The results set forth herein are provided by SGS North America Inc.

e-Hardcopy 2.0
Automated Report

Technical Report for

Kerr-McGee Oil & Gas Onshore LP

GWA_High_Sierra_Water_Well

FID:754022 Reg:Vol. Freq.:Q2

SGS Job Number: DA15674

Sampling Date: 05/07/19

Report to:

Kerr-McGee Oil & Gas Onshore LP
112 High Street
Buffalo, WY 82834
tanya.cude@absarokasolutions.com; anadarkodatamanagement@ghd.com; joel.mason@absarokasolutions.com; max.moran@absarokasolutions.com
ATTN: Tanya Cude

Total number of pages in report: 51

Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.

Scott Heideman
Laboratory Director

Client Service contact: Carissa Cumine 303-425-6021

Certifications: CO (CO00049), ID (CO00049), NE (NE-OS-06-04), ND (R-027), NJ (CO007), OK (D9942) UT (NELAP CO00049), LA (LA150028), TX (T104704511), WY (8TMS-L)

Sections: 1 2 3 4 5 6 7 8 9 10

Table of Contents

Section 1: Sample Summary **3**
Section 2: Case Narrative/Conformance Summary **4**
Section 3: Summary of Hits **7**
Section 4: Sample Results **8**
4.1: DA15674-1: BW_SIERRA_272956 SESE_30_3N_65W 9
4.2: DA15674-1A: BW_SIERRA_272956 SESE_30_3N_65W 13
4.3: DA15674-1B: BW_SIERRA_272956 SESE_30_3N_65W 14
4.4: DA15674-1F: BW_SIERRA_272956 SESE_30_3N_65W 15
Section 5: Misc. Forms **16**
5.1: Chain of Custody 17
Section 6: MS Volatiles - QC Data Summaries **19**
6.1: Method Blank Summary 20
6.2: Blank Spike Summary 21
6.3: Matrix Spike/Matrix Spike Duplicate Summary 22
Section 7: GC Volatiles - QC Data Summaries **23**
7.1: Method Blank Summary 24
7.2: Blank Spike Summary 26
7.3: Matrix Spike/Matrix Spike Duplicate Summary 28
Section 8: GC/LC Semi-volatiles - QC Data Summaries **30**
8.1: Method Blank Summary 31
8.2: Blank Spike Summary 32
8.3: Matrix Spike/Matrix Spike Duplicate Summary 33
Section 9: Metals Analysis - QC Data Summaries **34**
9.1: Prep QC MP27993: B,Ca,Fe,Mg,Mn,K,Na,Sr 35
9.2: Prep QC MP27997: Ba,Se 43
Section 10: General Chemistry - QC Data Summaries **47**
10.1: Method Blank and Spike Results Summary 48
10.2: Duplicate Results Summary 49
10.3: Matrix Spike Results Summary 50
10.4: Matrix Spike Duplicate Results Summary 51

SGS North America Inc.

Sample Summary

Kerr-McGee Oil & Gas Onshore LP

Job No: DA15674

GWA_High_Sierra_Water_Well
Project No: FID:754022 Reg:Vol. Freq.:Q2

Sample Number	Collected Date	Time	By	Received	Matrix Code	Matrix Type	Client Sample ID
DA15674-1	05/07/19	15:57	TS	05/08/19	AQ	Ground Water	BW_SIERRA_272956 SESE_30_3N_65W
DA15674-1A	05/07/19	15:57	TS	05/08/19	AQ	Ground Water	BW_SIERRA_272956 SESE_30_3N_65W
DA15674-1B	05/07/19	15:57	TS	05/08/19	AQ	Ground Water	BW_SIERRA_272956 SESE_30_3N_65W
DA15674-1F	05/07/19	15:57	TS	05/08/19	AQ	Groundwater Filtered	BW_SIERRA_272956 SESE_30_3N_65W

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	Kerr-McGee Oil & Gas Onshore LP	**Job No**	DA15674
Site:	GWA_High_Sierra_Water_Well	**Report Date**	6/3/2019 4:07:20 PM

On 05/08/2019, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 4.4 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA15674 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Volatiles By Method SW846 8260B

Matrix: AQ **Batch ID:** V7V3071

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12209-37MS, DA12209-37MSD were used as the QC samples indicated.

GC Volatiles By Method RSK175 MOD

Matrix: AQ **Batch ID:** GFB1072

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12209-47MS, DA12209-47MSD were used as the QC samples indicated.
- DA15674-1A: The pH of the sample was >2 at time of analysis.

GC Volatiles By Method SW846 8015B

Matrix: AQ **Batch ID:** GGA2226

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12209-45MS, DA12209-45MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

GC/LC Semi-volatiles By Method SW846-8015B

Matrix: AQ **Batch ID:** OP17782

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) DA12209-24MS, DA12209-24MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

Metals Analysis By Method EPA 200.7

Matrix: AQ **Batch ID:** MP27993

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15672-1FMS, DA15672-1FMSD were used as the QC samples for the metals analysis.
- MP27993-MB1 for Sodium: All sample results >10x method blank concentration.

