

March 28, 2016  
ALS1603102



Ft. Collins, Colorado

LIMS Version: 6.808

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Monday, March 28, 2016

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

Re: ALS Workorder: 1603102  
Project Name: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Wa  
Project Number: F16-007

Dear Mr. Todak:

Two water samples were received from CH2M HILL Plateau Remediation Company, on 3/4/2016. The samples were scheduled for the following analyses:

Metals  
GC/MS Volatiles

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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,

A handwritten signature in black ink that reads "Julie Ellingson".

ALS Environmental  
Julie Ellingson  
Project Manager

# ALS Environmental -- FC

## Sample Number(s) Cross-Reference Table

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**OrderNum:** 1603102

**Client Name:** CH2M HILL Plateau Remediation Company

**Client Project Name:** FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-

**Client Project Number:** F16-007

**Client PO Number:** BOA 54854

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Client Sample Number	Lab Sample Number	COC Number	Matrix	Date Collected	Time Collected
B349M2	1603102-1		WATER	02-Mar-16	15:30
B349M3	1603102-2		WATER	02-Mar-16	15:30

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		PAGE 1 OF 1	
COLLECTOR Don Braitherton CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9415, I-005	PROJECT DESIGNATION FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water	FIELD LOGBOOK NO. HNF-N-645 3 - 45	SAF NO. F16-007	AIR QUALITY <input type="checkbox"/>	METHOD OF SHIPMENT FEDERAL EXPRESS
ICE CHEST NO. CWS-480	ACTUAL SAMPLE DEPTH 336.48'	OFFSITE PROPERTY NO. 6403	COA 300192	BILL OF LADING/AIR BILL NO. 7751 89 67 8623	
SHIPPED TO ALS Environmental Ft. Collins	ORIGINAL				

MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=Solids L=Liquid O=Oil S=Soil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	POSSIBLE SAMPLE HAZARDS/ REMARKS *Contains Radioactive Material at concentrations that are not be regulated for transportation per 49 CFR/IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1. NA	PRESERVATION HNO3 to pH <2	HOLDING TIME 6 Months	TYPE OF CONTAINER G/P	NO. OF CONTAINER(S) 1	VOLUME 500ml	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS	SAMPLE DATE MAR 02 2016	SAMPLE TIME 1530	MATRIX* WATER
SPECIAL HANDLING AND/OR STORAGE										

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	SPECIAL INSTRUCTIONS FILTER (1) 6020_METALS_ICPMS: COMMON (Add-on) {Manganese, Uranium};  FILTER
RELINQUISHED BY/REMOVED FROM CHPRC 2013	RECEIVED BY/STORED IN SSU #1	DATE/TIME MAR 02 2016 1610
RELINQUISHED BY/REMOVED FROM SSU #1	RECEIVED BY/STORED IN L.B. Wall	DATE/TIME MAR 03 2016 0920
RELINQUISHED BY/REMOVED FROM CHPRC	RECEIVED BY/STORED IN Fedex	DATE/TIME MAR 03 2016 1400
RELINQUISHED BY/REMOVED FROM Fedex	RECEIVED BY/STORED IN Mr. Rebecca Mesole	DATE/TIME MAR 03 2016 1000
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM	RECEIVED BY/STORED IN	DATE/TIME
LABORATORY SECTION 3 of 19	RECEIVED BY	DATE/TIME
FINAL SAMPLE DISPOSITION	DISPOSAL METHOD	DATE/TIME
PRINTED ON 1/13/2016	FR ID = FSR20443	TRVL NUM = TRVL-16-062
		A-6003-618 (REV 2)

14 lbs

CH2M Hill Plateau Remediation Company		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST		F16-007-130	PAGE 1 OF 1
COLLECTOR Don Brotherton CHPRC	COMPANY CONTACT TODAK, D	TELEPHONE NO. 376-6427	PROJECT COORDINATOR TODAK, D	PRICE CODE 7H	DATA TURNAROUND 30 Days / 30 Days
SAMPLING LOCATION C9415, I-005	PROJECT DESIGNATION FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water	FIELD LOGBOOK NO. HNF-N-645 3-45	SAF NO. F16-007	AIR QUALITY	<input type="checkbox"/>
ICE CHEST NO. GWS-480	ACTUAL SAMPLE DEPTH 336.48'	OFFSITE PROPERTY NO. 6403	COA 300192	METHOD OF SHIPMENT FEDERAL EXPRESS	ORIGINAL
SHIPPED TO ALS Environmental Ft. Collins	BILL OF LADING/AIR BILL NO. 7757 8967 8623				

