Supplemental Surface Water Sampling for the CAP Part B Investigation Pumphouse #1 (Former Building 8060) HUNTER ARMY AIRFIELD, GEORGIA

Facility ID # 9-025085

March 1999

Data Validation Summary Report

DOCUMENT 11

Supplemental Surface Water Sampling for the CAP Part B Investigation Pumphouse #1 (Former Building 8060) Hunter Army Airfield (HAAF)

Facility ID # 9-025085

Data Validation Summary Report

An M&E, Inc. geologist and chemist collected five surface water samples from the drainage ditch located south of Pump House #1 and on February 17, 1999 (see Figure 1 in Attachment C). Each sampling location was marked using a grade stake situated approximately 10 feet up the vertical slope of the ditch bank from the collection point in the ditch. A duplicate sample was also collected from the Pumphouse #1 SW3 location. Samples were collected in glassware provided by the Corps of Engineers, South Atlantic Division (SAD) laboratory. The volatile organic compound (VOC) sample vials were pre-preserved with hydrochloric acid. The semi-volatile organic compound (PAH) sample bottles were not preserved. Each sample was placed in a cooler after collection and chilled to approximately 4 degrees Celsius using water ice (contained in doubled ziplock bags). A completed chain-of-custody (COC) was placed in each cooler prior to taping the cooler closed and placing custody seals over the base and lid joints. The samples were shipped using Federal Express overnight priority delivery to the SAD laboratory in Atlanta, Georgia. A record of sample shipment and custody can be found on the Federal Express airbill and the COC forms (the complete analytical data set and COC forms can be found in Attachment D).

Level II data validation of the analytical data packages assembled from HAAF was completed. Water matrices were validated. The sample data were validated following The Quality Assurance (QA)/ Quality Control (QC) quidance outlined in the *USEPA's Test Methods for Evaluating Solid Waste* (EPA SW-846). Overall, these guidelines mimic the most current editions of the *USEPA Contract Laboratory Program National Functional Guidelines For Inorganic Data Review (February 1994)* and *USEPA Contract Laboratory Program National Functional Guidelines For Organic Data Review (February 1994).* These two documents are hereafter referred to as USEPAFG. For those analytical methods not addressed by USEPAFG, the validation was based on the method requirements (i.e., SW-846, CFR, Standard Operating Procedures) and technical judgment following the logic of the USEPAFG.

The overall quality of the data was determined to be acceptable. There were no rejected data ('R' qualified) based on data quality. The qualifier 'R' was applied in the event of a reanalysis, where a sample might have more than one reported result, to indicate that a given result should not be used to characterize a particular constituent or an analysis for a given sample.

The calculated percent completeness for all parameters was 100%.

This summary is broken down by parameter. A listing of the validation qualifiers used and their definitions can be found in Attachment A. The following paragraphs highlight the key findings of the data validation. Samples were validated for the following parameters:

VOCs by SW-846 8021B
PAHs by SW-846 8310

A Summary of the Data, Comparison of QC duplicate RPDs (Relative Percent Differences) and a comparison of the positive hits against Instream Water Quality Standards (as agreed to by GA EPD, USTMP representatives during the January 27, 1999 meeting) can be found in Attachment B. The complete analytical data package is presented in Attachment D.

I. VOLATILE ORGANICS

Overall, the data were of acceptable quality and are usable as reported by the laboratory with the exceptions noted. Data were reviewed for the following:

Holding Times
Holding Time criteria were met for all samples.

Temperature
Temperature criteria were met for all samples.

Blanks
The 5X/10X rule for contaminants found in the associated equipment rinses, method and trip blanks was applied to the sample results. The following data required a UB (not detected above 5X/10X the amount found in the blank) or B (detected above 5X/10X the amount found in the blank) qualification:

A Method Blank showed 1.5 ug/L of methylene chloride this did not result in any qualifiers being applied to the data since there were no hits for methylene chloride in the data set of which this blank was a part.

Surrogate Recoveries
There were no qualifications due to surrogate recoveries.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)
No qualifications were caused due to MS/MSDs.

Laboratory Control Samples (LCS)
No qualifications were caused due to LCSs.

Other Notes
There were some elevated detection limits as can be seen in sample PH1-SWE07. This is attributable to matrix interference as well as interference from other compounds found in the sample. RPDs were calculated on the QC duplicate. All analyte RPDs agreed well with the exception of Toluene (48.8%) and m,p-xylene (167%) for this sample. These two compounds were therefore given a "J" flag for the duplicate and its sister field sample.

II. PAHs

Overall, the data were of acceptable quality and are usable as reported by the laboratory with the exceptions noted. Data were reviewed for the following:

Holding Times
Holding Time criteria were met for all samples.

Temperature
Temperature criteria were met for all samples.

Blanks
The 5X/10X rule for contaminants found in the associated equipment rinses, method and trip blanks was applied to the sample results. The following data required a UB (not detected above 5X/10X the amount found in the blank) or B (detected above 5X/10X the amount found in the blank) qualification:

No blank contamination was found.

Surrogate Recoveries
There were no qualifications due to surrogate recoveries.

Matrix Spike / Matrix Spike Duplicate (MS/MSD)
No qualifications were caused due to MS/MSDs. There were some slightly high RPDs for MS/MSDs, which could indicate some degree of matrix interference.

Laboratory Control Samples (LCS)
No qualifications were caused due to LCSs.

Other Notes
PAHs were not detected above their respective reporting limits in any of the surface water samples collected at Pumphouse #1. Although QC duplicate RPDs cannot be calculated (a zero in the denominator of the RPD equation invalidates the calculation), it may be assumed that the QC duplicates correlate to each other well. This assumption is substantiated by the fact that the non detects in the QC duplicate are matched analyte for analyte in its sister sample.

Attachment A

Data Qualifier Definitions

DATA QUALIFIER DEFINITIONS

The following definitions provide brief explanations of the qualifiers assigned to the results in th data review process.

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.

UJ - The analyte was not detected above the sample quantitation limit. However the quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

B - The blank associated with this sample showed contamination for this analyte. The sample result exceeded the 5X/10X rule.

UB - The blank associated with this sample showed contamination for this analyte. The sample result did not exceed the 5X/10X rule and is considered to be a non-detect.

NT The analyte was not tested for.

<DL The analyte was not detected above the respective detection limit.

Attachment B

Validated
Data Summary Tables

Attachment C

Figure

Surface Water Sampling Results (February 1999 Sampling)
Pumphouse # 1 (Former Building 8060)
Hunter Army Airfield, GA
Facility ID NO. 9-025085

HAAF PUMPHOUSE # 1	IWQS		RL		RL		RL
FIELD IDENTIFICATION		38010 PH1-SW1		38011 PH1-SW2		38014 PH1-SW4	
SAMPLING DATE		17-Feb		17-Feb		17-Feb	
SAMPLING TIME		17:08		17:10		17:20	
TYPE OF SAMPLE(Soil or Groundwater)		GW		GW		GW	
SAMPLED BY		M&E		M&E		M&E	
TESTING LABORATORY		SPECIALIZED ASSAYS		SPECIALIZED ASSAYS		SPECIALIZED ASSAYS	
DATE RECEIVED		19-Feb		19-Feb		19-Feb	
TESTING LAB SAMPLE NUMBER		99-A23633		99-A23634		99-A23637	
PURGEABLES, SW 846 METHOD 8021B		8021B		8021B		8021B	
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
Date Tested		23-Feb		23-Feb		23-Feb	
Holding Time (Maximum is 14 Days)		6 days		6 days		6 days	
Benzene	71.28	<DL	1	<DL	1	9	1
cis-1,2-Dichloroethene	-	<DL	1	**2.6**	1	1.5	1
Ethylbenzene	28718	<DL	1	<DL	1	5.4	1
Toluene	200000	<DL	1	<DL	1	144	1
1,2,4-Trimethylbenzene	-	<DL	1	<DL	1	1.0	1
m, p- Xylenes	-	<DL	1	<DL	1	111.5	1
o- Xylenes	-	<DL	1	<DL	1	22.3	1

NOTE:
1 - Where no IWQS exists (per Georgia rule 391-03-6) for a compound a dash "-" was placed in the data block.
2 - There were no hits for PAHs therefore they are not seen on this data summary table.