Metals Analysis By Method EPA 200.8

Matrix:	AQ	Batch ID:	MP27997

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15659-1FMS, DA15659-1FMSD were used as the QC samples for the metals analysis.

General Chemistry By Method EPA 300.0/SW846 9056

Matrix:	AQ	Batch ID:	R47614

- The data for EPA 300.0/SW846 9056 meets quality control requirements.
- DA15674-1 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

General Chemistry By Method EPA 365.1

Matrix:	AQ	Batch ID:	GP25107

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15651-3DUP, DA15674-1MS were used as the QC samples for the Phosphorus, Total analysis.

General Chemistry By Method EPA300.0/SW846 9056A

Matrix:	AQ	Batch ID:	GP25073

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15651-1MS, DA15651-1MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.
- DA15674-1 for Fluoride; Nitrogen, Nitrate and Nitrogen, Nitrite: Elevated detection limit due to matrix interference.

General Chemistry By Method HACH IRB-BART

Matrix:	AQ	Batch ID:	MB1188

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method HACH SLYM-BART

Matrix:	AQ	Batch ID:	MB1183

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method HACH SRB-BART

Matrix:	AQ	Batch ID:	MB1184

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

General Chemistry By Method SM 2320B-2011

Matrix: AQ **Batch ID:** GN46938

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** GN46939

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

Matrix: AQ **Batch ID:** GN46940

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15672-1DUP, DA15674-1MS, DA15674-1MSD were used as the QC samples for the Alkalinity, Total as CaCO3 analysis.

General Chemistry By Method SM 2510B-2011

Matrix: AQ **Batch ID:** GP25099

- Sample(s) DA15672-1DUP were used as the QC samples for the Specific Conductivity analysis.

General Chemistry By Method SM 2540C-2011

Matrix: AQ **Batch ID:** GN46872

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15581-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.

General Chemistry By Method SM1030E-2011

Matrix: AQ **Batch ID:** GN46959

- The data for SM1030E-2011 meets quality control requirements.

General Chemistry By Method SM4500HB+-2011/9040C

Matrix: AQ **Batch ID:** GN46933

- Sample(s) DA15672-1DUP were used as the QC samples for the pH analysis.
- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: DA15674-1 Analysis performed past recommended hold time.

Field Data By Method FIELD

Matrix: AQ **Batch ID:** R47637

- The data for FIELD meets quality control requirements.

SGS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting SGS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

SGS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by SGS indicated via signature on the report cover.

Summary of Hits

Job Number: DA15674
Account: Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well
Collected: 05/07/19

Lab Sample ID / Analyte	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
DA15674-1	**BW_SIERRA_272956 SESE_30_3N_65W**					
Alkalinity, Bicarbonate as CaCO3		225	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3		225	5.0		mg/l	SM 2320B-2011
Bromide		1.3	0.25		mg/l	EPA300.0/SW846 9056A
Cation Anion Balance		3.6			%	SM1030E-2011
Chloride		187	25		mg/l	EPA300.0/SW846 9056A
Phosphorus, Total		0.013	0.010		mg/l	EPA 365.1
Solids, Total Dissolved		2770	10		mg/l	SM 2540C-2011
Specific Conductivity		3870	1.0		umhos/cm	SM 2510B-2011
Sulfate		1540	50		mg/l	EPA300.0/SW846 9056A
pH [a]		8.01			su	SM4500HB + -2011/9040C
Oxygen, Dissolved (Field)		0.31			mg/l	FIELD
Temperature (Field)		14.8			Deg. C	FIELD
Specific Conductivity (Field)		3956	0.50		umhos/cm	FIELD
Turbidity		0.02			NTU	FIELD
pH (Field)		7.53			su	FIELD
Redox Potential Vs H2		432.9			mv	FIELD
DA15674-1A	**BW_SIERRA_272956 SESE_30_3N_65W**					
Methane [b]		0.779	0.0080	0.0040	mg/l	RSK175 MOD
Ethane [b]		0.0273	0.0016	0.00080	mg/l	RSK175 MOD
DA15674-1B	**BW_SIERRA_272956 SESE_30_3N_65W**					
Iron-Related Bacteria		9000	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria		2500	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria		6000	200		CFU/ml	HACH SRB-BART
DA15674-1F	**BW_SIERRA_272956 SESE_30_3N_65W**					
Barium		0.0077	0.0040		mg/l	EPA 200.8
Boron		0.108	0.050		mg/l	EPA 200.7
Calcium		68.4	0.40		mg/l	EPA 200.7
Iron		0.0882	0.010		mg/l	EPA 200.7
Magnesium		12.6	0.20		mg/l	EPA 200.7
Manganese		0.0546	0.0050		mg/l	EPA 200.7
Potassium		6.03	1.0		mg/l	EPA 200.7
Sodium		790	0.40		mg/l	EPA 200.7
Strontium		1.50	0.0050		mg/l	EPA 200.7

(a) Analysis performed past recommended hold time.
(b) The pH of the sample was > 2 at time of analysis.

