



STL St. Louis  
13715 Rider Trail North  
Earth City, MO 63045

Tel 314 298 8566  
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# ANALYTICAL REPORT

PROJECT NO. 200ZP1 IAM GW

C01-005

Lot #: FOK010139  
SDG #: W03245

Joan Kessner

Bechtel Hanford, Inc.  
3190 George Washington Way  
Richland, WA 99352

SEVERN TRENT LABORATORIES, INC.

RECEIVED  
JAN 22 2001

EDMC

*M Ward*

MARTI WARD  
Project Manager

December 20, 2000



STL St. Louis is a part of Severn Trent Laboratories, Inc.

## CASE NARRATIVE

Bechtel Hanford Incorporated  
3190 George Washington Way  
Richland, Washington 99352  
December 15, 2000  
Attention: Joan Kessner

**STL St. Louis**  
13715 Rider Trail North  
Earth City, MO 63045

Tel 314 298 8566  
Fax 314 298 8757  
www.stl-inc.com

Project Number	:	39213
SDG	:	W03245
Number of Samples	:	one
Sample Matrix	:	water
Data Deliverable	:	Summary
Date SDG Closed	:	November 14, 2000



### II. Introduction

On November 1, 2000, one (1) water sample was received by STL-St. Louis for chemical analysis. The sample was received within temperature criteria. See the attached Sample Summary sheet for the client and lab Ids for these samples.

### III. Analytical Results/ Methodology

The analytical results for this report are presented by analytical test. Each set of data includes sample identification information, analytical results and the appropriate detection limits.

Analyses requested: 8240 Volatiles

Deviation from Request: There were no deviations.

### IV. Definitions

The following codes are used to denote laboratory quality control samples and can be found in the data summary section of this report:

QCBLK- Quality Control Blank, Method Blank  
 QCLCS- Quality Control Laboratory Control Sample, Blank Spike  
 MS- Matrix Spike  
 DUP- Matrix Duplicate  
 MSD- Matrix Spike Duplicate

### V. Comments

General: The term "Detection Limit" used in the analytical data reports refers to either the lab's standard reporting limits or contractually required reporting limits, whichever is applicable.

Please refer to the attached cross-reference table for the standard preparation methods used at Quanterra, St. Louis.

Bechtel Hanford Incorporated  
December 15, 2000  
Project Number: 39213  
SDG: W03245  
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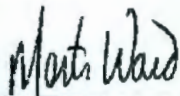
Volatiles:

A Laboratory Control Sample, Method Blank, Matrix Spike and Matrix Spike Duplicate were analyzed with each preparation batch per the protocol for this analysis.

There were no comments or non-conformances associated with this data.

I certify that this Data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

Reviewed and approved:



Marti Ward  
St. Louis Project Manager

**SAMPLE SUMMARY**

F0K010139

<u>WO #</u>	<u>SAMPLE#</u>	<u>CLIENT</u>	<u>SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
DN55J	001	B10F27		10/31/00	13:24

**NOTE(S) :**

- The analytical results of the samples listed above are presented on the following pages.
- All calculations are performed before rounding to avoid round-off errors in calculated results.
- Results noted as "ND" were not detected at or above the stated limit.
- This report must not be reproduced, except in full, without the written approval of the laboratory.
- Results for the following parameters are never reported on a dry weight basis: color, corrosivity, density, flashpoint, ignitability, layers, odor, paint filter test, pH, porosity pressure, reactivity, redox potential, specific gravity, spot tests, solids, solubility, temperature, viscosity, and weight.

**METHODS SUMMARY**

FOK010139

<u>PARAMETER</u>	<u>ANALYTICAL METHOD</u>	<u>PREPARATION METHOD</u>
Volatile Organics by GC/MS	SW846 8240A	SW846 8240A

**References:**

SW846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 and its updates.