1603102

20.3/3/16

MATRIX* A=Air DL=Drum L=Liquids DS=Drum S=Soil O=Oil SE=Sediment T=Tissue V=Vegetation W=Water WI=Wipe X=Other	PRESERVATION HCl or H2SO4 to pH <2/ Cool 14 Days	HOLDING TIME 14 Days	TYPE OF CONTAINER aGs*	NO. OF CONTAINER(S) 3	VOLUME 40ml	SAMPLE ANALYSIS SEE ITEM (1) IN SPECIAL INSTRUCTIONS
SPECIAL HANDLING AND/OR STORAGE	SAMPLE DATE MAR 02 2016					
	SAMPLE TIME 1530					
SAMPLE NO. B349M3 ②	MATRIX* WATER					

SPECIAL INSTRUCTIONS

(1) 8260\_VOA\_GCMS: COMMON {Carbon tetrachloride, Trichloroethene};

CHAIN OF POSSESSION	SIGN/ PRINT NAMES	RECEIVED BY/STORED IN	DATE/TIME
RELINQUISHED BY/REMOVED FROM Don Brotherton	SSU #1	RECEIVED BY/STORED IN	MAR 02 2016 1610
RELINQUISHED BY/REMOVED FROM SSU #1	L.D. Wall	RECEIVED BY/STORED IN	MAR 03 2016 0920
RELINQUISHED BY/REMOVED FROM L.D. Wall	CHPRC	RECEIVED BY/STORED IN	MAR 03 2016 1000
RELINQUISHED BY/REMOVED FROM Fedex	Rebecca Morala	RECEIVED BY/STORED IN	3/4/16
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
RELINQUISHED BY/REMOVED FROM		RECEIVED BY/STORED IN	
LABORATORY SECTION	TITLE		
FINAL SAMPLE DISPOSITION	DISPOSED BY		

March 28, 2016

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ALS Environmental - Fort Collins

CONDITION OF SAMPLE UPON RECEIPT FORM



Client: CHPRC

Workorder No: 1603102

Project Manager: JE

Initials: PLR Date: 3/4/16

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)	N/A	<input checked="" type="radio"/> 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>3.8°C</u>			
No. of custody seals on cooler: <u>2</u>			
External µR/hr reading: <u>8</u>			
Background µR/hr reading: <u>8</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.

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

Project Manager Signature / Date:  3/4/16

\*IR Gun #2: Oakton, SN 29922500201-0066  
\*IR Gun #4: Oakton, SN 2372220101-0002

1603102

ORIGIN ID: PSCA (509) 528-9426

LESLEY WALL  
CH2M  
6267 LATAH ST.  
6269 LATAH ST.  
RICHLAND, WA 99354  
UNITED STATES US

SHIP DATE: 03MAR16  
ACTWGT: 14.00 LB  
CAD: 1071066051/NET3730

BILL THIRD PARTY

TO JULIE ELLINGSON  
ALS GLOBAL  
225 COMMERCE DRIVE

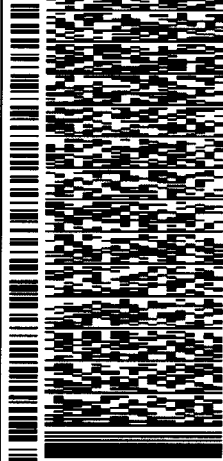
3328  
-2

FORT COLLINS CO 80524

(970) 490-1511 REF: PTR# 6403

PO: DEPT

5401JCF3A727E



FRI - 04 MAR 10:30A

PRIORITY OVERNIGHT

TRK# 7757 8967 8623

DSR

80524

XH FTCA

CO-US DEN



After printing this label:  
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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value. Pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.



# Metals

## Case Narrative

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### **CH2M HILL Plateau Remediation Company**

FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis - Water -- F16-007

Work Order Number: 1603102

1. This report consists of 1 water sample.
2. The sample was received cool and intact by ALS on 03/04/16.
3. The sample was to be analyzed for dissolved metals. The sample had been filtered prior to receipt, and had a pH less than 2 upon receipt.
4. The sample was prepared and analyzed based on SW-846, 3<sup>rd</sup> Edition procedures.

