681-1-69

II. Analytical Results/Methodology (continued)

The samples were analyzed for polynuclear aromatic hydrocarbons based on modified EPA method 8310.

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on two Finnigan OWA GC/MS/DS units. The sample runs went well. An MS/MSD was performed using sample EBB16001BWH with acceptable results. Associated QC samples for soils were analyzed with ITAS project SON 51247, sample EMBB18001SE.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Fison VG TRIO-1 GC/MS/DS. The sample runs went well, however, due to the appearance of the extact, a moderate dilution was analyzed. Associated QC samples were analyzed with ITAS project SON 51247, sample EMBB18001SD. There were no problems seen in final data review.

The samples were analyzed for PNAs on 05/21 and 05/22/92. Some elevated detection limits were reported due to matrix interferences. Matrix spike/matrix spike duplicate analyses were performed using sample EBB16001BWF. Recoveries for anthracene were high. This was due to a contaminant found in the spiking solution. No other problems were encountered.

The soil sample was digested on 05/22/92 for ICP and GFAA. The sample for mercury analysis was prepared just prior to analysis. The CVAA analysis for mercury was performed on 05/18/92; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 05/26/92 to 05/28/92; the remaining metals were analyzed by ICP on 05/26/92. All run QC was acceptable. Associated QC samples were analyzed with ITAS project SON 51247, sample EMBB18001SD. No problems were encountered.

The water sample was digested on 05/04/92 for ICP and GFAA. The sample for mercury analysis was prepared just prior to analysis. The CVAA analysis for mercury was performed on 05/05/92; the GFAA analyses for arsenic, lead, selenium and thallium were performed from 05/04/92 to 05/06/92; the remaining

III. Quality Control (continued)

metals were analyzed by ICP on 05/06/92. All run QC was acceptable. A duplicate/spike pair was prepared using sample number EBB16001BWG. Spike recovery (accuracy) results were outside control limits for cadmium by ICP and lead by GFAA for both the spike and a post-digestion spike, indicating a possible matrix interference for both elements. Duplicate RPD (precision) results were within acceptance limits for all parameters. No other problems were encountered.

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

June 23, 1992

Sanford, Cohen and Associates
c/o USEPA-NAREL
1504 Avenue A
Montgomery, AL 36115-2601
Attn: Joe Stinson

Job Number: SON 51247

P.O. Number: N/A

This is the Certificate of Analysis for the following samples:

Client Project ID:	Sanford, Cohen and Associates
Date Received by Lab:	04/23/92
Number of Samples:	Four (4)
Sample Type:	Soil - three (3), Trip Blank - one (1)

I. Introduction

On 04/23/92, three (3) soil samples and one (1) trip blank arrived at the ITAS-Knoxville, Tennessee laboratory from Sanford, Cohen and Associates in Montgomery, Alabama, via the ITAS-Oak Ridge, Tennessee laboratory. The list of analytical tests performed, as well as date of receipt and analysis, can be found in the attached report.

II. Analytical Results/Methodology

The analytical results for this report are presented by analytical test. Each set of data will include sample identification information and the analytical results. Please note that the data are not blank corrected. Soil samples are reported on a dry weight basis.

The samples were analyzed for the requested volatile and semivolatile organic compounds by gas chromatography/mass spectroscopy (GC/MS) based on EPA SW-846 methods 8240 and 8270.

Reviewed and Approved:

Robert L. Curry
Laboratory Systems Manager

American Council of Independent Laboratories
International Association of Environmental Testing Laboratories
American Association for Laboratory Accreditation

IT Analytical Services, 5815 Middlebrook Pike, Knoxville, TN 37921

681-1-89

II. Analytical Results/Methodology (continued)

The samples were analyzed for the requested metals by cold vapor atomic absorption spectroscopy (CVAA), graphite furnace atomic absorption spectroscopy (GFAA), and inductively coupled plasma spectroscopy (ICP) based on EPA SW-846 methods 7470, 7471, 7060, 7741, 7841 and 6010.

The samples were analyzed for Iodine-129 at the ITAS-Oak Ridge, Tennessee, laboratory. A copy of their report will follow.

III. Quality Control

The volatiles analyses were performed by purge and trap with a J&W DB-624 megabore column on a Finnigan OWA GC/MS/DS and a Finnigan INCOS-500 GC/MS/DS. The sample runs generally went well; however, the sample, Travel Blank, was inadvertently run outside sample holding time by one day. No targets were detected in this sample, and the data from the other samples are not negatively impacted. A single point calibration was used for 1,1,2-trichlorotrifluoroethane. The MS/MSD on sample EMBB18001SD for the volatiles fraction was analyzed fourteen (14) days outside sample holding times due to an error when logging the samples into the laboratory. The original sample was analyzed within holding time, and there was good agreement between the QC and sample.

The semivolatiles analyses were performed by direct injection of sample extract on a Restek XTI-5 capillary column on a Fisons VG TRIO-1 GC/MS/DS, with MS/MSD analyses performed on a Finnigan 4500. The MS/MSD on sample EMBB18001SD was extracted fourteen (14) days outside sample holding time due to an error when logging the samples into the laboratory. The original sample was extracted within sample holding time, and there was good agreement between the QC and sample. The sample runs went well. There were no other problems seen in final data review.

The samples were digested on 05/01/92 for ICP and GFAA. The samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 05/05/92; the GFAA analyses for arsenic, cadmium, lead, silver, selenium and thallium were performed on 05/04/92 and 05/06/92. The remaining metals were analyzed by ICP on 05/06/92. All run QC was acceptable. Due to an error when logging the samples into the laboratory, a spike and duplicate were not performed until a later date. The analyses were performed within holding time. The QC samples were digested on 05/18/92 for ICP and GFAA. The QC samples for mercury analysis were prepared just prior to analysis. The CVAA analysis for mercury was performed on 05/18/92; the GFAA analyses for

III. Quality Control (continued)

arsenic, lead, selenium, and thallium were performed from 05/18/92 to 05/21/92; the remaining metals were analyzed by ICP on 05/26/92. All run QC was acceptable. The duplicate/spike pair was prepared using sample number EMBB18001SF. Spike recovery (accuracy) results were acceptable for all parameters except cadmium and lead by ICP analysis and lead by GFAA analysis. Duplicate RPD (precision) results were acceptable for all parameters except for lead by ICP analysis and lead by GFAA analysis. Sample nonhomogeneity appeared to be the problem for lead since both the accuracy and precision results were outside acceptance limits. No other problems were encountered.

APPENDIX D

Quality Control Samples

TABLE RQ1-SS

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

MATRIX SPIKE, MATRIX SPIKE DUPLICATE RECOVERY

Media: Soil
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Activity of Spike Added	Sample Activity pCi/Samp	MS Activity pCi/Samp	MSD Activity pCi/Samp	MS% Activity (Accuracy)	MSD% Activity (Accuracy)	%RPD (Precision)
EPA 900.0	Cs-137	105.8	0.0534	90.3	84.9	85	80	6
EERF H-01	H_3	917.0	0	800	790	87	86	1
EERF Pu-01	Pu-239	3.2	0.01	2.87	2.5	89	78	14
EERF 00-06	U-234	4.1	1.19	6.19	6.43	122	128	5
	U-235	0.2	0.0724	0.34	0.36	132	144	9
	U-238	4.1	0.953	6.43	7	134	147	10
EERF Sr-01	Sr-90	4.6	0	4.7	4.2	102	91	11
RSL 307	I-129	1072.6	0	1071	1072	100	100	0

TABLE RQ1-SD

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

COMPARISON OF DUPLICATE ANALYSIS

Media: Soil
For Samples Collected: 3/10/92 - 3/23/-92

Method	Radionuclide	Original Sample Activity pCi/Unit	Duplicate Sample Activity pCi/Unit	RPD
EPA 900.0	Cs-137	.153	.167	9
	Cs-137	.0299	.0412	32
EERF H-01	H_3	<200	<200	N/A
	H_3	<200	<200	N/A
EERF Pu-01	Pu-238	<.024	<.015	N/A
	Pu-239	<.015	<.025	N/A
	Pu-238	.025	<.020	N/A
	Pu-239	<.016	.026	N/A
EERF 00-06	U-234	0.995	1.04	4
	U-235	0.0599	.0868	36
	U-238	1.04	1.05	1
	U-234	1.09	1.28	16
	U-235	0.0657	0.0771	16
	U-238	0.943	1.1	15
EERF Sr-01	Sr-90	<.675	<.525	N/A
		<.709	<.520	N/A

TABLE RQ1-SB

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

REAGENT BLANK RESULTS

Media: Soil
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Sample Activity pCi/Unit
EPA 900.0	Cs-137	N/A
EERF H-01	H_3	N/A
EERF Pu-01	Pu-238	<.009
	Pu-239	<.009
EERF 0006	U-234	<.015
	U-235	<.012
	U-238	<.012
EERF Sr-01	Sr-90	<.642

TABLE RQ1-SB

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

REAGENT BLANK RESULTS

D - 4

Media: Soil
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Sample Activity pCi/Unit
EPA 900.0	Cs-137	N/A
EERF H-01	H_3	N/A
EERF Pu-01	Pu-238	<.009
	Pu-239	<.009
EERF 0006	U-234	<.015
	U-235	<.012
	U-238	<.012
EERF Sr-01	Sr-90	<.642

TABLE RQ1-WS

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

MATRIX SPIKE, MATRIX SPIKE DUPLICATE RECOVERY

Media: Water
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Activity of Spike Added	Sample Activity pCi/Samp	MS Activity pCi/Samp	MSD Activity pCi/Samp	MS% Activity (Accuracy)	MSD% Activity (Accuracy)	%RPD (Precision)
EERF 00-01	Gross Alpha	7.1	0	6.5	6.5	92	92	0
	Gross Beta	10.6	0	9.12	9.65	86	91	6
EPA 900.0	Cs-137	26.0	0	25.8	26	99	100	1
EERF H-01	H_3	458	0	466	452	102	99	3
EERF Pu-01	Pu-239	3.2	0	3.3	3.4	103	106	3
EERF Sr-04	Sr-90	4.6	0	3.42	4.61	74	100	30
RSL 307	I-129	1072.6	0	1072	1073	100	100	0

TABLE RQ1-WD

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

COMPARISON OF DUPLICATE ANALYSIS

Media: Water
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Original Sample Activity pCi/Unit	Duplicate Sample Activity pCi/Unit	RPD
EERF 00-01	Gross Alpha	<1.62	<7.69	N/A
	Gross Beta	4.2	3.7	13
EPA 900.0	Cs-137	<4.33	<7.69	N/A
EERF H-01	H_3	<200	<200	N/A
EERF Pu-01	Pu-238	<.0252	<.0581	N/A
	Pu-239	<.0378	<.0581	N/A
EERF Sr-04	Sr-90	<.804	<.750	N/A

TABLE RQ1-WB

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

REAGENT BLANK RESULTS

Media: Water
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Sample Activity pCi/Unit
EPA 900.0	Cs-137	N/A
EPA H-01	H_3	N/A
EERF Pu-01	Pu-238	<.0428
	Pu-239	<.0465
EERF Sr-04	Sr-90	<.733

TABLE RQ1-FS

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

MATRIX SPIKE, MATRIX SPIKE DUPLICATE RECOVERY

Media: Fruit
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Activity of Spike Added	Sample Activity pCi/Samp	MS Activity pCi/Samp	MSD Activity pCi/Samp	MS% Activity (Accuracy)	MSD% Activity (Accuracy)	%RPD (Precision)
EPA 900.0	Cs-137	26.0	0	26.6	23.1	102	89	14
EERF H-01	H_3	917	0	990	882	108	96	12
EERF Pu-01	Pu-239	3.2	0	3.29	3.06	103	96	7
EERF Sr-01	Sr-90	4.6	0	6.1	5.8	133	126	5
RSL 307	I-129	1.14	0	.93	1.21	82	106	26

TABLE RQ1-FD

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

COMPARISON OF DUPLICATE ANALYSIS

Media: Fruit
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Original Sample Activity pCi/Unit	Duplicate Sample Activity pCi/Unit	RPD
EPA 900.0	Cs-137	<.0101	<.0093	N/A
EERF H-01	H_3	<206	<206	N/A
EERF Pu-01	Pu-238	<.000618	<.000508	N/A
	Pu-239	<.000584	.00174	N/A
EERF Sr-01	Sr-90	<.023	<.022	N/A

TABLE RQ1-FB

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

REAGENT BLANK RESULTS

Media: Fruit
For Samples Collected: 3/10/92 - 3/23/92

Method	Radionuclide	Sample Activity pCi/Unit
EPA 900.0	Cs-137	N/A
EERF H-01	H_3	N/A
EERF Pu-01	Pu-238	<.009
	Pu-239	<.020
EERF Sr-01	Sr-90	<.649

TABLE RQ2-SS

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

MATRIX SPIKE, MATRIX SPIKE DUPLICATE RECOVERY

Media: Soil
For Samples Collected: 4/21/92 - 4/22/92

Method	Radionuclide	Activity of Spike Added	Sample Activity pCi/Samp	MS Activity pCi/Samp	MSD Activity pCi/Samp	MS% Activity (Accuracy)	MSD% Activity (Accuracy)	% RPD (Precision)
EPA 900.0	Cs-137	105.8	0.0534	90.3	79.3	85	75	13
EERF H-01	H_3	458.0	0	402	*	88	N/A	N/A
EERF Pu-01	Pu-239	3.2	0	3.41	2.66	107	83	25
EERF 00-06	U-234	4.1	0.93	5.99	5.5	123	111	10
	U-235	0.2	0.0284	0.35	0.32	159	147	8
	U-238	4.1	0.726	6.23	5.77	134	123	9
EERF Sr-01	Sr-90	4.6	0	2.7	4.3	59*	93	46
RSL 307	I-129	994.2	0	993.3	993.4	100	100	0

