

**Harding Lawson Associates**



June 12, 1998

Mr. Emil Klawitter  
Northern Division  
Naval Facilities Engineering Command  
10 Industrial Highway, Mailstop 82  
Town of Lester, PA 19113-2090

**Subject: Summary Report on Sampling and Analysis of Soil and  
Groundwater at Building 95 and Groundwater at Site 11  
NAS Brunswick, Maine**

Dear Mr. Klawitter:

This letter report describes the soil and groundwater sampling that was conducted on May 5-6, 1998, by Harding Lawson Associates (formerly ABB Environmental Services, Inc.) at Site 11 and the Building 95 Site at Naval Air Station Brunswick, and presents the results of laboratory analyses performed by Katahdin Analytical Services, Inc. In summary, the sampling found no evidence of significant deep groundwater contamination at Site 11, and confirmed that the concentrations of pesticides in soil and groundwater at the Building 95 Site are below levels of concern. A more detailed description of the sampling program and analytical results is provided in the following sections.

#### **SAMPLING OBJECTIVES**

The objective of the additional sampling at Site 11 was to determine whether past releases from the former fire training area had resulted in the presence of deep groundwater contamination and/or dense non-aqueous phase liquid (DNAPL) at the top of the underlying clay layer at the site.

At the former Building 95 Site, a previous removal action conducted in 1994 resulted in the excavation and off-site disposal of pesticide-contaminated soil to the prescribed preliminary remediation goals (PRGs) for the site. However, a discrepancy between field and off-site laboratory results for one of the confirmation samples caused some uncertainty as to whether PRGs were fully attained, and additional soil samples at that location were requested by the Maine Department of Environmental Protection (MEDEP). In addition, the MEDEP requested additional groundwater data in the area immediately downgradient of the confirmation sampling point in question.

## **SAMPLING METHODOLOGY**

**Site 11.** At Site 11, direct-push techniques were used to collect groundwater samples at the three locations recommended by MEDEP, as shown on Figure 1. Boring locations were identified by tape measuring from two existing Site 11 wells. The boring locations as shown from west to east were identified as PW-1101, PW-1102, and PW-1103. Location PW-1103 was sampled first, followed by locations PW-1102 and PW-1101. A representative of the MEDEP (Larry Dearborn) was present during sampling at the first two locations.

At boring PW-1103, the probe was advanced without sampling to 11 feet below ground surface (bgs). Soil sampling tubes were then continuously collected with soils of the transitional unit being observed down to 23 feet bgs. Photoionization detector (PID) readings were taken on each soil tube. No PID readings were detected above background. A color change from tans to completely gray was observed to occur at 19.9 feet bgs in which clay layers/lenses were in a repeating sequence with sand layers/lenses down to 23 feet. Recovery was not obtained at the 23-to-26-foot interval. HLA and MEDEP agreed this was the top of the clay layer and could not be recovered because of the "soupy" nature of the clay. A separate boring was then advanced for the collection of a groundwater sample. A total of six 40-ml pre-preserved VOA vials were filled with groundwater collected directly from a slotted probe casing at the 21-to-23-foot interval. Groundwater was collected by using a small-diameter bailer. Once filled, the VOA vials were immediately placed on ice.

In boring PW-1102, sample tubes were continuously collected from 20 feet to 32 feet bgs. No PID readings above background were noted. The color change from tans to all gray began at 26 feet bgs. The clay unit was identified in the 29-to-32-foot tube in which the recovered soil was a very soft, Presumpscot Formation clay. A second boring was advanced, and a water sample (3 pre-preserved VOA vials) was collected from the 27-to-29-foot interval.

Boring PW-1101 was advanced without sampling to 23 feet bgs. Soil tubes were then sampled continuously down to 38 feet bgs. No PID readings above background were noted. The color change from tans to all gray was observed at 29.7 feet bgs. Two successive tubes with no recovery were driven from 32 to 38 feet bgs, indicating that the top of clay was at approximately 32 feet. A water sample (3 pre-preserved VOA vials) was collected from the 30-to-32-foot interval. All borings drilled at Site 11 were backfilled with bentonite pellets. Water samples (collected for TCL VOCs) were extremely turbid due to the high percentages of fine soils in the formation just above the clay unit.

**Building 95.** Sampling at this site consisted of two probe borings to collect soil samples and two borings to collect groundwater samples. The soil borings were identified in the field as PS-9501 and PS-9502, while the groundwater borings were designated as PW-9501 and PW-9502. Sample locations were as recommended by MEDEP, and are shown on Figure 2.

In the two soil borings, PS-9501 and PS-9502, a distinct horizon was found at 7 feet bgs, consisting of an abrupt change from well sorted tan sands to rusty fine sands. This was interpreted as being the border between filled and natural soils, even though the geotextile fabric that was reportedly placed at the bottom of the excavation was not observed. Soil samples collected for TCL DDT were collected from both borings at the 7-to-7.5-foot depths.

Water samples were collected for TCL pesticides from the two additional borings as shown in Figure 2. These samples were collected using a peristaltic pump equipped with an in-line filter to prevent analytical inaccuracies due to turbidity. Depths of the water samples were from 6-to-8-feet bgs.

Soil and groundwater samples collected during the field effort were immediately placed on ice and were hand delivered to Katahdin Analytical Laboratory in Westbrook, Maine.

#### **ANALYTICAL RESULTS**

**Site 11 Groundwater.** Groundwater samples from Site 11 were analyzed for total volatile organic compounds. Low concentrations of acetone and methylene chloride were reported by the laboratory in all three groundwater samples. However, these analytes also appeared in the trip blank and are, therefore, considered as artifacts. The groundwater sample from location PW-1101 contained an estimated 7 ug/l of 2-butanone and an estimated 2 ug/l of 1,1,1-trichloroethane (TCA). Both results are reported as estimated because the analytes were detected at concentrations less than the sample quantitation limit. Neither of these analytes was detected in samples collected from PW-1102 and PW-1103. The USEPA Maximum Contaminant Level (MCL) and the Maine Maximum Exposure Guideline (MEG) for TCA are both 200 ug/l. For 2-butanone, there is no MCL, but the MEG is 170 ug/l.

