RECEIVED JULY 01, 2009

0082828

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FLUOR®

M4W41-SLF-09-195

June 30, 2009

Mr. M. A. Neely, Manager
Analytical Services
CH2M HILL Plateau Remediation Contract
PO Box 1600 MSIN R3-60
Richland, WA 99352

Dear Mike:

FINAL RESULTS FOR SAMPLE DELIVERY GROUP WSCF20090505 – SAF NUMBER F09-028

Reference: (1) Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, 'FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER'

(2) HNF-SD-CD-QAPP-017, Rev. 9, Waste Sampling & Characterization Facility Quality Assurance Plan

This letter contains the following attachments for sample delivery group WSCF20090505:

- Cover Sheet (Attachment 1)
- Narrative (Attachment 2)
- Analytical Results (Attachment 3)
- Sample Receipt Information (Attachment 4)

Very truly yours,

S. L. Fitzgerald
WSCF Analytical Lab

SLF/grf

Attachments 4

cc: w/Attachments

A. J. Kopriva	S3-30
H. K. Meznarich	S3-30
J. E. Trechter	S3-30
S. J. Trent	R3-50
File/LB	

M4W41-SLF-09-195

ATTACHMENT 1

COVER SHEET

Consisting of 2 pages
Including cover page

WSCF SAF NUMBER CROSS REFERENCE

Group#:	WSCF20090505	
Data Deliverable Date:	06-jul-2009	
Data Deliverable:	Cover Sheet	

SAF#	Sample ID	WSCF#	Matrix
F09-028	B20T73	W09GR00464	GASEOUS

M4W41-SLF-09-195

ATTACHMENT 2

NARRATIVE

Consisting of 3 pages
Including cover page

Introduction

One S&GRP sample was received at the WSCF Laboratory on May 27, 2009. The sample was analyzed for the analytes indicated on the attached copy of the chain of custody (COC) form in accordance with the *Statement of Work (SOW), Modification No. 2 to Agreement 36587, Release 3, "FH WSCF ANALYTICAL SERVICES FOR GROUNDWATER."*

The narrative (Attachment 2) will address sample characteristics, analyses requested and general information in performance of the analytical methods. A Data Summary Report (Attachment 3) includes analytical results, a comment report detailing method abnormalities, tentatively identified peaks if applicable, method references, and Laboratory QC information as applicable. Copies of the chain of custody and sample receipt documentation are included as Attachment 4.

The following generic data qualifiers (i.e., B, D, and J) may be applicable to this report, as appropriate

- **B** – Sample results with a concentration greater than the MDL but less than the PQL are B flagged (applies to inorganic and wetchem analyses), as appropriate.
- **D** – Sample results are D flagged if dilution(s) were required, as appropriate.
- **J** – Sample results with a concentration greater than the MDL but less than the PQL are J flagged (applies to organic analyses), as appropriate.

Analytical Methodology for Requested Analyses

Refer to *WSCF Method References Report,* page 10, for a complete listing of approved analytical methods.

Organic Comments

VOC (Vapor) – A Blank, Laboratory Control Sample (LCS), LCS Duplicate (LCSD) and Limit of Quantitation Standard (LOQ) were analyzed with this delivery group. See pages 13 through 21 for QC details. Analytical Note(s):

- 1-butanol exceeded calibration requirement with a recovery of 27.3%, toluene exceeded the calibration requirement with a recovery of 25.3%, and hexanenitrile exceeded the calibration requirement with a recovery of 29.4%.
- LCS – 1,1 –dichloroethlyene recovery was 65%, carbon disulfide recovery was 62.0%, methylene chloride recovery was 62%, and furan recovery was at 67%. All recoveries were below the established limit of 70%.
- LCSD – carbon disulfide recovery was 67%, carbon tetrachloride recovery was 67.0%, methylene chloride recovery was 67%, and furan recovery was 67%. All recoveries were below the established limit of 70%.
- LQO –Butanal recovery was 49%, 3-hexanone recovery was 45.0%,MIBK recovery was 47%. All recoveries were below the established limit of 50%.
- All other QC controls are within the established limits.

We 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 data package has been authorized by the Analytical Laboratory Manager (or designee) and the Client Services representative as verified by the following signatures.

Scot L. Fitzgerald
WSCF Analytical Laboratory Manager

Andrew J. Kopriva
WSCF Client Services

M4W41-SLF-09-195

ATTACHMENT 3

ANALYTICAL RESULTS

Consisting of 16 pages
Including cover page

WSCF
ANALYTICAL RESULTS REPORT

for

Groundwater Remediation Program

Richland, WA 99354

Attention: Steve Trent

Analytical: S. Fitzgerald 6-17-09

Client Services: A. Kopriva 6-17-09

All results are reported on an "as received" basis unless otherwise noted in the comment section.