For analysis by ICP-MS, the sample was digested following method 3005A and the current revision of SOP 806.

5. Analysis by ICP-MS followed method 6020A and the current revision of SOP 827.
6. All standards and solutions are NIST traceable and were used within their recommended shelf life.
7. The sample was prepared and analyzed within the established hold time.

All in house quality control procedures were followed, as described below.

8. General quality control procedures.
  - A preparation (method) blank and laboratory control sample were digested and analyzed with the sample in this digestion batch.
  - The preparation (method) blank associated with this digestion batch was below the reporting limit for the requested analytes. Sample results have been compared to the blank results.
  - All laboratory control sample criteria were met.



- All initial and continuing calibration blanks were below the reporting limit for the requested analytes.
- All initial and continuing calibration verifications were within the acceptance criteria for the requested analytes.
- The interference check samples associated with Method 6020A were analyzed.

9. Matrix specific quality control procedures.


Sample 1603053-2 was designated as the quality control sample for this analysis. Results for the shared quality control samples are included at the client's request.

Similarity of matrix and therefore relevance of the QC results should not be automatically inferred for any sample other than the native sample selected for QC.

- A matrix spike and matrix spike duplicate were digested and analyzed with this batch. All acceptance criteria for accuracy were met.
- A sample duplicate and matrix spike duplicate were digested and analyzed with this batch. All acceptance criteria for precision were met.
- A serial dilution was analyzed with this ICP batch. All acceptance criteria were met.

10. It is a standard practice that samples for ICP-MS are analyzed at a dilution. The 10X factor can be considered an artifact of the prep and does not indicate a secondary dilution and is therefore not flagged as a dilution.

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.

  
\_\_\_\_\_  
Jill Latelle  
Inorganics Primary Data Reviewer

3/28/16  
Date

  
\_\_\_\_\_  
April E. Ellinger  
Inorganics Final Data Reviewer

3/28/16  
Date



### Inorganic Data Reporting Qualifiers

The following qualifiers are used as needed by the laboratory when reporting results of inorganic analyses.

- Result qualifier -- A “B” is entered if the reported value was obtained from a reading that was less than the Reporting Limit but greater than or equal to the Method Detection Limit (MDL). If the analyte was analyzed for but not detected a “U” is entered. For samples, negative values are reported as non-detects (“U” flagged). For blanks, if the absolute value of the negative value is above the MDL and below the reporting limit, then the result is “B” flagged.
- QC qualifier -- Specified entries and their meanings are as follows:
  - E - The reported value is estimated because of the presence of interference. An explanatory note may be included in the narrative.
  - M - Duplicate injection precision was not met.
  - N - Spiked sample recovery not within control limits. A post spike is analyzed for all ICP analyses when the matrix spike and or spike duplicate fail and the native sample concentration is less than four times the spike added concentration.
  - Z - Spiked recovery not within control limits. An explanatory note may be included in the narrative.
  - \* - Duplicate analysis (relative percent difference) not within control limits.
  - S - SAR value is estimated as one or more analytes used in the calculation were not detected above the detection limit.
  - C - The analyte was detected in both the sample and the associated QC blank, and the sample concentration was  $\leq 5X$  the blank concentration.
  - D - Analyte was reported at a secondary dilution factor, typically  $DF > 1$  (i.e., the primary preparation required dilution to either bring the analyte within the calibration range or to minimize interference). Required for organics/wetchem if the sample was diluted.

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# Dissolved ICPMS Metals

Method SW6020A

Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Field ID: B349M2

Lab ID: 1603102-1

Sample Matrix: WATER

% Moisture: N/A

Date Collected: 02-Mar-16

Date Extracted: 08-Mar-16

Date Analyzed: 16-Mar-16

Prep Method: SW3005 Rev A

Prep Batch: IP160308-3

QCBatchID: IP160308-3-3

Run ID: IM160316-12A5

Cleanup: NONE

Basis: As Received

File Name: 071SMPL\_

Analyst: Brent A. Stanfield

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

Analysis ReqCode: 6020\_METALS\_I

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7439-96-5	MANGANESE	10	21	5	0.3		
7440-61-1	URANIUM	10	1.3	0.1	0.027		