**Building 95 Soil.** Soil samples from the Building 95 Site were analyzed for total pesticides. The pesticide 4,4'-dichlorodiphenyltrichloroethane (DDT) and its metabolite, 4,4'-dichlorodiphenyldichloroethane (DDD), were detected in both soil samples. In sample PS-9501, DDT was reported at 430 ug/kg and DDD was reported at 36 ug/kg. In sample PS-9502, DDT was reported at 180 ug/kg and DDD was reported at 14 ug/kg. Reported DDT concentrations should be viewed as estimated, due to variability in DDT recoveries in the matrix spike analyses (see Data Quality and Usability discussion below). The PRG established at the Building 95 site for deep soils was 135,000 ug/kg of DDT.

**Building 95 Groundwater.** Groundwater samples collected at the Building 95 Site were also analyzed for total pesticides. DDT and/or DDD were detected in both samples. Sample PW-9501 detected 0.44 ug/l of DDD, while sample PW-9502 contained 0.20 ug/l of DDD and

0.20 ug/l of DDT. There is no MCL or MEG for DDD, and no MCL for DDT. The MEG for DDT is 0.83 ug/l.

#### DATA QUALITY AND USABILITY

A chemist review was conducted on analytical data for the soil and water samples collected at Site 11 and Building 95 to evaluate data quality and usability. Samples were analyzed by Katahdin Analytical Services, Westbrook, Maine. The data set contained four aqueous samples (PW-1101, PW-1102, PW-1103, and TB-101) analyzed for total volatile organic compounds using USEPA CLP methods (USEPA, 1992), and two aqueous samples (PW-9501, PW-9502) and two soil samples (PS-9501, PS-9502) analyzed for pesticides using USEPA procedures.

The objective of the chemist review was to evaluate quality control (QC) measurements associated with the sample analyses, and to determine if results were adequate for the identification of the presence or absence of contamination at the sampling locations. The chemist review included a review of holding time compliance, quality control blank results, laboratory control samples results, matrix spike (MS/MSD) results, surrogate recoveries, and dilution and preparation. Based on the QC data presented for the items listed above, results for all samples were interpreted to meet the project objective and are usable as reported by the laboratory. With the exception of the items discussed below, QC checks and measurements were within method specifications, and QC measurements indicate that accurate and precise data were obtained.

The laboratory sample receipt log indicated that the cooler temperature was 7.3°C upon receipt at the laboratory. This exceeds the sample preservation goal of 4°C ± 2°C. Samples were delivered at the laboratory within 12 hours of shipment. Because of the minor temperature variation, and the short time period of sample transport, this discrepancy was interpreted to not have a significant impact on the integrity of the samples.

Aqueous samples PW-1101, PW-1102, PW-1103 analyzed for volatiles were diluted by a factor of two prior to analysis due to sediments and suspended solids observed in the sample vials. Quantitation limits were increased from 1 µg/L to 2 µg/L in the final results. This small increase in quantitation limits is not interpreted to have an effect on project objectives.

Several target compounds were reported in QC blanks associated with the volatile analyses including methylene chloride, acetone, and 2-hexanone. These results indicate that the presence of these compounds in samples may be due to laboratory or field-introduced contamination.

A subset of volatile compounds had recoveries outside the 60 - 140% recovery limits. These compounds included 1,1-dichloroethene, 1,2-dibromo-3-chloropropane, 1,2-dibromomethane, 2-butanone, 2-hexanone, 4-methyl-2-pentanone, carbon disulfide, chloroethane, and methylene chloride. Recoveries were high for all these compounds except methylene chloride. Methylene chloride was detected in samples, but this detection is attributed to laboratory contamination. The compound 2-butanone was detected in one sample at a concentration below its quantitation limit. It is reported as "estimated" and may also have a high bias. For the remaining compounds, because recoveries were high and results are reported as non-detects, there is no impact on data usability.

Several pesticide compounds also had soil matrix spike recoveries that were outside method specified limits. High recoveries were observed for endrin and lindane. These compounds were not detected in samples; therefore, data use considerations are not needed. Spike recoveries were also outside the specified limits for DDT. This compound was detected in the original analysis of the spike sample at a concentration that was approximately ten times the spike concentration. Samples were also diluted prior to analysis. Low recovery was observed in the MS sample, and high recovery was observed in the spike duplicate. These results indicate a possible variation of DDT concentrations in the soil matrix, and DDT results should be considered estimated values in the soil matrix.

## CONCLUSIONS

1. The groundwater samples collected at Site 11 show no indication of significant contamination in deeper groundwater, and no evidence of the presence of DNAPL.
2. The soil samples collected at the Building 95 Site suggest that the previous analytical result from the off-site laboratory during the soil removal action was anomalous. Current sample results are well below the PRG that had been established for the removal action.
3. Groundwater samples from Building 95 also support the conclusion that the soil removal action conducted in 1994 accomplished its objective. DDT concentrations in groundwater immediately downgradient of the former location of greatest soil pesticide concentrations are below MEGs, and are consistent with the results of the on-going long term groundwater monitoring program.
4. Based on the results of this most recent sampling, no further actions are recommended for either Site 11 or Building 95.

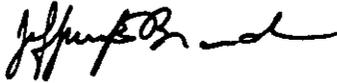
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Harding Lawson Associates

If you have any questions or comments regarding the contents of this sampling report, please call Jeffrey Brandow at (207) 775-5401.