Surface Water Sampling Results (February 1999 Sampling)
Pumphouse # 1 (Former Building 8060)
Hunter Army Airfield, GA
Facility ID NO. 9-025085

HAAF PUMPHOUSE # 1	IWQS			RL	QC			RL			RL
FIELD IDENTIFICATION		38012 PH1-SW3			DUP	38013 PH1-SW3D			38015 PH1-SWE07		
SAMPLING DATE		17-Feb			RPD	17-Feb			17-Feb		
SAMPLING TIME		17:12				17:15			16:30		
TYPE OF SAMPLE(Soil or Groundwater)		GW				GW			GW		
SAMPLED BY		M&E				M&E			M&E		
TESTING LABORATORY		SPECIALIZED ASSAYS				SPECIALIZED ASSAYS			SPECIALIZED ASSAYS		
DATE RECEIVED		19-Feb				19-Feb			19-Feb		
TESTING LAB SAMPLE NUMBER		99-A23635				99-A23636			99-A23638		
PURGEABLES, SW 846 METHOD 8021B		8021B				8021B			8021B		
Units	ug/L	ug/L		ug/L		ug/L		ug/L	ug/L		ug/L
Date Tested		23-Feb				23-Feb			23-Feb		
Holding Time (Maximum is 14 Days)		6 days				6 days			6 days		
Benzene	71.28	**11.1**		1	**6**	**11.8**		1	8.5		5
cis-1,2-Dichloroethene	-	**2.2**		1	**0**	**2.2**		1	<DL		5
Ethylbenzene	28718	**36.4**		1	**22**	**45.3**		1	32.0		5
Toluene	200000	**96.0**	**J**	1	**49**	**158**	**J**	1	185		5
1,2,4-Trimethylbenzene	-	**1.8**		1	**24**	**2.3**		1	<DL		5
m, p- Xylenes	-	**854**	**J**	1	**167**	**78.0**	**J**	1	157.5		5
o- Xylenes	-	**22.8**		1	**22**	**28.4**		1	25.0		5

NOTE:
1 - Where no IWQS exists (per Georgia rule 391-03-6) for a compound a dash "-" was placed in the data block.
2 - There were no hits for PAHs therefore they are not seen on this data summary table.

Surface Water Sampling Results (February 1999 Sampling)
Pumphouse # 1 (Former Building 8060)
Hunter Army Airfield, GA
Facility ID NO. 9-025085

HAAF PUMPHOUSE # 1	IWQS			RL
FIELD IDENTIFICATION		38015 PH1-TB01		
SAMPLING DATE		17-Feb		
SAMPLING TIME		-		
TYPE OF SAMPLE(Soil or Groundwater)		GW		
SAMPLED BY		M&E		
TESTING LABORATORY		SPECIALIZED ASSAYS		
DATE RECEIVED		19-Feb		
TESTING LAB SAMPLE NUMBER		99-A23639		
PURGEABLES, SW 846 METHOD 8021B		8021B		
Units	ug/L	ug/L		ug/L
Date Tested		23-Feb		
Holding Time (Maximum is 14 Days)		6 days		
Benzene	71.28	<DL		1
cis-1,2-Dichloroethene	-	<DL		1
Ethylbenzene	28718	<DL		1
Toluene	200000	<DL		1
1,2,4-Trimethylbenzene	-	<DL		1
m, p- Xylenes	-	<DL		1
o- Xylenes	-	<DL		1
NOTE:				
1 - Where no IWQS exists (per Georgia rule				
391-03-6) for a compound a dash "-" was placed				
in the data block.				
2 - There were no hits for PAHs therefore they are				
not seen on this data summary table.				

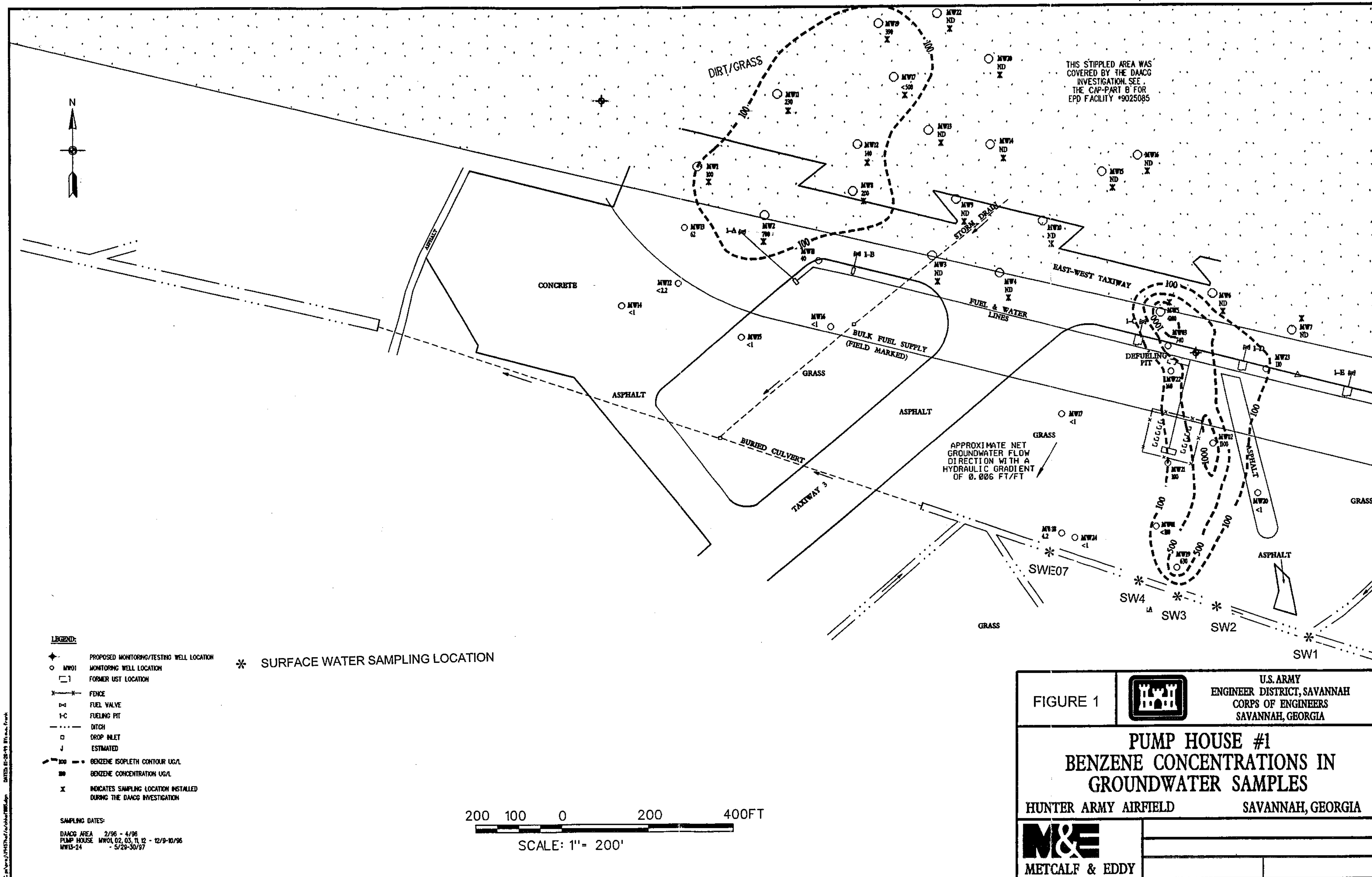
N
DIRT/GRASS
THIS STIPPLED AREA WAS COVERED BY THE DAACG INVESTIGATION. SEE THE CAP-PART B FOR EPD FACILITY #9025085
CONCRETE
ASPHALT
GRASS
STORM DRAIN
EAST-WEST TAXIWAY
FUEL & WATER LINES
BULK FUEL SUPPLY (FIELD MARKED)
BURIED CULVERT
TAXIWAY 3
DEFUELING PIT
APPROXIMATE NET GROUNDWATER FLOW DIRECTION WITH A HYDRAULIC GRADIENT OF 0.006 FT/FT
SWE07
SW4
SW3
SW2
SW1
LEGEND:
PROPOSED MONITORING/TESTING WELL LOCATION
MW01 MONITORING WELL LOCATION
FORMER UST LOCATION
FENCE
FUEL VALVE
FUELING PIT
DITCH
DROP INLET
ESTIMATED
BENZENE ISOPLETH CONTOUR UG/L
BENZENE CONCENTRATION UG/L
INDICATES SAMPLING LOCATION INSTALLED DURING THE DAACG INVESTIGATION
SAMPLING DATES:
DAACG AREA 2/96 - 4/96
PUMP HOUSE MW01, 02, 03, 11, 12 - 12/9-10/96
MW13-24 - 5/29-30/97
SURFACE WATER SAMPLING LOCATION
200 100 0 200 400FT
SCALE: 1" = 200'
U.S. ARMY ENGINEER DISTRICT, SAVANNAH CORPS OF ENGINEERS SAVANNAH, GEORGIA
M&E METCALF & EDDY

FIGURE 1

PUMP HOUSE #1 BENZENE CONCENTRATIONS IN GROUNDWATER SAMPLES

HUNTER ARMY AIRFIELD SAVANNAH, GEORGIA

Attachment D

Analytical Laboratory Data
And
Chain of Custody Forms

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

Hunter AAF

PROJECT NAME: Pump House 1 & 2

TASK ORDER NO.

