



Tuesday, May 31, 2016

Dave Todak
CH2M HILL Plateau Remediation Company
2420 Stevens Center
Richland, WA 99352

Re: ALS Workorder: 1605434
Project Name: 100-FR-3 Drilling FY2016 - water
Project Number: F16-024

Dear Mr. Todak:

One water sample was received from CH2M HILL Plateau Remediation Company, on 5/21/2016. The sample was scheduled for the following analysis:

GC/MS Volatiles

The results for these analyses are contained in the enclosed reports.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.

Thank you for your confidence in ALS Environmental. Should you have any questions, please call.

Sincerely,


ALS Environmental
Julie Ellingson
Project Manager

ALS Environmental -- FC

Sample Number(s) Cross-Reference Table

OrderNum: 1605434

Client Name: CH2M HILL Plateau Remediation Company

Client Project Name: 100-FR-3 Drilling FY2016 - water

Client Project Number: F16-024

Client PO Number: BOA 54854

Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B34T42	1605434-1		WATER	19-May-16	8:38



ALS Environmental - Fort Collins
CONDITION OF SAMPLE UPON RECEIPT FORM

Client: CHPRC Workorder No: 1605434
Project Manager: JME Initials: SDM Date: 5-21-16

1. Does this project require any special handling in addition to standard ALS procedures?		YES	<input checked="" type="radio"/> NO
2. Are custody seals on shipping containers intact?	NONE	<input checked="" type="radio"/> YES	NO
3. Are Custody seals on sample containers intact?	NONE	<input checked="" type="radio"/> YES	NO
4. Is there a COC (Chain-of-Custody) present or other representative documents?		<input checked="" type="radio"/> YES	NO
5. Are the COC and bottle labels complete and legible?		<input checked="" type="radio"/> YES	NO
6. Is the COC in agreement with samples received? (IDs, dates, times, no. of samples, no. of containers, matrix, requested analyses, etc.)		<input checked="" type="radio"/> YES	NO
7. Were airbills / shipping documents present and/or removable?	DROP OFF	<input checked="" type="radio"/> YES	NO
8. Are all aqueous samples requiring preservation preserved correctly? (excluding volatiles)	<input checked="" type="radio"/> N/A	YES	NO
9. Are all aqueous non-preserved samples pH 4-9?	<input checked="" type="radio"/> N/A	YES	NO
10. Is there sufficient sample for the requested analyses?		<input checked="" type="radio"/> YES	NO
11. Were all samples placed in the proper containers for the requested analyses?		<input checked="" type="radio"/> YES	NO
12. Are all samples within holding times for the requested analyses?		<input checked="" type="radio"/> YES	NO
13. Were all sample containers received intact? (not broken or leaking, etc.)		<input checked="" type="radio"/> YES	NO
14. Are all samples requiring no headspace (VOC, GRO, RSK/MEE, Rx CN/S, radon) headspace free? Size of bubble: ___ < green pea ___ > green pea	N/A	<input checked="" type="radio"/> YES	NO
15. Do any water samples contain sediment? Amount Amount of sediment: ___ dusting ___ moderate ___ heavy	N/A	YES	<input checked="" type="radio"/> NO
16. Were the samples shipped on ice?		<input checked="" type="radio"/> YES	NO
17. Were cooler temperatures measured at 0.1-6.0°C? IR gun used*: #2 <input checked="" type="radio"/> #4	RAD ONLY	<input checked="" type="radio"/> YES	NO
Cooler #: <u>1</u>			
Temperature (°C): <u>1.8</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>11</u>			
Background µR/hr reading: <u>12</u>			
Were external µR/hr readings ≤ two times background and within DOT acceptance criteria? <input checked="" type="radio"/> YES / NO / NA (If no, see Form 008.)			

Additional Information: PROVIDE DETAILS BELOW FOR A NO RESPONSE TO ANY QUESTION ABOVE, EXCEPT #1 AND #16.

If applicable, was the client contacted? YES / NO / NA Contact: _____ Date/Time: _____

Project Manager Signature / Date: [Signature] 5/23/16

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1605434

ORIGIN ID: PSCA
 CHRIS FULTON
 CH2M
 6267 LATAH ST
 RICHLAND, WA 99354
 UNITED STATES US

(509) 373-3547

SHIP DATE: 20MAY16
 ACTWGT: 44.00 LB
 CAD: 107066051/INET3730

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225 COMMERCE DRIVE

1.82

FORT COLLINS CO 80524

(970) 490-1311 REF: PTR6654

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1605434



GC/MS Volatiles Case Narrative

CH2M HILL Plateau Remediation Company

100-FR-3 Drilling FY2016 - water -- F16-024

Work Order Number: 1605434

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 05/21/16.

The sample was free of headspace prior to analysis and had a pH < 2 at the time of analysis.