Data Package ID: *im1603102-1*

Date Printed: Monday, March 28, 2016

ALS Environmental -- FC

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# ICPMS Metals

Method SW6020A

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: IP160308-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 08-Mar-16

Date Analyzed: 16-Mar-16

Prep Batch: IP160308-3

QCBatchID: IP160308-3-3

Run ID: IM160316-12A5

Cleanup: NONE

Basis: N/A

File Name: 048SMPL\_

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	DF	Result	RptLimit/ LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
7439-96-5	MANGANESE	10	0.3	5	0.3	U	
7440-61-1	URANIUM	10	0.027	0.1	0.027	U	

Data Package ID: *im1603102-1*

Date Printed: Monday, March 28, 2016

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ALS1603102

# ICPMS Metals

Method SW6020A

## Laboratory Control Sample

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: IM160308-3LCS

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 03/08/2016

Date Analyzed: 03/16/2016

Prep Method: SW3005A

Prep Batch: IP160308-3

QCBatchID: IP160308-3-3

Run ID: IM160316-12A5

Cleanup: NONE

Basis: N/A

File Name: 050SMPL\_

Sample Aliquot: 50 ml

Final Volume: 50 ml

Result Units: UG/L

Clean DF: 1

CASNO	Target Analyte	Spike Added	LCS Result	Reporting Limit	Result Qualifier	LCS % Rec.	Control Limits
7439-96-5	MANGANESE	100	101	5		101	80 - 120%
7440-61-1	URANIUM	10	9.93	0.1		99	80 - 120%

Data Package ID: *im1603102-1*

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ALS1603102

# ICPMS Metals

Method SW6020A

Matrix Spike And Matrix Spike Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Anal

Field ID: SHARED QC
LabID: 1603053-2MS

Sample Matrix: WATER  
 % Moisture: N/A  
 Date Collected: 02-Mar-16  
 Date Extracted: 08-Mar-16  
 Date Analyzed: 16-Mar-16  
 Prep Method: SW3005 Rev A

Prep Batch: IP160308-3  
 QCBatchID: IP160308-3-3  
 Run ID: IM160316-12A5  
 Cleanup: NONE  
 Basis: As Received

Sample Aliquot: 50 ml  
 Final Volume: 50 ml  
 Result Units: UG/L  
 File Name: 062SMPL\_

CASNO	Target Analyte	Sample Result	Samp Qual	MS Result	MS Qual	Reporting Limit	Spike Added	MS % Rec.	Control Limits
7439-96-5	MANGANESE	18		121		5	100	103	75 - 125%
7440-61-1	URANIUM	2.5		13.1		0.1	10	106	75 - 125%

Field ID: SHARED QC
LabID: 1603053-2MSD

Sample Matrix: WATER  
 % Moisture: N/A  
 Date Collected: 02-Mar-16  
 Date Extracted: 08-Mar-16  
 Date Analyzed: 16-Mar-16  
 Prep Method: SW3005 Rev A

Prep Batch: IP160308-3  
 QCBatchID: IP160308-3-3  
 Run ID: IM160316-12A5  
 Cleanup: NONE  
 Basis: As Received

Sample Aliquot: 50 ml  
 Final Volume: 50 ml  
 Result Units: UG/L  
 File Name: 063SMPL\_

CASNO	Target Analyte	MSD Result	MSD Qual	Spike Added	MSD % Rec.	Reporting Limit	RPD Limit	RPD
7439-96-5	MANGANESE	122		100	104	5	20	1
7440-61-1	URANIUM	13.2		10	108	0.1	20	1

Data Package ID: im1603102-1



## GC/MS Volatiles Case Narrative

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### **CH2M HILL Plateau Remediation Company** FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis-Water -- F16-007

Work Order Number: 1603102

1. This report consists of 1 water sample. The sample was received cool and intact by ALS on 03/04/16.

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

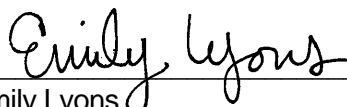
2. The sample was prepared according to SW-846, 3rd Edition procedures. Specifically, the water sample was prepared using purge and trap procedures based on Method 5030C.
3. The sample was analyzed using GC/MS with an RTX-624, RTX-VMS, or equivalent capillary column according to the current revision 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.