PROJECT NO:

SAMPLE EVENT:

LABORATORY ID:

PROGRAM TYPE:

SAMPLER(S) NAME: D Howard / G Rowell

SAMPLER(S) SIGNATURE: Daniel Howard / G Rowell

ANALYTICAL PARAMETERS/METHODS

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES. CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
2/17/99	1645	W	PH2-SW1				3	X	—
	1650	W	PH2-SW2				3	X	—
	1700	W	PH2-SW3				3	X	—
	1705	W	PH2-SWE04				3	X	—
	1708	W	PH1-SW1				3	X	—
	1710	W	PH1-SW2				3	X	—
	1712	W	PH1-SW3				3	X	—
	1712	W	PH1-SW3D				3	X	—
	1715	W	PH1-SW4				3	X	—
	1720	W	PH1-SWE07				3	X	—
	1630	W	TB01				3	X	—
↓	—	W	TEMP	Blank			1		

Method No.	VOCs BTEX	SVOC	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
8021									

Relinquished by: (Signature) David Howard — Date/Time: 2/17/99/1900

Received by: — Date/Time: 2-18-99 1020

Cooler Temperature:

Remarks:

AIRBILL CO. FedEx

TRACKING NO: 305129196 1

Send Results to:

~~Christine Hettinger c/o METCALF & EDDY, INC.~~
~~1201 Peachtree St., N.E., 400 Colony Square, Suite 1101~~
~~nta, Georgia 30361~~
~~4) 881-8010, FAX (404) 872-3161~~

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SH.) IN ICE (Y)N

CHAIN - OF - CUSTODY - RECORD

Metcalf & Eddy

Hunter AAF

PROJECT NAME: Pump House 1+2

TASK ORDER NO.

PROJECT NO:

SAMPLE EVENT:

LABORATORY ID:

PROGRAM TYPE:

SAMPLER(S) NAME: D Howard / G Rowell

SAMPLER(S) SIGNATURE: Daniel Howard / G Rowell

DATE	TIME MILITARY	MATRIX (S/W)	FIELD SAMPLE ID	SITE ID	RES CODE	DEPTH (FT.)	NO. OF CONTS.	STANRDARD PRESERV. (Y/N)*	FILTERED (L) LAB (F) FIELD
2/17/99	1645	W	PH2-SW1				1	N	—
	1650	W	PH2-SW2				1	N	—
	1700	W	PH2-SW3				1	N	—
	1705	W	PH2-SWE04				1	N	—
	1708	W	PH1-SW1				1	N	—
	1710	W	PH1-SW2				1	N	—
	1712	W	PH1-SW3				1	N	—
	1712	W	PH1-SW3D				1	N	—
	1715	W	PH1-SW4				1	N	—
↓	1720	W	PH1-SWE07				1	N	—

ANALYTICAL PARAMETERS/METHODS

Method No.	VOCS	SVOC PAH	METALS ICP Hg CVAA GFAA	HERBICIDES	PESTICIDES	PCB	TPH/DRO	GRO	
		8310							
		1							
		1							
		1							
		1							
		1							
		1							
		1							
		1							
		1							
		1							
		1							

Relinquished by: (Signature) Daniel Howard — Date/Time: 2/17/99/1900

Received by: — Date/Time: 2-18-99 1020

Cooler Temperature:

Remarks:

AIRBILL CO. FedEx

TRACKING NO: 305129195 0

Send Results to:

~~Christine Hettinger c/o METCALF & EDDY, INC.~~
1201 Peachtree St, N.E., 400 Colony Square, Suite 1101
~~Atlanta, Georgia 30361~~
~~(404) 881-8010~~, FAX (404) 872-3161

STANDARD PRESERVATION (Y):

(H) HCl/VOC,
(N) HNO_3/METALS
(S) H_2SO_4/
(O) OTHER _____

STORED/SH[illegible] IN ICE (Y)/N

Cooler Receipt Form

Job # 6290 No. of Coolers 2 Return Cooler Hydrologic

Project: Hunter AAF - Pumphouse 1 & 2 Date Received: 2-18-99

Date cooler opened: 2-18-99 by (print) J. Smith
(sign)

1. Did cooler come with a shipping slip? (Yes) No
If yes, enter carrier & air bill number here: FedEx 305129195 0 305129196 1

2. Were custody seals on outside of cooler: Yes (No)
How many & where: Ø seal date: — seal name: —

3. Were custody seals unbroken upon receipt? (Yes) No

4. Did you screen samples for radioactivity? (Yes) No

5. Were custody papers sealed in a plastic bag & taped to inside lid? (Yes) No

6. Were custody papers filled out properly (ink,signed,etc.)? (Yes) No

7. Did you sign custody papers in the appropriate place? (Yes) No

8. Was project identifiable from custody papers? If yes enter project name at the top of this form. (Yes) No

9. If required, was enough ice used: Type: Regular (Yes) No

Date logged-in: 2-18-99 by (print) J. Smith
(sign)

1. Describe cooler packing: Bubble Wrap / ~~Styrofoam~~

2. Were all bottles sealed in separate plastic bags? (Yes) No

3. Did all bottles arrive unbroken & labels in good condition? (Yes) No

4. Were all bottle labels complete (ID,date,time,signature,pres.,etc.) (Yes) No

5. Were all bottle labels agree with custody papers? ~~Yes~~ PH2-SW4 on bottle for 8310 PH2-SWE04 on COC and on 8021 bottles Yes (No)

6. Were correct containers used for the tests indicated? (Yes) No

7. Were correct preservatives added to samples? (Yes) No

8. Was a sufficient amount of sample sent for tests? (Yes) No

9. Were bubbles absent in Volatile samples? If no, list Field ID: (Yes) No

10. Number of days from sample date when received in the lab 1

11. Was project manager called & status discussed? (Yes) No
If yes, give details on the bottom of this form.

Who was called? Mike Sydow By whom? J. Smith Date: 2-18-99

US Army Corps
of Engineers
Savannah District

Environmental & Materials Unit
200 North Cobb Parkway
Building 400, Suite 404
Marietta, Georgia 30062

Phone: (678) 354-0310 Fax: (678) 354-0330

Project Name Hunter AAF Pumphouse 1 & 2 Job No.- 6290

Lab #	Field Id	Sample Date	Sample Time
38006	PH2-SW1	17-Feb-99	16:45
38007	PH2-SW2	17-Feb-99	16:50
38008	PH2-SW3	17-Feb-99	17:00
38009	PH2-SWE04	17-Feb-99	17:05
38010	PH1-SW1	17-Feb-99	17:08
38011	PH1-SW2	17-Feb-99	17:10
38012	PH1-SW3	17-Feb-99	17:12
38013	PH1-SW3D	17-Feb-99	17:15
38014	PH1-SW4	17-Feb-99	17:20
38015	PH1-SWE07	17-Feb-99	16:30
38016	TB01	17-Feb-99	

Test Performed	Test Lab	Test date
PAH	SPA	23-Feb-99
Volatiles	SPA	2/20/99-2/24/99

See attached report for test results.

Checked by: T.A.