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1	**Date Sampled:**	05/07/19
Matrix:	AQ - Ground Water	**Date Received:**	05/08/19
Method:	SW846 8260B	**Percent Solids:**	n/a
Project:	GWA_High_Sierra_Water_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V60457.D	1	05/10/19 06:03	MB	n/a	n/a	V7V3071
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	
	m,p-Xylene	ND	1.0	0.70	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	99%		70-130%
17060-07-0	1,2-Dichloroethane-D4	98%		70-130%
2037-26-5	Toluene-D8	95%		70-130%
460-00-4	4-Bromofluorobenzene	96%		70-130%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range

J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1	**Date Sampled:**	05/07/19
Matrix:	AQ - Ground Water	**Date Received:**	05/08/19
Method:	SW846 8015B	**Percent Solids:**	n/a
Project:	GWA_High_Sierra_Water_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GA48381.D	1	05/11/19 07:55	BB	n/a	n/a	GGA2226
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.050	0.050	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	94%		60-140%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1	**Date Sampled:**	05/07/19
Matrix:	AQ - Ground Water	**Date Received:**	05/08/19
Method:	SW846-8015B SW846 3510C	**Percent Solids:**	n/a
Project:	GWA_High_Sierra_Water_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FC63458.D	1	05/10/19 21:04	RB	05/09/19	OP17782	GFC2602
Run #2							

	Initial Volume	Final Volume
Run #1	1050 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	83%		11-142%

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1	**Date Sampled:**	05/07/19
Matrix:	AQ - Ground Water	**Date Received:**	05/08/19
		Percent Solids:	n/a
Project:	GWA_High_Sierra_Water_Well		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	225	5.0	mg/l	1	05/14/19 14:30	PV	SM 2320B-2011
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	05/14/19 14:30	PV	SM 2320B-2011
Alkalinity, Total as CaCO3	225	5.0	mg/l	1	05/14/19 14:30	PV	SM 2320B-2011
Bromide	1.3	0.25	mg/l	5	05/09/19 12:11	JB	EPA300.0/SW846 9056A
Cation Anion Balance	3.6		%	1	05/15/19	SH	SM1030E-2011
Chloride	187	25	mg/l	50	05/09/19 12:24	JB	EPA300.0/SW846 9056A
Fluoride [a]	< 0.50	0.50	mg/l	5	05/09/19 12:11	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate [a]	< 0.050	0.050	mg/l	5	05/09/19 12:11	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite [b]	< 0.25	0.25	mg/l	1	05/09/19 12:24	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite [a]	< 0.20	0.20	mg/l	50	05/09/19 12:24	JB	EPA300.0/SW846 9056A
Phosphorus, Total	0.013	0.010	mg/l	1	05/15/19 09:53	AM	EPA 365.1
Solids, Total Dissolved	2770	10	mg/l	1	05/09/19	SK	SM 2540C-2011
Specific Conductivity	3870	1.0	umhos/cm	1	05/14/19 13:30	PV	SM 2510B-2011
Sulfate	1540	50	mg/l	100	05/09/19 19:09	JB	EPA300.0/SW846 9056A
pH [c]	8.01		su	1	05/14/19 14:00	PV	SM4500HB+-2011/9040C

Field Parameters

Oxygen, Dissolved (Field)	0.31		mg/l	1	05/15/19	SH	FIELD
Redox Potential Vs H2	432.9		mv	1	05/15/19	SH	FIELD
Specific Conductivity (Field)	3956	0.50	umhos/cm	1	05/15/19	SH	FIELD
Temperature (Field)	14.8		Deg. C	1	05/15/19	SH	FIELD
Turbidity	0.02		NTU	1	05/15/19	SH	FIELD
pH (Field)	7.53		su	1	05/15/19	SH	FIELD

(a) Elevated detection limit due to matrix interference.
(b) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)
(c) Analysis performed past recommended hold time.