This information is intended for the use of the addressee only. If the reader of this report is not the intended recipient or is not authorized by the recipient to receive the report, you are hereby notified that any dissemination, distribution or copying of this report is strictly prohibited. If you have received this report in error, please notify WSCF Laboratory immediately by telephone at (509) 373-7020 or (509) 531-8004. Information designation of this report is the responsibility of the customer.

Contract#: MOA-FH-CHPRC-2008
Report#: WSCF20090505
Report Date: 17-jun-2009
Report WGPP/ver. 5.2
Groundwater Remediation Program

w13qlog v4.2 17-jun-2009 09:23:23

Department: Organic

W13q Worklist/Batch/QC Report for Group# WSCF20090505

WL#	S#	Batch	QC#	Tray Type	Sample#	Test
39605	1	40028	44612	BLANK		Headspace Analysis
39605	2	40028	44612	LCS		Headspace Analysis
39605	5	40028	44612	LCS-DUP		Headspace Analysis
39605	5	40028	44612	LCS-RPD		Headspace Analysis
39605	3	40028	44612	LOQ		Headspace Analysis
39605	4	40028	44612	SAMPLE	W09GR00464	Headspace Analysis

WSCF
METHOD REFERENCES REPORT

Department: Organic

The results provided in this report were generated using the following WSCF Laboratory procedures. For your convenience, this table provides a listing of the regulatory or industry methods that are referenced by each of these WSCF procedures. Please note that the most recent version of the regulatory or industry method is listed here even though the WSCF procedure may reference an older version of the method. Also, a reference to a regulatory or industry method here does not necessarily indicate a verbatim implementation of that method.

LA-523-449 LA-523-449: DETERMINATION OF VOLATILE ORGANIC COMPOUNDS FOR INDUSTIAL HYGIENE

EPA TO Methods TO-15 mod.	Determination Of Volatile Organic Compounds (VOCs) In Ambient Air -Modified-
HEIS TO-15_VOA_GAS	VOA TO-15

Note: A complete list of WSCF analytical procedures and referenced regulatory or industry methods is available online at http://www2.rl.gov/phmc/as-dol.

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F09-028
Sample # W09GR00464
Client ID: B20T73 TRENT BLANK WSCF

Matrix: GASEOUS

Group #: WSCF20090505
Department: Organic
Sampled: 05/27/09
Received: 05/27/09

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
Headspace Analysis											
Propane	74-98-6	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Chloromethane	74-87-3	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Vinyl chloride	75-01-4	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Butane	106-97-8	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1,3-Butadiene	106-99-0	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Methanol	67-56-1	LA-523-449		< 50	PPB(V/V)			2.00	50		06/10/09
Pentane	109-66-0	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Ethanol	64-17-5	LA-523-449		< 50	PPB(V/V)			2.00	50		06/10/09
Furan	110-00-9	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1,1-Dichloroethene	75-35-4	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Acetone	67-64-1	LA-523-449		< 25	PPB(V/V)			2.00	25		06/10/09
2-Propanol	67-63-0	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Acetonitrile	75-05-8	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Carbon disulfide	75-15-0	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Methylenechloride	75-09-2	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Hexane	110-54-3	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1-Propanol	71-23-8	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Butanal	123-72-8	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
2-Butanone	78-93-3	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Ethyl cyanide	107-12-0	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Chloroform	67-66-3	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Tetrahydrofuran	109-99-9	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1,1,1-Trichloroethane	71-55-6	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Carbon tetrachloride	56-23-5	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF
ANALYTICAL RESULTS REPORT

Attention: Steve Trent
SAF Number: F09-028
Sample # W09GR00464
Client ID: B20T73 TRENT BLANK WSCF

Matrix: GASEOUS

Group #: WSCF20090505
Department: Organic
Sampled: 05/27/09
Received: 05/27/09

Test Performed	CAS #	Method	RQ	Result	Unit	TP Err	Unit	DF	MDL	PQL	Analysis Date
1,2-Dichloroethane	107-06-2	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Benzene	71-43-2	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Heptane	142-82-5	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1-Butanol	71-36-3	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Trichloroethene	79-01-6	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Butanenitrile	109-74-0	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1,4-Dioxane	123-91-1	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
4-Methyl-2-Pentanone	108-10-1	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Toluene	108-88-3	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
3-Hexanone	589-38-8	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
2-Hexanone	591-78-6	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Tetrachloroethene	127-18-4	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Valeronitrile	110-59-8	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Chlorobenzene	108-90-7	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Ethylbenzene	100-41-4	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
m/p-xylene	179601-23-1	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Styrene	100-42-5	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
o-Xylene	95-47-6	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Hexanenitrile	628-73-9	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
1,1,2,2-Tetrachloroethane	79-34-5	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09
Decane	124-18-5	LA-523-449		< 10	PPB(V/V)			2.00	10		06/10/09

MDL = Minimum Detection Limit
RQ = Result Qualifier
TP Err = Total Propagated Error
DF = Dilution Factor

* - Indicates results that have NOT been validated; + - Indicates more than six qualifier symbols

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BATCH QC											
BLANK	1-Butanol	71-36-3	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1-Propanol	71-23-8	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1,1,1-Trichloroethane	71-55-6	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1,1,2,2-Tetrachloroethane	79-34-5	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1,1-Dichloroethene	75-35-4	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1,2-Dichloroethane	107-06-2	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1,3-Butadiene	106-99-0	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	2-Propanol	67-63-0	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	2-Hexanone	591-78-6	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Acetone	67-64-1	< 20	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Acetonitrile	75-05-8	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Benzene	71-43-2	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Butanal	123-72-8	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Butanenitrile	109-74-0	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Carbon disulfide	75-15-0	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Carbon tetrachloride	56-23-5	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Chloroform	67-66-3	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Chlorobenzene	108-90-7	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Decane	124-18-5	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Methylenechloride	75-09-2	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	1,4-Dioxane	123-91-1	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Ethylbenzene	100-41-4	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Ethanol	64-17-5	< 30	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Furan	110-00-9	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	3-Hexanone	589-38-8	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Hexanenitrile	628-73-9	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Methanol	67-56-1	< 30	n/a	% Recov	70.000	130.000			U	06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
BLANK	Chloromethane	74-87-3	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	2-Butanone	78-93-3	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	4-Methyl-2-Pentanone	108-10-1	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	m/p-xylene	179601-23-1	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Butane	106-97-8	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Hexane	110-54-3	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Pentane	109-66-0	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Propane	74-98-6	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Heptane	142-82-5	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	o-Xylene	95-47-6	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Ethyl cyanide	107-12-0	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Styrene	100-42-5	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Tetrachloroethene	127-18-4	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Tetrahydrofuran	109-99-9	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Toluene	108-88-3	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Trichloroethene	79-01-6	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Valeronitrile	110-59-8	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
BLANK	Vinyl chloride	75-01-4	< 5	n/a	% Recov	70.000	130.000			U	06/10/09
LCS	1-Butanol	71-36-3	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	1-Propanol	71-23-8	17	80.952	% Recov	70.000	130.000				06/10/09
LCS	1,1,1-Trichloroethane	71-55-6	15	71.429	% Recov	70.000	130.000				06/10/09
LCS	1,1,2,2-Tetrachloroethane	79-34-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS	1,1-Dichloroethene	75-35-4	13	65.000	% Recov	70.000	130.000				06/10/09
LCS	1,2-Dichloroethane	107-06-2	17	80.952	% Recov	70.000	130.000				06/10/09
LCS	1,3-Butadiene	106-99-0	15	75.000	% Recov	70.000	130.000				06/10/09
LCS	2-Propanol	67-63-0	15	71.429	% Recov	70.000	130.000				06/10/09
LCS	2-Hexanone	591-78-6	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	Acetone	67-64-1	44	84.615	% Recov	70.000	130.000				06/10/09
LCS	Acetonitrile	75-05-8	17	77.273	% Recov	70.000	130.000				06/10/09
LCS	Benzene	71-43-2	17	80.952	% Recov	70.000	130.000				06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Butanal	123-72-8	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Butanenitrile	109-74-0	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Carbon disulfide	75-15-0	13	61.905	% Recov	70.000	130.000			*	06/10/09
LCS	Carbon tetrachloride	56-23-5	15	71.429	% Recov	70.000	130.000				06/10/09
LCS	Chloroform	67-66-3	15	75.000	% Recov	70.000	130.000				06/10/09
LCS	Chlorobenzene	108-90-7	18	85.714	% Recov	70.000	130.000				06/10/09
LCS	Decane	124-18-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS	Methylenechloride	75-09-2	13	61.905	% Recov	70.000	130.000			*	06/10/09
LCS	1,4-Dioxane	123-91-1	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Ethylbenzene	100-41-4	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Ethanol	64-17-5	83	75.455	% Recov	70.000	130.000				06/10/09
LCS	Furan	110-00-9	14	66.667	% Recov	70.000	130.000			*	06/10/09
LCS	3-Hexanone	589-38-8	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Hexanenitrile	628-73-9	23	109.524	% Recov	70.000	130.000				06/10/09
LCS	Methanol	67-56-1	83	83.000	% Recov	70.000	130.000				06/10/09
LCS	Chloromethane	74-87-3	14	70.000	% Recov	70.000	130.000				06/10/09
LCS	2-Butanone	78-93-3	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	4-Methyl-2-Pentanone	108-10-1	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	m/p-xylene	179601-23-1	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Butane	106-97-8	14	70.000	% Recov	70.000	130.000				06/10/09
LCS	Hexane	110-54-3	16	76.190	% Recov	70.000	130.000				06/10/09
LCS	Pentane	109-66-0	15	75.000	% Recov	70.000	130.000				06/10/09
LCS	Propane	74-98-6	14	70.000	% Recov	70.000	130.000				06/10/09
LCS	Heptane	142-82-5	15	71.429	% Recov	70.000	130.000				06/10/09
LCS	o-Xylene	95-47-6	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Ethyl cyanide	107-12-0	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	Styrene	100-42-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS	Tetrachloroethene	127-18-4	16	76.190	% Recov	70.000	130.000				06/10/09
LCS	Tetrahydrofuran	109-99-9	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	Toluene	108-88-3	19	90.476	% Recov	70.000	130.000				06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Butanal	123-72-8	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Butanenitrile	109-74-0	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Carbon disulfide	75-15-0	13	61.905	% Recov	70.000	130.000			*	06/10/09
LCS	Carbon tetrachloride	56-23-5	15	71.429	% Recov	70.000	130.000				06/10/09
LCS	Chloroform	67-66-3	15	75.000	% Recov	70.000	130.000				06/10/09
LCS	Chlorobenzene	108-90-7	18	85.714	% Recov	70.000	130.000				06/10/09
LCS	Decane	124-18-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS	Methylenechloride	75-09-2	13	61.905	% Recov	70.000	130.000			*	06/10/09
LCS	1,4-Dioxane	123-91-1	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Ethylbenzene	100-41-4	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Ethanol	64-17-5	83	75.455	% Recov	70.000	130.000				06/10/09
LCS	Furan	110-00-9	14	66.667	% Recov	70.000	130.000			*	06/10/09
LCS	3-Hexanone	589-38-8	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Hexanenitrile	628-73-9	23	109.524	% Recov	70.000	130.000				06/10/09
LCS	Methanol	67-56-1	83	83.000	% Recov	70.000	130.000				06/10/09
LCS	Chloromethane	74-87-3	14	70.000	% Recov	70.000	130.000				06/10/09
LCS	2-Butanone	78-93-3	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	4-Methyl-2-Pentanone	108-10-1	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	m/p-xylene	179601-23-1	20	95.238	% Recov	70.000	130.000				06/10/09
LCS	Butane	106-97-8	14	70.000	% Recov	70.000	130.000				06/10/09
LCS	Hexane	110-54-3	16	76.190	% Recov	70.000	130.000				06/10/09
LCS	Pentane	109-66-0	15	75.000	% Recov	70.000	130.000				06/10/09
LCS	Propane	74-98-6	14	70.000	% Recov	70.000	130.000				06/10/09
LCS	Heptane	142-82-5	15	71.429	% Recov	70.000	130.000				06/10/09
LCS	o-Xylene	95-47-6	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Ethyl cyanide	107-12-0	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	Styrene	100-42-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS	Tetrachloroethene	127-18-4	16	76.190	% Recov	70.000	130.000				06/10/09
LCS	Tetrahydrofuran	109-99-9	19	90.476	% Recov	70.000	130.000				06/10/09
LCS	Toluene	108-88-3	19	90.476	% Recov	70.000	130.000				06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS	Trichloroethene	79-01-6	16	76.190	% Recov	70.000	130.000				06/10/09
LCS	Valeronitrile	110-59-8	21	100.000	% Recov	70.000	130.000				06/10/09
LCS	Vinyl chloride	75-01-4	15	75.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	1-Butanol	71-36-3	16	76.190	% Recov	70.000	130.000				06/10/09
LCS-DUP	1-Propanol	71-23-8	16	76.190	% Recov	70.000	130.000				06/10/09
LCS-DUP	1,1,1-Trichloroethane	71-55-6	16	76.190	% Recov	70.000	130.000				06/10/09
LCS-DUP	1,1,2,2-Tetrachloroethane	79-34-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	1,1-Dichloroethene	75-35-4	14	70.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	1,2-Dichloroethane	107-06-2	18	85.714	% Recov	70.000	130.000				06/10/09
LCS-DUP	1,3-Butadiene	106-99-0	16	80.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	2-Propanol	67-63-0	15	71.429	% Recov	70.000	130.000				06/10/09
LCS-DUP	2-Hexanone	591-78-6	20	95.238	% Recov	70.000	130.000				06/10/09
LCS-DUP	Acetone	67-64-1	47	90.385	% Recov	70.000	130.000				06/10/09
LCS-DUP	Acetonitrile	75-05-8	18	81.818	% Recov	70.000	130.000				06/10/09
LCS-DUP	Benzene	71-43-2	18	85.714	% Recov	70.000	130.000				06/10/09
LCS-DUP	Butanal	123-72-8	21	100.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Butanenitrile	109-74-0	21	100.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Carbon disulfide	75-15-0	14	66.667	% Recov	70.000	130.000			*	06/10/09
LCS-DUP	Carbon tetrachloride	56-23-5	14	66.667	% Recov	70.000	130.000			*	06/10/09
LCS-DUP	Chloroform	67-66-3	16	80.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Chlorobenzene	108-90-7	18	85.714	% Recov	70.000	130.000				06/10/09
LCS-DUP	Decane	124-18-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Methylenechloride	75-09-2	14	66.667	% Recov	70.000	130.000			*	06/10/09
LCS-DUP	1,4-Dioxane	123-91-1	18	85.714	% Recov	70.000	130.000				06/10/09
LCS-DUP	Ethylbenzene	100-41-4	20	95.238	% Recov	70.000	130.000				06/10/09
LCS-DUP	Ethanol	64-17-5	79	71.818	% Recov	70.000	130.000				06/10/09
LCS-DUP	Furan	110-00-9	14	66.667	% Recov	70.000	130.000			*	06/10/09
LCS-DUP	3-Hexanone	589-38-8	21	100.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Hexanenitrile	628-73-9	22	104.762	% Recov	70.000	130.000				06/10/09
LCS-DUP	Methanol	67-56-1	86	86.000	% Recov	70.000	130.000				06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS-DUP	Chloromethane	74-87-3	16	80.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	2-Butanone	78-93-3	20	95.238	% Recov	70.000	130.000				06/10/09
LCS-DUP	4-Methyl-2-Pentanone	108-10-1	21	100.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	m/p-xylene	179601-23-1	20	95.238	% Recov	70.000	130.000				06/10/09
LCS-DUP	Butane	106-97-8	16	80.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Hexane	110-54-3	16	76.190	% Recov	70.000	130.000				06/10/09
LCS-DUP	Pentane	109-66-0	16	80.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Propane	74-98-6	16	80.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Heptane	142-82-5	16	76.190	% Recov	70.000	130.000				06/10/09
LCS-DUP	o-Xylene	95-47-6	21	100.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Ethyl cyanide	107-12-0	19	90.476	% Recov	70.000	130.000				06/10/09
LCS-DUP	Styrene	100-42-5	21	105.000	% Recov	70.000	130.000				06/10/09
LCS-DUP	Tetrachloroethene	127-18-4	16	76.190	% Recov	70.000	130.000				06/10/09
LCS-DUP	Tetrahydrofuran	109-99-9	20	95.238	% Recov	70.000	130.000				06/10/09
LCS-DUP	Toluene	108-88-3	19	90.476	% Recov	70.000	130.000				06/10/09
LCS-DUP	Trichloroethene	79-01-6	17	80.952	% Recov	70.000	130.000				06/10/09
LCS-DUP	Valeronitrile	110-59-8	20	95.238	% Recov	70.000	130.000				06/10/09
LCS-DUP	Vinyl chloride	75-01-4	15	75.000	% Recov	70.000	130.000				06/10/09
LCS-RPD	1-Butanol	71-36-3	76.190		RPD			22.223	25.000		06/10/09
LCS-RPD	1-Propanol	71-23-8	76.190		RPD			6.061	25.000		06/10/09
LCS-RPD	1,1,1-Trichloroethane	71-55-6	76.190		RPD			6.450	25.000		06/10/09
LCS-RPD	1,1,2,2-Tetrachloroethane	79-34-5	105.000		RPD			0.000	25.000		06/10/09
LCS-RPD	1,1-Dichloroethene	75-35-4	70.000		RPD			7.407	25.000		06/10/09
LCS-RPD	1,2-Dichloroethane	107-06-2	85.714		RPD			5.714	25.000		06/10/09
LCS-RPD	1,3-Butadiene	106-99-0	80.000		RPD			6.452	25.000		06/10/09
LCS-RPD	2-Propanol	67-63-0	71.429		RPD			0.000	25.000		06/10/09
LCS-RPD	2-Hexanone	591-78-6	95.238		RPD			5.128	25.000		06/10/09
LCS-RPD	Acetone	67-64-1	90.385		RPD			6.594	25.000		06/10/09
LCS-RPD	Acetonitrile	75-05-8	81.818		RPD			5.714	25.000		06/10/09
LCS-RPD	Benzene	71-43-2	85.714		RPD			5.714	25.000		06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS-RPD	Butanal	123-72-8	100.000		RPD			0.000	25.000		06/10/09
LCS-RPD	Butanenitrile	109-74-0	100.000		RPD			0.000	25.000		06/10/09
LCS-RPD	Carbon disulfide	75-15-0	66.667		RPD			7.408	25.000		06/10/09
LCS-RPD	Carbon tetrachloride	56-23-5	66.667		RPD			6.897	25.000		06/10/09
LCS-RPD	Chloroform	67-66-3	80.000		RPD			6.452	25.000		06/10/09
LCS-RPD	Chlorobenzene	108-90-7	85.714		RPD			0.000	25.000		06/10/09
LCS-RPD	Decane	124-18-5	105.000		RPD			0.000	25.000		06/10/09
LCS-RPD	Methylenechloride	75-09-2	66.667		RPD			7.408	25.000		06/10/09
LCS-RPD	1,4-Dioxane	123-91-1	85.714		RPD			10.527	25.000		06/10/09
LCS-RPD	Ethylbenzene	100-41-4	95.238		RPD			0.000	25.000		06/10/09
LCS-RPD	Ethanol	64-17-5	71.818		RPD			4.939	25.000		06/10/09
LCS-RPD	Furan	110-00-9	66.667		RPD			0.000	25.000		06/10/09
LCS-RPD	3-Hexanone	589-38-8	100.000		RPD			4.878	25.000		06/10/09
LCS-RPD	Hexanenitrile	628-73-9	104.762		RPD			4.445	25.000		06/10/09
LCS-RPD	Methanol	67-56-1	86.000		RPD			3.550	25.000		06/10/09
LCS-RPD	Chloromethane	74-87-3	80.000		RPD			13.333	25.000		06/10/09
LCS-RPD	2-Butanone	78-93-3	95.238		RPD			5.128	25.000		06/10/09
LCS-RPD	4-Methyl-2-Pentanone	108-10-1	100.000		RPD			10.000	25.000		06/10/09
LCS-RPD	m/p-xylene	179601-23-1	95.238		RPD			0.000	25.000		06/10/09
LCS-RPD	Butane	106-97-8	80.000		RPD			13.333	25.000		06/10/09
LCS-RPD	Hexane	110-54-3	76.190		RPD			0.000	25.000		06/10/09
LCS-RPD	Pentane	109-66-0	80.000		RPD			6.452	25.000		06/10/09
LCS-RPD	Propane	74-98-6	80.000		RPD			13.333	25.000		06/10/09
LCS-RPD	Heptane	142-82-5	76.190		RPD			6.450	25.000		06/10/09
LCS-RPD	o-Xylene	95-47-6	100.000		RPD			0.000	25.000		06/10/09
LCS-RPD	Ethyl cyanide	107-12-0	90.476		RPD			0.000	25.000		06/10/09
LCS-RPD	Styrene	100-42-5	105.000		RPD			0.000	25.000		06/10/09
LCS-RPD	Tetrachloroethene	127-18-4	76.190		RPD			0.000	25.000		06/10/09
LCS-RPD	Tetrahydrofuran	109-99-9	95.238		RPD			5.128	25.000		06/10/09
LCS-RPD	Toluene	108-88-3	90.476		RPD			0.000	25.000		06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: Organic

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LCS-RPD	Trichloroethene	79-01-6	80.952		RPD			6.061	25.000		06/10/09
LCS-RPD	Valeronitrile	110-59-8	95.238		RPD			4.878	25.000		06/10/09
LCS-RPD	Vinyl chloride	75-01-4	75.000		RPD			0.000	25.000		06/10/09
LOQ	1-Butanol	71-36-3	4.0	75.472	% Recov	50.000	150.000				06/10/09
LOQ	1-Propanol	71-23-8	3.1	58.491	% Recov	50.000	150.000				06/10/09
LOQ	1,1,1-Trichloroethane	71-55-6	4.3	82.692	% Recov	50.000	150.000				06/10/09
LOQ	1,1,2,2-Tetrachloroethane	79-34-5	4.0	80.000	% Recov	50.000	150.000				06/10/09
LOQ	1,1-Dichloroethene	75-35-4	3.9	78.000	% Recov	50.000	150.000				06/10/09
LOQ	1,2-Dichloroethane	107-06-2	4.0	78.431	% Recov	50.000	150.000				06/10/09
LOQ	1,3-Butadiene	106-99-0	4.9	98.000	% Recov	50.000	150.000				06/10/09
LOQ	2-Propanol	67-63-0	3.3	62.264	% Recov	50.000	150.000				06/10/09
LOQ	2-Hexanone	591-78-6	2.9	55.769	% Recov	50.000	150.000				06/10/09
LOQ	Acetone	67-64-1	12	92.308	% Recov	50.000	150.000				06/10/09
LOQ	Acetonitrile	75-05-8	4.0	74.074	% Recov	50.000	150.000				06/10/09
LOQ	Benzene	71-43-2	3.9	75.000	% Recov	50.000	150.000				06/10/09
LOQ	Butanal	123-72-8	2.6	49.057	% Recov	50.000	150.000			*	06/10/09
LOQ	Butanenitrile	109-74-0	2.7	50.943	% Recov	50.000	150.000				06/10/09
LOQ	Carbon disulfide	75-15-0	4.4	86.275	% Recov	50.000	150.000				06/10/09
LOQ	Carbon tetrachloride	56-23-5	4.1	78.846	% Recov	50.000	150.000				06/10/09
LOQ	Chloroform	67-66-3	4.3	86.000	% Recov	50.000	150.000				06/10/09
LOQ	Chlorobenzene	108-90-7	4.1	78.846	% Recov	50.000	150.000				06/10/09
LOQ	Decane	124-18-5	3.4	66.667	% Recov	50.000	150.000				06/10/09
LOQ	Methylenechloride	75-09-2	4.4	83.019	% Recov	50.000	150.000				06/10/09
LOQ	1,4-Dioxane	123-91-1	3.0	56.604	% Recov	50.000	150.000				06/10/09
LOQ	Ethylbenzene	100-41-4	3.3	63.462	% Recov	50.000	150.000				06/10/09
LOQ	Ethanol	64-17-5	19	73.077	% Recov	50.000	150.000				06/10/09
LOQ	Furan	110-00-9	3.2	60.377	% Recov	50.000	150.000				06/10/09
LOQ	3-Hexanone	589-38-8	2.4	45.283	% Recov	50.000	150.000			*	06/10/09
LOQ	Hexanenitrile	628-73-9	2.8	52.830	% Recov	50.000	150.000				06/10/09
LOQ	Methanol	67-56-1	26	100.000	% Recov	50.000	150.000				06/10/09