Signed by:
Blaise Willis
Blaise Willis
Chemist

U.S. Army Corps of Engineers

Work Order # _____ Job # 6290

Chain of Custody Record

(ER 1110-1-263)

Proj. No. | Project Name: 131864 Hunter AAF Pumphouse 1&2

Sampler: (Signature)

TAT 14 Days

Remarks:

Date	Time	Pres.	Gr	Cm	Site Code/Sample Number	No. of Conts.	8021	8310 (PAH)						SAD NO.	MATRIX
2-17-99	1645				PH2-SW1	4	✓	✓			23629			38006	Water
	1650				PH2-SW2		✓	✓				30		38007	
	1700				PH2-SW3		✓	✓				31		38008	
	1705				PH2-SWE04		✓	✓				32		38009	
	1708				PH1-SW1		✓	✓				33		38010	
	1710				PH1-SW2		✓	✓				34		38011	
	1712				PH1-SW3		✓	✓				35		38012	
	1715				PH1-SW3D		✓	✓				36		38013	
	1720				PH1-SW4		✓	✓				37		38014	
	1630				PH1-SWE07		✓	✓			23638			38015	

Sampler Relinquished by:	Date/Time 2-18-99 1030	Received by: (Sig.)	Date/Time
Relinquished by: (Sig.)	Date/Time	Received by: (Sig.) 1	Date/Time
Relinquished by: (Sig.)	Date/Time	Received for Laboratory by: (Sig.)	Date/Time 2/19/99 900
Custody Seal No.		Lab Case No.	

Hazards Associated with Samples

Remarks at time of receipt.

Proponent: CEMP-RT

US Army Corps of Engineers
Savannah District
Environmental & Materials Unit

131864

Chain of Custody Record

Project Name: Hunter AAF Pumphouse 102
Work Order #:
Job #: ~~[illegible]~~.6290 cont.
TAT: 14 Day

Date	Time	Pres.	Gr	Cm	Site Code/Sample Number	No. of Containers	8021						SAD No. / Matrix
2-17-99	—				TB03	3	✓		93639				38016 water

Sampler Relinquisher by: (sig)	Date/Time 2-18-99 1030	Received by: (sig)	Date/Time 2/19/99 900	Remarks:
Relinquished by: (sig)	Date/Time	Received by: (sig)	Date/Time	
Relinquished by: (sig)	Date/Time	Received by: (sig)	Date/Time	

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23633
Sample ID: 38010 PH1-SW1
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected: 17:08
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND	ng/l	0.00103	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenapthene	ND	ng/l	0.00103	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Anthracene	ND	ng/l	0.00068	0.00066	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluoranthene	ND	ng/l	0.00022	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluorene	ND	ng/l	0.00022	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Pyrene	ND	ng/l	0.00028	0.00027	1	2/23/99	21:43	Noorbakhsh	8310	1038
zo(a)anthracene	ND	ng/l	0.00013	0.00013	1	2/23/99	21:43	Noorbakhsh	8310	1038
benzo(a)pyrene	ND	ng/l	0.00010	0.00010	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(b)fluoranthene	ND	ng/l	0.00019	0.00018	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(k)fluoranthene	ND	ng/l	0.00018	0.00017	1	2/23/99	21:43	Noorbakhsh	8310	1038
Chrysene	ND	ng/l	0.00015	0.00015	1	2/23/99	21:43	Noorbakhsh	8310	1038
Dibenzo(a,h)anthracene	ND	ng/l	0.00031	0.00030	1	2/23/99	21:43	Noorbakhsh	8310	1038
Indeno(1,2,3-cd)pyrene	ND	ng/l	0.00044	0.00043	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenaphthylene	ND	ng/l	0.00206	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(g,h,i)perylene	ND	ng/l	0.00078	0.00076	1	2/23/99	21:43	Noorbakhsh	8310	1038
Phenanthrene	ND	ng/l	0.00066	0.00064	1	2/23/99	21:43	Noorbakhsh	8310	1038
1-Methylnapthalene	ND	ng/l	0.00206	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
2-Methylnapthalene	ND	ng/l	0.00206	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
VOLATILE ORGANICS by GC										
Benzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Bromobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
n-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
sec-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
tert-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Chlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
2-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
4-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,3-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,4-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Ethylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
opropylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
4-Isopropyltoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Naphthalene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
n-Propylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Styrene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495

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ANALYTICAL REPORT

Laboratory Number: 99-A23633
Sample ID: 38010 PH1-SW1

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Toluene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
m,p-Xylenes	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
o-Xylene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Hexachlorobutadiene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Bromochloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Bromodichloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Bromoform	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Bromomethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Carbon tetrachloride	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Chloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Chloroform	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
[illegible]romethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Dibromochloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Ethylene Dibromide	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Dibromomethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Vinyl chloride	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,1-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,1-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
cis-1,2-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,3-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
2,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,1-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Methylene chloride	ND	ng/l	0.0050	0.0050	1	2/20/99	19:12	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,1,2,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Tetrachloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
Trichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
[illegible]ichlorofluoromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495
[illegible],2-Dibromo-3-chloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:12	T McCollum	8021B	9495

ND = Not detected at the report limit.

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ANALYTICAL REPORT

Laboratory Number: 99-A23633
Sample ID: 38010 PH1-SW1

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	970. ml	1.00 ml	2/22/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	99.	50. - 150.
Hall Surr., chloroprene	88.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	79.	59. - 117.
PAH Surr., p-terphenyl d14	70.	20. - 140.

Report Approved By: Eric S Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23634
Sample ID: 38011 PH1-SW2
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected: 17:10
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND	mg/l	0.00101	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenapthene	ND	mg/l	0.00101	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Anthracene	ND	mg/l	0.00067	0.00066	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluoranthene	ND	mg/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluorene	ND	mg/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Pyrene	ND	mg/l	0.00027	0.00027	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(a)anthracene	ND	mg/l	0.00013	0.00013	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(a)pyrene	ND	mg/l	0.00010	0.00010	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(b)fluoranthene	ND	mg/l	0.00018	0.00018	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(k)fluoranthene	ND	mg/l	0.00017	0.00017	1	2/23/99	21:43	Noorbakhsh	8310	1038
Chrysene	ND	mg/l	0.00015	0.00015	1	2/23/99	21:43	Noorbakhsh	8310	1038
Dibenzo(a,h)anthracene	ND	mg/l	0.00030	0.00030	1	2/23/99	21:43	Noorbakhsh	8310	1038
Indeno(1,2,3-cd)pyrene	ND	mg/l	0.00043	0.00043	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenaphthylene	ND	mg/l	0.00202	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(g,h,i)perylene	ND	mg/l	0.00077	0.00076	1	2/23/99	21:43	Noorbakhsh	8310	1038
Phenanthrene	ND	mg/l	0.00065	0.00064	1	2/23/99	21:43	Noorbakhsh	8310	1038
1-Methylnapthalene	ND	mg/l	0.00202	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
2-Methylnapthalene	ND	mg/l	0.00202	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
VOLATILE ORGANICS by GC										
Benzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Bromobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
n-Butylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
sec-Butylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
tert-Butylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Chlorobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
2-Chlorotoluene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
4-Chlorotoluene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2-Dichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,3-Dichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,4-Dichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Ethylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Isopropylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
4-Isopropyltoluene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Naphthalene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
n-Propylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Styrene	ND	mg/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495

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ANALYTICAL REPORT

Laboratory Number: 99-A23634
Sample ID: 38011 PH1-SW2

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Toluene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
m,p-Xylenes	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
o-Xylene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Hexachlorobutadiene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Bromochloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Bromodichloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Bromoform	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Bromomethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Carbon tetrachloride	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Chloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Chloroform	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
oromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Dibromochloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Ethylene Dibromide	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Dibromomethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Vinyl chloride	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,1-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,1-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
cis-1,2-Dichloroethene	0.0026	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,3-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
2,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,1-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Methylene chloride	ND	ng/l	0.0050	0.0050	1	2/20/99	19:56	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,1,2,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Tetrachloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Trichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
Trichlorofluoromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495
,2-Dibromo-3-chloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	19:56	T McCollum	8021B	9495

ND = Not detected at the report limit.

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ANALYTICAL REPORT

Laboratory Number: 99-A23634
Sample ID: 38011 PH1-SW2

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	990. ml	1.00 ml	2/22/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	99.	50. - 150.
Hall Surr., chloroprene	88.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	78.	59. - 117.
PAH Surr., p-terphenyl d14	68.	20. - 140.