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1A	**Date Sampled:**	05/07/19
Matrix:	AQ - Ground Water	**Date Received:**	05/08/19
Method:	RSK175 MOD	**Percent Solids:**	n/a
Project:	GWA_High_Sierra_Water_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 [a]	FB23537.D	1	05/14/19 14:24	BB	n/a	n/a	GFB1072
Run #2 [a]	FB23538.D	10	05/14/19 14:35	BB	n/a	n/a	GFB1072

	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	21.6 Deg. C
Run #2	39.0 ml	4.0 ml	500 ul	21.6 Deg. C

Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.779 [b]	0.0080	0.0040	mg/l	
74-84-0	Ethane	0.0273	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

(a) The pH of the sample was > 2 at time of analysis.
(b) Result is from Run# 2

ND = Not detected MDL = Method Detection Limit
RL = Reporting Limit
E = Indicates value exceeds calibration range
J = Indicates an estimated value
B = Indicates analyte found in associated method blank
N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1B	**Date Sampled:**	05/07/19
Matrix:	AQ - Ground Water	**Date Received:**	05/08/19
		Percent Solids:	n/a
Project:	GWA_High_Sierra_Water_Well		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron-Related Bacteria	9000	25	CFU/ml	1	05/28/19 16:00	SK	HACH IRB-BART
Slime Forming Bacteria	2500	500	CFU/ml	1	05/16/19 13:00	SK	HACH SLYM-BART
Sulfate Reducing Bacteria	6000	200	CFU/ml	1	05/16/19 14:00	SK	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_SIERRA_272956 SESE_30_3N_65W		
Lab Sample ID:	DA15674-1F	**Date Sampled:**	05/07/19
Matrix:	AQ - Groundwater Filtered	**Date Received:**	05/08/19
		Percent Solids:	n/a
Project:	GWA_High_Sierra_Water_Well		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Barium	0.0077	0.0040	mg/l	2	05/10/19	05/14/19	EP	EPA 200.8 [2]	EPA 200.8 [4]
Boron	0.108	0.050	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Calcium	68.4	0.40	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Iron	0.0882	0.010	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Magnesium	12.6	0.20	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Manganese	0.0546	0.0050	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Potassium	6.03	1.0	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Selenium	< 0.00080	0.00080	mg/l	2	05/10/19	05/14/19	EP	EPA 200.8 [2]	EPA 200.8 [4]
Sodium	790	0.40	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]
Strontium	1.50	0.0050	mg/l	1	05/10/19	05/11/19	JR	EPA 200.7 [1]	EPA 200.7 [3]

(1) Instrument QC Batch: MA11374
(2) Instrument QC Batch: MA11379
(3) Prep QC Batch: MP27993
(4) Prep QC Batch: MP27997

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

SGS
4036 Youngfield Street, Wheat Ridge, CO 80033
TEL: 303-425-6021 FAX: 303-425-6854
www.accutest.com

Bottle Order Control #: | FED-EX Tracking #:
SGS Quote #: | SGS Job # DA15674

Client / Reporting Information

Company: (Report to) **Absaroka Solutions**
Street: 112 High Street
City, State: Buffalo, WY 82834
Project Contact: Tanya Cude
Phone: 352-318-4034
Email:
Sampler(s) Name(s): Tyler Scherden

Project Information

Project Name: GWA_High_Sierra_Water_Well | Frequency: Q2
Regulation: Voluntary
Facility ID: 754022
EQuIS Facility Code: 0089019-AN-GWABWQ
Client Purchase Order #: WO#89225209
Project Manager: Joel Mason

Billing Information (if different from Report to)

Company: Anadarko Petroleum Corportation (APC)
Street Address: 1099 18th Street, Suite 1800
City, State ZIP: Denver, CO 80202-1918
Attention: Erik Mickelson User ID: fvv451

Requested Analysis (see TEST CODE sheet)

Matrix Codes: DW - Drinking Water; GW - Ground Water; WW - Water; SW - Surface Water; SO - Soil; SL- Sludge; SED-Sediment; OI - Oil; LIQ - Other Liquid; AIR - Air; SOL - Other Solid; WP - Wipe; FB-Field Blank; EB-Equipment Blank; RB- Rinse Blank; TB-Trip Blank

Field ID / Point of Collection	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: NONE	HCl	NaOH	HNO3	H2SO4	DI Water	MEOH	ENCORE	Na2S2O4	Other	PH, SCON, TDS	XCARBICALK	BRO, CHL, F, NO2, XNO3O, NO32, SO4	TPO4	Dissolved Metals - Lab Filtered*	VRSK175DGMEP	V8260BTX	B8015DRO	V8015GRO	IRBAC, SFBAC, SO4RBAC	CABAL	LAB USE ONLY
BW_Sierra_272956	5/7/2019	1557	TS	GW	17	9	6			1					1	X	X	X	X	X	X	X	X	X	X	X	01
SESE_30_3N_65W																											02
Temperature, field	14.8	°C																									
pH, field	7.53	s.u.																									
Specific Conductivity, field	3956	uS/cm																									
Oxidation Reduction Potential, field	432.9	mV																									
Dissolved Oxygen, field	0.31	mg/L																									
Turbidity, field	0.02	NTU																									

Turnaround Time (Business days)

- [x] Std. 10 Business Days
- [ ] 5 Day RUSH
- [ ] 3 Day Emergency
- [ ] 2 Day Emergency
- [ ] 1 Day Emergency

Emergency & Rush T/A data available VIA LabLink. RUSH TAT approval needed.