Sincerely,

**HARDING LAWSON ASSOCIATES**



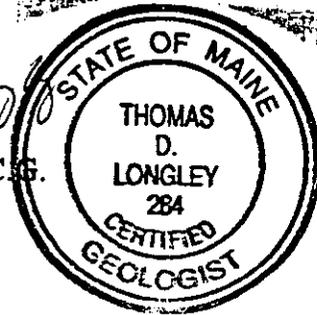
Jeffrey E. Brandow, P.E.  
Program Manager

Attachments

cc: G. Apraham, NASB

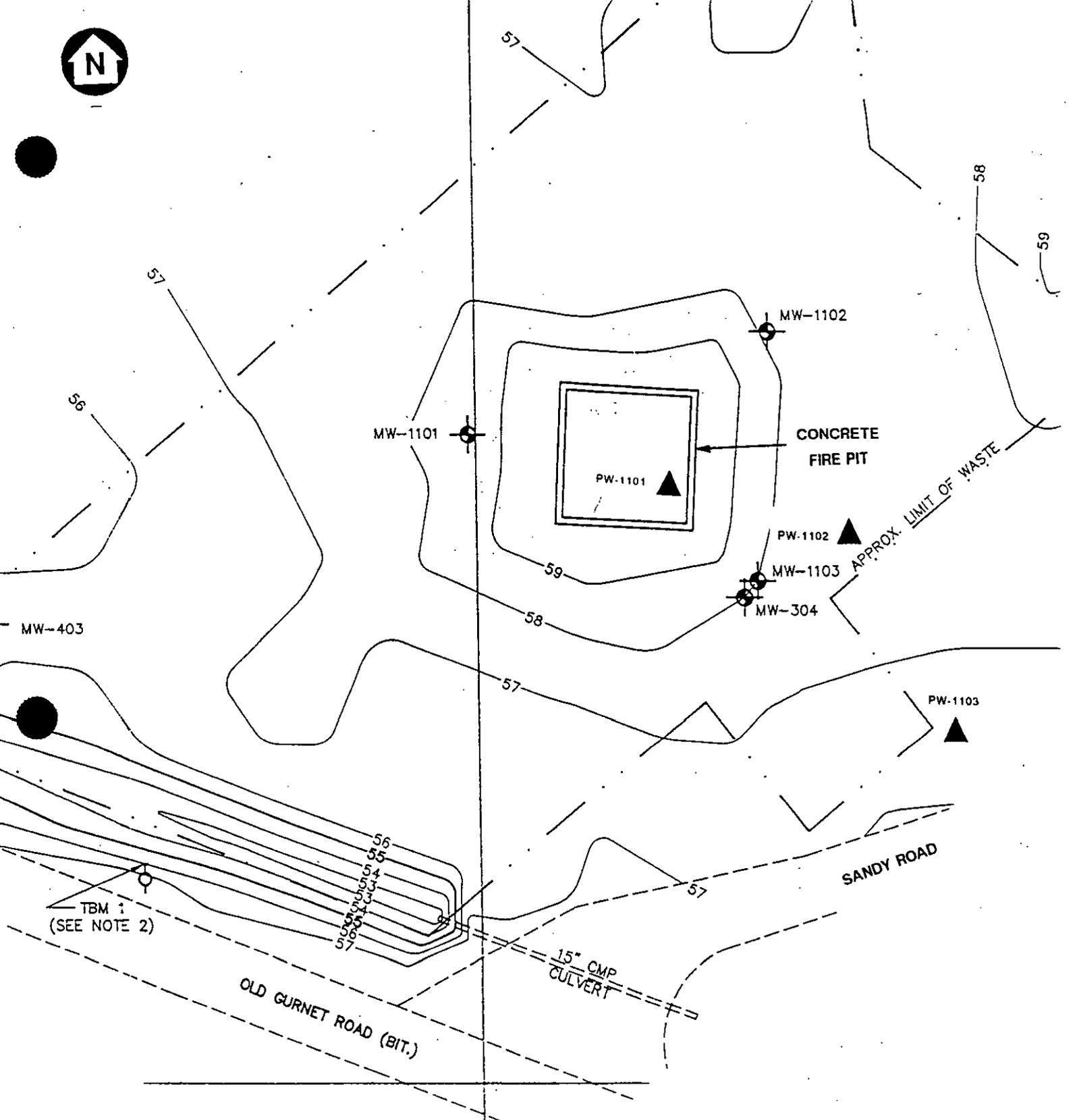


Thomas D. Longley, C.G.  
Project Geologist



**ATTACHMENT 1**

**FIGURES**



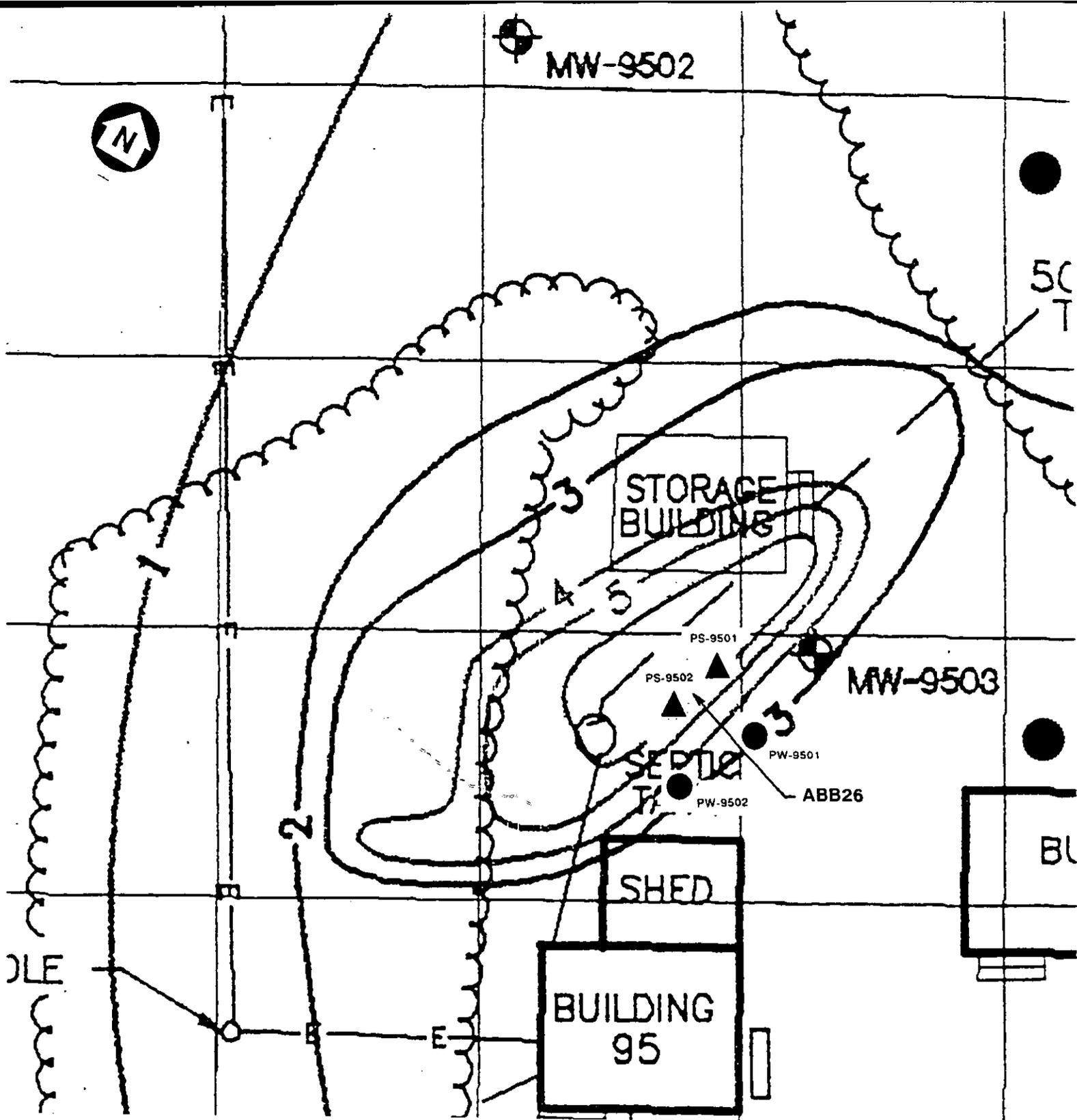
**LEGEND**

GROUNDWATER SAMPLING LOCATION



SCALE: 1" = 40'

**FIGURE 1**  
**EXPLORATION LOCATION MAP - SITE 11**  
**SITE 11/BUILDING 95 SAMPLING PLAN**  
**NAVAL AIR STATION BRUNSWICK, MAINE**



**LEGEND**

- ▲ SOIL SAMPLING LOCATION
- GROUNDWATER SAMPLING LOCATION

SCALE: 1" = 10'

**FIGURE 2**  
**EXPLORATION LOCATION MAP - BUILDING 95**  
**SITE 11/BUILDING 95 SAMPLING PLAN**  
**NAVAL AIR STATION BRUNSWICK, MAINE**

**ATTACHMENT 2**  
**LABORATORY ANALYTICAL RESULTS**

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

PW-1101
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Lab Name: Katahdin Analytical Services      SDG No.: BNA01

Matrix: (Soil/Water)    Water

Sample wt/vol:    2.5 ml

Level: (low/med)    low

% Moisture: not dec.

GC Column:    RTX-624    ID: 0.18    (mm)

Soil Extract Volume:                      (uL)

Lab Sample ID: WO1192-1

Lab File ID:    Z5420

Date Received: 05/07/98

Date Analyzed: 05/11/98

Dilution Factor: . 2

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
74-87-3	CHLOROMETHANE	2.0	U
74-83-9	BROMOMETHANE	2.0	U
75-01-4	VINYL CHLORIDE	2.0	U
75-00-3	CHLOROETHANE	2.0	U
75-09-2	METHYLENE CHLORIDE	10	
67-64-1	ACETONE	22	B