= Sample Lost In Laboratory Accident
* = Value Outside Of Standard Control Limit

TABLE RQ2-SD

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

COMPARISON OF DUPLICATE ANALYSIS

Media: Soil
For Samples Collected: 4/21/92 - 4/22/92

Method	Radionuclide	Original Sample Activity pCi/Unit	Duplicate Sample Activity pCi/Unit	RPD
EPA 900.0	Cs-137	<.0171	<MDA	N/A
	Cs-137	.0857	.0867	1
EERF H-01	H_3	<190	<200	N/A
EERF Pu-01	Pu-238	.034	<.023	N/A
	Pu-239	<.020	<.016	N/A
EERF 00-06	U-234	.731	.626	15
	U-235	.0429	.0293	38
	U-238	.663	.582	13
EERF Sr-01	Sr-90	<.737	<.740	N/A

TABLE RQ2-SB

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

REAGENT BLANK RESULTS

Media: Soil
For Samples Collected: 4/21/92 - 4/22/92

Method	Radionuclide	Sample Activity pCi/Unit
EPA 900.0	Cs-137	N/A
EERF H-01	H_3	N/A
EERF Pu-01	Pu-238	<.025
	Pu-239	<.017
EERF 00-06	U-234	.045
	U-235	<.015
	U-238	.033
EERF Sr-01	Sr-90	<.718

TABLE RQ2-WD

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

COMPARISON OF DUPLICATE ANALYSIS

Media: Water
For Samples Collected: 4/21/92 - 4/22/92

Method	Radionuclide	Original Sample Activity pCi/Unit	Duplicate Sample Activity pCi/Unit	RPD
EERF 00-01	Gross Alpha	<5.19	<5.25	N/A
	Gross Beta	<4.67	<5.55	N/A
EPA 900.0	Cs-137	<4.80	<4.85	N/A
EERF H-01	H_3	<191	<191	N/A
EERF Pu-01	Pu-238	<.0393	<.0524	N/A
	Pu-239	<.0248	<.0436	N/A
EERF Sr-04	Sr-90	<.532	<.872	N/A

TABLE RQ2-WB

QUALITY CONTROL SAMPLES
RADIOCHEMICAL ANALYSES

REAGENT BLANK RESULTS

Media: Water
For Samples Collected: 4/21/92 - 4/22/92

Method	Radionuclide	Sample Activity pCi/Unit
EPA 900.0	Cs-137	N/A
EERF H-01	H_3	N/A
EERF Pu-01	Pu-238	.0424
	Pu-239	.0283
EERF Sr-04	Sr-90	<.681

Section 2. Chemical Analyses

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: EBG03059SE/88346
Lab Sample ID: SS7704

Compound	Conc. Spike Added	Sample Conc.	MS Conc.	MS % Rec.
1,1-dichloroethene	73.5	7 U	78.7	107
trichloroethene	73.5	7 U	78.4	107
benzene	73.5	7 U	77.6	106
toluene	73.5	7 U	79.3	108
chlorobenzene	73.5	7 U	75.6	103

Compound	Conc. Spike Added	MSD Conc.	MSD % Rec.	% RPD
1,1-dichloroethene	73.5	68.5	93	14
trichloroethene	73.5	65.6	89	18
benzene	73.5	68.7	93	13
toluene	73.5	69.6	95	13
chlorobenzene	73.5	67.2	91	12

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date of Analysis: 03/19/92

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-SS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51018

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: ESM01007SE/88593
Lab Sample ID: SS8484 MS/SS8485 MSD

Compound	Conc. Spike Added	Sample Conc.	MS Conc.	MS % Rec.
1,1-dichloroethene	56.8	6 U	55.7	98
trichloroethene	56.8	6 U	69.1	122
benzene	56.8	6 U	57.5	101
toluene	56.8	4.38 J	58.2	95
chlorobenzene	56.8	6 U	68.4	120

Compound	Conc. Spike Added	MSD Conc.	MSD % Rec.	% RPD
1,1-dichloroethene	56.8	59.5	105	-7
trichloroethene	56.8	67.0	118	3
benzene	56.8	56.1	99	2
toluene	56.8	56.7	92	3
chlorobenzene	56.8	65.9	116	3

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: EBG03059SD/88345
Lab Sample ID: SS7709

Compound	Conc. Spike Added	Sample Conc.		MS Conc.	MS % Rec.
phenol	9,740	980	U	5,920	61
2-chlorophenol	9,740	980	U	6,460	66
1,4-dichlorobenzene	4,870	980	U	2,630	54
n-nitroso-di-n-propylamine	4,870	980	U	3,030	62
1,2,4-trichlorobenzene	4,870	980	U	3,100	64
4-chloro-3-methylphenol	9,740	980	U	6,670	68
acenaphthene	4,870	980	U	3,680	76
4-nitrophenol	9,740	4,900	U	7,150	73
2,4-dinitrotoluene	4,870	980	U	3,330	68
pentachlorophenol	9,740	980	U	3,710	38
pyrene	4,870	980	U	3,310	68

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
(continued)

Results in $\mu g/kg$ (ppb) dry weight

Client Sample ID: EBG03059SD/88345
Lab Sample ID: SS7709

Compound	Conc. Spike Added	MSD Conc.	MSD %Rec.	% RPD
phenol	9,810	5,030	51	18
2-chlorophenol	9,810	4,080	42	44
1,4-dichlorobenzene	4,900	0	0 *	200 *
n-nitroso-di-n-propylamine	4,900	1,760	36 *	53 *
1,2,4-trichlorobenzene	4,900	257	5 *	171 *
4-chloro-3-methylphenol	9,810	5,180	53	25
acenaphthene	4,900	1,430	29 *	90 *
4-nitrophenol	9,810	6,060	62	16
2,4-dinitrotoluene	4,900	2,320	47	37
pentachlorophenol	9,810	4,550	46	-19
pyrene	4,900	1,810	37	59 *

RPD = Relative Percent Difference

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

*Values are outside QC limits.

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: ESM01007SB/88592
Lab Sample ID: SS8489 MS/SS8490 MSD

Compound	Conc. Spike Added	Sample Conc.		MS Conc.	MS % Rec.
phenol	7,250	710	U	4,790	66
2-chlorophenol	7,250	710	U	5,180	71
1,4-dichlorobenzene	3,620	710	U	2,230	62
n-nitroso-di-n-propylamine	3,620	710	U	2,300	64
1,2,4-trichlorobenzene	3,620	710	U	2,510	69
4-chloro-3-methylphenol	7,250	710	U	5,690	78
acenaphthene	3,620	710	U	3,040	84
4-nitrophenol	7,250	350	U	5,910	82
2,4-dinitrotoluene	3,620	710	U	2,700	75
pentachlorophenol	7,250	350	U	5,980	82
pyrene	3,620	710	U	2,760	76

Date of Extraction: 03/30/92
Date of Analysis: 04/02/92

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
(continued)

Results in $\mu g/kg$ (ppb) dry weight

Client Sample ID: ESM01007SB/88592
Lab Sample ID: SS8489 MS/SS8490 MSD

Compound	Conc. Spike Added	MSD Conc.	MSD %Rec.	% RPD
phenol	7,250	5,750	79	-18
2-chlorophenol	7,250	6,050	83	-16
1,4-dichlorobenzene	3,620	2,420	67	-8
n-nitroso-di-n-propylamine	3,620	2,520	70	-9
1,2,4-trichlorobenzene	3,620	2,820	78	-12
4-chloro-3-methylphenol	7,250	6,370	88	-12
acenaphthene	3,620	3,380	93	-10
4-nitrophenol	7,250	6,670	92	-11
2,4-dinitrotoluene	3,620	2,980	82	-9
pentachlorophenol	7,250	6,600	91	-10
pyrene	3,620	3,050	84	-10

RPD = Relative Percent Difference

Date of Extraction: 03/30/92
Date of Analysis: 04/02/92

Sanford, Cohen and Associates
April 16, 1992

TABLE CQ1-SS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

Analysis Sheet 1 of 2

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in $\mu g/kg$ (ppb) dry weight

Client Sample ID: EBG03059SD/88345 RE
Lab Sample ID: SS7709 RE

Compound	Conc. Spike Added	Sample Conc.		MS Conc.	MS % Rec.
phenol	9,760	980	U	6,850	70
2-chlorophenol	9,760	980	U	7,600	78
1,4-dichlorobenzene	4,880	980	U	3,200	66
n-nitroso-di-n-propylamine	4,880	980	U	3,570	73
1,2,4-trichlorobenzene	4,880	980	U	3,640	75
4-chloro-3-methylphenol	9,760	980	U	7,730	79
acenaphthene	4,880	980	U	3,910	80
4-nitrophenol	9,760	4,900	U	8,000	82
2,4-dinitrotoluene	4,880	980	U	3,680	75
pentachlorophenol	9,760	980	U	6,850	70
pyrene	4,880	980	U	3,530	72

Date of Extraction: 03/31/92
Date of Analysis: 04/03/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
(continued)

Results in $\mu g/kg$ (ppb) dry weight

Client Sample ID: EBG03059SD/88345 RE
Lab Sample ID: SS7709 RE

Compound	Conc. Spike Added	MSD Conc.	MSD %Rec.	% RPD
phenol	10,900	7,040	65	7
2-chlorophenol	10,900	7,700	71	9
1,4-dichlorobenzene	5,460	3,040	56	16
n-nitroso-di-n-propylamine	5,460	3,220	59	21
1,2,4-trichlorobenzene	5,460	3,620	66	13
4-chloro-3-methylphenol	10,900	8,010	73	8
acenaphthene	5,460	3,790	69	15
4-nitrophenol	10,900	7,900	72	13
2,4-dinitrotoluene	5,460	3,640	67	11
pentachlorophenol	10,900	7,100	65	7
pyrene	5,460	3,550	65	10

RPD = Relative Percent Difference

Date of Extraction: 03/31/92
Date of Analysis: 04/03/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

MATRIX SPIKE RECOVERY

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: EBG03059SF
Lab Sample ID: SS7713

Compound	Sample Conc.	Conc. Spike Added	MS Conc.	MS % Rec.
antimony	3 U	50	23	46.0
beryllium	0.6	5.0	6.0	108.0
cadmium	5.0	5.0	8.7	74.0
chromium	62	20	84	110.0
copper	40	25	65	100.0
nickel	70	50	113	86.0
silver	1.6	5.0	6.0	88.0
zinc	85.5	50	138	105.0
arsenic	4.8	4.0	8.2	85.0
lead	5.3	2.0	6.6	65.0
selenium	0.6	1.0	1.7	110.0
thallium	0.4	5.0	5.2	96.0
mercury	0.1 U	1.0	1.0	100.0

Digestion Date: 03/23/92 (ICP), 03/20/92 (GFAA)
Analysis Date: 03/24/92 (ICP), 03/25/92 (GFAA), 03/24/92 (CVAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-SS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Analysis Sheet 2 of 2

Job Number: SON 51018

POST DIGESTION SPIKE RECOVERY
Results in µg/liter (ppb)
Sample Matrix: Soil

Client Sample ID: ESM01007SF/88594
Lab Sample ID: SS8492

	Control Limit % R	Spiked Sample Result	Sample Result	Spike Added	% Recovery
selenium		4.38	2.00 U	10.0	43.8 N

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
N - Spiked sample recovery outside control limits.

Date of Digestion: 04/06/92 (GFAA)
Date of Analysis: 04/06/92 (GFAA)

SOIL SURROGATE PERCENT RECOVERY SUMMARY

VOLATILE

Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBG02007SE/88498	101	101	118
ESM02019SE/88386	100	94	112
ESM03001SE/88338	111	94	118
Method Blank	108	114	111

*Values in parenthesis represent USEPA contract required QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

VOLATILE

Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBB03005SE/90138	102	85	93
EBB04021SE/88285	98	92	94
EBB06092SE/89185	96	95	93
EBB13024SE/88938	103	101	99
EBB14079SE/88438	100	98	100
Method Blank	97	97	100

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

VOLATILE

Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBG03059SE/88346	99	88	97
EBG03059SE/88346 MS	109	93	105
EBG03059SE/88346 MSD	99	88	97
EBG04029SE/88242	101	90	96
Method Blank	101	98	101

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBB01056SE/90287	102	97	99
EBB05077SE/90036	98	95	93
EBB12020SE/90087	96	103	109
Method Blank	96	98	99

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBB11061SE/89261	99	97	96
Method Blank	96	97	92

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

VOLATILE

Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
ESM01004SE/88585	99	95	89
ESM01007SE/88593	97	97	88
ESM01007SE/88593 MS	97	94	89
ESM01007SE/88593 MSD	97	95	94
Method Blank	96	97	92

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-116%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (26-121%)*	2,4,6-Tribromo-Phenol (18-122%)*
EBG02007SD/88500	68	80	87	76	68	103
ESM02019SD/88385	72	86	96	77	71	91
ESM03001SD/88337	77	89	98	81	76	113
Method Blank	67	82	110	78	71	90

*Values in parenthesis represent USEPA contract required QC limits.