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SEVERN TRENT LABORATORIES, INC  
CLIENT ANALYSIS SUMMARY  
STL St. Louis

Run Date: 11/01/00  
Time: 10:24:29  
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.  
PROJECT MANAGER: MARTI WARD  
PROJECT #: 200ZP1 IAM GW  
REPORT TO: Joan Kessner  
P.O. NUMBER: MRC-SBB-A-19981  
SITE: C01-004  
AMOUNT REC'D: 3XVIAL40,VIAL20  
STORAGE LOC: V12C  
LOT COMMENTS: VOA: report diluted and un-diluted runs  
MATRIX: WATER  
SAMPLE ID: B10F27  
QC PACKAGE: Special Report - see checklist  
SAMPLE COMMENTS:

QUOTE/SAR #: 39213  
LAB ID: F-0K010139-001  
WORK ORDER: DN55J  
RECEIVING DATE: 11/01/00  
SAMPLING DATE: 10/31/00  
ANALYTICAL DUE DATE: 12/01/00N  
REPORT DUE DATE: 12/15/00  
PRIORITY: 31  
SAMPLING TIME: 13:24  
RECEIVING TIME: 8:50  
SDG# : W03245

Beginning Depth: .00 Ending Depth: .00

\*\*\*\*\* ANALYSIS \*\*\*\*\*

	WRK LOC	REQUEST DATE	EXTRACTION EXP DATE	ANALYSIS EXP DATE
Volatile Organics, GC/MS (8240) PURGE AND TRAP - 5 mL purge STL: HANFORD 8240 GCMS:LIST-1(33) (I-15-FB-5I) DN55J-1-AA Protocol: A	06	11/01/00	0/00/00	11/14/00

QC Program: CLIENT: HANFORD

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SEVERN TRENT LABORATORIES, INC  
CLIENT ANALYSIS SUMMARY  
STL St. Louis

Run Date: 11/01/00  
Time: 10:24:29  
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.  
PROJECT MANAGER: MARTI WARD  
PROJECT #: 200ZP1 IAM GW  
REPORT TO: Joan Kessner  
P.O. NUMBER: MRC-SBB-A-19981  
SITE: C01-004

QUOTE/SAR #: 39213  
LAB ID: F-0K010139-001-D  
WORK ORDER: DN55J MSD  
RECEIVING DATE: 11/01/00  
SAMPLING DATE: 10/31/00  
ANALYTICAL DUE DATE: 12/01/00N  
REPORT DUE DATE: 12/15/00  
PRIORITY: 31  
SAMPLING TIME: 13:24  
RECEIVING TIME: 8:50

AMOUNT REC'D: 3XVIAL40,VIAL20  
STORAGE LOC: V12C

LOT COMMENTS: VOA: report diluted and un-diluted runs

MATRIX: WATER

SAMPLE ID: B10F27

QC PACKAGE: Special Report - see checklist

SDG# : W03245

SAMPLE COMMENTS:

Beginning Depth: .00 Ending Depth: .00

\*\*\*\* ANALYSIS \*\*\*\*

WRK	REQUEST	EXTRACTION	ANALYSIS
LOC	DATE	EXP DATE	EXP DATE

06	11/01/00	0/00/00	11/14/00
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Volatile Organics, GC/MS (8240)

PURGE AND TRAP - 5 mL purge

STL: HANFORD 8240 GCMS:LIST-1(33)

(I-15-FB-5I) DN55J-1-AD Protocol: A QC Program: CLIENT: HANFORD

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SEVERN TRENT LABORATORIES, INC  
CLIENT ANALYSIS SUMMARY  
STL St. Louis

Run Date: 11/01/00  
Time: 10:24:29  
User Id.: CLARKEJ

CLIENT: 127642 BECHTEL HANFORD, INC.  
PROJECT MANAGER: MARTI WARD  
PROJECT #: 200ZP1 IAM GW  
REPORT TO: Joan Kessner  
P.O. NUMBER: MRC-SBB-A-19981  
SITE: C01-004

QUOTE/SAR #: 39213  
LAB ID: F-0K010139-001-S  
WORK ORDER: DN55J MS  
RECEIVING DATE: 11/01/00  
SAMPLING DATE: 10/31/00  
ANALYTICAL DUE DATE: 12/01/00N  
REPORT DUE DATE: 12/15/00  
PRIORITY: 31  
SAMPLING TIME: 13:24  
RECEIVING TIME: 8:50

AMOUNT REC'D: 3XVIAL40, VIAL20  
STORAGE LOC: V12C

LOT COMMENTS: VOA: report diluted and un-diluted runs

MATRIX: WATER

SAMPLE ID: B10F27

QC PACKAGE: Special Report - see checklist

SDG# : W03245

SAMPLE COMMENTS:

Beginning Depth: .00 Ending Depth: .00

\*\*\*\*\* ANALYSIS \*\*\*\*\*

WRK	REQUEST	EXTRACTION	ANALYSIS
LOC	DATE	EXP DATE	EXP DATE

06	11/01/00	0/00/00	11/14/00
----	----------	---------	----------

Volatile Organics, GC/MS (8240)