Report Approved By: Eric L. Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
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ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23635
Sample ID: 38012 PH1-SW3
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected: 17:12
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND	ng/l	0.00102	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenapthene	ND	ng/l	0.00102	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Anthracene	ND	ng/l	0.00067	0.00066	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluoranthene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluorene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Pyrene	ND	ng/l	0.00028	0.00027	1	2/23/99	21:43	Noorbakhsh	8310	1038
zo(a)anthracene	ND	ng/l	0.00013	0.00013	1	2/23/99	21:43	Noorbakhsh	8310	1038
benzo(a)pyrene	ND	ng/l	0.00010	0.00010	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(b)fluoranthene	ND	ng/l	0.00018	0.00018	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(k)fluoranthene	ND	ng/l	0.00017	0.00017	1	2/23/99	21:43	Noorbakhsh	8310	1038
Chrysene	ND	ng/l	0.00015	0.00015	1	2/23/99	21:43	Noorbakhsh	8310	1038
Dibenzo(a,h)anthracene	ND	ng/l	0.00031	0.00030	1	2/23/99	21:43	Noorbakhsh	8310	1038
Indeno(1,2,3-cd)pyrene	ND	ng/l	0.00044	0.00043	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenaphthylene	ND	ng/l	0.00204	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(g,h,i)perylene	ND	ng/l	0.00078	0.00076	1	2/23/99	21:43	Noorbakhsh	8310	1038
Phenanthrene	ND	ng/l	0.00065	0.00064	1	2/23/99	21:43	Noorbakhsh	8310	1038
1-Methylnapthalene	ND	ng/l	0.00204	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
2-Methylnapthalene	ND	ng/l	0.00204	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
VOLATILE ORGANICS by GC										
Benzene	0.0111	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Bromobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
n-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
sec-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
tert-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Chlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
2-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
4-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,3-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,4-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
thylbenzene	0.0364	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
opropylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
4-Isopropyltoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Naphthalene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
n-Propylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Styrene	ND	ng/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A23635
Sample ID: 38012 PH1-SW3

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Toluene	0.0960	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	0.0018	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
m,p-Xylenes	0.0540	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
o-Xylene	0.0228	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Hexachlorobutadiene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Bromochloromethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Bromodichloromethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Bromoform	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Bromomethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Carbon tetrachloride	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Chloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Chloroform	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
[illegible]loromethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
[illegible]bromochloromethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Ethylene Dibromide	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Dibromomethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Vinyl chloride	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,1-Dichloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2-Dichloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,1-Dichloroethene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
cis-1,2-Dichloroethene	0.0022	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,2-Dichloropropane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,3-Dichloropropane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
2,2-Dichloropropane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,1-Dichloropropene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Methylene chloride	ND	ug/l	0.0050	0.0050	1	2/20/99	20:39	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,1,2,2-Tetrachloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Tetrachloroethene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Trichloroethene	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
Trichlorofluoromethane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495
[illegible]2-Dibromo-3-chloropropane	ND	ug/l	0.0010	0.0010	1	2/20/99	20:39	T McCollum	8021B	9495

ND = Not detected at the report limit.

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
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Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A23635
Sample ID: 38012 PH1-SW3

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	980. ml	1.00 ml	2/22/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	106.	50. - 150.
Hall Surr., chloroprene	90.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	81.	59. - 117.
PAH Surr., p-terphenyl d14	86.	20. - 140.

Report Approved By: Eric S Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
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P.O. Box 40566
Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23636
Sample ID: 38013 PH1-SW3D
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected: 17:15
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND	ng/l	0.00101	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenapthene	ND	ng/l	0.00101	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Anthracene	ND	ng/l	0.00067	0.00066	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluoranthene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluorene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Pyrene	ND	ng/l	0.00027	0.00027	1	2/23/99	21:43	Noorbakhsh	8310	1038
zo(a)anthracene	ND	ng/l	0.00013	0.00013	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(a)pyrene	ND	ng/l	0.00010	0.00010	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(b)fluoranthene	ND	ng/l	0.00018	0.00018	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(k)fluoranthene	ND	ng/l	0.00017	0.00017	1	2/23/99	21:43	Noorbakhsh	8310	1038
Chrysene	ND	ng/l	0.00015	0.00015	1	2/23/99	21:43	Noorbakhsh	8310	1038
Dibenzo(a,h)anthracene	ND	ng/l	0.00030	0.00030	1	2/23/99	21:43	Noorbakhsh	8310	1038
Indeno(1,2,3-cd)pyrene	ND	ng/l	0.00043	0.00043	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenaphthylene	ND	ng/l	0.00202	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(g,h,i)perylene	ND	ng/l	0.00077	0.00076	1	2/23/99	21:43	Noorbakhsh	8310	1038
Phenanthrene	ND	ng/l	0.00065	0.00064	1	2/23/99	21:43	Noorbakhsh	8310	1038
1-Methylnapthalene	ND	ng/l	0.00202	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
2-Methylnapthalene	ND	ng/l	0.00202	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
VOLATILE ORGANICS by GC										
Benzene	0.0118	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Bromobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
n-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
sec-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
tert-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Chlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
2-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
4-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,3-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,4-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Ethylbenzene	0.0453	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
opropylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
4-Isopropyltoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Naphthalene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
n-Propylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Styrene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495

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Nashville, TN 37204-0566
Phone 1-615-726-0177

ANALYTICAL REPORT

Laboratory Number: 99-A23636
Sample ID: 38013 PH1-SW3D

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Toluene	0.1580	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	0.0023	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
m,p-Xylenes	0.0780	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
o-Xylene	0.0284	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Hexachlorobutadiene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Bromochloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Bromodichloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Bromoform	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Bromomethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Carbon tetrachloride	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Chloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Chloroform	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Chloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Dibromochloromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Ethylene Dibromide	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Dibromomethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Vinyl chloride	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,1-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,1-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
cis-1,2-Dichloroethene	0.0022	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,3-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
2,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,1-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Methylene chloride	ND	ng/l	0.0050	0.0050	1	2/20/99	21:23	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,1,2,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Tetrachloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Trichloroethene	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
Trichlorofluoromethane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495
1,2-Dibromo-3-chloropropane	ND	ng/l	0.0010	0.0010	1	2/20/99	21:23	T McCollum	8021B	9495

ND = Not detected at the report limit.

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ANALYTICAL REPORT

Laboratory Number: 99-A23636
Sample ID: 38013 PH1-SW3D

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	990. ml	1.00 ml	2/22/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	109.	50. - 150.
Hall Surr., chloroprene	93.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	79.	59. - 117.
PAH Surr., p-terphenyl d14	82.	20. - 140.

Report Approved By: Eric S. Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23637
Sample ID: 38014 PH1-SW4
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected: 17:20
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND	ng/l	0.00100	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenapthene	ND	ng/l	0.00100	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Anthracene	ND	ng/l	0.00066	0.00066	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluoranthene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluorene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Pyrene	ND	ng/l	0.00027	0.00027	1	2/23/99	21:43	Noorbakhsh	8310	1038
[illegible]nzo(a)anthracene	ND	ng/l	0.00013	0.00013	1	2/23/99	21:43	Noorbakhsh	8310	1038
[illegible]zo(a)pyrene	ND	ng/l	0.00010	0.00010	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(b)fluoranthene	ND	ng/l	0.00018	0.00018	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(k)fluoranthene	ND	ng/l	0.00017	0.00017	1	2/23/99	21:43	Noorbakhsh	8310	1038
Chrysene	ND	ng/l	0.00015	0.00015	1	2/23/99	21:43	Noorbakhsh	8310	1038
Dibenzo(a,h)anthracene	ND	ng/l	0.00030	0.00030	1	2/23/99	21:43	Noorbakhsh	8310	1038
Indeno(1,2,3-cd)pyrene	ND	ng/l	0.00043	0.00043	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenaphthylene	ND	ng/l	0.00200	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(g,h,i)perylene	ND	ng/l	0.00076	0.00076	1	2/23/99	21:43	Noorbakhsh	8310	1038
Phenanthrene	ND	ng/l	0.00064	0.00064	1	2/23/99	21:43	Noorbakhsh	8310	1038
1-Methylnapthalene	ND	ng/l	0.00200	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
2-Methylnapthalene	ND	ng/l	0.00200	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
VOLATILE ORGANICS by GC										
Benzene	0.0090	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Bromobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
n-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
sec-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
tert-Butylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Chlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
2-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
4-Chlorotoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,3-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,4-Dichlorobenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Ethylbenzene	0.0054	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
[illegible]opropylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
4-Isopropyltoluene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Naphthalene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
n-Propylbenzene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Styrene	ND	ng/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495

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ANALYTICAL REPORT

Laboratory Number: 99-A23637
Sample ID: 38014 PH1-SW4

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Toluene	0.1440	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	0.0010	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
m,p-Xylenes	0.1115	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
o-Xylene	0.0223	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Hexachlorobutadiene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Bromochloromethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Bromodichloromethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Bromoform	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Bromomethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Carbon tetrachloride	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Chloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Chloroform	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Chloromethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Dibromochloromethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Ethylene Dibromide	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Dibromomethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Vinyl chloride	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,1-Dichloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2-Dichloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,1-Dichloroethene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
cis-1,2-Dichloroethene	0.0015	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2-Dichloropropane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,3-Dichloropropane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
2,2-Dichloropropane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,1-Dichloropropene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Methylene chloride	ND	mg/l	0.0050	0.0050	1	2/20/99	22:06	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,1,2,2-Tetrachloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Tetrachloroethene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Trichloroethene	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
Trichlorofluoromethane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495
1,2-Dibromo-3-chloropropane	ND	mg/l	0.0010	0.0010	1	2/20/99	22:06	T McCollum	8021B	9495

ND = Not detected at the report limit.