75-15-0	CARBON DISULFIDE	2.0	U
75-35-4	1,1-DICHLOROETHENE	2.0	U
75-34-3	1,1-DICHLOROETHANE	2.0	U
156-59-2	1,2-DICHLOROETHENE (CIS)	2.0	U
156-60-5	1,2-DICHLOROETHENE (TRANS)	2.0	U
67-66-3	CHLOROFORM	2.0	U
107-06-2	1,2-DICHLOROETHANE	2.0	U
78-93-3	2-BUTANONE	7	J
74-97-5	BROMOCHLOROMETHANE	2.0	U
71-55-6	1,1,1-TRICHLOROETHANE	2	J
56-23-5	CARBON TETRACHLORIDE	2.0	U
75-27-4	BROMODICHLOROMETHANE	2.0	U
78-87-5	1,2-DICHLOROPROPANE	2.0	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	2.0	U
79-01-6	TRICHLOROETHENE	2.0	U
124-48-1	DIBROMOCHLOROMETHANE	2.0	U
79-00-5	1,1,2-TRICHLOROETHANE	2.0	U
71-43-2	BENZENE	2.0	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	2.0	U
75-25-2	BROMOFORM	2.0	U
108-10-1	4-METHYL-2-PENTANONE	10	U
591-78-6	2-HEXANONE	10	U
127-18-4	TETRACHLOROETHENE	2.0	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	2.0	U
106-93-4	1,2-DIBROMOETHANE	2.0	U
108-88-3	TOLUENE	2.0	U
108-90-7	CHLOROBENZENE	2.0	U
100-41-4	ETHYLBENZENE	2.0	U
100-42-5	STYRENE	2.0	U
1330-20-7	TOTAL XYLENES	2.0	U
541-73-1	1,3-DICHLOROBENZENE	2.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

PW-1101

Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-1

Sample wt/vol: 12.5 ml *cm 4/11/98*

Lab File ID: Z5420

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: .2

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
106-46-7	1,4-DICHLOROBENZENE	2.0	U
95-50-1	1,2-DICHLOROBENZENE	2.0	U
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2.0	U
120-82-1	1,2,4-TRICHLOROBENZENE	2.0	U