Sanford, Cohen and Associates
April 10, 1992

TABLE CQ1-SR
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-115%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (25-121%)*	2,4,6-Tribromo-Phenol (19-122%)*
EBB03005SD/90137	98	100	96	85	92	84
EBB04021SD/88284	82	91	100	77	72	74
EBB06092SD/89184	84	93	103	80	77	62
EBB13024SD/88937	83	88	92	76	78	85
EBB14079SD/88437	86	92	97	78	75	55
Method Blank	85	88	110	75	72	54

*Values in parenthesis represent required QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-116%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (26-121%)*	2,4,6-Tribromo-Phenol (18-122%)*
EBG03059SD/88345	62	68	71	64	69	78
EBG03059SD/88345 RE	86	84	88	93	87	85
EBG04029SD/88241	78	86	87	94	94	87
EBD03059SD/88345 MS	30	20 **	47	57	44	51
EBG03059SD/88345 MS RE	65	70	74	70	70	77
EBG03059SD/88345 MSD	75	71	73	75	74	73
EBG03059SD/88345 MSD RE	78	78	81	81	79	82
Method Blank 1	68	71	84	60	49	42
Method Blank 2	88	86	94	94	90	73

*Values in parenthesis represent QC limits.
**Values are outside of QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-115%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (25-121%)*	2,4,6-Tribromo-Phenol (19-122%)*
EBB11061SD/89285	81	87	91	96	104	98
Method Blank	69	81	88	71	70	79

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-115%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (25-121%)*	2,4,6-Tribromo-Phenol (19-122%)*
ESM01004SD/88584	79	85	93	81	89	93
ESM01007SB/88592	77	79	86	84	78	87
ESM01007SB/88592 MS	80	84	92	83	83	94
ESM01007SB/88592 MSD	86	93	93	87	90	95
Method Blank	83	81	96	82	80	69

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-116%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (26-121%)*	2,4,6-Tribromo-Phenol (18-122%)*
EBB01056SD/90286	78	87	92	83	87	96
EBB05077SD/90035	69	85	90	81	85	98
EBB12020SD/90086	75	85	92	79	85	101
Method Blank	69	81	88	71	70	79

*Values in parenthesis represent QC limits.

DUPLICATE ANALYSIS

Results in mg/kg (ppb) dry weight

Sample Matrix: Soil

Client Sample ID: ESM01007SF/88594
Lab Sample ID: SS8493

Parameter	Original Sample	Duplicate	RPD
antimony	3.8250	3.7240	2.7
arsenic	5.2100	5.7000	9.0
beryllium	0.8850	0.8870	0.2
cadmium	0.5000 U	0.5000 U	
chromium	21.0330	21.4810	2.1
copper	23.5590	22.4090	5.0
lead	13.5600	15.3900	12.6
mercury	0.1000 U	0.1000 U	
nickel	15.1230	16.8510	10.8
selenium	0.2000 U	0.2000 U	
silver	0.5000 U	0.5000 U	
thallium	0.2960	0.2910	1.7
zinc	67.0510	67.2710	0.3

Date of Digestion: 04/01/92 (ICP), 04/06/92 (GFAA)
Date of Analysis: 04/02/92 (ICP), 04/07/92 (CVAA), 04/06/92 (GFAA)

RPD = Relative percent difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB03172

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	1	J
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	2	J
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/17/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
April 10, 1992

TABLE CQ1-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB03252

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	2	J	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	1	J	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/25/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50985

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB03262

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	5	J	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/26/92

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50998

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB0327

Compound	Concentration	Compound	Concentration
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	5 U	1,1,2-trichloroethane	5 U
acetone	10 U	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	xylenes (total)	5 U
		1,1,2-trichlorotrifluoroethane	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92

VOLATILE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB0327

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92

Sanford, Cohen and Associates
April 8, 1992

TABLE CQ1-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

Analysis Sheet 1 of 2

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: H0066

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: H0066

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 03/17/92
Date of Analysis: 03/25/92
Dilution Factor: 1.00

SEMIVOLATILE TARGET COMPOUND LIST
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: H0106

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00

SEMIVOLATILE TARGET COMPOUND LIST (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: H0106

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	52	J
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 03/23/92
Date of Analysis: 03/30/92
Dilution Factor: 1.00

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: BL0085

Compound	Concentration		Compound	Concentration	
acenaphthene	330	U	bis(2-chloroisopropyl)ether	330	U
acenaphthylene	330	U	bis(2-ethylhexyl)phthalate	330	U
anthracene	330	U	4-bromophenyl phenyl ether	330	U
benzidine	1,700	U	2-chloronaphthalene	330	U
benzo(a)anthracene	330	U	4-chlorophenyl phenyl ether	330	U
benzo(b)fluoranthene	330	U	chrysene	330	U
benzo(k)fluoranthene	330	U	dibenz(a,h)anthracene	330	U
benzo(a)pyrene	330	U	di-n-butylphthalate	330	U
benzo(g,h,i)perylene	330	U	1,2-dichlorobenzene	330	U
butylbenzylphthalate	330	U	1,3-dichlorobenzene	330	U
bis(2-chloroethoxy)methane	330	U	1,4-dichlorobenzene	330	U
bis(2-chloroethyl)ether	330	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: BL0085

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	660	U	hexachloroethane	330	U
diethylphthalate	330	U	indeno(1,2,3-cd)pyrene	330	U
dimethyl phthalate	330	U	isophorone	330	U
2,4-dinitrotoluene	330	U	naphthalene	330	U
2,6-dinitrotoluene	330	U	nitrobenzene	330	U
di-n-octyl phthalate	330	U	n-nitroso-di-n-propylamine	330	U
1,2-diphenylhydrazine(1)	330	U	n-nitrosodimethylamine	330	U
fluoranthene	330	U	n-nitrosodiphenylamine(2)	330	U
fluorene	330	U	phenanthrene	330	U
hexachlorobenzene	330	U	pyrene	330	U
hexachlorobutadiene	330	U	1,2,4-trichlorobenzene	330	U
hexachlorocyclopentadiene	330	U			

(1)-Screened for as azobenzene
(2)-Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

This method blank applies to the following samples: EBG03059SD, EBG04029SD, EBG3059SD MS, EBG03059SD MSD.

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in $\mu g/kg$ (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: BL0085

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	330	U	2-nitrophenol	330	U
2-chlorophenol	330	U	4-nitrophenol	1,700	U
2,4-dichlorophenol	330	U	pentachlorophenol	1,700	U
2,4-dimethylphenol	330	U	phenol	330	U
2,4-dinitrophenol	1,700	U	2,4,6-trichlorophenol	330	U
2-methyl-4,6-dinitrophenol	1,700	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/19/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: BL0176

Compound	Concentration		Compound	Concentration	
acenaphthene	330	U	bis(2-chloroisopropyl)ether	330	U
acenaphthylene	330	U	bis(2-ethylhexyl)phthalate	330	U
anthracene	330	U	4-bromophenyl phenyl ether	330	U
benzidine	1,700	U	2-chloronaphthalene	330	U
benzo(a)anthracene	330	U	4-chlorophenyl phenyl ether	330	U
benzo(b)fluoranthene	330	U	chrysene	330	U
benzo(k)fluoranthene	330	U	dibenz(a,h)anthracene	330	U
benzo(a)pyrene	330	U	di-n-butylphthalate	330	U
benzo(g,h,i)perylene	330	U	1,2-dichlorobenzene	330	U
butylbenzylphthalate	330	U	1,3-dichlorobenzene	330	U
bis(2-chloroethoxy)methane	330	U	1,4-dichlorobenzene	330	U
bis(2-chloroethyl)ether	330	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/31/92
Date of Analysis: 04/03/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: BL0176

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	660	U	hexachloroethane	330	U
diethylphthalate	330	U	indeno(1,2,3-cd)pyrene	330	U
dimethyl phthalate	330	U	isophorone	330	U
2,4-dinitrotoluene	330	U	naphthalene	330	U
2,6-dinitrotoluene	330	U	nitrobenzene	330	U
di-n-octyl phthalate	330	U	n-nitroso-di-n-propylamine	330	U
1,2-diphenylhydrazine(1)	330	U	n-nitrosodimethylamine	330	U
fluoranthene	330	U	n-nitrosodiphenylamine(2)	330	U
fluorene	330	U	phenanthrene	330	U
hexachlorobenzene	330	U	pyrene	330	U
hexachlorobutadiene	330	U	1,2,4-trichlorobenzene	330	U
hexachlorocyclopentadiene	330	U			

(1)-Screened for as azobenzene
(2)-Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/31/92
Date of Analysis: 04/03/92

This method blank applies to the following samples: EBG03059SD RE, EBG03059SD MSD RE, EBG03059SD MS RE.

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: BL0176

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	330	U	2-nitrophenol	330	U
chlorophenol	330	U	4-nitrophenol	1,700	U
-dichlorophenol	330	U	pentachlorophenol	1,700	U
-dimethylphenol	330	U	phenol	330	U
-dinitrophenol	1,700	U	2,4,6-trichlorophenol	330	U
methyl-4,6-dinitrophenol	1,700	U			

- Compound was analyzed for but not detected. The number is the detection limit for the sample.
- Indicates an estimated value less than the detection limit.

Date of Extraction: 03/31/92
Date of Analysis: 04/03/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: BL0128

Compound	Concentration		Compound	Concentration	
acenaphthene	330	U	bis(2-chloroisopropyl)ether	330	U
acenaphthylene	330	U	bis(2-ethylhexyl)phthalate	35	J
anthracene	330	U	4-bromophenyl phenyl ether	330	U
benzidine	1,700	U	2-chloronaphthalene	330	U
benzo(a)anthracene	330	U	4-chlorophenyl phenyl ether	330	U
benzo(b)fluoranthene	330	U	chrysene	330	U
benzo(k)fluoranthene	330	U	dibenz(a,h)anthracene	330	U
benzo(a)pyrene	330	U	di-n-butylphthalate	330	U
benzo(g,h,i)perylene	330	U	1,2-dichlorobenzene	330	U
butylbenzylphthalate	330	U	1,3-dichlorobenzene	330	U
bis(2-chloroethoxy)methane	330	U	1,4-dichlorobenzene	330	U
bis(2-chloroethyl)ether	330	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

BASE/NEUTRAL EXTRACTABLE ORGANIC ANALYSIS
(continued)

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: BL0128

Compound	Concentration		Compound	Concentration	
3,3'dichlorobenzidine	660	U	hexachloroethane	330	U
diethylphthalate	330	U	indeno(1,2,3-cd)pyrene	330	U
dimethyl phthalate	330	U	isophorone	330	U
2,4-dinitrotoluene	330	U	naphthalene	330	U
2,6-dinitrotoluene	330	U	nitrobenzene	330	U
di-n-octyl phthalate	330	U	n-nitroso-di-n-propylamine	330	U
1,2-diphenylhydrazine(1)	330	U	n-nitrosodimethylamine	330	U
fluoranthene	330	U	n-nitrosodiphenylamine(2)	330	U
fluorene	330	U	phenanthrene	330	U
hexachlorobenzene	330	U	pyrene	330	U
hexachlorobutadiene	330	U	1,2,4-trichlorobenzene	330	U
hexachlorocyclopentadiene	330	U			

(1) Screened for as azobenzene
(2) Detected as diphenylamine

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

ACID EXTRACTABLE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: BL0128

Compound	Concentration		Compound	Concentration	
4-chloro-3-methylphenol	330	U	2-nitrophenol	330	U
2-chlorophenol	330	U	4-nitrophenol	1,700	U
2,4-dichlorophenol	330	U	pentachlorophenol	1,700	U
2,4-dimethylphenol	330	U	phenol	330	U
2,4-dinitrophenol	1,700	U	2,4,6-trichlorophenol	330	U
2-methyl-4,6-dinitrophenol	1,700	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

SEMIVOLATILE ORGANICS ANALYSIS (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: BL0128

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

(1) Detected as diphenylamine.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/25/92
Date of Analysis: 03/30/92

SEMIVOLATILE ORGANICS ANALYSIS
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: BL0170

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/30/92
Date of Analysis: 04/02/92

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: BL0170

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

(1) Detected as diphenylamine.

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/30/92
Date of Analysis: 04/02/92

SEMIVOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: H0451

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/30/92
Date of Analysis: 05/05/92

SEMIVOLATILE ORGANIC ANALYSIS (continued)

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: H0451

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	82	J
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/30/92
Date of Analysis: 05/05/92

This method blank applies to sample EBB16001BSD.

SEMIVOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: H0447

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92

SEMIVOLATILE TARGET COMPOUND LIST (continued)

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: H0447

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92

This method blank applies to sample EBB19003SD.

METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank PBSE4664/PBSE4708/PBSC5050	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	1	U
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	0.5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Digestion Date: 03/25/92 (ICP) 03/27/92 (GFAA)
Analysis Date: 03/26/92 (CVAA), 03/30/92 (ICP), 03/26/92 through 03/29/92 (GFAA)

Sanford, Cohen and Associates
April 16, 1992

TABLE CQ1-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

PRIORITY POLLUTANT METALS ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSC5044/PBSE4636/PBSE4626

Compound	Concentration	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	1	U
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	1.6	

Digestion Date: 03/23/92 (ICP), 03/20/92 (GFAA)
Analysis Date: 03/24/92 (ICP), 03/25/92 (GFAA), 03/24/92 (CVAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

PRIORITY POLLUTANT METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSC5060/PBSE4732/PBSE4765

Compound	Concentration	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	2	
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	1.2	

Digestion Date: 04/01/92 (ICP), 04/06/92 (GFAA)
Analysis Date: 04/02/92 (ICP), 04/06/92 (GFAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

PRIORITY POLLUTANT METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Lab Sample ID:	Method Blank PBSC5056/PBSE4705/PBSE4700	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	1	
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	0.8	

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Digestion Date: 03/26/92 (GFAA), 03/27/92 (ICP)
Analysis Date: 03/30/92 (ICP, CVAA), 03/29/92 through 04/01/92 (GFAA)

PRIORITY POLLUTANT METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSC5060/PBSE4732/PBSE4765

Compound	Concentration	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	2	
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	1.2	

Digestion Date: 04/01/92 (ICP), 04/06/92 (GFAA)
Analysis Date: 04/02/92 (ICP), 04/07/92 (CVAA), 04/06/92 (GFAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSE4968/PBSE4970/PBSC5094

Analyte	Result	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	1	U
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	0.5	U

Date of Digestion: 05/01/92
Date of Analysis: 05/06/92 (ICP), 05/14/92 (CVAA), 05/04 through 05/06/92 (GFAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: EMBB18001SE/89240
Lab Sample ID: K1130

Compound	Conc. Spike Added	Sample Conc.	MS Conc.	MS % Rec.
1,1-dichloroethene	68.5	7 U	63.8	93
trichloroethene	68.5	7 U	65.5	96
benzene	68.5	7 U	59.7	87
toluene	68.5	7 U	60.5	88
chlorobenzene	68.5	7 U	62.7	92

Compound	Conc. Spike Added	MSD Conc.	MSD % Rec.	% RPD
1,1-dichloroethene	68.5	69.7	102	-9
trichloroethene	68.5	68.5	100	-4
benzene	68.5	63.0	92	-6
toluene	68.5	61.4	90	-2
chlorobenzene	68.5	65.1	95	-3

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/27/92

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

Analysis Sheet 1 of 2

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/kg (ppb) dry weight

Client Sample ID: EMBB18001SD/89243
Lab Sample ID: K1133

Compound	Conc. Spike Added	Sample Conc.		MS Conc.	MS % Rec.	
phenol	9,120	450	U	8,530	94	*
2-chlorophenol	9,120	450	U	9,720	107	*
1,4-dichlorobenzene	4,560	450	U	3,180	70	
n-nitroso-di-n-propylamine	4,560	450	U	4,310	95	
1,2,4-trichlorobenzene	4,560	450	U	3,540	78	
4-chloro-3-methylphenol	9,120	450	U	8,620	95	
acenaphthene	4,560	450	U	3,870	85	
4-nitrophenol	9,120	2,200	U	7,390	81	
2,4-dinitrotoluene	4,560	450	U	3,490	77	
pentachlorophenol	9,120	2,200	U	7,710	85	
pyrene	4,560	450	U	3,250	71	

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

*Values are outside QC limits.

SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY
(continued)

Results in µg/kg (ppb) dry weight

Client Sample ID: EMBB18001SD/89243
Lab Sample ID: K1133

Compound	Conc. Spike Added	MSD Conc.	MSD %Rec.	% RPD
phenol	9,100	6,500	71	28
2-chlorophenol	9,100	7,910	87	21
1,4-dichlorobenzene	4,550	3,170	70	0
n-nitroso-di-n-propylamine	4,550	3,900	86	10
1,2,4-trichlorobenzene	4,550	3,470	76	3
4-chloro-3-methylphenol	9,100	7,870	86	10
acenaphthene	4,550	3,850	85	0
4-nitrophenol	9,100	8,050	88	-8
2,4-dinitrotoluene	4,550	3,400	75	3
pentachlorophenol	9,100	8,640	95	-11
pyrene	4,550	3,300	73	-3

RPD = Relative Percent Difference

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

MATRIX SPIKE RECOVERY
Results in mg/kg (ppm) dry weight
Sample Matrix: Soil

Client Sample ID: EMBB18001SF/82945
Lab Sample ID: K1136

	Control Limit % R	Spiked Sample Result	Sample Result		Spike Added	% Recovery	
antimony	75-125	42	4		50	76.0	
arsenic	75-125	8.5	5.4		4.0	77.5	
beryllium	75-125	5.3	0.2		5.0	102.0	
cadmium	75-125	3.7	0.5	U	5.0	74.0	N
chromium	75-125	26	8		20	90.0	
copper	75-125	26	3		25	92.0	
iron		10,900	9,610		100	1,290.0	
lead	75-125	12.7	4.9		2.0	390.0	N
mercury	75-125	1.6	0.4		1.0	120.0	
nickel	75-125	49	5		50	88.8	
selenium	75-125	0.8	0.2	U	1.0	80.0	
silver	75-125	4	0.5	U	5.0	80.0	
thallium		5.6	0.3		5.0	106.0	
zinc	75-125	71.7	25.9		50	91.6	

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
N - Spiked sample recovery outside control limits.

Date of Digestion: 05/18/92
Date of Analysis: 05/26/92 (ICP), 05/18/92 through 05/21/92 (GFAA), 05/18/92 (CVAA)
% Solids: 100.0

SOIL SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBB16001BSE/89890	104	103	96
EBB19003SE/90438	106	99	94
Method Blank	105	107	99

*Values in parenthesis represent QC limits.

Sanford, Cohen and Associates
June 1, 1992

TABLE CQ2-SR
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

SOIL SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBB15005SE/89589	83	98	99
Method Blank	105	107	99

*Values in parenthesis represent QC limits.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SR
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

SOIL SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
EBB017001SE/89337	105	90	99
EBB180001SE/89236	109	92	100
EMBB18001SE/89240	96	92	96
Method Blank 1	101	97	97

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (81-117%)*	BFB (74-121%)*	1,2 Dichloroethane-D4 (70-121%)*
Method Blank 2	99	99	100
EMBB18001SE MS/89240	96	92	98
EMBB18001SE MSD/89240	96	91	100

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-115%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (25-121%)*	2,4,6-Tribromo-Phenol (19-122%)*
EBB16001BSD/89889	100	97	89	88	88	65
EBB19003SD/90437	108	95	97	86	88	74
Method Blank 2	88	88	91	72	64	48
Method Blank 1	96	96	102	83	86	58

*Values in parenthesis represent QC limits.

SOIL SURROGATE PERCENT RECOVERY SUMMARY

SEMIVOLATILE

Client Sample ID	Nitro-Benzene-D5 (23-120%)*	2-Fluoro-Biphenyl (30-115%)*	Terphenyl-D14 (18-137%)*	Phenol-D5 (24-113%)*	2-Fluoro-Phenol (25-121%)*	2,4,6-Tribromo-Phenol (19-122%)*
EBB15005SD/89588	83	81	76	71	72	65
Method Blank	88	88	91	72	64	48

*Values in parenthesis represent QC limits.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SD
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

DUPLICATE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Soil

Client Sample ID: EMBB18001SF/82945
Lab Sample ID: K1136

Parameter	Control Limit	Original Sample	Duplicate	RPD
antimony	6.0	4	3 U	200.0
arsenic		5.4	5.2	4.2
beryllium		0.2	0.2	
cadmium	0.5	0.5 U	0.5 U	
chromium		8	9	11.8
copper	2.5	3	5	50.0
iron		9,610	11,600	18.8
lead		4.9	17.8	113.9 *
mercury		0.4	0.4	
nickel	4.0	5	6	18.2
selenium		0.2 U	0.2 U	
silver		0.5 U	0.5 U	
thallium	1.0	0.3	0.2 U	200.0
zinc		25.9	30.0	14.7

Date of Digestion: 05/18/92
Date of Analysis: 05/26/92 (ICP), 05/18/92 through 05/21/92 (GFAA), 05/18/92 (CVAA)
% Solids: 100.0

RPD = Relative percent difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
* - Duplicate analysis not within control limits.

Sanford, Cohen and Associates
May 29, 1992

TABLE CQ2-SB
QUALITY CONTROL SAMPELS
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51263

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB0501

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/01/92

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: VB0501

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/01/92

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SB
QUALITY CONTROL SAMPEES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: WB0427

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	cis-1,3-dichloropropene	5	U
bromomethane	10	U	trichloroethene	5	U
vinyl chloride	10	U	dibromochloromethane	5	U
chloroethane	10	U	1,1,2-trichloroethane	5	U
methylene chloride	2	J	benzene	5	U
acetone	10	U	trans-1,3-dichloropropene	5	U
carbon disulfide	5	U	bromoform	5	U
1,1-dichloroethene	5	U	4-methyl-2-pentanone	10	U
1,1-dichloroethane	5	U	2-hexanone	10	U
1,2-dichloroethene (total)	5	U	tetrachloroethene	5	U
chloroform	5	U	1,1,2,2-tetrachloroethane	5	U
1,2-dichloroethane	5	U	toluene	5	U
2-butanone	10	U	chlorobenzene	5	U
1,1,1-trichloroethane	5	U	ethylbenzene	5	U
carbon tetrachloride	5	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
1,2-dichloropropane	5	U	1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/27/92
This method blank applies to the following samples: EBB017001SE, EBB180001SE and EMBB18001SE.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

VOLATILE ORGANIC ANALYSIS

Results in µg/kg (ppb)

Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: WB0519

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	cis-1,3-dichloropropene	5	U
bromomethane	10	U	trichloroethene	5	U
vinyl chloride	10	U	dibromochloromethane	5	U
chloroethane	10	U	1,1,2-trichloroethane	5	U
methylene chloride	2	J	benzene	5	U
acetone	10	U	trans-1,3-dichloropropene	5	U
carbon disulfide	10	U	bromoform	5	U
1,1-dichloroethene	5	U	4-methyl-2-pentanone	10	U
1,1-dichloroethane	5	U	2-hexanone	10	U
1,2-dichloroethene (total)	5	U	tetrachloroethene	5	U
chloroform	5	U	1,1,2,2-tetrachloroethane	5	U
1,2-dichloroethane	5	U	toluene	5	U
2-butanone	10	U	chlorobenzene	5	U
1,1,1-trichloroethane	5	U	ethylbenzene	5	U
carbon tetrachloride	5	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
1,2-dichloropropane	5	U	1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/19/92

This method blank applies to the following samples: EMBB18001SE MSD and EMBB18001SE MS.

Sanford, Cohen and Associates
June 1, 1992

TABLE CQ2-SB
QUALITY CONTROL SAMPLES
CHEMICLA ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

Analysis Sheet 1 of 2

SEMIVOLATILE ORGANIC ANALYSIS
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: H0447

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: H0447

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/29/92
Date of Analysis: 05/05/92

SEMIVOLATILE ORGANIC ANALYSIS
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: H0419

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank 1
Lab Sample ID: H0419

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	330	U
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	330	U
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 04/27/92
Date of Analysis: 05/01/92

This method blank applies to the following samples: EBB017001SD, EBB180001SD and EMBB18001SD.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

Analysis Sheet 1 of 2

SEMIVOLATILE ORGANIC ANALYSIS
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: BL0595

Compound	Concentration		Compound	Concentration	
phenol	330	U	bis(2-chloroethoxy)methane	330	U
bis(2-chloroethyl)ether	330	U	2,4-dichlorophenol	330	U
2-chlorophenol	330	U	1,2,4-trichlorobenzene	330	U
1,3-dichlorobenzene	330	U	naphthalene	330	U
1,4-dichlorobenzene	330	U	4-chloroaniline	330	U
benzyl alcohol	330	U	hexachlorobutadiene	330	U
1,2-dichlorobenzene	330	U	4-chloro-3-methylphenol	330	U
2-methylphenol	330	U	2-methylnaphthalene	330	U
bis(2-chloroisopropyl)ether	330	U	hexachlorocyclopentadiene	330	U
4-methylphenol	330	U	2,4,6-trichlorophenol	330	U
n-nitroso-di-n-propylamine	330	U	2,4,5-trichlorophenol	1,600	U
hexachloroethane	330	U	2-chloronaphthalene	330	U
nitrobenzene	330	U	2-nitroaniline	1,600	U
isophorone	330	U	dimethyl phthalate	330	U
2-nitrophenol	330	U	acenaphthylene	330	U
2,4-dimethylphenol	330	U	2,6-dinitrotoluene	330	U
benzoic acid	1,600	U			

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 05/19/92
Date of Analysis: 06/10/92

SEMIVOLATILE ORGANIC ANALYSIS (continued)
Results in µg/kg (ppb)
Sample Matrix: Soil

Client Sample ID: Method Blank 2
Lab Sample ID: BL0595

Compound	Concentration		Compound	Concentration	
3-nitroaniline	1,600	U	anthracene	330	U
acenaphthene	330	U	di-n-butylphthalate	330	U
2,4-dinitrophenol	1,600	U	fluoranthene	330	U
4-nitrophenol	1,600	U	pyrene	330	U
dibenzofuran	330	U	butylbenzylphthalate	60	J
2,4-dinitrotoluene	330	U	3,3'-dichlorobenzidine	660	U
diethylphthalate	330	U	benzo(a)anthracene	330	U
4-chlorophenyl-phenylether	330	U	chrysene	330	U
fluorene	330	U	bis(2-ethylhexyl)phthalate	41	J
4-nitroaniline	1,600	U	di-n-octylphthalate	330	U
4,6-dinitro-2-methylphenol	1,600	U	benzo(b)fluoranthene	330	U
n-nitrosodiphenylamine[1]	330	U	benzo(k)fluoranthene	330	U
4-bromophenyl-phenylether	330	U	benzo(a)pyrene	330	U
hexachlorobenzene	330	U	indeno(1,2,3-cd)pyrene	330	U
pentachlorophenol	1,600	U	dibenzo(a,h)anthracene	330	U
phenanthrene	330	U	benzo(g,h,i)perylene	330	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
1 - Detected as diphenylamine.