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ANALYTICAL REPORT

Laboratory Number: 99-A23637
Sample ID: 38014 PH1-SW4

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	1000 ml	1.00 ml	2/22/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	108.	50. - 150.
Hall Surr., chloroprene	88.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	86.	59. - 117.
PAH Surr., p-terphenyl d14	84.	20. - 140.

Report Approved By: Eric S Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

SPECIALIZED ASSAYS, INC.
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ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23638
Sample ID: 38015 PH1-SWE07
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected: 16:30
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
ORGANIC PARAMETERS										
Naphthalene	ND	ng/l	0.00102	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenapthene	ND	ng/l	0.00102	0.00100	1	2/23/99	21:43	Noorbakhsh	8310	1038
Anthracene	ND	ng/l	0.00067	0.00066	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluoranthene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Fluorene	ND	ng/l	0.00021	0.00021	1	2/23/99	21:43	Noorbakhsh	8310	1038
Pyrene	ND	ng/l	0.00028	0.00027	1	2/23/99	21:43	Noorbakhsh	8310	1038
...o(a)anthracene	ND	ng/l	0.00013	0.00013	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(a)pyrene	ND	ng/l	0.00010	0.00010	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(b)Fluoranthene	ND	ng/l	0.00018	0.00018	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(k)Fluoranthene	ND	ng/l	0.00017	0.00017	1	2/23/99	21:43	Noorbakhsh	8310	1038
Chrysene	ND	ng/l	0.00015	0.00015	1	2/23/99	21:43	Noorbakhsh	8310	1038
Dibenzo(a,h)anthracene	ND	ng/l	0.00031	0.00030	1	2/23/99	21:43	Noorbakhsh	8310	1038
Indeno(1,2,3-cd)pyrene	ND	ng/l	0.00044	0.00043	1	2/23/99	21:43	Noorbakhsh	8310	1038
Acenaphthylene	ND	ng/l	0.00204	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
Benzo(g,h,i)perylene	ND	ng/l	0.00078	0.00076	1	2/23/99	21:43	Noorbakhsh	8310	1038
Phenanthrene	ND	ng/l	0.00065	0.00064	1	2/23/99	21:43	Noorbakhsh	8310	1038
1-Methylnapthalene	ND	ng/l	0.00204	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
2-Methylnapthalene	ND	ng/l	0.00204	0.00200	1	2/23/99	21:43	Noorbakhsh	8310	1038
VOLATILE ORGANICS by GC										
Benzene	0.0085	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
Bromobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
n-Butylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
sec-Butylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
tert-Butylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
Chlorobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
2-Chlorotoluene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
4-Chlorotoluene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
1,2-Dichlorobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
1,3-Dichlorobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
1,4-Dichlorobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
...hylbenzene	0.0320	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
...propylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
4-Isopropyltoluene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
Naphthalene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
n-Propylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495
Styrene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollun	8021B	9495

SPECIALIZED ASSAYS, INC.
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ANALYTICAL REPORT

Laboratory Number: 99-A23638
Sample ID: 38015 PH1-SWE07

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Toluene	0.1850	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
m,p-Xylenes	0.1575	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
o-Xylene	0.0250	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Hexachlorobutadiene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Bromochloromethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Bromodichloromethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Bromoform	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Bromomethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Carbon tetrachloride	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Chloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Chloroform	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
`oromethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
..oromochloromethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Ethylene Dibromide	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Dibromomethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Vinyl chloride	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,1-Dichloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,2-Dichloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,1-Dichloroethene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
cis-1,2-Dichloroethene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,2-Dichloropropane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,3-Dichloropropane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
2,2-Dichloropropane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,1-Dichloropropene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Methylene chloride	ND	ng/l	0.0250	0.0050	5	2/24/99	1:59	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,1,2,2-Tetrachloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Tetrachloroethene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Trichloroethene	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
Trichlorofluoromethane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495
,2-Dibromo-3-chloropropane	ND	ng/l	0.0050	0.0010	5	2/24/99	1:59	T McCollum	8021B	9495

ND = Not detected at the report limit.

SPECIALIZED ASSAYS, INC.
2960 Foster Creighton Dr.
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ANALYTICAL REPORT

Laboratory Number: 99-A23638
Sample ID: 38015 PH1-SWE07

Sample Extraction Data

Parameter	Wt/Vol Extracted	Extract Vol	Date	Analyst	Method
PAH's	980. ml	1.00 ml	2/22/99	Fitzwater	3510

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	98.	50. - 150.
Hall Surr., chloroprene	92.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	94.	59. - 117.
PAH Surr., p-terphenyl d14	82.	20. - 140.

Report Approved By: Eric S. Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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ANALYTICAL REPORT

DIRECTOR U.S. ARMY CORPS ENG. 5394
CESAD LABORATORY-BLDG 400
200 N COBB PKWY, STE 404
MARIETTA, GA 30062

Lab Number: 99-A23639
Sample ID: 38016 T-B01
Sample Type: Water
Site ID:

Date Collected: 2/17/99
Time Collected:
Date Received: 2/19/99
Time Received: 9:00

Project:
Project Name:
Sampler:

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
VOLATILE ORGANICS by GC										
Benzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Bromobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
n-Butylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
sec-Butylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
tert-Butylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Chlorobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
2-Chlorotoluene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
4-Chlorotoluene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2-Dichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,3-Dichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,4-Dichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Ethylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Isopropylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
4-Isopropyltoluene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Naphthalene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
n-Propylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Styrene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Toluene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2,3-Trichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2,4-Trichlorobenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2,4-Trimethylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,3,5-Trimethylbenzene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
m,p-Xylenes	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
o-Xylene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Hexachlorobutadiene	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Bromochloromethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Bromodichloromethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Bromoform	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Bromomethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Carbon tetrachloride	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Chloroethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Chloroform	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Chloromethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Dibromochloromethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Ethylene Dibromide	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Dibromomethane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2,3-Trichloropropane	ND	mg/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495

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ANALYTICAL REPORT

Laboratory Number: 99-A23639
Sample ID: 38016 TB01

Analyte	Result	Units	Report Limit	Quan Limit	Dil Factor	Date	Time	Analyst	Method	Batch
Vinyl chloride	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Dichlorodifluoromethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,1-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2-Dichloroethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,1-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
cis-1,2-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
trans-1,2-Dichloroethene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,3-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
2,2-Dichloropropane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,1-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
cis-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
trans-1,3-Dichloropropene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Methylene chloride	ND	ng/l	0.0050	0.0050	1	2/21/99	0:17	T McCollum	8021B	9495
1,1,1,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2,2-Tetrachloroethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Tetrachloroethene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,1,1-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,1,2-Trichloroethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Trichloroethene	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
Trichlorofluoromethane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495
1,2-Dibromo-3-chloropropane	ND	ng/l	0.0010	0.0010	1	2/21/99	0:17	T McCollum	8021B	9495

ND = Not detected at the report limit.

Surrogate	% Recovery	Target Range
PID Surr., a,a,a-trifluorotoluene	99.	50. - 150.
Hall Surr., chloroprene	90.	63. - 122.
Hall Surr., 1-chloro-3-fluorobenzene	78.	59. - 117.