Special Reporting Instructions

- [ ] Report in PPB
- [ ] Report in PPM
- [ ] Report MDLs

Data Deliverable Information

- [ ] Commercial "A" (Level 1, Results Only)
- [ ] Commercial "B" (Level 2, Results + QC Summary)
- [ ] COMMBN (Results/QC/Narrative)
- [ ] COMMBN+ (Results/QC/Narrative (+ chromatograms))
- [ ] REDT2
- [ ] FULT1
- [x] EDD Format: COGCC Compatible

Comments / Special Instructions

*Dissolved Metals (200.7/200.8): BaMS, B, Ca, Fe,Mg, Mn, K, SeMS, Na, Sr

Please also send reports to Joel.Mason@Absarokasolutions.com and Max.Moran@Absarokasolutions.com

Bubbles / [illegible]

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by Sampler: 1	Date/Time: 5/7/19 1600	Received By: 1	Relinquished By: 2	Date/Time:	Received By: 2
Relinquished by Sampler: 3	Date/Time:	Received By: 3	Relinquished By: 4	Date/Time:	Received By: 4

Custody Seal # | Intact ☐ | Not Intact ☐ | Absent ☐ | Preserved where applicable ☐ | Cooler Temp. °C: 4.4 | Therm. ID: T080 | On Ice ☑ | Form MSQA 064-01, RV 6/19/17

5.1 5

DA15674: Chain of Custody
Page 1 of 2

SGS Accutest Sample Receipt Summary

Job Number: DA15674 **Client:** ABSAROKA SOLUTIONS **Project:** GWA

Date / Time Received: 5/8/2019 2:30:00 PM **Delivery Method:** **Airbill #'s:** CO

Cooler Temps (Initial/Adjusted): #1: (4.4/4.4);

Cooler Security	Y	or	N		Y	or	N
1. Custody Seals Present:	☑		☐	3. COC Present:	☑		☐
2. Custody Seals Intact:	☑		☐	4. Smpl Dates/Time OK	☑		☐

Cooler Temperature	Y	or	N
1. Temp criteria achieved:	☑		☐
2. Cooler temp verification:	IR Gun;		
3. Cooler media:	Ice (Bag)		
4. No. Coolers:	1		

Quality Control Preservation	Y	or	N	N/A
1. Trip Blank present / cooler:	☑		☐	☐
2. Trip Blank listed on COC:	☑		☐	☐
3. Samples preserved properly:	☑		☐	
4. VOCs headspace free:	☑		☐	☐

Sample Integrity - Documentation	Y	or	N
1. Sample labels present on bottles:	☑		☐
2. Container labeling complete:	☑		☐
3. Sample container label / COC agree:	☑		☐

Sample Integrity - Condition	Y	or	N
1. Sample recvd within HT:	☑		☐
2. All containers accounted for:	☑		☐
3. Condition of sample:	Intact		

Sample Integrity - Instructions	Y	or	N	N/A
1. Analysis requested is clear:	☑		☐	
2. Bottles received for unspecified tests	☐		☑	
3. Sufficient volume recvd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

MS Volatiles

6

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3071-MB	7V60434.D	1	05/09/19	MB	n/a	n/a	V7V3071

The QC reported here applies to the following samples: **Method:** SW846 8260B

DA15674-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.50	ug/l	
100-41-4	Ethylbenzene	ND	1.0	0.50	ug/l	
108-88-3	Toluene	ND	1.0	0.50	ug/l	
	m,p-Xylene	ND	1.0	0.70	ug/l	
95-47-6	o-Xylene	ND	1.0	0.50	ug/l	
1330-20-7	Xylene (total)	ND	1.0	1.0	ug/l	

CAS No.	Surrogate Recoveries		Limits
1868-53-7	Dibromofluoromethane	99%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	99%	70-130%

Blank Spike Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3071-BS	7V60432.D	1	05/09/19	MB	n/a	n/a	V7V3071

The QC reported here applies to the following samples: **Method:** SW846 8260B

DA15674-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	50.6	101	70-130
100-41-4	Ethylbenzene	50	48.6	97	69-130
108-88-3	Toluene	50	48.6	97	70-130
	m,p-Xylene	100	98.0	98	70-130
95-47-6	o-Xylene	50	48.9	98	70-130
1330-20-7	Xylene (total)	150	147	98	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	100%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	70-130%
2037-26-5	Toluene-D8	98%	70-130%
460-00-4	4-Bromofluorobenzene	100%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12209-37MS	7V60435.D	1	05/09/19	MB	n/a	n/a	V7V3071
DA12209-37MSD	7V60436.D	1	05/09/19	MB	n/a	n/a	V7V3071
DA12209-37	7V60437.D	1	05/09/19	MB	n/a	n/a	V7V3071