Date of Extraction: 05/19/92
Date of Analysis: 06/10/92

This method blank applies to the following samples: EMBB18001SD MS, EMBB18001SD MSD

METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSI0094/PBSI0096/PBSC5098

Analyte	Result	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	1	U
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
thallium	0.2	U
zinc	1.2	

Date of Digestion: 05/22/92
Date of Analysis: 05/26/92 (ICP), 05/18/92 (CVAA), 05/26 - 05/28/92 (GFAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-SB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Job Number: SON 51247

Client Project ID: Sanford, Cohen and Associates

METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSE4968/PBSE4970/PBSC5082

Analyte	Result
antimony	3 U
arsenic	0.2 U
beryllium	0.1
cadmium	0.5 U
chromium	1 U
copper	1 U
iron	2
lead	0.2 U
mercury	0.1 U
nickel	2 U
selenium	0.2 U
silver	0.5 U
thallium	0.2 U
zinc	0.5 U

Date of Digestion: 05/01/92
Date of Analysis: 05/06/92 (ICP), 05/04/92 through 05/06/92 (GFAA), 05/05/92 (CVAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

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METALS ANALYSIS

Results in mg/kg (ppm)

Sample Matrix: Soil

Client Sample ID: Method Blank
Lab Sample ID: PBSI0055/PBSI0053/PBSC5059

Analyte	Result	
antimony	3	U
arsenic	0.2	U
beryllium	0.1	U
cadmium	0.5	U
chromium	1	U
copper	1	U
lead	0.2	U
mercury	0.1	U
nickel	2	U
selenium	0.2	U
silver	0.5	U
zinc	1.9	

Date of Digestion: 05/18/92
Date of Analysis: 05/26/92 (ICP), 05/18/92 through 05/21/92 (GFAA), 05/18/92 (CVAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

This method blank applies to the spike and duplicate analysis.

Sanford, Cohen and Associates
April 8, 1992

TABLE CQ1-WS
QUALIIY CONTROL SAMPLE
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in µg/liter (ppb)

Client Sample ID: ESM07001GH/170701/170702/170703
Lab Sample ID: SS7611 MS/SS7612 MSD

Compound	Sample Conc.	Conc. Spike Added	MS Conc.	MS % Rec.
1,1-dichloroethene	50.0	10 U	45.7	91
trichloroethene	50.0	13.0	63.8	102
benzene	50.0	10 U	51.7	103
toluene	50.0	10 U	49.9	100
chlorobenzene	50.0	10 U	51.5	103

Compound	MSD Conc.	Conc. Spike Added	MSD % Rec.	% RPD
1,1-dichloroethene	50.0	49.1	98	-7
trichloroethene	50.0	68.4	111	-8
benzene	50.0	54.8	110	-7
toluene	50.0	52.6	105	-5
chlorobenzene	50.0	54.8	110	-7

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/18/92

WATER SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in μg/liter (ppb)

Client Sample ID: ESM07001GG/170705/170725
Lab Sample ID: SS7620 MS/SS7621 MSD

	Conc. Spike Added	Sample Conc.	MS Conc.	MS % Rec.
acenaphthene	200	10 U	202	101
pyrene	200	10 U	191	96

	Conc. Spike Added	MSD Conc.	MSD %Rec.	%RPD
acenaphthene	200	205	102	-1
pyrene	200	196	98	-2

RPD = Relative Percent Difference

Date of Extraction: 03/17/92
Date of Analysis: 03/26/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Sanford, Cohen and Associates
April 8, 1992

TABLE CQ1-WR
QUALITY CONTROL SAMPLE
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
EBG01002WH/196714	97	94	96
ESM05001GH/196701	102	99	102
ESM07001GH/170701	101	99	99
ESM07001GHMS/170702	92	90	91
ESM07001GHMSD/170703	92	92	92
Method Blank	99	99	99

*Values in parenthesis represent USEPA contract required QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
Travel Blank	100	97	96
Method Blank	101	98	101

*Values in parenthesis represent QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

VOLATILE

Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
Travel Blank	103	100	91
Method Blank	96	97	92

*Values in parenthesis represent QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
ESM08001WH/171801	98	97	100
Travel Blank	98	100	102
Method Blank	96	98	99

*Values in parenthesis represent QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
Travel Blank	97	98	91
Method Blank	96	97	92

*Values in parenthesis represent contract required QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
ESM05003WH/197885	108	109	97
Travel Blank	104	106	89
Method Blank	103	104	98

*Values in parenthesis represent QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

Client Sample ID	Lab Sample ID	1-Fluoronaphthalene
Method Blank	H0107 B-1	56
ESM08001WF/171805	SS8087	45

*No QC limits have been established at this time.

WATER SURROGATE PERCENT RECOVERY SUMMARY

Client Sample ID	Lab Sample ID	1-Fluoronaphthalene
Method Blank	H0107 B-1	56
EBB03001WF/146743	SS7891	52
EBB04001WF/196731	SS7892	52

*No QC limits have been established at this time.

Sanford, Cohen and Associates
April 8, 1992

TABLE CQ1-WD
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Analysis Sheet 1 of 2

Job Number: SON 50938

DUPLICATE ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID: EBG01002WG/196726
Lab Sample ID: SS7615

Parameter	Control Limit	Original Sample		Duplicate		RPD
aluminum		0.040	U	0.040	U	
antimony		0.030	U	0.030	U	
arsenic		0.002	U	0.002	U	
barium		0.038		0.038		
beryllium		0.001	U	0.001	U	
cadmium	5.0	0.005	U	0.005	U	
calcium	5,000.0	13.6		13.3		2.2
chromium	10.0	0.010	U	0.010	U	
cobalt		0.020	U	0.020	U	
copper		0.010	U	0.010	U	
iron		0.051		0.034		40.0
lead		0.002	U	0.002	U	

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Digestion Date: 03/25/92
Analysis Date: 03/30/92 (ICP), 03/26/92 (CVAA), 03/26/92 through 03/29/92 (GFAA)

RPD - Relative percent difference

DUPLICATE ANALYSIS
(continued)

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID: EBG01002WG/196726
Lab Sample ID: SS7615

Parameter	Control Limit	Original Sample		Duplicate		RPD
magnesium		4.47		4.42		1.1
manganese		0.008		0.007		13.3
mercury	0.2	0.0002	U	0.0002	U	
nickel		0.020	U	0.020	U	
potassium		1.27		1.19		6.5
selenium		0.002	U	0.002	U	
silver		0.005	U	0.005	U	
sodium	5,000.0	9.74		9.64		1.0
thallium		0.002	U	0.002	U	
vanadium		0.010	U	0.010	U	
zinc	20.0	0.020		0.018	B	10.5

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.

Digestion Date: 03/25/92
Analysis Date: 03/30/92 (ICP), 03/26/92 (CVAA), 03/26/92 through 03/29/92 (GFAA)

RPD - Relative percent difference

DUPLICATE ANALYSIS

Results in mg/kg (ppm) dry weight

Sample Matrix: Water

Client Sample ID: EBG03059SF
Lab Sample ID: SS7713

Parameter	Original Sample	Duplicate	RPD
antimony	3 U	3 U	NC
beryllium	0.6	0.6	0
cadmium	5.0	5.7	13.1
chromium	62	56	10.2
copper	40	38	5.1
nickel	70	70	0
silver	1.6	1.4	13.3
zinc	85.5	90.8	6.0
arsenic	4.8	5.1	6.1
lead	5.3	6.4	18.8
selenium	0.6	0.9	40.0
thallium	0.4	0.5	22.2
mercury	0.1 U	0.1 U	NC

Date of Analysis:

RPD = Relative percent difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Value greater than instrument detection limit, but less than contract required quantitation limit.
B - Analyte was found in the blank as well as the sample.
NC - Not calculable

Sanford, Cohen and Associates
April 8, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: VB03188

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/18/92
Dilution Factor: 1.00

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank 1
Lab Sample ID: VB03252

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	2	J	1,1,2-trichloroethane	5	U
acetone	100	U	benzene	5	U
carbon disulfide	1	J	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	50	U
1,2-dichloroethene (total)	5	U	2-hexanone	50	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	100	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/25/92
Dilution Factor: 1.00

This method blank applies to sample BBI0692.

Sanford, Cohen and Associates
April 10, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

VOLATILE ORGANIC TARGET COMPOUND LIST

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank 2
Lab Sample ID: VB03262

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	5	J	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	50	U
1,2-dichloroethene (total)	5	U	2-hexanone	50	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	100	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/26/92
Dilution Factor: 1.00
This method blank applies to the following samples: BBI0421, EBB03001WH, EBB04001WH.

Sanford, Cohen and Associates
April 16, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

VOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: VB03194

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/19/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50985

VOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: VB03262

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	5	J	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/26/92

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51018

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: VB0327

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Job Number: SON 50998

Client Project ID: Sanford, Cohen and Associates

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: VB0327

Compound	Concentration	Compound	Concentration
chloromethane	10 U	1,2-dichloropropane	5 U
bromomethane	10 U	cis-1,3-dichloropropene	5 U
vinyl chloride	10 U	trichloroethene	5 U
chloroethane	10 U	dibromochloromethane	5 U
methylene chloride	5 U	1,1,2-trichloroethane	5 U
acetone	10 U	benzene	5 U
carbon disulfide	5 U	trans-1,3-dichloropropene	5 U
1,1-dichloroethene	5 U	bromoform	5 U
1,1-dichloroethane	5 U	4-methyl-2-pentanone	10 U
1,2-dichloroethene (total)	5 U	2-hexanone	10 U
chloroform	5 U	tetrachloroethene	5 U
1,2-dichloroethane	5 U	1,1,2,2-tetrachloroethane	5 U
2-butanone	10 U	toluene	5 U
1,1,1-trichloroethane	5 U	chlorobenzene	5 U
carbon tetrachloride	5 U	ethylbenzene	5 U
vinyl acetate	10 U	styrene	5 U
bromodichloromethane	5 U	xylenes (total)	5 U
		1,1,2-trichlorotrifluoroethane	5 U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92

Sanford, Cohen and Associates
April 8, 1992

TABLE CQ1-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50938

SEMIVOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: H0060

Compound	Concentration	
naphthalene	10	U
acenaphthylene	10	U
acenaphthene	10	U
fluorene	10	U
phenanthrene	10	U
anthracene	10	U
fluoranthene	10	U
pyrene	10	U
benzo(a)anthracene	10	U
chrysene	10	U
benzo(b)fluoranthene	10	U
benzo(k)fluoranthene	10	U
benzo(a)pyrene	10	U
indeno(1,2,3-cd)pyrene	10	U
dibenz(a,h)anthracene	10	U
benzo(g,h,i)perylene	10	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/17/92
Date of Analysis: 03/26/92
Dilution Factor: 1.0

METALS ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID:	Method Blank	
Lab Sample ID:	PBWC5052/PBWE4658/PBWE4660	
antimony	0.03	U
arsenic	0.002	U
beryllium	0.001	U
cadmium	0.005	U
chromium	0.01	U
copper	0.02	
lead	0.002	U
mercury	0.001	U
nickel	0.02	U
selenium	0.002	U
silver	0.005	U
thallium	0.002	U
zinc	0.005	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Digestion Date: 03/25/92
Analysis Date: 03/30/92 (ICP), 03/26/92 (CVAA), 03/26/92 through 03/29/92 (GFAA)

Sanford, Cohen and Associates
April 10, 1992

TABLE CQ-1WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50975

METALS ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID:	Method Blank	
Lab Sample ID:	PBWE4658/PBWE4660/PBWC5052	
antimony	0.03	U
arsenic	0.002	U
beryllium	0.001	U
cadmium	0.005	U
chromium	0.01	U
copper	0.02	
lead	0.002	U
mercury	0.001	U
nickel	0.02	U
selenium	0.002	U
silver	0.005	U
thallium	0.002	U
zinc	0.005	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Digestion Date: 03/25/92
Analysis Date: 03/26/92 (CVAA), 03/30/92 (ICP), 03/26/92 through 03/29/92 (GFAA)

PRIORITY POLLUTANT METALS ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID:	Method Blank	
Lab Sample ID:	PBWC5054/PBWE4691/PBWE4694	
antimony	0.03	U
arsenic	0.002	U
beryllium	0.001	U
cadmium	0.005	U
chromium	0.01	U
copper	0.02	
lead	0.002	U
mercury	0.001	U
nickel	0.02	U
selenium	0.002	U
silver	0.005	U
thallium	0.002	U
zinc	0.011	

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Digestion Date: 03/26/92
Analysis Date: 03/30/92 (ICP, CVAA), 03/29/92 through 04/01/92 (GFAA)