Report Approved By: Eric S. Smith Report Date: 2/27/99

Theodore J. Duello, Ph.D., Lab Director
Michael H. Dunn, M.S., Technical Director
Johnny A. Mitchell, Dir. Technical Services
Eric Smith, Assistant Technical Director

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PROJECT QUALITY CONTROL DATA

Matrix Spike Recovery

Analyte	units	Orig. Val.	MS Val	Spike Conc	Recovery	Target Range	Q.C. Batch
Naphthalene	ng/l	< 0.00100	0.00850	0.0100	85	55. - 115.	1038
Acenapthene	ng/l	< 0.00100	0.00950	0.0100	95	41. - 108.	1038
Anthracene	ng/l	< 0.00066	0.00910	0.0100	91	25. - 119.	1038
Fluoranthene	ng/l	< 0.00021	0.00880	0.0100	88	42. - 120.	1038
Fluorene	ng/l	< 0.00021	0.00910	0.0100	91	48. - 118.	1038
Pyrene	ng/l	< 0.00027	0.00910	0.0100	91	51. - 114.	1038
Benzo(a)anthracene	ng/l	< 0.00013	0.00910	0.0100	91	47. - 111.	1038
Benzo(a)pyrene	ng/l	< 0.00010	0.00790	0.0100	79	51. - 109.	1038
Benzo(b)fluoranthene	ng/l	< 0.00018	0.00870	0.0100	87	62. - 115.	1038
Benzo(k)fluoranthene	ng/l	< 0.00017	0.00870	0.0100	87	62. - 110.	1038
Chrysene	ng/l	< 0.00015	0.00910	0.0100	91	58. - 109.	1038
Dibenzo(a,h)anthracene	ng/l	< 0.00030	0.00820	0.0100	82	59. - 122.	1038
Indeno(1,2,3-cd)pyrene	ng/l	< 0.00043	0.00810	0.0100	81	56. - 114.	1038
Acenaphthylene	ng/l	< 0.00200	0.00950	0.0100	95	30. - 128.	1038
Benzo(g,h,i)perylene	ng/l	< 0.00076	0.00800	0.0100	80	56. - 115.	1038
Phenanthrene	ng/l	< 0.00064	0.00920	0.0100	92	47. - 123.	1038
nzene	ng/l	< 0.0010	0.0211	0.0200	106	76. - 122.	9495
oluene	ng/l	< 0.0010	0.0208	0.0200	104	74. - 127.	9495
m,p-Xylenes	ng/l	< 0.0010	0.0403	0.0400	101	75. - 133.	9495
cis-1,2-Dichloroethene	ng/l	< 0.0010	0.0195	0.0200	98	76. - 123.	9495
Tetrachloroethene	ng/l	< 0.0010	0.0199	0.0200	100	69. - 127.	9495
Trichloroethene	ng/l	< 0.0010	0.0205	0.0200	102	67. - 129.	9495

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
Naphthalene	ng/l	0.00850	0.0100	16.22	23.	1038
Acenapthene	ng/l	0.00950	0.0102	7.11	23.	1038
Anthracene	ng/l	0.00910	0.0110	18.91	27.	1038
Fluoranthene	ng/l	0.00880	0.0110	22.22#	18.	1038
Fluorene	ng/l	0.00910	0.0109	18.00	27.	1038
Pyrene	ng/l	0.00910	0.0114	22.44#	18.	1038
Benzo(a)anthracene	ng/l	0.00910	0.0115	23.30#	21.	1038
Benzo(a)pyrene	ng/l	0.00790	0.0108	31.02#	26.	1038
Benzo(b)fluoranthene	ng/l	0.00870	0.0115	27.72#	23.	1038
Benzo(k)fluoranthene	ng/l	0.00870	0.0114	26.87#	19.	1038
Chrysene	ng/l	0.00910	0.0115	23.30#	17.	1038
Dibenzo(a,h)anthracene	ng/l	0.00820	0.0118	36.00#	28.	1038
Indeno(1,2,3-cd)pyrene	ng/l	0.00810	0.0116	35.53#	28.	1038
Acenaphthylene	ng/l	0.00950	0.0107	11.88	27.	1038
Benzo(g,h,i)perylene	ng/l	0.00800	0.0117	37.56#	31.	1038
henanthrene	ng/l	0.00920	0.0111	18.72#	18.	1038
Benzene	ng/l	0.0211	0.0207	1.91	12.	9495
Toluene	ng/l	0.0208	0.0203	2.43	11.	9495
m,p-Xylenes	ng/l	0.0403	0.0393	2.51	12.	9495

SPECIALIZED ASSAYS, INC.
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PROJECT QUALITY CONTROL DATA

Matrix Spike Duplicate

Analyte	units	Orig. Val.	Duplicate	RPD	Limit	Q.C. Batch
cis-1,2-Dichloroethene	ng/l	0.0195	0.0210	7.41	12.	9495
Tetrachloroethene	ng/l	0.0199	0.0188	5.68	12.	9495
Trichloroethene	ng/l	0.0205	0.0231	11.93	19.	9495

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
Naphthalene	ng/l	0.0100	0.00920	92	60 - 140	1038
Acenapthene	ng/l	0.0100	0.00980	98	60 - 140	1038
Anthracene	ng/l	0.0100	0.0101	101	60 - 140	1038
Fluoranthene	ng/l	0.0100	0.0104	104	60 - 140	1038
Fluorene	ng/l	0.0100	0.0103	103	60 - 140	1038
Pyrene	ng/l	0.0100	0.0105	105	60 - 140	1038
Benzo(a)anthracene	ng/l	0.0100	0.0106	106	60 - 140	1038
Benzo(a)pyrene	ng/l	0.0100	0.00960	96	60 - 140	1038
Benzo(b)Fluoranthene	ng/l	0.0100	0.00960	96	60 - 140	1038
Benzo(k)Fluoranthene	ng/l	0.0100	0.0104	104	60 - 140	1038
Chrysene	ng/l	0.0100	0.0104	104	60 - 140	1038
Dibenzo(a,h)anthracene	ng/l	0.0100	0.0105	105	60 - 140	1038
Indeno(1,2,3-cd)pyrene	ng/l	0.0100	0.0105	105	60 - 140	1038
Acenaphthylene	ng/l	0.0100	0.0100	100	60 - 140	1038
Benzo(g,h,i)perylene	ng/l	0.0100	0.0102	102	60 - 140	1038
Phenanthrene	ng/l	0.0100	0.0102	102	60 - 140	1038
Benzene	ng/l	0.0200	0.0209	104	70 - 130	9495
Bromobenzene	ng/l	0.0200	0.0216	108	70 - 130	9495
n-Butylbenzene	ng/l	0.0200	0.0219	110	70 - 130	9495
sec-Butylbenzene	ng/l	0.0200	0.0217	108	70 - 130	9495
tert-Butylbenzene	ng/l	0.0200	0.0217	108	70 - 130	9495
Chlorobenzene	ng/l	0.0200	0.0224	112	70 - 130	9495
2-Chlorotoluene	ng/l	0.0200	0.0207	104	70 - 130	9495
4-Chlorotoluene	ng/l	0.0200	0.0234	117	70 - 130	9495
1,2-Dichlorobenzene	ng/l	0.0200	0.0235	118	70 - 130	9495
1,3-Dichlorobenzene	ng/l	0.0200	0.0219	110	70 - 130	9495
1,4-Dichlorobenzene	ng/l	0.0200	0.0226	113	70 - 130	9495
Ethylbenzene	ng/l	0.0200	0.0209	104	70 - 130	9495
Isopropylbenzene	ng/l	0.0200	0.0211	106	70 - 130	9495
4-Isopropyltoluene	ng/l	0.0200	0.0216	108	70 - 130	9495
Naphthalene	ng/l	0.0200	0.0223	112	70 - 130	9495
n-Propylbenzene	ng/l	0.0200	0.0214	107	70 - 130	9495
Styrene	ng/l	0.0200	0.0208	104	70 - 130	9495
Toluene	ng/l	0.0200	0.0206	103	70 - 130	9495
1,2,3-Trichlorobenzene	ng/l	0.0200	0.0220	110	70 - 130	9495
1,2,4-Trichlorobenzene	ng/l	0.0200	0.0223	112	70 - 130	9495
1,2,4-Trimethylbenzene	ng/l	0.0200	0.0218	109	70 - 130	9495
1,3,5-Trimethylbenzene	ng/l	0.0200	0.0214	107	70 - 130	9495

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PROJECT QUALITY CONTROL DATA