PURGE AND TRAP - 5 mL purge

STL: HANFORD 8240 GCMS:LIST-1(33)

(I-15-FB-5I) DN55J-1-AC Protocol: A QC Program: CLIENT: HANFORD







Committed to Your Success

Lot No.: FOK010139

W03245

Condition Upon Receipt Variance Report  
St. Louis Laboratory

Client: PNNL

Date: 11.01.00 Time: 0858

Quote No: 39213

Initiated by: Sue Holsen

Shipper/No: Airborne 002663535 744f

RFA/COC Numbers: COL-005-5

Condition/Variance (Check all that apply):

1. <input type="checkbox"/> Sample received broken/leaking.	8. <input type="checkbox"/> Sample ID on container does not match sample ID on paperwork. Explain: _____
2. <input type="checkbox"/> Sample received without proper preservative. <input type="checkbox"/> Cooler temperature not within 4°C ± 2°C Record temperature: _____ <input type="checkbox"/> pH _____ <input type="checkbox"/> other: _____	9. <input type="checkbox"/> All coolers on airbill not received with shipment.
3. <input type="checkbox"/> Sample received in improper container.	10. <input type="checkbox"/> Sample volume insufficient for analysis
4. <input checked="" type="checkbox"/> Sample received without proper paperwork. Explain: <u>relinquished signature missing</u>	11. <input type="checkbox"/> Other (explain below)
5. <input type="checkbox"/> Paperwork received without sample.	
6. <input type="checkbox"/> No sample ID on sample container.	
7. <input checked="" type="checkbox"/> Custody tape disturbed/broken/missing/not tamper evident type (circle all that apply).	

No variances were noted during sample receipt.  
 Cooler Temperature Upon Receipt in °C: 5.0

Temperature Variance Does Not Affect the Following Analyses: \_\_\_\_\_

Notes:

Corrective Action:

Client's Name: \_\_\_\_\_ Informed verbally on: \_\_\_\_\_ By: \_\_\_\_\_

Client's Name: \_\_\_\_\_ Informed in writing on: \_\_\_\_\_ By: \_\_\_\_\_

Sample(s) processed "as is". sent COC to Richland for signature

Sample(s) on hold until: \_\_\_\_\_ If released, notify: \_\_\_\_\_

Sample Control Supervisor Review: (or designate) Sue Holsen Date: 11.01.00

Project Management Review: M. Ward Date: 11.1.00

SIGNED ORIGINAL MUST BE RETAINED IN THE PROJECT FILE  
THIS FORM MUST BE COMPLETED AT THE TIME THE ITEMS ARE BEING CHECKED  
IF ANY ITEM IS COMPLETED BY SOMEONE OTHER THAN THE INITIATOR, THEN THAT PERSON IS REQUIRED TO APPLY HIS/HER INITIALS  
AND THE DATE NEXT TO THAT ITEM

Form: SL-ADMIN-0004, Revised 6/21/00 SOP Reference: STL-QA-0006

# VOLATILE ORGANICS



## BECHTEL HANFORD, INC.

Client Sample ID: B10F27

## GC/MS Volatiles

Lot-Sample #...: FOK010139-001 Work Order #...: DN55J1AA Matrix.....: WATER  
 Date Sampled...: 10/31/00 Date Received...: 11/01/00  
 Prep Date.....: 11/09/00 Analysis Date...: 11/09/00  
 Prep Batch #...: 0318450  
 Dilution Factor: 1 Method.....: SW846 8240A