Sanford, Cohen and Associates
April 16, 1992

TABLE CQ1-TB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50952

VOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: SS7708

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	8	J	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/19/92
Dilution Factor: 1.00

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: SS8085

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/26/92
Dilution Factor: 1.00

VOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: SS8330

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	5	J	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ1-TB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51018

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: SS8486

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 03/27/92
Dilution Factor: 1.00

Sanford, Cohen and Associates
June 1, 1992

TABLE CQ2-WS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

WATER VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Results in μg/liter (ppb)

Client Sample ID: EBB16001BWH/197319
Lab Sample ID: K1229

Compound	Conc. Spike Added	Sample Conc.	MS Conc.	MS % Rec.
1,1-dichloroethene	50.0	5.0 U	57.0	114
trichloroethene	50.0	5.0 U	46.4	93
benzene	50.0	5.0 U	43.8	88
toluene	50.0	5.0 U	47.2	94
chlorobenzene	50.0	5.0 U	49.7	99

Compound	Conc. Spike Added	MSD Conc.	MSD % Rec.	% RPD
1,1-dichloroethene	50.0	56.0	112	2
trichloroethene	50.0	46.1	92	1
benzene	50.0	42.3	85	3
toluene	50.0	44.9	90	4
chlorobenzene	50.0	48.9	98	1

RPD = Relative Percent Difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/30/92

MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBB16001BWF/197328
Lab Sample ID: K1239-41

Compound	Conc. Spike Added	Sample Result		Conc. MS	% Rec.	Conc. MSD	% Rec.	RPD
naphthalene	100	0.16	U	73	73	68	68	7.1
acenaphthylene	100	0.16	U	79	79	59	59	29
acenaphthene	100	0.16	U	77	77	68	68	12
fluorene	100	0.0080	U	81	81	72	72	11
phenanthrene	100	0.0080	U	81	81	72	72	11
anthracene	100	0.0080	U	490	490	440	440	11
fluoranthene	100	0.33		84	84	73	73	14
pyrene	100	0.0080	U	77	77	73	73	5.3
benzo(a)anthracene	100	0.0080	U	97	97	91	91	6.4
chrysene	100	0.0080	U	77	77	73	73	5.3
benzo(b)fluoranthene	100	0.0080	U	82	82	78	78	5.0
benzo(k)fluoranthene	100	0.080	U	76	76	74	74	2.7
benzo(a)pyrene	100	0.0080	U	104	104	100	100	3.9
dibenzo(a,h)anthracene	100	0.0080	U	83	83	79	79	4.9
benzo(g,h,i)perylene	100	0.0080	U	86	86	80	80	7.2
indeno(1,2,3-c,d)pyrene	100	0.0080	U	85	85	79	79	7.3

RPD = Relative Percent Difference

Date of Extraction: 04/29/92
Date of Analysis: 05/21/92

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

MATRIX SPIKE RECOVERY
Results in mg/liter (ppm)
Sample Matrix: Water

Client Sample ID: EBB16001BWG/197342
Lab Sample ID: K1237

	Control Limit % R	Spiked Sample Result	Sample Result		Spike Added	% Recovery
antimony	75-125	0.47	0.03	U	0.50	94.0
arsenic	75-125	0.035	0.002	U	0.040	87.5
beryllium	75-125	0.051	0.001	U	0.050	102.0
cadmium	75-125	0.033	0.005	U	0.050	66.0
chromium	75-125	0.19	0.01	U	0.20	95.0
copper	75-125	0.23	0.01	U	0.25	92.0
lead	75-125	0.012	0.002	U	0.020	60.0
mercury	75-125	0.009	0.001	U	0.010	90.0
nickel	75-125	0.45	0.02	U	0.50	90.0
selenium	75-125	0.009	0.002	U	0.010	90.0
silver	75-125	0.044	0.005	U	0.050	88.0
thallium	75-125	0.055	0.002	U	0.050	110.0
zinc	75-125	0.45	0.014		0.50	87.2

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date of Digestion: 05/04/92
Date of Analysis: 05/06/92 (ICP), 05/04 - 05/06/92 (GFAA), 05/05/92 (CVAA)

Sanford, Cohen and Associates
June 1, 1992

TABLE CQ2-WS
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Analysis Sheet 2 of 2

Job Number: SON 51257

POST DIGESTION SPIKE SAMPLE RECOVERY

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: EBB16001BWG/197342
Lab Sample ID: K1237

	Control Limit % R	Spiked Sample Result	Sample Result		Spike Added	% Recovery
cadmium		0.031	0.005	U	0.050	62.0
lead		0.010	0.002	U	0.020	50.0

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Date of Digestion: 05/04/92
Date of Analysis: 05/06/92 (ICP), 05/04 - 05/06/92 (GFAA), 05/05/92 (CVAA)

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
EBB16001BWH/197319	106	105	95
EBB16001BWH MS/197323	108	107	93
EBB16001BWH MSD/197324	101	104	91
Travel Blank	101	103	91
Method Blank	103	104	98

*Values in parenthesis represent QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

	VOLATILE		
Client Sample ID	Toluene-D8 (88-110%)*	BFB (86-115%)*	1,2 Dichloroethane-D4 (76-114%)*
Travel Blank	100	96	87
Method Blank	98	96	90

*Values in parenthesis represent QC limits.

WATER SURROGATE PERCENT RECOVERY SUMMARY

		POLYNUCLEAR AROMATIC HYDROCARBONS ANALYSIS
Client Sample ID	Lab Sample ID:	1-Fluoronaphthalene (50-150%)*
Method Blank	H0448	91
EBB16001BWF/197327	K1239	86
EBB16001BWF/197328	K1240 MS	95
EBB16001BWF/197328	K1241 MSD	88

*Values in parentheses represent QC limits.

Sanford, Cohen and Associates
June 1, 1992

TABLE CQ2-WD
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

Analysis Sheet 1 of 2

DUPLICATE ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID: EBB16001BWG/197342
Lab Sample ID: K1238

Parameter	Control Limit	Original Sample		Duplicate		RPD
antimony		0.03	U	0.03	U	
arsenic		0.002	U	0.002	U	
beryllium		0.001	U	0.001	U	
cadmium		0.005	U	0.005	U	
chromium		0.01	U	0.01	U	
copper		0.01	U	0.01	U	
lead		0.002	U	0.002	U	
mercury	0.2	0.001	U	0.001	U	

Date of Digestion: 05/04/92
Date of Analysis: 05/06/92 (ICP), 05/04 - 05/06/92 (GFAA), 05/05/92 (CVAA)

RPD = Relative percent difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

DUPLICATE ANALYSIS (continued)

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID: EBB16001BWG/197342
Lab Sample ID: K1238

Parameter	Control Limit	Original Sample		Duplicate		RPD
nickel		0.02	U	0.02	U	
selenium		0.002	U	0.002	U	
silver		0.005	U	0.005	U	
thallium		0.002	U	0.002	U	
zinc		0.014		0.013		7.4

Date of Digestion: 05/04/92
Date of Analysis: 05/06/92 (ICP), 05/04 - 05/06/92 (GFAA), 05/05/92 (CVAA)

RPD = Relative percent difference

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

Sanford, Cohen and Associates
May 29, 1992

TABLE CQ2-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51263

VOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: EB0430

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	1	J
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/30/92

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: EB0430

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	1	J	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/30/92

Sanford, Cohen and Associates
June 23, 1992

TABLE CQ2-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51247

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: EB0506

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	cis-1,3-dichloropropene	5	U
bromomethane	10	U	trichloroethene	5	U
vinyl chloride	10	U	dibromochloromethane	5	U
chloroethane	10	U	1,1,2-trichloroethane	5	U
methylene chloride	1	J	benzene	5	U
acetone	10	U	trans-1,3-dichloropropene	5	U
carbon disulfide	5	U	bromoform	5	U
1,1-dichloroethene	5	U	4-methyl-2-pentanone	10	U
1,1-dichloroethane	5	U	2-hexanone	10	U
1,2-dichloroethene (total)	5	U	tetrachloroethene	5	U
chloroform	5	U	1,1,2,2-tetrachloroethane	5	U
1,2-dichloroethane	5	U	toluene	5	U
2-butanone	10	U	chlorobenzene	5	U
1,1,1-trichloroethane	5	U	ethylbenzene	5	U
carbon tetrachloride	5	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
1,2-dichloropropane	5	U	1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/06/92

Sanford, Cohen and Associates
April 21, 1992

TABLE CQ2-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 50985

POLYNUCLEAR AROMATIC HYDROCARBONS ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: H0107

Compound	Concentration	
naphthalene	0.016	U
acenaphthylene	0.0080	U
acenaphthene	0.016	U
fluorene	0.0080	U
phenanthrene	0.0080	U
anthracene	0.0080	U
fluoranthene	0.0080	U
pyrene	0.0080	U
benzo(a)anthracene	0.0080	U
chrysene	0.0080	U
benzo(b)fluoranthene	0.0080	U
benzo(k)fluoranthene	0.0080	U
benzo(a)pyrene	0.0080	U
dibenzo(a,h)anthracene	0.016	U
benzo(g,h,i)perylene	0.016	U
indeno(1,2,3-c,d)pyrene	0.0080	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Extraction: 03/23/92
Date of Analysis: 03/31/92

TABLE CQ2-WB
QUALITY CONTROL SAMPLES
CHEMICAL ANALYSES

IT ANALYTICAL SERVICES
5815 MIDDLEBROOK PIKE
KNOXVILLE, TN

Client Project ID: Sanford, Cohen and Associates

Job Number: SON 51257

METALS ANALYSIS

Results in mg/liter (ppm)

Sample Matrix: Water

Client Sample ID: Method Blank
Lab Sample ID: PBWE4976/PBWE4979/PBWC5084

Analyte	Result	
antimony	0.03	U
arsenic	0.002	U
beryllium	0.001	U
cadmium	0.005	U
chromium	0.01	U
copper	0.01	U
lead	0.002	U
mercury	0.001	U
nickel	0.02	U
selenium	0.002	U
silver	0.005	U
thallium	0.002	U
zinc	0.005	U

Date of Digestion: 05/04/92
Date of Analysis: 05/06/92 (ICP), 05/04 - 05/06/92 (GFAA), 05/05/92 (CVAA)

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: K1267

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	2	BJ	1,1,2-trichloroethane	5	U
acetone	10	U	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	3	J
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	6	
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.
B - Analyte was found in the blank as well as the sample.

Date of Analysis: 04/30/92
Dilution Factor: 1.00

VOLATILE ORGANIC ANALYSIS

Results in μg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: K1233

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	1,2-dichloropropane	5	U
bromomethane	10	U	cis-1,3-dichloropropene	5	U
vinyl chloride	10	U	trichloroethene	5	U
chloroethane	10	U	dibromochloromethane	5	U
methylene chloride	5	U	1,1,2-trichloroethane	5	U
acetone	7	J	benzene	5	U
carbon disulfide	5	U	trans-1,3-dichloropropene	5	U
1,1-dichloroethene	5	U	bromoform	5	U
1,1-dichloroethane	5	U	4-methyl-2-pentanone	10	U
1,2-dichloroethene (total)	5	U	2-hexanone	10	U
chloroform	5	U	tetrachloroethene	5	U
1,2-dichloroethane	5	U	1,1,2,2-tetrachloroethane	5	U
2-butanone	10	U	toluene	5	U
1,1,1-trichloroethane	5	U	chlorobenzene	5	U
carbon tetrachloride	5	U	ethylbenzene	5	U
vinyl acetate	10	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
			1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 04/30/92
Dilution Factor: 1.00

VOLATILE ORGANIC ANALYSIS

Results in µg/liter (ppb)

Sample Matrix: Water

Client Sample ID: Travel Blank
Lab Sample ID: K1127

Compound	Concentration		Compound	Concentration	
chloromethane	10	U	cis-1,3-dichloropropene	5	U
bromomethane	10	U	trichloroethene	5	U
vinyl chloride	10	U	dibromochloromethane	5	U
chloroethane	10	U	1,1,2-trichloroethane	5	U
methylene chloride	5	U	benzene	5	U
acetone	10	U	trans-1,3-dichloropropene	5	U
carbon disulfide	5	U	bromoform	5	U
1,1-dichloroethene	5	U	4-methyl-2-pentanone	10	U
1,1-dichloroethane	5	U	2-hexanone	10	U
1,2-dichloroethene (total)	5	U	tetrachloroethene	5	U
chloroform	5	U	1,1,2,2-tetrachloroethane	5	U
1,2-dichloroethane	5	U	toluene	5	U
2-butanone	10	U	chlorobenzene	5	U
1,1,1-trichloroethane	5	U	ethylbenzene	5	U
carbon tetrachloride	5	U	styrene	5	U
bromodichloromethane	5	U	xylenes (total)	5	U
1,2-dichloropropane	5	U	1,1,2-trichlorotrifluoroethane	5	U

U - Compound was analyzed for but not detected. The number is the detection limit for the sample.
J - Indicates an estimated value less than the detection limit.

Date of Analysis: 05/06/92
Dilution Factor: 1.00

APPENDIX E

Cs-137 In California Soil

Cs-137 and H-3 in Soil
in California since 1987

Sample ID	Location	Collection Date	Cs-137 (pCi/g)	Cs-137 2 σ Error	H-3 (pCi/g)	H-3 2 σ Error
NST 87.04870	CA:FARALLON ISLAND	6/16/87	0.06	0.02	NA	
NST 87.04871	CA:FARALLON ISLAND	6/16/87	0.04	0.02	NA	
NST 87.04872	CA:FARALLON ISLAND	6/16/87	0.04	0.01	NA	
NST 87.04873	CA:FARALLON ISLAND	6/16/87	0.03	0.02	NA	
NST 87.04874	CA:FARALLON ISLAND	6/16/87	0.05	0.01	NA	
NST 87.04875A	CA:SOUTHHAMPTON SHOA	6/22/87	0.19	0.04	NA	
NST 87.04875B	CA:SOUTHHAMPTON SHOA	6/22/87	0.18	0.06	NA	
NST 87.04876A	CA:SOUTHHAMPTON SHOA	6/22/87	0.24	0.05	NA	
NST 87.04876B	CA:SOUTHHAMPTON SHOA	6/22/87	0.19	0.02	NA	
NST 87.04877A	CA:SOUTHHAMPTON SHOA	6/22/87	0.12	0.05	NA	
NST 87.04877B	CA:SOUTHHAMPTON SHOA	6/22/87	0.18	0.06	NA	
NST 87.04877C	CA:SOUTHHAMPTON SHOA	6/22/87	0.13	0.04	NA	
NST 87.04878A	CA:HUNTERS POINT	6/29/87	0.16	0.03	NA	
NST 87.04878B	CA:HUNTERS POINT	6/29/87	0.25	0.03	NA	
NST 87.04879A	CA:HUNTERS POINT	6/29/87	0.23	0.14	NA	
NST 87.04879B	CA:HUNTERS POINT	6/29/87	0.22	0.07	NA	
NST 87.04879C	CA:HUNTERS POINT	6/29/87	0.25	0.09	NA	
NST 87.04880A	CA:HUNTERS POINT	6/29/87	0.12	0.03	NA	
NST 87.04880B	CA:HUNTERS POINT	6/29/87	0.18	0.05	NA	
NST 87.04880C	CA:HUNTERS POINT	6/29/87	0.21	0.09	NA	
NST 90.06915	CA:SAN FRANCISCO BAY	5/29/90	0.16	0.07	NA	
NST 90.06916	CA:SAN FRANCISCO BAY	5/29/90	0.05	0.02	NA	
NST 90.06917	CA:SAN FRANCISCO BAY	5/29/90	0.05	0.03	NA	
NST 90.06921	CA:SAN FRANCISCO BAY	5/31/90	0.10	0.02	NA	
NST 90.06922	CA:SAN FRANCISCO BAY	5/31/90	0.24	0.07	NA	
NST 90.06923	CA:SAN FRANCISCO BAY	5/31/90	0.18	0.04	NA	

Cs-137 and H-3 in Soil in California since 1987

Sample ID	Location	Collection Date	Cs-137 (pCi/g)	Cs-137 2 σ Error	H-3 (pCi/g)	H-3 2 σ Error
T13C92.05723	CA:SAN FRANCISCO	1/13/92	0.13	0.04	NA	
T13C92.05726	CA:SAN FRANCISCO	1/13/92	0.07	0.05	NA	
T13C92.05732	CA:SAN FRANCISCO	1/13/92	0.03	0.01	NA	
T13C92.05733	CA:SAN FRANCISCO	1/13/92	0.03	0.01	NA	

STATE OF CALIFORNIA—HEALTH AND WELFARE AGENCY

PETE WILSON, *Governor*

DEPARTMENT OF HEALTH SERVICES
714/744 P STREET
P.O. BOX 942732
SACRAMENTO, CA 94234-7320
(916) 445-0498

February 19, 1993

Mary Shoemaker, Director
Environmental Protection Department, T486
Rocketdyne Division
Rockwell International Corporation
6633 Canoga Avenue
Canoga Park, CA 91303

Dear Ms. Shoemaker:

Thank you for providing the Department of Health Services with the opportunity to participate in the **Multi-media Sampling at the Brandeis-Bardin Institute and the Santa Monica Mountain Conservancy**. We have enclosed a copy of the draft report which addresses our participation in the sampling project. We encourage a review of the document and are interested in any comments or questions anyone may have. We would also like to request that the report be placed in the public information repositories maintained for the Santa Susana Field Laboratory.

If you have any questions feel free to contact me at (916) 323-3023, or Gary Butner of my staff at (916) 323-5027.

Sincerely,

Jack McGurk

Jack McGurk
Acting Chief
Environmental Management Branch

Enclosure

cc: SSFL Workgroup Members
Arlene Giliberto, Ph.D.
Ed Ballard
Robert LeChevalier

DRAFT

Department of Health Services Participation in Multi-Media Sampling in the Vicinity of Rocketdyne SSFL

Introduction

The Rockwell International Corporation, Rocketdyne Division, developed a sampling plan to assess off-site contamination of properties adjacent to and north of the Rocketdyne Santa Susana Field Laboratory (SSFL). The Rocketdyne sampling plan included analysis for both chemical contaminants as well as radioactive materials. McLaren/Hart was contracted by Rockwell to perform sampling and prepare the final report.

The Environmental Management Branch of the California Department of Health Services (DHS) participated in the sampling program under the auspices of the Agreement in Principle (AIP) between the U.S. Department of Energy (DOE) and DHS. The AIP specifies that DHS will perform oversight of DOE environmental activities to ensure DOE is taking an environmentally responsible direction. The Energy Technology Engineering Center (ETEC) is a DOE operated facility within the boundary of SSFL. The ETEC facilities are used to test systems and components for use in energy, power conversion, and liquid metal development programs.

The scope of work for DHS in the AIP is confined to oversight of activities involving radioactive materials, so sample analysis was limited to radionuclide measurements. A detailed evaluation of sample site selection and collection methods was not performed by DHS. Participation by DHS in this sampling event was to provide an independent measurement of radioactivity in the environmental samples. Samples were collected when DHS staff was available to participate in each sampling event and therefore DHS samples were not randomly selected.

Sampling Methods

Seven McLaren/Hart samples were split with DHS, one was surface water and six were surface soil samples. All were collected from the Brandeis-Bardin Institute property, which is north of the SSFL. Figure 1 shows the sample locations listed in the McLaren/Hart workplan within the Brandeis-Bardin Institute property. DHS received split samples of the following locations: Campsite Area 2, Sodium (Na) Burn Pit Watershed, Building 59 Watershed, RD-51 Watershed, RMDF Watershed, and Sodium Reactor Experiment (SRE) Watershed. With one exception, Campsite Area 2, all split DHS samples were collected in ravine areas where runoff

from Rockwell facilities was possible. Sampling performed by Rockwell included environmental media such as soil, groundwater, surface water, fruits, and vegetables. As stated previously, DHS participated in the analysis of soil and surface water samples only.

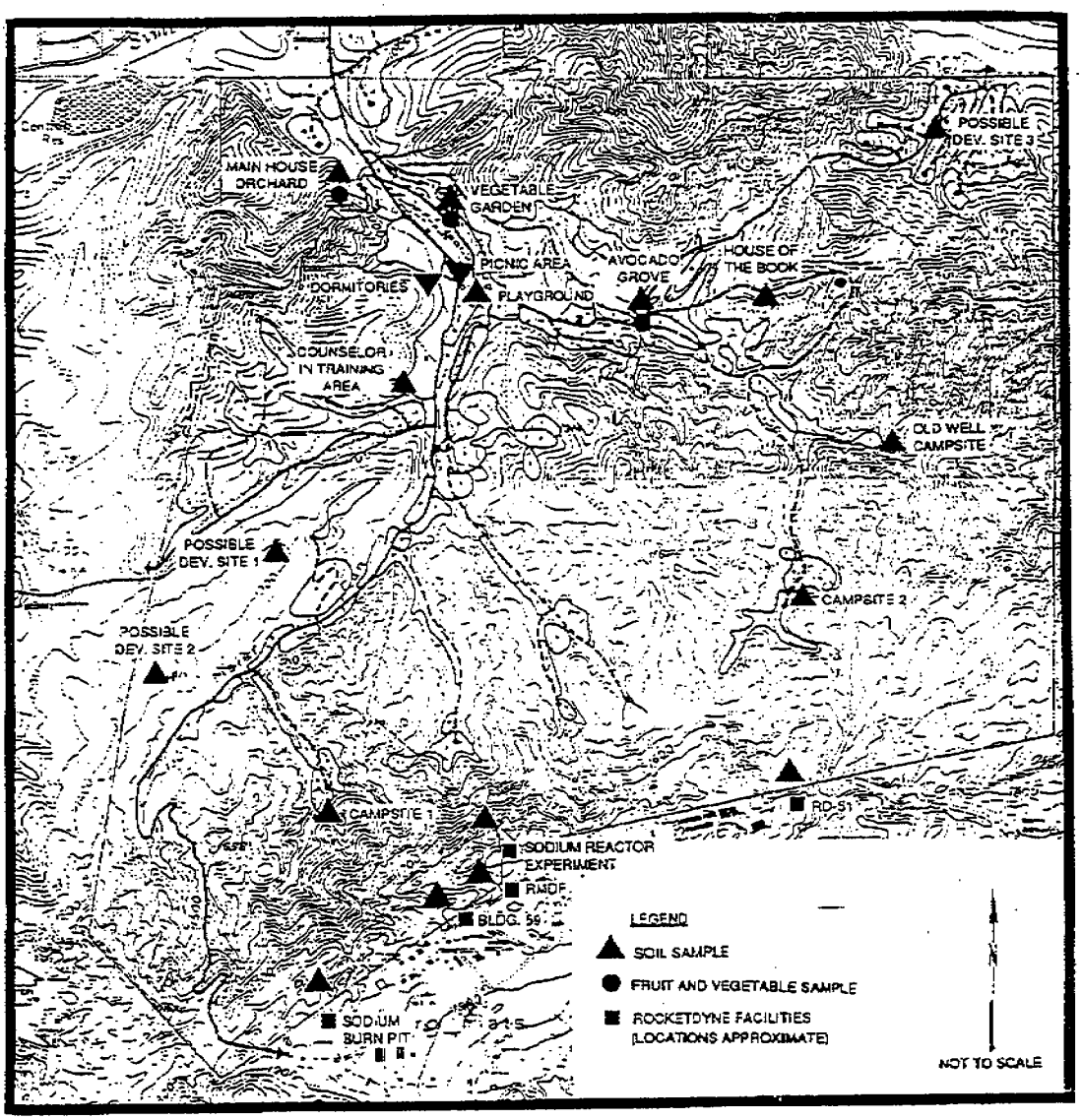

Figure 1. Brandeis-Bardin Institute

Samples analyzed by DHS were collected and prepared by McLaren/Hart under the direct observation of DHS or U. S. Environmental Protection Agency (USEPA) personnel in most cases. The sampling approach followed was presented in the workplan prepared by

Mclaren/Hart[1]. Procedures on sample collection are also detailed in that document.

Soil samples collected were from surface soil to a depth of 6 inches. Samples from ravine areas (Brandeis-Bardin sampling areas 15 through 19) were collected in locations likely to accumulate sediment and debris in the drainages that transport surface runoff. Split samples were prepared for more than one lab by collecting an additional core within the same sampling radius, mixing the soil for one minute with the cores taken by McLaren/Hart, and then dividing the contents. All soil samples (except Campsite Area 2) were found to have leaked a small amount of moisture (rainwater) in the shipping container during shipment. The soils were very moist from rain that occurred prior to collection.

Surface water samples were collected at sampling locations where surface water was present. Individual water samples from a single location were filtered and transferred to a large, clean bucket for mixing prior to partitioning of samples.

Analytical Methods

Sample preparation and analysis methods used are described in the California State Department of Health Services/Sanitation and Radiation Laboratory Manual of Radiological Procedures. Quality control procedures and detection limit calculations are also discussed in this document. Typical detection limits (limits vary with instrument background, count time, sample size, etc) for the radionuclides of concern are provided in Table 1.

Soil Analysis

Soil samples were analyzed for gamma emitting radionuclides and tritium. For gamma spectrometry, the soil samples are dried and sieved. About 200 grams of soil are placed in a canister for counting. Samples are normally counted from 500 to 1000 minutes.

For the tritium analysis, water from soil was extracted using a VirTis model

[1]Workplan for Multi-Media Sampling at the Brandeis-Bardin Institute and the Santa Monica Mountains Conservancy, ChemRisk, Division of McLaren/Hart, February 10, 1992.

Table 1
Sanitation and Radiation Laboratory
Typical Detection Limits

Sample Type	^{137}Cs pCi/l	Gross Alpha pCi/l	Gross Beta pCi/l	^{3}H pCi/l
Water	8.0	0.40	2.50	260

Sample Type	^{40}K pCi/g (dry)	^{232}Th pCi/g (dry)	^{238}U pCi/g (dry)	^{137}Cs pCi/g (dry)	^{3}H pCi/l
Soil	0.18	0.03	0.02	0.09	260

lyophilizer unit. After extraction, the SRL procedure for analysis follows EPA Method 906.0, "Tritium in Drinking Water". Sodium hydroxide pellets and 0.1 gram potassium permanganate were added to approximately 100 milliliters (ml) of extracted water and distilled. The first 10-15 ml fraction was discarded and approximately 50 ml of the distillate was collected. Two - 10 ml aliquots per sample were pipetted into separate scintillation vials and counted in the Packard 2200CA Liquid Scintillation Counter for 100 minutes each. Background and tritium standard samples are routinely counted before and after each run. The average of the duplicate aliquot results was reported.