Laboratory Control Data

Analyte	units	Known Val.	Analyzed Val	% Recovery	Target Range	Q.C. Batch
m,p-Xylenes	mg/l	0.0400	0.0399	100	70 - 130	9495
o-Xylene	mg/l	0.0200	0.0207	104	70 - 130	9495
Hexachlorobutadiene	mg/l	0.0200	0.0200	100	70 - 130	9495
Bromochloromethane	mg/l	0.0200	0.0202	101	70 - 130	9495
Bromodichloromethane	mg/l	0.0200	0.0201	100	70 - 130	9495
Bromoform	mg/l	0.0200	0.0201	100	70 - 130	9495
Bromomethane	mg/l	0.0200	0.0203	102	70 - 130	9495
Carbon tetrachloride	mg/l	0.0200	0.0219	110	70 - 130	9495
Chloroethane	mg/l	0.0200	0.0215	108	70 - 130	9495
Chloroform	mg/l	0.0200	0.0199	100	70 - 130	9495
Chloromethane	mg/l	0.0200	0.0191	96	70 - 130	9495
Dibromochloromethane	mg/l	0.0200	0.0203	102	70 - 130	9495
Ethylene Dibromide	mg/l	0.0200	0.0226	113	70 - 130	9495
Dibromomethane	mg/l	0.0200	0.0207	104	70 - 130	9495
1,2,3-Trichloropropane	mg/l	0.0200	0.0213	106	70 - 130	9495
Vinyl chloride	mg/l	0.0200	0.0219	110	70 - 130	9495
Chlorodifluoromethane	mg/l	0.0200	0.0191	96	70 - 130	9495
1,1-Dichloroethane	mg/l	0.0200	0.0215	108	70 - 130	9495
1,2-Dichloroethane	mg/l	0.0200	0.0235	118	70 - 130	9495
1,1-Dichloroethene	mg/l	0.0200	0.0202	101	70 - 130	9495
cis-1,2-Dichloroethene	mg/l	0.0200	0.0198	99	70 - 130	9495
trans-1,2-Dichloroethene	mg/l	0.0200	0.0214	107	70 - 130	9495
1,2-Dichloropropane	mg/l	0.0200	0.0211	106	70 - 130	9495
1,3-Dichloropropane	mg/l	0.0200	0.0225	112	70 - 130	9495
2,2-Dichloropropane	mg/l	0.0200	0.0171	86	70 - 130	9495
1,1-Dichloropropene	mg/l	0.0200	0.0199	100	70 - 130	9495
cis-1,3-Dichloropropene	mg/l	0.0200	0.0205	102	70 - 130	9495
trans-1,3-Dichloropropene	mg/l	0.0200	0.0203	102	70 - 130	9495
Methylene chloride	mg/l	0.0200	0.0179	90	70 - 130	9495
1,1,1,2-Tetrachloroethane	mg/l	0.0200	0.0208	104	70 - 130	9495
1,1,2,2-Tetrachloroethane	mg/l	0.0200	0.0223	112	70 - 130	9495
Tetrachloroethene	mg/l	0.0200	0.0187	94	70 - 130	9495
1,1,1-Trichloroethane	mg/l	0.0200	0.0210	105	70 - 130	9495
1,1,2-Trichloroethane	mg/l	0.0200	0.0214	107	70 - 130	9495
Trichloroethene	mg/l	0.0200	0.0210	105	70 - 130	9495
Trichlorofluoromethane	mg/l	0.0200	0.0183	92	70 - 130	9495
1,2-Dibromo-3-chloropropane	mg/l	0.0200	0.0228	114	70 - 130	9495

Blank Data

Analyte	Blank Value	Units	Q.C. Batch
Naphthalene	< 0.00100	mg/l	1038
Acenapthene	< 0.00100	mg/l	1038
Anthracene	< 0.00066	mg/l	1038
Fluoranthene	< 0.00021	mg/l	1038

SPECIALIZED ASSAYS, INC.

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PROJECT QUALITY CONTROL DATA

Blank Data

Analyte	Blank Value	Units	B.C. Batch
Fluorene	< 0.00021	ng/l	1038
Pyrene	< 0.00027	ng/l	1038
Benzo(a)anthracene	< 0.00013	ng/l	1038
Benzo(a)pyrene	< 0.00010	ng/l	1038
Benzo(b)fluoranthene	< 0.00018	ng/l	1038
Benzo(k)fluoranthene	< 0.00017	ng/l	1038
Chrysene	< 0.00015	ng/l	1038
Dibenzo(a,h)anthracene	< 0.00030	ng/l	1038
Indeno(1,2,3-cd)pyrene	< 0.00043	ng/l	1038
Acenaphthylene	< 0.00200	ng/l	1038
Benzo(g,h,i)perylene	< 0.00076	ng/l	1038
Phenanthrene	< 0.00064	ng/l	1038
1-Methylnapthalene	< 0.00200	ng/l	1038
2-Methylnapthalene	< 0.00200	ng/l	1038
Benzene	< 0.0010	ng/l	9495
Bromobenzene	< 0.0010	ng/l	9495
n-Butylbenzene	< 0.0010	ng/l	9495
sec-Butylbenzene	< 0.0010	ng/l	9495
tert-Butylbenzene	< 0.0010	ng/l	9495
Chlorobenzene	< 0.0010	ng/l	9495
2-Chlorotoluene	< 0.0010	ng/l	9495
4-Chlorotoluene	< 0.0010	ng/l	9495
1,2-Dichlorobenzene	< 0.0010	ng/l	9495
1,3-Dichlorobenzene	< 0.0010	ng/l	9495
1,4-Dichlorobenzene	< 0.0010	ng/l	9495
Ethylbenzene	< 0.0010	ng/l	9495
Isopropylbenzene	< 0.0010	ng/l	9495
4-Isopropyltoluene	< 0.0010	ng/l	9495
Naphthalene	< 0.0010	ng/l	9495
n-Propylbenzene	< 0.0010	ng/l	9495
Styrene	< 0.0010	ng/l	9495
Toluene	< 0.0010	ng/l	9495
1,2,3-Trichlorobenzene	< 0.0010	ng/l	9495
1,2,4-Trichlorobenzene	< 0.0010	ng/l	9495
1,2,4-Trimethylbenzene	< 0.0010	ng/l	9495
1,3,5-Trimethylbenzene	< 0.0010	ng/l	9495
m,p-Xylenes	< 0.0010	ng/l	9495
o-Xylene	< 0.0010	ng/l	9495
Hexachlorobutadiene	< 0.0010	ng/l	9495
Bromochloromethane	< 0.0010	ng/l	9495
Bromodichloromethane	< 0.0010	ng/l	9495
Bromoform	< 0.0010	ng/l	9495
Bromomethane	< 0.0010	ng/l	9495
Carbon tetrachloride	< 0.0010	ng/l	9495
Chloroethane	< 0.0010	ng/l	9495
Chloroform	< 0.0010	ng/l	9495

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Blank Data

Analyte	Blank Value	Units	A.C. Batch
Chloromethane	< 0.0010	mg/l	9495
Dibromochloromethane	< 0.0010	mg/l	9495
Ethylene Dibromide	< 0.0010	mg/l	9495
Dibromomethane	< 0.0010	mg/l	9495
1,2,3-Trichloropropane	< 0.0010	mg/l	9495
Vinyl chloride	< 0.0010	mg/l	9495
Dichlorodifluoromethane	< 0.0010	mg/l	9495
1,1-Dichloroethane	< 0.0010	mg/l	9495
1,2-Dichloroethane	< 0.0010	mg/l	9495
1,1-Dichloroethene	< 0.0010	mg/l	9495
cis-1,2-Dichloroethene	< 0.0010	mg/l	9495
trans-1,2-Dichloroethene	< 0.0010	mg/l	9495
1,2-Dichloropropane	< 0.0010	mg/l	9495
1,3-Dichloropropane	< 0.0010	mg/l	9495
2,2-Dichloropropane	< 0.0010	mg/l	9495
1,1-Dichloropropene	< 0.0010	mg/l	9495
cis-1,3-Dichloropropene	< 0.0010	mg/l	9495
trans-1,3-Dichloropropene	< 0.0010	mg/l	9495
Methylene chloride	0.0015	mg/l	9495
1,1,1,2-Tetrachloroethane	< 0.0010	mg/l	9495
1,1,2,2-Tetrachloroethane	< 0.0010	mg/l	9495
Tetrachloroethene	< 0.0010	mg/l	9495
1,1,1-Trichloroethane	< 0.0010	mg/l	9495
1,1,2-Trichloroethane	< 0.0010	mg/l	9495
Trichloroethene	< 0.0010	mg/l	9495
Trichlorofluoromethane	< 0.0010	mg/l	9495
1,2-Dibromo-3-chloropropane	< 0.0010	mg/l	9495