**Surrogate Recoveries**

460-00-4	4-BROMOFLUOROBENZENE	112	%
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1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

Sample Name:  
PW-1101

Lab Name	<u>Katahdin ASI</u>	SDG No.:	<u>BNA01</u>
Matrix (soil/water)	<u>Water</u>	Lab Sample ID:	<u>WO1192-1.</u>
Sample wt/vol:	<u>12.5</u> (g/ml) <u>ml</u>	Lab File ID:	<u>Z5420.D</u>
Level: (low/med)	<u>Low</u>	Date Received:	<u>5/7/98</u>
% Moisture: not dec.	<u>N/A</u>	Date Analyzed:	<u>5/11/98</u>
GC Column:	<u>RTX-624</u> ID: <u>0.18</u>	Dilution Factor:	<u>2.0</u>
Soil Extract Volume:	<u>0</u> (ul)	Soil Aliquot Volume:	<u>0</u> (ul)

CONCENTRATION UNITS  
(ug/L or ug/KG) ug/L

Number of TIC's Found: 9

#	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	000115-07-1	Propene	2.14	7	JN
2.		C4H8 isomer	2.59	3	J
3.	000074-93-1	Methanethiol	3.05	1	JN
4.	000624-92-0	Disulfide, dimethyl	13.47	1	JN
5.	020333-39-5	Methyl ethyl disulphide	16.71	2	JN
6.		Unknown	22.25	1	J
7.		Unknown	25.04	3	J
8.		Unknown	26.63	1	J
9.		Unknown	27.43	5	J
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

PW-1102

Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-2

Sample wt/vol: 12.5 ml <sup>CV</sup> 6/13/98

Lab File ID: Z5421

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: 2

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
74-87-3	CHLOROMETHANE	2.0	U
74-83-9	BROMOMETHANE	2.0	U
75-01-4	VINYL CHLORIDE	2.0	U
75-00-3	CHLOROETHANE	2.0	U
75-09-2	METHYLENE CHLORIDE	8	
67-64-1	ACETONE	10	B
75-15-0	CARBON DISULFIDE	2.0	U
75-35-4	1,1-DICHLOROETHENE	2.0	U
75-34-3	1,1-DICHLOROETHANE	2.0	U
156-59-2	1,2-DICHLOROETHENE (CIS)	2.0	U
156-60-5	1,2-DICHLOROETHENE (TRANS)	2.0	U
67-66-3	CHLOROFORM	2.0	U
107-06-2	1,2-DICHLOROETHANE	2.0	U
78-93-3	2-BUTANONE	10	U
74-97-5	BROMOCHLOROMETHANE	2.0	U
71-55-6	1,1,1-TRICHLOROETHANE	2.0	U
56-23-5	CARBON TETRACHLORIDE	2.0	U
75-27-4	BROMODICHLOROMETHANE	2.0	U
78-87-5	1,2-DICHLOROPROPANE	2.0	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	2.0	U
79-01-6	TRICHLOROETHENE	2.0	U
124-48-1	DIBROMOCHLOROMETHANE	2.0	U
79-00-5	1,1,2-TRICHLOROETHANE	2.0	U
71-43-2	BENZENE	2.0	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	2.0	U
75-25-2	BROMOFORM	2.0	U
108-10-1	4-METHYL-2-PENTANONE	10	U
591-78-6	2-HEXANONE	10	U
127-18-4	TETRACHLOROETHENE	2.0	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	2.0	U
106-93-4	1,2-DIBROMOETHANE	2.0	U
108-88-3	TOLUENE	2.0	U
108-90-7	CHLOROBENZENE	2.0	U
100-41-4	ETHYLBENZENE	2.0	U
100-42-5	STYRENE	2.0	U
1330-20-7	TOTAL XYLENES	2.0	U
541-73-1	1,3-DICHLOROENZENE	2.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

PW-1102
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Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-2

Sample wt/vol: 2.5 ml

Lab File ID: Z5421

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: 2

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
106-46-7	1,4-DICHLOROBENZENE	2.0	U
95-50-1	1,2-DICHLOROBENZENE	2.0	U
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2.0	U
120-82-1	1,2,4-TRICHLOROBENZENE	2.0	U

**Surrogate Recoveries**

460-00-4	4-BROMOFLUOROBENZENE	123	%
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1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

Sample Name: PW-1102
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Lab Name	<u>Katahdin ASI</u>	SDG No.:	<u>BNA01</u>
Matrix (soil/water)	<u>Water</u>	Lab Sample ID:	<u>WO1192-2</u>
Sample wt/vol:	<u>12.5</u> (g/ml) <u>ml</u>	Lab File ID:	<u>Z5421.D</u>
Level: (low/med)	<u>Low</u>	Date Received:	<u>5/7/98</u>
% Moisture: not dec.	<u>N/A</u>	Date Analyzed:	<u>5/11/98</u>
GC Column:	<u>RTX-624</u> ID: <u>0.18</u>	Dilution Factor:	<u>2.0</u>
Soil Extract Volume:	<u>0</u> (ul)	Soil Aliquot Volume:	<u>0</u> (ul)

CONCENTRATION UNITS

Number of TIC's Found: 7 (ug/L or ug/KG) ug/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 000115-07-1	Propene	2.14	5	JN
2.	C4H8 isomer	2.59	2	J
3. 000074-93-1	Methanethiol	3.06	4	JN
4. 000075-08-1	Ethanethiol	4.59	1	JN
5. 020333-39-5	Methyl ethyl disulphide	16.71	1	JN
6.	Unknown	25.04	2	J
7.	Unknown	27.44	3	J
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1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