The QC reported here applies to the following samples: **Method:** SW846 8260B

DA15674-1

CAS No.	Compound	DA12209-37 ug/l	Q	Spike ug/l	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		50	51.8	104	50	52.2	104	1	67-130/30
100-41-4	Ethylbenzene	ND		50	50.2	100	50	50.0	100	0	69-130/30
108-88-3	Toluene	ND		50	50.3	101	50	50.4	101	0	70-130/30
	m,p-Xylene	ND		100	101	101	100	101	101	0	70-130/30
95-47-6	o-Xylene	ND		50	50.5	101	50	50.1	100	1	70-130/30
1330-20-7	Xylene (total)	ND		150	152	101	150	151	101	1	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12209-37	Limits
1868-53-7	Dibromofluoromethane	102%	100%	101%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	98%	99%	70-130%
2037-26-5	Toluene-D8	98%	98%	97%	70-130%
460-00-4	4-Bromofluorobenzene	101%	101%	94%	70-130%

* = Outside of Control Limits.

GC Volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA2226-MB	GA48361.D	1	05/10/19	BB	n/a	n/a	GGA2226

The QC reported here applies to the following samples: **Method:** SW846 8015B

DA15674-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.050	0.050	mg/l	

CAS No.	Surrogate Recoveries		Limits
120-82-1	1,2,4-Trichlorobenzene	101%	60-140%

Method Blank Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB1072-MB	FB23528.D	1	05/14/19	BB	n/a	n/a	GFB1072

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA15674-1A

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	ND	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

Blank Spike Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGA2226-BS	GA48362.D	1	05/10/19	BB	n/a	n/a	GGA2226

The QC reported here applies to the following samples: **Method:** SW846 8015B

DA15674-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	2.16	98	51-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	104%	60-140%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB1072-BS	FB23529.D	10	05/14/19	BB	n/a	n/a	GFB1072

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA15674-1A

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.512	0.504	98	70-133
74-84-0	Ethane	0.923	1.03	112	70-137
74-98-6	Propane	1.38	1.55	112	70-137

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12209-45MS	GA48363.D	1	05/10/19	BB	n/a	n/a	GGA2226
DA12209-45MSD	GA48364.D	1	05/10/19	BB	n/a	n/a	GGA2226
DA12209-45	GA48365.D	1	05/10/19	BB	n/a	n/a	GGA2226

The QC reported here applies to the following samples: **Method:** SW846 8015B

DA15674-1

CAS No.	Compound	DA12209-45 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		2.2	2.12	96	2.2	2.34	106	10	40-132/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12209-45	Limits
120-82-1	1,2,4-Trichlorobenzene	106%	101%	95%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12209-47MS	FB23530.D	10	05/14/19	BB	n/a	n/a	GFB1072
DA12209-47MSD	FB23531.D	10	05/14/19	BB	n/a	n/a	GFB1072
DA12209-47	FB23532.D	1	05/14/19	BB	n/a	n/a	GFB1072

The QC reported here applies to the following samples: **Method:** RSK175 MOD

DA15674-1A

CAS No.	Compound	DA12209-47 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
74-82-8	Methane	0.0016		0.512	0.509	99	0.512	0.510	99	0	15-196/30
74-84-0	Ethane	ND		0.923	1.05	114	0.923	1.05	114	0	53-144/30
74-98-6	Propane	ND		1.38	1.56	113	1.38	1.57	114	1	54-144/30

* = Outside of Control Limits.

GC/LC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Method Blank Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17782-MB	FM5019.D	1	05/09/19	RB	05/09/19	OP17782	GFM170

The QC reported here applies to the following samples: **Method:** SW846-8015B

DA15674-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.20	0.18	mg/l	

CAS No.	Surrogate Recoveries		Limits
84-15-1	o-Terphenyl	69%	11-142%

Blank Spike Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17782-BS	FM5021.D	1	05/09/19	RB	05/09/19	OP17782	GFM170

The QC reported here applies to the following samples: **Method:** SW846-8015B

DA15674-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	2.19	44	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	46%	11-142%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA15674
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17782-MS	FM5023.D	1	05/09/19	RB	05/09/19	OP17782	GFM170
OP17782-MSD	FM5025.D	1	05/09/19	RB	05/09/19	OP17782	GFM170
DA12209-24	FM5027.D	1	05/09/19	RB	05/09/19	OP17782	GFM170