Water Analysis

The water sample was analyzed for gamma emitting radionuclides using gamma spectrometry, for gross alpha using internal proportional counters, for gross beta using low-background counters, and for tritium using liquid scintillation counters. Procedures for these analyses are provided in the DHS laboratory manual and are based on methods provided in USEPA-680/4-75-001, USEPA 600/4-80-032 and Standard Methods for the Examination of Water and Wastewater[2].

[2]Standard Methods for the Examination of Water and Wastewater, L. S. Clesceri, et. al., 17th Edition, 1989.

Laboratory Results

Seven McLaren/Hart samples were split with DHS, one was surface water and six were soil samples. Table 2 provides a cross-reference between the McLaren/Hart numbering system and site description.

Table 2

Sample Identification Cross Reference

Sample Location	McLaren/Hart Identification	Sample Type	Collection Date	Date Rec'd	Date Analyzed
Brandeis-Bardin Camp Site Area 2	DBB4097SC	Soil	3/16/92	3/23/92	3/28/92
Brandeis-Bardin Sodium Burn Pit Watershed	DBB18003WD	Surface water	4/21/92	4/27/92	4/29/92
Brandeis-Bardin Bldg 59 Watershed	DBB17003SC	Soil	4/21/92	4/27/92	5/01/92
Brandeis-Bardin Sodium Burn Pit Watershed	DBB18001ASC	Soil	4/21/92	4/27/92	4/29/92
Brandeis-Bardin RD-51 Watershed	DBB15001SC	Soil	4/22/92	4/29/92	5/05/92
Brandeis-Bardin RMDF Watershed	DBB16004SC	Soil	4/22/92	4/29/92	5/06/92
Brandeis-Bardin Sodium Reactor E. Watershed	DBB19002SC	Soil	4/22/92	4/29/92	5/08/92

Soil Results

Soil samples were analyzed for tritium (Hydrogen-3) in soil moisture and gamma emitting radionuclides. The results of the analyses are listed in Table 3.

Potassium-40, Thorium-232, and Uranium-238 are all naturally occurring radionuclides that are widely distributed in the environment, and are normally found in soil in the concentrations reported here. These are all primordial radionuclides, meaning that they were present when the earth was formed some 4 billion years ago. Literature reports that Potassium-40 has typically been found in concentrations ranging from 17 picocuries/gram (pCi/g) to 50 pCi/g, which compare to our range of 20 to 24 pCi/g. Typical Thorium-232 concentrations range from 0.1 pCi/g to 1.3 pCi/g, as

compared to our range of 0.6 to 1.5 pCi/g. And typical Uranium-238 concentrations range from 0.4 to 1.3 pCi/g, as compared to our range of 0.3 to 1.0 pCi/g.[3] It should also be noted here that in NCRP No.50, Radionuclides in Man's Environment[4], it states that, " . . significant variations of soil radioactivity with location and depth are common."

Cesium-137 is found today in the surface soil, primarily from deposition of fallout from past atmospheric testing of nuclear weapons. Cesium-137 is still detectable in the environment because of its relatively long half-life of 30 years. Cesium-137 was produced by some of the nuclear projects conducted at ETEC. In a study prepared by Pacific Northwest Laboratories[5], Cesium-137 measurements in locations considered not affected by nuclear facilities (i.e., background locations), concentrations of Cesium-137 ranged from 0.2 pCi/g to 5.0 pCi/g, as compared to our range of 0.03 to 0.60 pCi/g. Our sampling did not include a background location, therefore typical concentrations for this region of California were not available for this report. An assessment of the range of Cesium-137 concentrations in the vicinity of SSFL at background locations will be made by DHS when the McLaren/Hart report becomes available.

Tritium (Hydrogen-3) is a naturally occurring radionuclide that is widely distributed in nature, and is also a possible contaminant from projects conducted at ETEC. After rainfall, tritium concentrations in soil moisture may reflect the tritium concentrations of the rainwater or runoff water. Concentrations in soil moisture from naturally occurring tritium would normally be below the detection limits of laboratory counters (usually less than 300 picocuries/liter (pCi/l)). The range of results found in our analyses was from the detection limit up to 11,000 pCi/l.

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[3]Radioactivity in the Environment Sources, Distribution, and Surveillance, Ronald L. Kathren, Harwood Academic Publishers, 1984.

[4]Environmental Radiation Measurements, National Council on Radiation Protection and Measurements (NCRP), reprinted August 1, 1985.

[5]Transuranium and Other Long-Lived Radionuclides in the Terrestrial Environs of Nuclear Power Plants, Research Project 1059, Battelle, PNL, September, 1981.

Table 3
DHS Soil Analysis Results

Sample Location	^{40}K pCi/g (dry)	^{232}Th pCi/g (dry)	^{238}U pCi/g (dry)	^{137}Cs pCi/g (dry)	^{3}H pCi/l
Brandeis-Bardin Campsite Area 2	13.8 ± 0.3	0.73 ± 0.05	0.43 ± 0.03	0.03 ± 0.01	2470± 200
Brandeis-Bardin Sodium Pit Watershed	21.3 ± 0.7	0.93 ± 0.07	0.67 ± 0.06	0.07 ± 0.02	<260
Brandeis-Bardin Bldg 59 Watershed	21.9 ± 0.6	1.18 ± 0.08	0.92 ± 0.06	0.09 ± 0.02	10,700±300
Brandeis-Bardin RD-51 Watershed	23.6 ± 0.6	0.65 ± 0.06	0.46 ± 0.04	0.04 ± 0.01	316±152
Brandeis-Bardin RMDF Watershed	23.3 ± 0.7	1.48 ± 0.09	0.98 ± 0.06	0.60 ± 0.03	1900±190
Brandeis-Bardin Sodium Reactor E. Watershed	20.8 ± 0.7	0.94 ± 0.08	0.66 ± 0.06	0.28 ± 0.03	444±153

Surface Water Results

The surface water sample was analyzed for tritium, gross alpha and beta, and gamma emitting radionuclides. No radionuclides were detected above the detection limits. See Table 4 for results.

Table 4
DHS Surface Water Analysis Results

Sample Location	^{137}Cs pCi/l	Gross Alpha pCi/l	Gross Beta pCi/l	^{3}H pCi/l
Brandeis-Bardin Na Pit Watershed	<8	<0.40	<2.50	<260

Comparison of Laboratory Results

All McLaren/Hart samples were analyzed by Teledyne Isotopes in laboratories located in Illinois and New Jersey. Some samples were split with DHS and the USEPA. A listing of each laboratory's data is provided in Table 5. Similar methods were used for determining gamma emitting radionuclides, tritium in water and gross alpha and beta by the Teledyne, USEPA and DHS laboratories. Sample preparation varied among the laboratories for analysis of tritium in soil moisture. The use of vacuum distillation for extraction of water from soil was common to Teledyne and DHS. The USEPA used azeotropic distillation for the extraction of water from the soil.

Results were considered comparable if the concentrations reported were within the uncertainty ranges of samples collected at the same location. Of the 16 analyses compared, 14 were within (or very close to) the uncertainty range and therefore are considered comparable. Two DHS analysis results were well outside of this criteria: the tritium soil analysis for Campsite Area 2, and the Cesium-137 soil analysis for the RMDF Watershed. Reasons for discrepancies cannot always be determined. One possible cause is contamination of the sample during collection or transport.

Although the DHS laboratory does not normally perform reanalysis of tritium samples, a second analysis of a split of the original sample (DBB4097SA2) at Campsite Area 2, was conducted three months after receipt. The tritium concentration for this sample was 392 $\pm$ 153 pCi/l, which was lower than the initial analysis of 2470 $\pm$ 200 pCi/l. It is the policy of the laboratory to analyze tritium samples upon arrival and not store for reanalysis due to limitations discussed in NCRP 47.[6] Thus the initial analysis results could not be confirmed by our laboratory. The initial concentration reported does not pose a risk to public health and good correlation was demonstrated on most results between the laboratories. However, to resolve discrepancies in sample results, an additional round of sampling may be performed for tritium at Campsite Area 2.

For the RMDF Watershed, SRL reported a Cesium-137 level of 0.60 $\pm$ 0.03 pCi/g as compared to the Teledyne level of 0.34 $\pm$ 0.04 pCi/g. A second sample aliquot measured a level of 0.48 $\pm$ 0.02 pCi/g Cesium-137. It is a possibility that these small differences in the levels are due to variations between the soil samples. The range of concentrations reported were still within what is normally found in soil.

Overall, the DHS analyses showed good correlation with the Teledyne and USEPA laboratory results.

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[6]Tritium Measurement Techniques, National Council on Radiation Protection and Measurements Report No. 47, reprinted December 1, 1982.

Table 5

Comparison of Laboratory Results

Soil Samples

Sample Location	Laboratory	^{137}Cs pCi/g	^{3}H pCi/l
Campsite Area 2	Teledyne USEPA DHS	<0.03 no analysis 0.03 ± .01	<200 <192 2470 ± 200
RD-51 Watershed	Teledyne DHS	.045 ± .026 .04 ± .01	W 316 ± 152
RMDF Watershed	Teledyne Teledyne DHS	.34 ± .04 no analysis .60 ± .03	1300 ± 200 1600 ± 200 1900 ± 190
Bldg 59 Watershed	Teledyne USEPA DHS	.13 ± .03 no analysis .09 ± .02	10,800 ± 300 12,380 ± 371 10,700 ± 300
Sodium Burn Pit Watershed	Teledyne DHS	.11 ± .03 .07 ± .02	120 ± 80 <260
Sodium Reactor Experiment Watershed	Teledyne DHS	.24 ± .06 .28 ± .03	<200 444 ± 153

Surface Water Sample

Sample Location	Laboratory	^{137}Cs pCi/l	Gross alpha pCi/l	Gross beta pCi/l	^{3}H pCi/l
Sodium Burn Pit Watershed	Teledyne DHS	<4 <8	<2 <.40	<3 <2.50	<100 <260

W - Withdrawn by Teledyne. See McLaren/Hart report for discussion.

Conclusions

The purpose of our involvement in this multi-media sampling in the vicinity of the Santa Susana Field Laboratory was to provide an independent measurement of radioactivity in the environmental samples. Although the number of samples split with DHS and analyzed by the DHS laboratory was limited, a review of our analyses showed good agreement with the Teledyne and EPA laboratories. Eighty-five percent (14 out of 16) of the analyses performed by the DHS laboratory were within an acceptable range of variability with the other laboratories results.

These conclusions are based solely on the sampling and analyses performed by DHS. A thorough review of the completed McLaren/Hart report will be made when the document is available.

A summary of the analysis results from the DHS laboratory is as follows: all radionuclide concentrations measured by the DHS laboratory, with the exception of tritium in soil moisture, were determined to be in the range of what is normally found in the California environment. This includes as a minimum the following radionuclides: Potassium-40, Thorium-232, Uranium-238, Cesium-137, and tritium (Hydrogen-3) in surface water.

However, tritium concentrations found in soil moisture had a higher concentration than what is normally found in the environment. The levels of tritium measured by the DHS laboratory do not pose a risk to public health for several reasons. First, there is no radiation exposure to individuals from the tritium because the area is unoccupied, and second, even in the highly unlikely event that the soil moisture was ingested, the dose would still be well below regulatory standards. An explanation of these conclusions is provided below.

Currently, the State of California does not have a standard for an acceptable amount of tritium in soil moisture. In general, when environmental radiological contamination has been caused by a licensee of the State of California, an evaluation is made to determine the potential exposure to the public. Once the amount of radiation dose is determined, it is then compared to the exposure standards for the public in the California Radiation Control Regulations (Title 17). The U.S. Department of Energy is not a licensee of the State of California so our regulations would not apply, however, they have equivalent standards and methods for evaluating radiation exposure.

The evaluation to determine the radiation dose includes all the potential pathways of exposure to humans: ingestion through the drinking of water, ingestion through the consumption of food products, inhalation, and direct radiation exposure (being close enough to the radiation source to have the radiation come in contact with the body). Conservative assumptions are made in the assessment to ensure that the dose is not underestimated.

For the tritium in soil moisture found in our analyses, even if it is assumed that people occupied

the area where it was found, pathways to the public would not exist. The moisture in this soil is not potable water and therefore would not be consumed. Food products are not grown in the ravine locations where the tritium in the soil moisture was found limiting the potential for ingestion. The tritium is in the soil moisture, thus the inhalation pathway is negligible (and submersion dose would be negligible also since it is assumed to be equal to inhalation dose). The direct radiation pathway is not measurable for tritium because the beta particles emitted from decay are not sufficient energy to penetrate the protective outer layer of skin cells. If the extreme assumption is made that the soil moisture was consumed, the highest value reported by our laboratory of 10,700 pCi/l is below the USEPA drinking water standard of 20,000 pCi/l. The USEPA determined that it is safe to drink water that contains levels of tritium below 20,000 pCi/l.[7]

The California Agreement In Principle Program will continue to evaluate the environmental monitoring program currently in effect for the DOE facility. Our evaluation will include a review of the environmental sampling program at the Energy Technology and Engineering Center (ETEC) and of potential release pathways of radioactive materials to the environment. This review may entail additional independent sampling and analyses. As stated earlier, the final multi-media sampling report prepared by McLaren/Hart will be reviewed when released.

[7]National Interim Primary Drinking Water Regulations, U.S. EPA, EPA-570/9-76-003.