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Chloromethane	ND	10	ug/L	2.7
Vinyl chloride	ND	10	ug/L	2.6
Bromomethane	ND	10	ug/L	2.0
Chloroethane	ND	10	ug/L	1.9
Acetone	ND	20	ug/L	1.3
1,1-Dichloroethene	ND	5.0	ug/L	1.4
Methylene chloride	ND	5.0	ug/L	1.5
Carbon disulfide	ND	5.0	ug/L	1.3
1,1-Dichloroethane	ND	5.0	ug/L	1.3
2-Butanone	ND	20	ug/L	2.2
1,2-Dichloroethene (total)	ND	5.0	ug/L	5.0
Chloroform	ND	5.0	ug/L	1.7
1,1,1-Trichloroethane	ND	5.0	ug/L	5.0
Carbon tetrachloride	69	5.0	ug/L	1.2
1,2-Dichloroethane	ND	5.0	ug/L	1.9
Benzene	ND	5.0	ug/L	1.6
Trichloroethene	ND	5.0	ug/L	1.3
1,2-Dichloropropane	ND	5.0	ug/L	2.2
Bromodichloromethane	ND	5.0	ug/L	1.2
4-Methyl-2-pentanone	ND	20	ug/L	1.6
cis-1,3-Dichloropropene	ND	5.0	ug/L	1.3
Toluene	ND	5.0	ug/L	1.7
trans-1,3-Dichloropropene	ND	5.0	ug/L	1.3
1,1,2-Trichloroethane	ND	5.0	ug/L	1.2
2-Hexanone	ND	20	ug/L	1.7
Tetrachloroethene	ND	5.0	ug/L	2.0
Dibromochloromethane	ND	5.0	ug/L	5.0
Chlorobenzene	ND	5.0	ug/L	2.7
Ethylbenzene	ND	5.0	ug/L	1.1
Xylenes (total)	ND	5.0	ug/L	1.2
Styrene	ND	5.0	ug/L	1.2
Bromoform	ND	5.0	ug/L	0.97
1,1,2,2-Tetrachloroethane	ND	5.0	ug/L	0.97
	PERCENT	RECOVERY		
<u>SURROGATE</u>	<u>RECOVERY</u>	<u>LIMITS</u>		
Bromofluorobenzene	98	(69 - 113)		
Toluene-d8	100	(68 - 132)		
1,2-Dichloroethane-d4	81	(72 - 147)		

BCHTEL HANFORD, INC.

B10P27

GC/MS Volatiles

Lot-Sample #: FOK010139-001

Work Order #: DN55J1AA

Matrix: WATER

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

<u>PARAMETER</u>	<u>CAS #</u>	<u>ESTIMATED RESULT</u>	<u>RETENTION TIME</u>	<u>UNITS</u>
None				ug/L

## MATRIX SPIKE SAMPLE DATA REPORT

## GC/MS Volatiles

Client Lot #...: FOK010139      Work Order #...: DNS55JLAC-MS      Matrix.....: WATER  
 MS Lot-Sample #: FOK010139-001      DNS55JLAD-MSD  
 Date Sampled...: 10/31/00      Date Received...: 11/01/00  
 Prep Date.....: 11/09/00      Analysis Date...: 11/09/00  
 Prep Batch #...: 0318450  
 Dilution Factor: 1

PARAMETER	SAMPLE AMOUNT	SPIKE AMT	MEASRD AMOUNT	UNITS	PERCENT		METHOD
					RECOVERY	RPD	
1,1-Dichloroethene	ND	50.0	45.7	ug/L	91		SW846 8240A
	ND	50.0	45.8	ug/L	92	0.17	SW846 8240A
Benzene	ND	50.0	46.9	ug/L	94		SW846 8240A
	ND	50.0	47.2	ug/L	94	0.78	SW846 8240A
Trichloroethene	ND	50.0	42.2	ug/L	84		SW846 8240A
	ND	50.0	42.4	ug/L	85	0.63	SW846 8240A
Toluene	ND	50.0	50.5	ug/L	101		SW846 8240A
	ND	50.0	50.3	ug/L	101	0.39	SW846 8240A
Chlorobenzene	ND	50.0	48.9	ug/L	98		SW846 8240A
	ND	50.0	49.2	ug/L	98	0.57	SW846 8240A

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Bromofluorobenzene	100	(69 - 113)
	101	(69 - 113)
Toluene-d8	103	(68 - 132)
	102	(68 - 132)
1,2-Dichloroethane-d4	86	(72 - 147)
	87	(72 - 147)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters

## METHOD BLANK REPORT

## GC/MS Volatiles

Client Lot #...: FOK010139  
 MB Lot-Sample #: FOK130000-450

Work Order #...: DFRDW1AA

Matrix.....: WATER

Analysis Date...: 11/09/00  
 Dilution Factor: 1

Prep Date.....: 11/09/00  
 Prep Batch #...: 0318450

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	METHOD
Chloromethane	ND	10	ug/L	SW846 8240A
Vinyl chloride	ND	10	ug/L	SW846 8240A
Bromomethane	ND	10	ug/L	SW846 8240A
Chloroethane	ND	10	ug/L	SW846 8240A
Acetone	ND	20	ug/L	SW846 8240A
1,1-Dichloroethene	ND	5.0	ug/L	SW846 8240A
Methylene chloride	ND	5.0	ug/L	SW846 8240A
Carbon disulfide	ND	5.0	ug/L	SW846 8240A
1,1-Dichloroethane	ND	5.0	ug/L	SW846 8240A
2-Butanone	ND	20	ug/L	SW846 8240A
1,2-Dichloroethane (total)	ND	5.0	ug/L	SW846 8240A
Chloroform	ND	5.0	ug/L	SW846 8240A
1,1,1-Trichloroethane	ND	5.0	ug/L	SW846 8240A
Carbon tetrachloride	ND	5.0	ug/L	SW846 8240A
1,2-Dichloroethane	ND	5.0	ug/L	SW846 8240A
Benzene	ND	5.0	ug/L	SW846 8240A
Trichloroethene	ND	5.0	ug/L	SW846 8240A
1,2-Dichloropropane	ND	5.0	ug/L	SW846 8240A
Bromodichloromethane	ND	5.0	ug/L	SW846 8240A
4-Methyl-2-pentanone	ND	20	ug/L	SW846 8240A
cis-1,3-Dichloropropene	ND	5.0	ug/L	SW846 8240A
Toluene	ND	5.0	ug/L	SW846 8240A
trans-1,3-Dichloropropene	ND	5.0	ug/L	SW846 8240A
1,1,2-Trichloroethane	ND	5.0	ug/L	SW846 8240A
2-Hexanone	ND	20	ug/L	SW846 8240A
Tetrachloroethene	ND	5.0	ug/L	SW846 8240A
Dibromochloromethane	ND	5.0	ug/L	SW846 8240A
Chlorobenzene	ND	5.0	ug/L	SW846 8240A
Ethylbenzene	ND	5.0	ug/L	SW846 8240A
Xylenes (total)	ND	5.0	ug/L	SW846 8240A
Styrene	ND	5.0	ug/L	SW846 8240A
Bromoform	ND	5.0	ug/L	SW846 8240A
1,1,2,2-Tetrachloroethane	ND	5.0	ug/L	SW846 8240A

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
Bromofluorobenzene	93	(69 - 113)
Toluene-d8	96	(68 - 132)
1,2-Dichloroethane-d4	86	(72 - 147)

(Continued on next page)

STL St. Louis

METHOD BLANK REPORT

GC/MS Volatiles

Client Lot #...: FOK010139

Work Order #...: DPRDW1AA

Matrix.....: WATER

**NOTE(S):**

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Calculations are performed before rounding to avoid round-off errors in calculated results.



BECHTEL HANFORD, INC.

Method Blank Report

GC/MS Volatiles

Lot-Sample #: FOK130000-450 B Work Order #: DPRDW1AA Matrix: WATER

MASS SPECTROMETER/DATA SYSTEM (MSDS) TENTATIVELY IDENTIFIED COMPOUNDS

<u>PARAMETER</u>	<u>CAS #</u>	<u>ESTIMATED RESULT</u>	<u>RETENTION TIME</u>	<u>UNITS</u>
None				ug/L

## LABORATORY CONTROL SAMPLE DATA REPORT

## GC/MS Volatiles

Client Lot #....: FOK010139      Work Order #....: DPRDW1AC      Matrix.....: WATER  
 LCS Lot-Sample#: FOK130000-450  
 Prep Date.....: 11/09/00      Analysis Date...: 11/09/00  
 Prep Batch #...: 0318450  
 Dilution Factor: 1

<u>PARAMETER</u>	<u>SPIKE AMOUNT</u>	<u>MEASURED AMOUNT</u>	<u>UNITS</u>	<u>PERCENT RECOVERY</u>	<u>METHOD</u>
1,1-Dichloroethene	50.0	45.2	ug/L	90	SW846 8240A
Benzene	50.0	47.1	ug/L	94	SW846 8240A
Trichloroethene	50.0	41.7	ug/L	83	SW846 8240A
Toluene	50.0	50.1	ug/L	100	SW846 8240A
Chlorobenzene	50.0	48.4	ug/L	97	SW846 8240A

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
Bromofluorobenzene	100	(69 - 113)
Toluene-d8	102	(68 - 132)
1,2-Dichloroethane-d4	87	(72 - 147)

**NOTE(S):**

Calculations are performed before rounding to avoid round-off errors in calculated results.  
 Bold print denotes control parameters