PW-1103

Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-3

Sample wt/vol: 2.5 ml

Lab File ID: Z5422

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: 2

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
74-87-3	CHLOROMETHANE	2.0	U
74-83-9	BROMOMETHANE	2.0	U
75-01-4	VINYL CHLORIDE	2.0	U
75-00-3	CHLOROETHANE	2.0	U
75-09-2	METHYLENE CHLORIDE	6	
67-64-1	ACETONE	10	JB
75-15-0	CARBON DISULFIDE	2.0	U
75-35-4	1,1-DICHLOROETHENE	2.0	U
75-34-3	1,1-DICHLOROETHANE	2.0	U
156-59-2	1,2-DICHLOROETHENE (CIS)	2.0	U
156-60-5	1,2-DICHLOROETHENE (TRANS)	2.0	U
67-66-3	CHLOROFORM	2.0	U
107-06-2	1,2-DICHLOROETHANE	2.0	U
78-93-3	2-BUTANONE	10	U
74-97-5	BROMOCHLOROMETHANE	2.0	U
71-55-6	1,1,1-TRICHLOROETHANE	2.0	U
56-23-5	CARBON TETRACHLORIDE	2.0	U
75-27-4	BROMODICHLOROMETHANE	2.0	U
78-87-5	1,2-DICHLOROPROPANE	2.0	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	2.0	U
79-01-6	TRICHLOROETHENE	2.0	U
124-48-1	DIBROMOCHLOROMETHANE	2.0	U
79-00-5	1,1,2-TRICHLOROETHANE	2.0	U
71-43-2	BENZENE	2.0	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	2.0	U
75-25-2	BROMOFORM	2.0	U
108-10-1	4-METHYL-2-PENTANONE	10	U
591-78-6	2-HEXANONE	10	U
127-18-4	TETRACHLOROETHENE	2.0	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	2.0	U
106-93-4	1,2-DIBROMOETHANE	2.0	U
108-88-3	TOLUENE	2.0	U
108-90-7	CHLOROBENZENE	2.0	U
100-41-4	ETHYLBENZENE	2.0	U
100-42-5	STYRENE	2.0	U
1330-20-7	TOTAL XYLENES	2.0	U
541-73-1	1,3-DICHLOROBENZENE	2.0	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

PW-1103
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Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-3

Sample wt/vol: 2.5 ml

Lab File ID: Z5422

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: 2

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
106-46-7	1,4-DICHLOROBENZENE	2.0	U
95-50-1	1,2-DICHLOROBENZENE	2.0	U
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	2.0	U
120-82-1	1,2,4-TRICHLOROBENZENE	2.0	U

**Surrogate Recoveries**

460-00-4	4-BROMOFLUOROBENZENE	120	%
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1E  
VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

Sample Name:  
PW-1103

Lab Name	<u>Katahdin ASI</u>	SDG No.:	<u>BNA01</u>
Matrix (soil/water)	<u>Water</u>	Lab Sample ID:	<u>WO1192-3</u>
Sample wt/vol:	<u>12.5</u> (g/ml) <u>ml</u>	Lab File ID:	<u>Z5422.D</u>
Level: (low/med)	<u>Low</u>	Date Received:	<u>5/7/98</u>
% Moisture: not dec.	<u>N/A</u>	Date Analyzed:	<u>5/11/98</u>
GC Column:	<u>RTX-624</u> ID: <u>0.18</u>	Dilution Factor:	<u>2.0</u>
Soil Extract Volume:	<u>0</u> (ul)	Soil Aliquot Volume:	<u>0</u> (ul)

CONCENTRATION UNITS

Number of TIC's Found: 8 (ug/L or ug/KG) ug/L

#	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	000115-07-1	Propene	2.14	5	JN
2.		C4H8 isomer	2.59	2	J
3.	000074-93-1	Methanethiol	3.05	3	JN
4.	000075-08-1	Ethanethiol	4.59	1	JN
5.		Unknown	14.66	2	J
6.	000556-67-2	Cyclotetrasiloxane, octamethyl-	20.10	1	JN
7.		Unknown	25.04	2	J
8.		Unknown	27.43	2	J
9.					
10.					
11.					
12.					
13.					
14.					
15.					
16.					
17.					
18.					
19.					
20.					
21.					
22.					

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

TB-101

Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-4

Sample wt/vol: 5.0 ml

Lab File ID: Z5419

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
74-87-3	CHLOROMETHANE	1	U
74-83-9	BROMOMETHANE	1	U
75-01-4	VINYL CHLORIDE	1	U
75-00-3	CHLOROETHANE	1	U
75-09-2	METHYLENE CHLORIDE	4	
67-64-1	ACETONE	4	JB
75-15-0	CARBON DISULFIDE	1	U
75-35-4	1,1-DICHLOROETHENE	1	U
75-34-3	1,1-DICHLOROETHANE	1	U
156-59-2	1,2-DICHLOROETHENE (CIS)	1	U
156-60-5	1,2-DICHLOROETHENE (TRANS)	1	U
67-66-3	CHLOROFORM	1	U
107-06-2	1,2-DICHLOROETHANE	1	U
78-93-3	2-BUTANONE	5	U
74-97-5	BROMOCHLOROMETHANE	1	U
71-55-6	1,1,1-TRICHLOROETHANE	1	U
56-23-5	CARBON TETRACHLORIDE	1	U
75-27-4	BROMODICHLOROMETHANE	1	U
78-87-5	1,2-DICHLOROPROPANE	1	U
10061-01-5	CIS-1,3-DICHLOROPROPENE	1	U
79-01-6	TRICHLOROETHENE	1	U
124-48-1	DIBROMOCHLOROMETHANE	1	U
79-00-5	1,1,2-TRICHLOROETHANE	1	U
71-43-2	BENZENE	1	U
10061-02-6	TRANS-1,3-DICHLOROPROPENE	1	U
75-25-2	BROMOFORM	1	U
108-10-1	4-METHYL-2-PENTANONE	5	U
591-78-6	2-HEXANONE	5	U
127-18-4	TETRACHLOROETHENE	1	U
79-34-5	1,1,2,2-TETRACHLOROETHANE	1	U
106-93-4	1,2-DIBROMOETHANE	1	U
108-88-3	TOLUENE	1	U
108-90-7	CHLOROENZENE	1	U
100-41-4	ETHYLBENZENE	1	U
100-42-5	STYRENE	1	U
1330-20-7	TOTAL XYLENES	1	U
541-73-1	1,3-DICHLOROENZENE	1	U

1A  
VOLATILE ORGANICS ANALYSIS DATA SHEET

Client Sample No.