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

3/10/16  
Date

  
\_\_\_\_\_  
Arlic E. Ellis  
Organics Final Data Reviewer

3/28/16  
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.

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# GC/MS Volatiles

Method SW8260\_25C

Method Blank

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: VL160307-3MB

Sample Matrix: WATER

% Moisture: N/A

Date Collected: N/A

Date Extracted: 07-Mar-16

Date Analyzed: 07-Mar-16

Prep Batch: VL160307-3

QCBatchID: VL160307-3-2

Run ID: VL160307-3A

Cleanup: NONE

Basis: N/A

File Name: C66443

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
56-23-5	CARBON TETRACHLORIDE	1	0.3	1	0.3	U	
79-01-6	TRICHLOROETHENE	1	0.3	1	0.3	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.9		25	104	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.6		25	98	84 - 118
2037-26-5	TOLUENE-D8	24.9		25	100	85 - 115

Data Package ID: VL1603102-1

Date Printed: Thursday, March 10, 2016

ALS Environmental -- FC

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LIMS Version: 6.806

March 28, 2016

ALS1603102

# GC/MS Volatiles

Method SW8260\_25C

## Sample Results

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Field ID:	B349M3
Lab ID:	1603102-2

Sample Matrix: WATER

Prep Batch: VL160307-3

Analyst: Joe Kostelnik

% Moisture: N/A

QC Batch ID: VL160307-3-2

Sample Aliquot: 10 ml

Date Collected: 02-Mar-16

Run ID: VL160307-3A

Final Volume: 10 ml

Date Extracted: 07-Mar-16

Cleanup: NONE

Result Units: UG/L

Date Analyzed: 07-Mar-16

Basis: As Received

Clean DF: 1

Analysis ReqCode: 8260\_VOA\_GCM

Prep Method: SW5030 Rev C

File Name: C66455

CASNO	Target Analyte	Dilution Factor	Result	RptLimit/LOQ/LOD	MDL/DL	Result Qualifier	EPA Qualifier
56-23-5	CARBON TETRACHLORIDE	1	2.8	1	0.3		
79-01-6	TRICHLOROETHENE	1	0.3	1	0.3	U	

## Surrogate Recovery

CASNO	Surrogate Analyte	Result	Flag	Spike Amount	Percent Recovery	Control Limits
460-00-4	4-BROMOFLUOROBENZENE	25.5		25	102	85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	24.6		25	98	84 - 118
2037-26-5	TOLUENE-D8	25.5		25	102	85 - 115

Data Package ID: VL1603102-1

March 28, 2016

ALS1603102

# GC/MS Volatiles

Method SW8260\_25C

## Laboratory Control Sample and Laboratory Control Sample Duplicate

Lab Name: ALS Environmental -- FC

Work Order Number: 1603102

Client Name: CH2M HILL Plateau Remediation Company

ClientProject ID: FY2016 200-UP-1 Remedial Action Wells Sampling and Analysis

Lab ID: VL160307-3LCS

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: N/A  
Date Extracted: 03/07/2016  
Date Analyzed: 03/07/2016  
Prep Method: SW5030C

Prep Batch: VL160307-3  
QCBatchID: VL160307-3-2  
Run ID: VL160307-3A  
Cleanup: NONE  
Basis: N/A  
File Name: C66440

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
56-23-5	CARBON TETRACHLORIDE	10	11.2	1		112	77 - 122%
79-01-6	TRICHLOROETHENE	10	11	1		110	83 - 117%

Lab ID: VL160307-3LCSD

Sample Matrix: WATER  
% Moisture: N/A  
Date Collected: N/A  
Date Extracted: 03/07/2016  
Date Analyzed: 03/07/2016  
Prep Method: SW5030C

Prep Batch: VL160307-3  
QCBatchID: VL160307-3-2  
Run ID: VL160307-3A  
Cleanup: NONE  
Basis: N/A  
File Name: C66441

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
56-23-5	CARBON TETRACHLORIDE	10	10.6	1		106	20	6
79-01-6	TRICHLOROETHENE	10	10.6	1		106	20	4

### 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	98		97		85 - 115
1868-53-7	DIBROMOFLUOROMETHANE	25	98		99		84 - 118
2037-26-5	TOLUENE-D8	25	98		98		85 - 115

Data Package ID: VL1603102-1