The QC reported here applies to the following samples: **Method:** SW846-8015B

DA15674-1

CAS No.	Compound	DA12209-24 mg/l	Q	Spike mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND		5	3.14	63	5	3.76	75	18	22-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12209-24	Limits
84-15-1	o-Terphenyl	60%	72%	74%	11-142%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	46	30		
Antimony	30	14	10		
Arsenic	25	22	7		
Barium	10	.3	2		
Beryllium	10	1	1.3		
Boron	50	3.3	7.4	-2.1	<50
Cadmium	10	1.9	1.6		
Calcium	400	6.6	53	26.7	<400
Chromium	10	1.1	1.7		
Cobalt	5.0	2.7	2.3		
Copper	10	4.6	2.3		
Iron	10	8.9	3.1	4.9	<10
Lead	50	13	6.3		
Lithium	5.0	.6	4		
Magnesium	200	50	31	6.4	<200
Manganese	5.0	.5	1.1	0.20	<5.0
Molybdenum	10	8.5	4.3		
Nickel	30	6.2	6.1		
Phosphorus	100	91	24		
Potassium	1000	84	250	25.2	<1000
Selenium	50	30	21		
Silicon	50	41	45		
Silver	30	.6	4		
Sodium	400	13	51	249	* (a)
Strontium	5.0	.1	.6	0.0	<5.0
Thallium	10	17	7.5		
Tin	60	41	51		
Titanium	10	.5	1.9		
Uranium	50	3.9	8.5		
Vanadium	10	.9	.7		
Zinc	30	9	3.8		

Associated samples MP27993: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	RL	IDL	MDL	MB raw	final

(anr) Analyte not requested
(a) All sample results >10x method blank concentration.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	DA15672-1F Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron	185	1240	1000	105.5	70-130
Cadmium					
Calcium	2460	28800	25000	105.4	70-130
Chromium					
Cobalt					
Copper					
Iron	33.1	5280	5000	104.9	70-130
Lead					
Lithium					
Magnesium	479	25800	25000	101.3	70-130
Manganese	8.4	495	500	97.3	70-130
Molybdenum					
Nickel					
Phosphorus					
Potassium	1400	27600	25000	104.8	70-130
Selenium					
Silicon					
Silver					
Sodium	238000	260000	25000	88.0	70-130
Strontium	69.1	564	500	99.0	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP27993: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	DA15672-1F Original MS	Spikelot ICPALL2	% Rec	QC Limits

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	DA15672-1F Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron	185	1250	1000	106.5	0.8	20
Cadmium						
Calcium	2460	29300	25000	107.4	1.7	20
Chromium						
Cobalt						
Copper						
Iron	33.1	5280	5000	104.9	0.0	20
Lead						
Lithium						
Magnesium	479	25700	25000	100.9	0.4	20
Manganese	8.4	494	500	97.1	0.2	20
Molybdenum						
Nickel						
Phosphorus						
Potassium	1400	28200	25000	107.2	2.2	20
Selenium						
Silicon						
Silver						
Sodium	238000	267000	25000	116.0	2.7	20
Strontium	69.1	574	500	101.0	1.8	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP27993: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993 Methods: EPA 200.7
Matrix Type: AQUEOUS Units: ug/l

Prep Date: 05/10/19

Metal	DA15672-1F Original MSD	Spikelot ICPALL2 % Rec	MSD RPD	QC Limit

(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1010	1000	101.0	85-115
Cadmium				
Calcium	25300	25000	101.2	85-115
Chromium				
Cobalt				
Copper				
Iron	5150	5000	103.0	85-115
Lead				
Lithium				
Magnesium	24400	25000	97.6	85-115
Manganese	482	500	96.4	85-115
Molybdenum				
Nickel				
Phosphorus				
Potassium	25600	25000	102.4	85-115
Selenium				
Silicon				
Silver				
Sodium	24500	25000	98.0	85-115
Strontium	494	500	98.8	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP27993: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27993
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/10/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits

(anr) Analyte not requested

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27997
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/10/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079	0.042	<2.0
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Cadmium	0.10	.036	.042		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	0.050	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP27997: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27997
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/10/19

Metal	DA15659-1F Original	MS	Spikelot ICPALL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	31.3	442	400	102.7	70-130
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium	18.6	214	200	97.7	70-130
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP27997: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27997
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/10/19

Metal	DA15659-1F Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	31.3	439	400	101.9	0.7	20
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium	18.6	215	200	98.2	0.5	20
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP27997: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

QC Batch ID: MP27997
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/10/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	398	400	99.5	85-115
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium	189	200	94.5	85-115
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP27997: DA15674-1F