TB-101

Lab Name: Katahdin Analytical Services

SDG No.: BNA01

Matrix: (Soil/Water) Water

Lab Sample ID: WO1192-4

Sample wt/vol: 5.0 ml

Lab File ID: Z5419

Level: (low/med) low

Date Received: 05/07/98

% Moisture: not dec.

Date Analyzed: 05/11/98

GC Column: RTX-624 ID: 0.18 (mm)

Dilution Factor: 1

Soil Extract Volume: (uL)

Concentration Units: ug/L

CAS NO.	COMPOUND	CONCENTRATION	Q
106-46-7	1,4-DICHLOROBENZENE	1	U
95-50-1	1,2-DICHLOROBENZENE	1	U
96-12-8	1,2-DIBROMO-3-CHLOROPROPANE	1	U
120-82-1	1,2,4-TRICHLOROBENZENE	1	U

Surrogate Recoveries

460-00-4	4-BROMOFLUOROBENZENE	100	%
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VOLATILE ORGANICS ANALYSIS DATA SHEET  
TENTATIVELY IDENTIFIED COMPOUNDS

Sample Name: TB-101
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Lab Name	<u>Katahdin ASI</u>	SDG No.:	<u>BNA01</u>
Matrix (soil/water)	<u>Water</u>	Lab Sample ID:	<u>WO1192-4</u>
Sample wt/vol:	<u>25</u> (g/ml) <u>ml</u>	Lab File ID:	<u>Z5419.D</u>
Level: (low/med)	<u>Low</u>	Date Received:	<u>5/7/98</u>
% Moisture: not dec.	<u>N/A</u>	Date Analyzed:	<u>5/11/98</u>
GC Column:	<u>RTX-624</u> ID: <u>0.18</u>	Dilution Factor:	<u>1.0</u>
Soil Extract Volume:	<u>0</u> (ul)	Soil Aliquot Volume:	<u>0</u> (ul)

CONCENTRATION UNITS  
(ug/L or ug/KG) ug/L

Number of TIC's Found: 0

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				
10.				
11.				
12.				
13.				
14.				
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17.				
18.				
19.				
20.				
21.				
22.				

ID  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PS-9501

Lab Name: Katahdin Analytical Services Contract: \_\_\_\_\_

Lab Code: KAS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: BNA01

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: WO1192-5

Sample wt/vol: 30 (g/ml) g Lab File ID: 2OE1027/2027

% Moisture: 22 decanted: (Y/N) N Date Received: 5/07/98

Extraction: (SepF/Cont/Sonc) Sonc Date Extracted: 5/13/98

Concentrated Extract Volume: 5000 (ul) Date Analyzed: 5/20/98

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg Q

319-84-6	Alpha-BHC	2.1	U
319-85-7	Beta-BHC	2.1	U
319-86-8	Delta-BHC	2.1	U
58-89-9	Gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor Epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.3	U
72-55-9	4,4'-DDE	4.3	U
72-20-8	Endrin	4.3	U
33213-65-9	Endosulfan II	4.3	U
72-54-8	4,4'-DDD	36	P
1031-07-8	Endosulfan sulfate	4.3	U
50-29-3	4,4'-DDT	590	E
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.3	U
7421-92-4	Endrin aldehyde	4.3	U
5103-71-9	Alpha-Chlordane	2.1	U
5103-74-2	Gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U

FORM I PEST

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ID  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PS-9501DL

Lab Name: Katahdin Analytical Services Contract: \_\_\_\_\_

Lab Code: KAS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: BNA01

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: WO1192-5DL

Sample wt/vol: 30 (g/ml) g Lab File ID: 2OE1050/2050

% Moisture: 22 decanted: (Y/N) N Date Received: 5/07/98

Extraction: (SepF/Cont/Sonc) Sonc Date Extracted: 5/13/98

Concentrated Extract Volume: 5000 (ul) Date Analyzed: 5/21/98

Injection Volume: 1.0 (ul) Dilution Factor: 25.0

GPC Cleanup: (Y/N) Y pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) ug/Kg Q

319-84-6	Alpha-BHC	54	U
319-85-7	Beta-BHC	54	U
319-86-8	Delta-BHC	54	U
58-89-9	Gamma-BHC (Lindane)	54	U
76-44-8	Heptachlor	54	U
309-00-2	Aldrin	54	U
1024-57-3	Heptachlor Epoxide	54	U
959-98-8	Endosulfan I	54	U
60-57-1	Dieldrin	110	U
72-55-9	4,4'-DDE	110	U
72-20-8	Endrin	110	U
33213-65-9	Endosulfan II	110	U
72-54-8	4,4'-DDD	110	U
1031-07-8	Endosulfan sulfate	110	U
50-29-3	4,4'-DDT	430	D
72-43-5	Methoxychlor	540	U
53494-70-5	Endrin ketone	110	U
7421-92-4	Endrin aldehyde	110	U
5103-71-9	Alpha-Chlordane	54	U
5103-74-2	Gamma-Chlordane	54	U
8001-35-2	Toxaphene	5400	U

ID  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PS-9502

Lab Name: Katahdin Analytical Services Contract: \_\_\_\_\_

Lab Code: KAS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: BNA01

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: WO1192-6

Sample wt/vol: 30 (g/ml) g Lab File ID: 2OE1030/2030

% Moisture: 21 decanted: (Y/N) N Date Received: 5/07/98

Extraction: (SepF/Cont/Sonc) Sonc Date Extracted: 5/13/98

Concentrated Extract Volume: 5000 (ul) Date Analyzed: 5/20/98

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg Q

319-84-6	Alpha-BHC	2.1	U
319-85-7	Beta-BHC	2.1	U
319-86-8	Delta-BHC	2.1	U
58-89-9	Gamma-BHC (Lindane)	2.1	U
76-44-8	Heptachlor	2.1	U
309-00-2	Aldrin	2.1	U
1024-57-3	Heptachlor Epoxide	2.1	U
959-98-8	Endosulfan I	2.1	U
60-57-1	Dieldrin	4.2	U
72-55-9	4,4'-DDE	4.2	U
72-20-8	Endrin	4.2	U
33213-65-9	Endosulfan II	4.2	U
72-54-8	4,4'-DDD	14	P
1031-07-8	Endosulfan sulfate	4.2	U
50-29-3	4,4'-DDT	210	E
72-43-5	Methoxychlor	21	U
53494-70-5	Endrin ketone	4.2	U
7421-92-4	Endrin aldehyde	4.2	U
5103-71-9	Alpha-Chlordane	2.1	U
5103-74-2	Gamma-Chlordane	2.1	U
8001-35-2	Toxaphene	210	U

FORM I PEST

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ID  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PS-9502DL

Lab Name: Katahdin Analytical Services Contract: \_\_\_\_\_

Lab Code: KAS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: BNA01

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: WO1192-6DL

Sample wt/vol: 30 (g/ml) g Lab File ID: 2OE1053/2053

% Moisture: 21 decanted: (Y/N) N Date Received: 5/07/98

Extraction: (SepF/Cont/Sonc) Sonc Date Extracted: 5/13/98

Concentrated Extract Volume: 5000 (ul) Date Analyzed: 5/21/98

Injection Volume: 1.0 (ul) Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/Kg Q

319-84-6	Alpha-BHC	21	U
319-85-7	Beta-BHC	21	U
319-86-8	Delta-BHC	21	U
58-89-9	Gamma-BHC (Lindane)	21	U
76-44-8	Heptachlor	21	U
309-00-2	Aldrin	21	U
1024-57-3	Heptachlor Epoxide	21	U
959-98-8	Endosulfan I	21	U
60-57-1	Dieldrin	42	U
72-55-9	4,4'-DDE	42	U
72-20-8	Endrin	42	U
33213-65-9	Endosulfan II	42	U
72-54-8	4,4'-DDD	42	U
1031-07-8	Endosulfan sulfate	42	U
50-29-3	4,4'-DDT	180	D
72-43-5	Methoxychlor	210	U
53494-70-5	Endrin ketone	42	U
7421-92-4	Endrin aldehyde	42	U
5103-71-9	Alpha-Chlordane	21	U
5103-74-2	Gamma-Chlordane	21	U
8001-35-2	Toxaphene	2100	U

FORM I PEST

OLM03.0

0000017

ID  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PW-9501

Lab Name: Katahdin Analytical Services Contract: \_\_\_\_\_

Lab Code: KAS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: BNA01

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: WO1192-7

Sample wt/vol: 960 (g/ml) ml Lab File ID: 2OE1038/2038

% Moisture: 0 decanted: (Y/N) N Date Received: 5/07/98

Extraction: (SepF/Cont/Sonc) SepF Date Extracted: 5/13/98

Concentrated Extract Volume: 10000 (ul) Date Analyzed: 5/21/98

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:  
(ug/L or ug/Kg) ug/L Q

319-84-6	Alpha-BHC	0.052	U
319-85-7	Beta-BHC	0.052	U
319-86-8	Delta-BHC	0.052	U
58-89-9	Gamma-BHC (Lindane)	0.052	U
76-44-8	Heptachlor	0.052	U
309-00-2	Aldrin	0.052	U
1024-57-3	Heptachlor Epoxide	0.052	U
959-98-8	Endosulfan I	0.052	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.44	
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.52	U
53494-70-5	Endrin ketone	0.10	U
7421-92-4	Endrin aldehyde	0.10	U
5103-71-9	Alpha-Chlordane	0.052	U
5103-74-2	Gamma-Chlordane	0.052	U
8001-35-2	Toxaphene	5.2	U

1D  
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PW-9502

Lab Name: Katahdin Analytical Services Contract: \_\_\_\_\_

Lab Code: KAS Case No.: \_\_\_\_\_ SAS No.: \_\_\_\_\_ SDG No.: BNA01

Matrix: (soil/water) \_\_\_\_\_ Lab Sample ID: WO1192-8

Sample wt/vol: 940 (g/ml) ml \_\_\_\_\_ Lab File ID: 2OE1041/2041

% Moisture: 0 decanted: (Y/N) N Date Received: 5/07/98

Extraction: (SepF/Cont/Sonc) SepF Date Extracted: 5/13/98

Concentrated Extract Volume: 10000 (ul) Date Analyzed: 5/21/98

Injection Volume: 1.0 (ul) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: \_\_\_\_\_ Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:

CAS NO.                      COMPOUND                      (ug/L or ug/Kg) ug/L                      Q

319-84-6	Alpha-BHC	0.053	U
319-85-7	Beta-BHC	0.053	U
319-86-8	Delta-BHC	0.053	U
58-89-9	Gamma-BHC (Lindane)	0.053	U
76-44-8	Heptachlor	0.053	U
309-00-2	Aldrin	0.053	U
1024-57-3	Heptachlor Epoxide	0.053	U
959-98-8	Endosulfan I	0.053	U
60-57-1	Dieldrin	0.11	U
72-55-9	4,4'-DDE	0.11	U
72-20-8	Endrin	0.11	U
33213-65-9	Endosulfan II	0.11	U
72-54-8	4,4'-DDD	0.20	
1031-07-8	Endosulfan sulfate	0.11	U
50-29-3	4,4'-DDT	0.20	
72-43-5	Methoxychlor	0.53	U
53494-70-5	Endrin ketone	0.11	U
7421-92-4	Endrin aldehyde	0.11	U
5103-71-9	Alpha-Chlordane	0.053	U
5103-74-2	Gamma-Chlordane	0.053	U
8001-35-2	Toxaphene	5.3	U

FORM I PEST

OLM03.0

0000019