2. The sample was prepared according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared using purge and trap procedures based on Method 5030C.
3. The sample was analyzed using GC/MS with an RTX-624, RTX-VMS, or equivalent capillary column according to the current revision of SOP 525 based on SW-846 Method 8260. All positive results were quantitated against the initial calibration standards using the internal standard technique. The identification of positive results was achieved by a comparison of the retention time and mass spectrum of the sample versus the daily calibration standard.
4. All initial calibration criteria were met.
5. All initial calibrations are verified by comparing a second source standard calibration verification (ICV) against the calibration curve. All criteria for initial calibration verification were met.
6. All compounds in the daily (continuing) calibration verifications were within 20%D.
7. Methylene chloride, acetone and 2-butanone are common laboratory contaminants. In order to minimize the levels of these compounds detected in the gc/ms analysis, ALS has designated its volatile laboratory as a restricted access area. In addition, the laboratory has been equipped with a dedicated, air intake and exhaust system that operates under positive pressure in order to minimize cross contamination of these compounds. Due to fluctuations in ambient laboratory conditions, reported sample values for common laboratory contaminants may be due to lab contamination even if the compound in question is not detected in the associated method blank.

All method blank criteria were met.



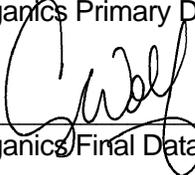
8. All laboratory control sample and laboratory control sample duplicate recoveries and RPDs were within the acceptance criteria.
9. A matrix spike and matrix spike duplicate were not performed because of insufficient sample. A laboratory control sample and laboratory control sample duplicate were performed instead.
10. The sample was analyzed within the established holding time.
11. All surrogate recoveries were within acceptance criteria.
12. All internal standard recoveries were within acceptance criteria.
13. Manual integrations are performed when needed to provide consistent and defensible data following the guidelines in the current revision of SOP 939.
14. Total xylene is the sum of m+p-xylene and o-xylene. If a sample is analyzed at multiple dilutions, the total will be obtained by adding the results from m+p-xylene and o-xylene at the dilution that brought each compound within the calibration range of the instrument. Therefore, a dilution factor for total xylene is not reported. Qualifier flags (other than "U" flags) and reporting limits are not applicable for the total. The reporting limit shown on the report is a placeholder to accommodate client EDD requirements.

The data contained in the following report have been reviewed and approved by the personnel listed below. In addition, ALS certifies that the analyses reported herein are true, complete and correct within the limits of the methods employed.



Emily Lyons
Organics Primary Data Reviewer

5/31/16
Date



Organics Final Data Reviewer

5/31/16
Date

ALS
Data Qualifier Flags
Organics

- U or ND:** This flag indicates that the compound was analyzed for but not detected.
- J:** This flag indicates an estimated value. This flag is used as follows : (1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the reporting limit (RL) but greater than the method detection limit (MDL); (3) when the retention time data indicate the presence of a compound that meets the GC identification criteria, and the result is less than the RL but greater than the MDL; and (4) the reported value is estimated.
- B:** This flag is used when the analyte is detected in the associated method blank as well as in the sample. It indicates probable blank contamination and warns the data user. This flag shall be used for a tentatively identified compound (TIC) as well as for a positively identified target compound.
- E:** This flag identifies compounds whose concentration exceeds the upper level of the calibration range.
- A:** This flag indicates that a tentatively identified compound is a suspected aldol-condensation product.
- X:** This flag indicates that the analyte was diluted below an accurate quantitation level.
- *:** This flag indicates that a spike recovery is equal to or outside the control criteria used.
- +:** This flag indicates that the relative percent difference (RPD) equals or exceeds the control criteria.

GC/MS Volatiles

Method SW8260_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Lab ID: VL160523-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 23-May-16

Date Analyzed: 23-May-16

Prep Batch: VL160523-3

QCBatchID: VL160523-3-2

Run ID: VL160523-3A

Cleanup: NONE

Basis: N/A

File Name: C68735

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
75-01-4	VINYL CHLORIDE	1	0.3	1	0.3	U	
75-35-4	1,1-DICHLOROETHENE	1	0.3	1	0.3	U	
67-64-1	ACETONE	1	3	10	3	U	
75-15-0	CARBON DISULFIDE	1	0.3	1	0.3	U	
75-09-2	METHYLENE CHLORIDE	1	0.44	1	0.44	U	
75-34-3	1,1-DICHLOROETHANE	1	0.3	1	0.3	U	
78-93-3	2-BUTANONE	1	3	10	3	U	
67-66-3	CHLOROFORM	1	0.3	1	0.3	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	0.3	1	0.3	U	
56-23-5	CARBON TETRACHLORIDE	1	0.3	1	0.3	U	
107-06-2	1,2-DICHLOROETHANE	1	0.3	1	0.3	U	
71-43-2	BENZENE	1	0.3	1	0.3	U	
79-01-6	TRICHLOROETHENE	1	0.3	1	0.3	U	
108-10-1	4-METHYL-2-PENTANONE	1	3	10	3	U	
108-88-3	TOLUENE	1	0.3	1	0.3	U	
79-00-5	1,1,2-TRICHLOROETHANE	1	0.3	1	0.3	U	
127-18-4	TETRACHLOROETHENE	1	0.2	1	0.2	U	
108-90-7	CHLOROBENZENE	1	0.3	1	0.3	U	
100-41-4	ETHYLBENZENE	1	0.3	1	0.3	U	
1330-20-7	TOTAL XYLENES	1	1	1		U	

Data Package ID: VL1605434-1

6/2/2016
ALS1605434

GC/MS Volatiles

Method SW8260_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Lab ID: VL160523-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 23-May-16

Date Analyzed: 23-May-16

Prep Batch: VL160523-3

QCBatchID: VL160523-3-2

Run ID: VL160523-3A

Cleanup: NONE

Basis: N/A

File Name: C68735

Sample Aliquot: 1 ml

Final Volume: 1 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.2		25	101	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	26.2		25	105	84 - 118
2037-26-5	TOLUENE-D8	25.3		25	101	85 - 115

Data Package ID: VL1605434-1

Date Printed: Tuesday, May 31, 2016

ALS Environmental -- FC

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LIMS Version: 6.815

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10 of 15

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Field ID:	B34T42
Lab ID:	1605434-1

Sample Matrix: WATER
% Moisture: N/A
Date Collected: 19-May-16
Date Extracted: 23-May-16
Date Analyzed: 23-May-16
Prep Method: SW5030 Rev C

Prep Batch: VL160523-3
QCBatchID: VL160523-3-2
Run ID: VL160523-3A
Cleanup: NONE
Basis: As Received
File Name: C68744

Analyst: Joe Kostelnik
Sample Aliquot: 10 ml
Final Volume: 10 ml
Result Units: UG/L
Clean DF: 1

Analysis ReqCode: 8260_VOA_GCM

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
75-01-4	VINYL CHLORIDE	1	0.3	1	0.3	U	
75-35-4	1,1-DICHLOROETHENE	1	0.3	1	0.3	U	
67-64-1	ACETONE	1	3	10	3	U	
75-15-0	CARBON DISULFIDE	1	0.3	1	0.3	U	
75-09-2	METHYLENE CHLORIDE	1	0.44	1	0.44	U	
75-34-3	1,1-DICHLOROETHANE	1	0.3	1	0.3	U	
78-93-3	2-BUTANONE	1	3	10	3	U	
67-66-3	CHLOROFORM	1	0.3	1	0.3	U	
71-55-6	1,1,1-TRICHLOROETHANE	1	0.3	1	0.3	U	
56-23-5	CARBON TETRACHLORIDE	1	0.3	1	0.3	U	
107-06-2	1,2-DICHLOROETHANE	1	0.3	1	0.3	U	
71-43-2	BENZENE	1	0.3	1	0.3	U	
79-01-6	TRICHLOROETHENE	1	0.3	1	0.3	U	
108-10-1	4-METHYL-2-PENTANONE	1	3	10	3	U	
108-88-3	TOLUENE	1	1.4	1	0.3		
79-00-5	1,1,2-TRICHLOROETHANE	1	0.3	1	0.3	U	
127-18-4	TETRACHLOROETHENE	1	0.2	1	0.2	U	
108-90-7	CHLOROBENZENE	1	0.3	1	0.3	U	
100-41-4	ETHYLBENZENE	1	0.3	1	0.3	U	
1330-20-7	TOTAL XYLENES	1	1	1		U	

Data Package ID: VL1605434-1

GC/MS Volatiles

Method SW8260_25C

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Field ID:	B34T42
Lab ID:	1605434-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 19-May-16

Date Extracted: 23-May-16

Date Analyzed: 23-May-16

Prep Method: SW5030 Rev C

Prep Batch: VL160523-3

QCBatchID: VL160523-3-2

Run ID: VL160523-3A

Cleanup: NONE

Basis: As Received

File Name: C68744

Analyst: Joe Kostelnik

Sample Aliquot: 1 ml

Final Volume: 1 ml

Result Units: UG/L

Clean DF: 1

Analysis ReqCode: 8260_VOA_GCM

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
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Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	24.6		25	98	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	26.9		25	107	84 - 118
2037-26-5	TOLUENE-D8	25.3		25	101	85 - 115

Data Package ID: VL1605434-1

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Lab ID: VL160523-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05/23/2016

Date Analyzed: 05/23/2016

Prep Method: SW5030C

Prep Batch: VL160523-3

QCBatchID: VL160523-3-2

Run ID: VL160523-3A

Cleanup: NONE

Basis: N/A

File Name: C68732

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
75-01-4	VINYL CHLORIDE	10	10.9	1		109	72 - 123%
75-35-4	1,1-DICHLOROETHENE	10	10.3	1		103	77 - 119%
67-64-1	ACETONE	40	35.8	10		89	62 - 142%
75-15-0	CARBON DISULFIDE	10	10.5	1		105	76 - 121%
75-09-2	METHYLENE CHLORIDE	10	9.2	1		92	71 - 130%
75-34-3	1,1-DICHLOROETHANE	10	10.2	1		102	83 - 119%
78-93-3	2-BUTANONE	40	38.2	10		95	70 - 135%
67-66-3	CHLOROFORM	10	10.1	1		101	82 - 119%
71-55-6	1,1,1-TRICHLOROETHANE	10	10.3	1		103	80 - 120%
56-23-5	CARBON TETRACHLORIDE	10	11.1	1		111	77 - 122%
107-06-2	1,2-DICHLOROETHANE	10	9.95	1		100	74 - 128%
71-43-2	BENZENE	10	10	1		100	83 - 117%
79-01-6	TRICHLOROETHENE	10	10.3	1		103	83 - 117%
108-10-1	4-METHYL-2-PENTANONE	40	41.8	10		105	73 - 125%
108-88-3	TOLUENE	10	9.78	1		98	82 - 113%
79-00-5	1,1,2-TRICHLOROETHANE	10	10.4	1		104	78 - 116%
127-18-4	TETRACHLOROETHENE	10	10.6	1		106	84 - 117%
108-90-7	CHLOROBENZENE	10	10.6	1		106	81 - 113%
100-41-4	ETHYLBENZENE	10	10.2	1		102	81 - 113%
136777-61-	M+P-XYLENE	20	19.7	1		99	82 - 115%
95-47-6	O-XYLENE	10	10.3	1		103	81 - 115%

Data Package ID: VL1605434-1

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Lab ID: VL160523-3LCSD

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 05/23/2016

Date Analyzed: 05/23/2016

Prep Method: SW5030C

Prep Batch: VL160523-3

QCBatchID: VL160523-3-2

Run ID: VL160523-3A

Cleanup: NONE

Basis: N/A

File Name: C68733

Sample Aliquot: 10 ml

Final Volume: 10 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCSD Result	Reporting Limit	Result Qualifier	LCSD % Rec.	RPD Limit	RPD
75-01-4	VINYL CHLORIDE	10	10.4	1		104	20	5
75-35-4	1,1-DICHLOROETHENE	10	9.85	1		98	20	5
67-64-1	ACETONE	40	35.5	10		89	30	1
75-15-0	CARBON DISULFIDE	10	9.97	1		100	20	5
75-09-2	METHYLENE CHLORIDE	10	8.9	1		89	20	3
75-34-3	1,1-DICHLOROETHANE	10	10	1		100	20	2
78-93-3	2-BUTANONE	40	39	10		97	30	2
67-66-3	CHLOROFORM	10	9.84	1		98	20	2
71-55-6	1,1,1-TRICHLOROETHANE	10	9.9	1		99	20	4
56-23-5	CARBON TETRACHLORIDE	10	10.4	1		104	20	6
107-06-2	1,2-DICHLOROETHANE	10	9.77	1		98	20	2
71-43-2	BENZENE	10	9.63	1		96	20	4
79-01-6	TRICHLOROETHENE	10	10	1		100	20	2
108-10-1	4-METHYL-2-PENTANONE	40	42.2	10		105	30	1
108-88-3	TOLUENE	10	9.29	1		93	20	5
79-00-5	1,1,2-TRICHLOROETHANE	10	10.3	1		103	20	1
127-18-4	TETRACHLOROETHENE	10	10	1		100	20	5
108-90-7	CHLOROBENZENE	10	10.2	1		102	20	3
100-41-4	ETHYLBENZENE	10	9.78	1		98	20	4
136777-61-	M+P-XYLENE	20	19.1	1		95	20	3
95-47-6	O-XYLENE	10	9.87	1		99	20	4

Data Package ID: VL1605434-1

GC/MS Volatiles

Method SW8260_25C

Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1605434

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: 100-FR-3 Drilling FY2016 - water F16-024

Surrogate Recovery LCS/LCSD

CASNO	Target Analyte	Spike Added	LCS % Rec.	LCS Flag	LCSD % Rec.	LCSD Flag	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25	97		96		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	106		106		84 - 118
2037-26-5	TOLUENE-D8	25	102		101		85 - 115

Data Package ID: VL1605434-1