WSCF ANALYTICAL LABORATORY QC REPORT

Department: **Organic**

SDG Number: WSCF20090505
Matrix: VAPOR
Test: Headspace Analysis

Sample Date:
Receive Date:

QC Type	Analyte	CAS #	QC Found	QC Yield	Units	Lower Limit	Upper Limit	RPD(%)	RPD Limit	RQ	Analysis Date
LOQ	Chloromethane	74-87-3	5.2	104.000	% Recov	50.000	150.000				06/10/09
LOQ	2-Butanone	78-93-3	3.0	56.604	% Recov	50.000	150.000				06/10/09
LOQ	4-Methyl-2-Pentanone	108-10-1	2.5	47.170	% Recov	50.000	150.000				06/10/09
LOQ	m/p-xylene	179601-23-1	3.1	59.615	% Recov	50.000	150.000				06/10/09
LOQ	Butane	106-97-8	4.9	98.000	% Recov	50.000	150.000				06/10/09
LOQ	Hexane	110-54-3	3.5	67.308	% Recov	50.000	150.000				06/10/09
LOQ	Pentane	109-66-0	3.7	74.000	% Recov	50.000	150.000				06/10/09
LOQ	Propane	74-98-6	4.7	94.000	% Recov	50.000	150.000				06/10/09
LOQ	Heptane	142-82-5	3.4	65.385	% Recov	50.000	150.000				06/10/09
LOQ	o-Xylene	95-47-6	3.2	62.745	% Recov	50.000	150.000				06/10/09
LOQ	Ethyl cyanide	107-12-0	3.6	66.667	% Recov	50.000	150.000				06/10/09
LOQ	Styrene	100-42-5	3.1	62.000	% Recov	50.000	150.000				06/10/09
LOQ	Tetrachloroethene	127-18-4	4.0	76.923	% Recov	50.000	150.000				06/10/09
LOQ	Tetrahydrofuran	109-99-9	2.9	54.717	% Recov	50.000	150.000				06/10/09
LOQ	Toluene	108-88-3	3.0	56.604	% Recov	50.000	150.000				06/10/09
LOQ	Trichloroethene	79-01-6	3.7	71.154	% Recov	50.000	150.000				06/10/09
LOQ	Valeronitrile	110-59-8	2.7	50.000	% Recov	50.000	150.000				06/10/09
LOQ	Vinyl chloride	75-01-4	5.1	100.000	% Recov	50.000	150.000				06/10/09

WSCF
ANALYTICAL COMMENT REPORT

Attention: Steve Trent
Project Number F09-028

Group #: WSCF20090505
Department: Organic

Sample #	Client ID	Lab Area	Test	Comment
		VALGROUP		QC: All QC requirements were met with the following exceptions: Calibration: 1-butanol was high with 27.3 %RSD, toluene with 25.3 %, and hexanenitrile with 29.4 %RSD. LCS: 1,1-dichloroethylene (65 %R), carbon disulfide (62 %R) methylenechloride (62 %R), furan (67 %R) were out. LCSD: Carbondisulfide (67 %R), carbon tetrachloride (67 %R), methylene chloride (67 %R), furan (67 %R) were low. LOQ: Butanal (49 %R), 3-hexanone (45 %R), and MIBK (47 %R) were outside the 50-150 %R limits. MS 6/17/09

Lab Areas: VALGROUP - Group Validation
LOGSAMP - Login for Sample
VALTEST - Test Validation
LOGTEST - Login for Tests
TESTDATA - Test Data Entry

This report may not be reproduced, except in its entirety without the written approval of the WSCF Laboratory.

M4W41-SLF-09-195

ATTACHMENT 4

SAMPLE RECEIPT INFORMATION

Consisting of 3 pages
Including cover page

Waste Sampling and Characterization Facility
P.O. BOX 1970 S3-30, Richland, WA 99352
PHONE: (509) 373-7004/FAX: (509) 373-7134

7/6/09
File
KB

ACKNOWLEDGMENT OF SAMPLES RECEIVED

Groundwater Remediation Program
Richland, WA 99354
Attn: Steve Trent

Customer Code: GPP
PO#: 300227/ES30
Group#: 20090505
Project#: F09-028
Proj Mgr: STEVE TRENT
Phone: 373-5869

The following samples were received from you on 05/27/09. They have been scheduled for the tests listed beside each sample. If this information is incorrect, please contact your service representative. Thank you for using Waste Sampling and Characterization Facility.

Sample#	Sample Id	Tests Scheduled	Matrix	Sample Date
W09GR00464	B20T73	TRENT BLANK @IHVAP3	Drum Head Space Vapor	05/27/09

Test Acronym Description

Test Acronym	Description
@IHVAP3	Headspace Analysis

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST	F09-028-254	PAGE 1 OF 1

COLLECTOR	COMPANY CONTACT	TELEPHONE NO.	PROJECT COORDINATOR	PRICE CODE 9N	DATA TURNAROUND
LA Pingel	DYEKMAN, DL	373-2858	DYEKMAN, DL	AIR QUALITY ☐	45 Days / 45 Days
SAMPLING LOCATION	**PROJECT DESIGNATION**		**SAF NO.**		
Lab Blank A'-14	218-W-4C Soil Vapor Sampling		F09-028		
ICE CHEST NO.	**FIELD LOGBOOK NO.**	**ACTUAL SAMPLE DEPTH**	**COA**	**METHOD OF SHIPMENT**	
		+ 30"	300227ES30	GOVERNMENT VEHICLE	
SHIPPED TO	**OFFSITE PROPERTY NO.**		**BILL OF LADING/AIR BILL NO.**		
Waste Sampling & Characterization	N/A		N/A		

MATRIX*
A=Air
DL=Drum Liquids
DS=Drum Solids
L=Liquid
O=Oil
S=Soil
SE=Sediment
T=Tissue
V=Vegitation
W=Water
WI=Wipe
X=Other

POSSIBLE SAMPLE HAZARDS/ REMARKS
Contains Radioactive Material at concentrations that may or may not be regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 5400.5 (1990/1993)
5-27-09

SPECIAL HANDLING AND/OR STORAGE
20090505

PRESERVATION	None
TYPE OF CONTAINER	Summa Canister
NO. OF CONTAINER(S)	1
VOLUME	6L
SAMPLE ANALYSIS	VOA - T0-15;

SAMPLE NO.	MATRIX*	SAMPLE DATE	SAMPLE TIME
B20T73	GASEOUS	5/27/09	1408
W09CR0044			

CHAIN OF POSSESSION / **SIGN/ PRINT NAMES**

RELINQUISHED BY/REMOVED FROM	DATE/TIME	RECEIVED BY/STORED IN	DATE/TIME
LA Pingel	5/27/09 1420	[illegible]	5/27/09 1420

SPECIAL INSTRUCTIONS

** The laboratory will prepare an equipment blank by filling a SUMMA canister with certified clean air. They will track and report the results under the sample number provided by Sample Data Management.

** The 200 Area S&GRP Characterization and Monitoring Sampling and Analysis GKI applies to this SAF.

LABORATORY SECTION	**RECEIVED BY**	**TITLE**	**DATE/TIME**
FINAL SAMPLE DISPOSITION	**DISPOSAL METHOD**	**DISPOSED BY**	**DATE/TIME**

A-6003-618(01/06)