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN46938	5.0	2.0	mg/l	100	99.5	99.5	90-110%
Alkalinity, Carbonate	GN46939	5.0	2.0	mg/l	100	99.5	99.5	80-120%
Alkalinity, Total as CaCO3	GN46940	5.0	2.0	mg/l	100	99.5	99.5	90-110%
Bromide	GP25073/GN46891	0.050	0.0	mg/l	0.5	0.502	100.4	90-110%
Chloride	GP25073/GN46891	0.50	0.0	mg/l	5	4.99	99.8	90-110%
Fluoride	GP25073/GN46891	0.10	0.0	mg/l	1	1.00	100.0	90-110%
Iron-Related Bacteria	MB1188	25	<25	CFU/ml				
Nitrogen, Nitrate	GP25073/GN46891	0.010	0.0	mg/l	0.1	0.0984	98.4	90-110%
Nitrogen, Nitrite	GP25073/GN46891	0.0040	0.0	mg/l	0.05	0.0514	102.8	90-110%
Phosphorus, Total	GP25107/GN46948	0.010	0.00	mg/l	0.2	0.194	97.0	90-110%
Phosphorus, Total	GP25107/GN46948	0.010	0.00	mg/l	0.2	0.199	99.5	90-110%
Phosphorus, Total	GP25107/GN46948	0.010	0.00	mg/l	0.2	0.195	97.5	90-110%
Slime Forming Bacteria	MB1183	500	<500	CFU/ml				
Solids, Total Dissolved	GN46872	10	0.0	mg/l	400	410	102.5	90-110%
Solids, Total Dissolved	GN46872	10	0.0	mg/l				
Specific Conductivity	GP25099/GN46934			umhos/cm	1413	1410	99.7	90-110%
Specific Conductivity	GP25099/GN46934			umhos/cm	1413	1390	98.4	90-110%
Specific Conductivity	GP25099/GN46934			umhos/cm	1413	1420	100.6	90-110%
Specific Conductivity	GP25099/GN46934			umhos/cm	1004	1000	99.9	90-110%
Specific Conductivity	GP25099/GN46934			umhos/cm	98.8	95.0	96.2	90-110%
Sulfate	GP25073/GN46891	0.50	0.0	mg/l	5	5.01	100.2	90-110%
Sulfate Reducing Bacteria	MB1184	200	<200	CFU/ml				
pH	GN46933			su	8.00	7.98	99.8	99.1-100.9%
pH	GN46933			su	8.00	7.97	99.6	99.1-100
pH	GN46933			su	6.00	5.99	99.8	99.1-100

Associated Samples:
Batch MB1183: DA15674-1B
Batch MB1184: DA15674-1B
Batch MB1188: DA15674-1B
Batch GN46872: DA15674-1
Batch GN46933: DA15674-1
Batch GN46938: DA15674-1
Batch GN46939: DA15674-1
Batch GN46940: DA15674-1
Batch GP25073: DA15674-1
Batch GP25099: DA15674-1
Batch GP25107: DA15674-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN46940	DA15672-1	mg/l	464	475	2.2	0-20%
Phosphorus, Total	GP25107/GN46948	DA15651-3	mg/l	0.11	0.111	0.0	0-20%
Solids, Total Dissolved	GN46872	DA15581-2	mg/l	1440	1430	0.4	0-5%
Specific Conductivity	GP25099/GN46934	DA15672-1	umhos/cm	953	962	0.9	0-20%
pH	GN46933	DA15672-1	su	8.68	8.69	0.1	0-5%

Associated Samples:
Batch GN46872: DA15674-1
Batch GN46933: DA15674-1
Batch GN46940: DA15674-1
Batch GP25099: DA15674-1
Batch GP25107: DA15674-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO3	GN46940	DA15674-1	mg/l	225	100	321	96.5	80-120%
Bromide	GP25073/GN46891	DA15651-1	mg/l	0.63 U	12.5	12.5	100.0	80-120%
Chloride	GP25073/GN46891	DA15651-1	mg/l	150	125	278	102.4	80-120%
Fluoride	GP25073/GN46891	DA15651-1	mg/l	1.3 U	25	26.4	105.6	80-120%
Nitrogen, Nitrate	GP25073/GN46891	DA15651-1	mg/l	4.0	2.5	6.4	96.0	80-120%
Nitrogen, Nitrite	GP25073/GN46891	DA15651-1	mg/l	0.075 U	1.25	1.2	96.0	80-120%
Phosphorus, Total	GP25107/GN46948	DA15674-1	mg/l	0.013	0.2	0.203	95.0	90-110%
Sulfate	GP25073/GN46891	DA15651-1	mg/l	126	125	251	100.0	80-120%

Associated Samples:
Batch GN46940: DA15674-1
Batch GP25073: DA15674-1
Batch GP25107: DA15674-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15674
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_High_Sierra_Water_Well

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN46940	DA15674-1	mg/l	225	100	322	0.1	20%
Bromide	GP25073/GN46891	DA15651-1	mg/l	0.63 U	12.5	12.5	0.0	20%
Chloride	GP25073/GN46891	DA15651-1	mg/l	150	125	276	0.7	20%
Fluoride	GP25073/GN46891	DA15651-1	mg/l	1.3 U	25	26.1	1.1	20%
Nitrogen, Nitrate	GP25073/GN46891	DA15651-1	mg/l	4.0	2.5	6.4	0.0	20%
Nitrogen, Nitrite	GP25073/GN46891	DA15651-1	mg/l	0.075 U	1.25	1.2	0.0	20%
Sulfate	GP25073/GN46891	DA15651-1	mg/l	126	125	251	0.0	20%

Associated Samples:
Batch GN46940: DA15674-1
Batch GP25073: DA15674-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits