

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_Henrickson_Water_Well

FID:752520 Reg:Vol. Freq.:Q2

SGS Job Number: DA15773

Sampling Date: 05/09/19



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: 52



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)

This report shall not be reproduced, except in its entirety, without the written approval of SGS.
Test results relate only to samples analyzed.

Table of Contents

-1-

Section 1: Sample Summary	3
Section 2: Case Narrative/Conformance Summary	4
Section 3: Summary of Hits	7
Section 4: Sample Results	9
4.1: DA15773-1: BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W	10
4.2: DA15773-1A: BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W	14
4.3: DA15773-1B: BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W	15
4.4: DA15773-1F: BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W	16
Section 5: Misc. Forms	17
5.1: Chain of Custody	18
Section 6: MS Volatiles - QC Data Summaries	20
6.1: Method Blank Summary	21
6.2: Blank Spike Summary	22
6.3: Matrix Spike/Matrix Spike Duplicate Summary	23
Section 7: GC Volatiles - QC Data Summaries	24
7.1: Method Blank Summary	25
7.2: Blank Spike Summary	27
7.3: Matrix Spike/Matrix Spike Duplicate Summary	29
Section 8: GC/LC Semi-volatiles - QC Data Summaries	31
8.1: Method Blank Summary	32
8.2: Blank Spike Summary	33
8.3: Matrix Spike/Matrix Spike Duplicate Summary	34
Section 9: Metals Analysis - QC Data Summaries	35
9.1: Prep QC MP28010: B,Ca,Fe,Mg,Mn,K,Na,Sr	36
9.2: Prep QC MP28011: Ba,Se	44
Section 10: General Chemistry - QC Data Summaries	48
10.1: Method Blank and Spike Results Summary	49
10.2: Duplicate Results Summary	50
10.3: Matrix Spike Results Summary	51
10.4: Matrix Spike Duplicate Results Summary	52



Sample Summary

Kerr-McGee Oil & Gas Onshore LP

Job No: DA15773

GWA_Henrickson_Water_Well
Project No: FID:752520 Reg:Vol. Freq.:Q2

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
DA15773-1	05/09/19	13:11 TS	05/10/19	AQ	Ground Water	BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W
DA15773-1A	05/09/19	13:11 TS	05/10/19	AQ	Ground Water	BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W
DA15773-1B	05/09/19	13:11 TS	05/10/19	AQ	Ground Water	BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W
DA15773-1F	05/09/19	13:11 TS	05/10/19	AQ	Groundwater Filtered	BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W

CASE NARRATIVE / CONFORMANCE SUMMARY

2

Client: Kerr-McGee Oil & Gas Onshore LP

Job No DA15773

Site: GWA_Henrickson_Water_Well

Report Date 6/3/2019 4:18:11 PM

On 05/10/2019, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 2.9 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA15773 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: V7V3073

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12209-39MS, DA12209-39MSD 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.
- Sample(s) DA12209-47MS, DA12209-47MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- DA15773-1A: The pH of the sample was >2 at time of analysis.

GC Volatiles By Method SW846 8015B

Matrix: AQ

Batch ID: GGB2350

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12210-8MS, DA12210-8MSD 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: OP17809

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) DA12210-3MS, DA12210-3MSD 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: MP28010

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15776-1AMS, DA15776-1AMSD were used as the QC samples for the metals analysis.

Monday, June 03, 2019

Page 1 of 3

Metals Analysis By Method EPA 200.8

Matrix: AQ **Batch ID:** MP28011

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15739-1MS, DA15739-1MSD were used as the QC samples for the metals analysis.

General Chemistry By Method EPA 300.0/SW846 9056

Matrix: AQ **Batch ID:** R47678

- The data for EPA 300.0/SW846 9056 meets quality control requirements.
- DA15773-1 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, DA15773-1MS were used as the QC samples for the Phosphorus, Total analysis.

General Chemistry By Method EPA300.0/SW846 9056A

Matrix: AQ **Batch ID:** GP25086

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15696-1MS, DA15696-1MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.
- DA15773-1 for Sulfate; 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:** GN46974

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

Matrix: AQ **Batch ID:** GN46975

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

Matrix: AQ **Batch ID:** GN46976

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12210-23MS, DA12210-23MSD, DA15771-1DUP were used as the QC samples for the Alkalinity, Total as CaCO₃ analysis.

General Chemistry By Method SM 2510B-2011

Matrix: AQ **Batch ID:** GP25124

- Sample(s) DA15771-1DUP were used as the QC samples for the Specific Conductivity analysis.

General Chemistry By Method SM 2540C-2011

Matrix: AQ **Batch ID:** GN46913

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA15717-1DUP were used as the QC samples for the Solids, Total Dissolved analysis.

General Chemistry By Method SM1030E-2011

Matrix: AQ **Batch ID:** GN46995

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

General Chemistry By Method SM4500HB+-2011/9040C

Matrix: AQ **Batch ID:** GN46971

- Sample(s) DA15771-1DUP were used as the QC samples for the pH analysis.
- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: DA15773-1 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

Page 1 of 2

Job Number: DA15773
Account: Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well
Collected: 05/09/19

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
---------------	------------------	-----------------	----	-----	-------	--------

DA15773-1 BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W

Benzene	2.5	1.0	0.50	ug/l	SW846 8260B
Toluene	1.0	1.0	0.50	ug/l	SW846 8260B
TPH-GRO (C6-C10)	0.0868	0.050	0.050	mg/l	SW846 8015B
Alkalinity, Bicarbonate as CaCO3	413	5.0		mg/l	SM 2320B-2011
Alkalinity, Carbonate	8.0	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO3	421	5.0		mg/l	SM 2320B-2011
Bromide	0.48	0.10		mg/l	EPA300.0/SW846 9056A
Cation Anion Balance	0.83			%	SM1030E-2011
Chloride	47.8	2.5		mg/l	EPA300.0/SW846 9056A
Fluoride	1.7	0.50		mg/l	EPA300.0/SW846 9056A
Phosphorus, Total	0.038	0.010		mg/l	EPA 365.1
Solids, Total Dissolved	536	10		mg/l	SM 2540C-2011
Specific Conductivity	883	1.0		umhos/cm	SM 2510B-2011
pH ^a	8.52			su	SM4500HB+ -2011/9040C
Oxygen, Dissolved (Field)	0.4			mg/l	FIELD
Temperature (Field)	13.8			Deg. C	FIELD
pH (Field)	8.7			su	FIELD
Specific Conductivity (Field)	897.5	0.50		umhos/cm	FIELD
Turbidity	0.02			NTU	FIELD

DA15773-1A BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W

Methane ^b	7.16	0.040	0.020	mg/l	RSK175 MOD
Ethane ^b	0.0028	0.0016	0.00080	mg/l	RSK175 MOD

DA15773-1B BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W

Iron-Related Bacteria	9000	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria	440000	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria	27000	200		CFU/ml	HACH SRB-BART

DA15773-1F BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W

Barium	0.0696	0.0040		mg/l	EPA 200.8
Boron	0.108	0.050		mg/l	EPA 200.7
Calcium	3.27	0.40		mg/l	EPA 200.7
Iron	0.0176	0.010		mg/l	EPA 200.7
Magnesium	0.762	0.20		mg/l	EPA 200.7
Manganese	0.0122	0.0050		mg/l	EPA 200.7
Potassium	1.26	1.0		mg/l	EPA 200.7
Sodium	215	0.40		mg/l	EPA 200.7
Strontium	0.115	0.0050		mg/l	EPA 200.7

Summary of Hits

Job Number: DA15773
Account: Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well
Collected: 05/09/19



Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
Analyte						

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



Wheat Ridge, CO

Section 4

4

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W	Date Sampled:	05/09/19
Lab Sample ID:	DA15773-1	Date Received:	05/10/19
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	GWA_Henrickson_Water_Well		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V60509.D	1	05/11/19 03:04	MB	n/a	n/a	V7V3073
Run #2							

Run #	Purge Volume
Run #1	5.0 ml
Run #2	

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	2.5	1.0	0.50	ug/l	
108-88-3	Toluene	1.0	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	97%		70-130%
2037-26-5	Toluene-D8	96%		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

Page 1 of 1

Client Sample ID:	BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W		
Lab Sample ID:	DA15773-1	Date Sampled:	05/09/19
Matrix:	AQ - Ground Water	Date Received:	05/10/19
Method:	SW846 8015B	Percent Solids:	n/a
Project:	GWA_Henrickson_Water_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB50186.D	1	05/14/19 07:26	BB	n/a	n/a	GGB2350
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	0.0868	0.050	0.050	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	106%		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_7_3N_66W_HENRICKSON SWSE_7_3N_66W				Date Sampled:	05/09/19
Lab Sample ID:	DA15773-1				Date Received:	05/10/19
Matrix:	AQ - Ground Water				Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C					
Project:	GWA_Henrickson_Water_Well					

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD63490.D	1	05/16/19 14:14	RB	05/15/19	OP17809	GFD2603
Run #2							

	Initial Volume	Final Volume
Run #1	1060 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	76%		11-142%		

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

Report of Analysis

Client Sample ID: BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W
 Lab Sample ID: DA15773-1
 Matrix: AQ - Ground Water
 Project: GWA_Henrickson_Water_Well

Date Sampled: 05/09/19
 Date Received: 05/10/19
 Percent Solids: n/a

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	413	5.0	mg/l	1	05/16/19 09:00	PV	SM 2320B-2011
Alkalinity, Carbonate	8.0	5.0	mg/l	1	05/16/19 09:00	PV	SM 2320B-2011
Alkalinity, Total as CaCO ₃	421	5.0	mg/l	1	05/16/19 09:00	PV	SM 2320B-2011
Bromide	0.48	0.10	mg/l	2	05/11/19 10:19	JB	EPA300.0/SW846 9056A
Cation Anion Balance	0.83		%	1	05/17/19	KM	SM1030E-2011
Chloride	47.8	2.5	mg/l	5	05/11/19 10:33	JB	EPA300.0/SW846 9056A
Fluoride	1.7	0.50	mg/l	5	05/11/19 10:33	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate ^a	< 0.020	0.020	mg/l	2	05/11/19 10:19	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite ^b	< 0.040	0.040	mg/l	1	05/11/19 10:33	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite ^a	< 0.020	0.020	mg/l	5	05/11/19 10:33	JB	EPA300.0/SW846 9056A
Phosphorus, Total	0.038	0.010	mg/l	1	05/15/19 10:50	AM	EPA 365.1
Solids, Total Dissolved	536	10	mg/l	1	05/13/19	SK	SM 2540C-2011
Specific Conductivity	883	1.0	umhos/cm	1	05/16/19 08:00	PV	SM 2510B-2011
Sulfate ^a	< 1.0	1.0	mg/l	2	05/11/19 10:19	JB	EPA300.0/SW846 9056A
pH ^c	8.52		su	1	05/16/19 09:00	PV	SM4500HB+ -2011/9040C

Field Parameters

Oxygen, Dissolved (Field)	0.4		mg/l	1	05/15/19	SH	FIELD
Redox Potential Vs H ₂	-165.9		mv	1	05/15/19	SH	FIELD
Specific Conductivity (Field)	897.5	0.50	umhos/cm	1	05/15/19	SH	FIELD
Temperature (Field)	13.8		Deg. C	1	05/15/19	SH	FIELD
Turbidity	0.02		NTU	1	05/15/19	SH	FIELD
pH (Field)	8.7		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_7_3N_66W_HENRICKSON SWSE_7_3N_66W	Date Sampled:	05/09/19
Lab Sample ID:	DA15773-1A	Date Received:	05/10/19
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Method:	RSK175 MOD		
Project:	GWA_Henrickson_Water_Well		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 ^a	FB23549.D	1	05/14/19 19:06	BB	n/a	n/a	GFB1072
Run #2 ^a	FB23550.D	50	05/14/19 19:14	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	7.16 ^b	0.040	0.020	mg/l	
74-84-0	Ethane	0.0028	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_7_3N_66W_HENRICKSON SWSE_7_3N_66W	Date Sampled:	05/09/19
Lab Sample ID:	DA15773-1B	Date Received:	05/10/19
Matrix:	AQ - Ground Water	Percent Solids:	n/a
Project:	GWA_Henrickson_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	440000	500	CFU/ml	1	05/16/19 13:00	SK	HACH SLYM-BART
Sulfate Reducing Bacteria	27000	200	CFU/ml	1	05/16/19 14:00	SK	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID: BW_7_3N_66W_HENRICKSON SWSE_7_3N_66W

Lab Sample ID: DA15773-1F

Date Sampled: 05/09/19

Matrix: AQ - Groundwater Filtered

Date Received: 05/10/19

Percent Solids: n/a

Project: GWA_Henrickson_Water_Well

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Barium	0.0696	0.0040	mg/l	2	05/13/19	05/15/19 EP	EPA 200.8 ²	EPA 200.8 ⁵
Boron	0.108	0.050	mg/l	1	05/13/19	05/15/19 JR	EPA 200.7 ³	EPA 200.7 ⁴
Calcium	3.27	0.40	mg/l	1	05/13/19	05/13/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Iron	0.0176	0.010	mg/l	1	05/13/19	05/13/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Magnesium	0.762	0.20	mg/l	1	05/13/19	05/15/19 JR	EPA 200.7 ³	EPA 200.7 ⁴
Manganese	0.0122	0.0050	mg/l	1	05/13/19	05/13/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴
Potassium	1.26	1.0	mg/l	1	05/13/19	05/15/19 JR	EPA 200.7 ³	EPA 200.7 ⁴
Selenium	< 0.00080	0.00080	mg/l	2	05/13/19	05/15/19 EP	EPA 200.8 ²	EPA 200.8 ⁵
Sodium	215	0.40	mg/l	1	05/13/19	05/15/19 JR	EPA 200.7 ³	EPA 200.7 ⁴
Strontium	0.115	0.0050	mg/l	1	05/13/19	05/13/19 JR	EPA 200.7 ¹	EPA 200.7 ⁴

(1) Instrument QC Batch: MA11378

(2) Instrument QC Batch: MA11388

(3) Instrument QC Batch: MA11389

(4) Prep QC Batch: MP28010

(5) Prep QC Batch: MP28011

RL = Reporting Limit

Misc. Forms

5

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody



CHAIN OF CUSTODY

Page 1 of 1

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 # DA15273	
Client / Reporting Information		Project Information	
Company: (Report to) Absaroka Solutions		Project Name: GWA_Henrickson_Water_Well Frequency: Q2	
Street: 112 High Street		Regulation: Voluntary	
City, State: Buffalo, WY 82834		Facility ID: 752520 Company: Anaderko Petroleum Corporation (APC)	
Project Contact: Tanya Cude		EQUIS Facility Code: 0089019-AN-GWABWQ Street Address: 1099 18th Street, Suite 1800	
Phone: 352-318-4034		Client Purchase Order #: WO#88363888 City, State ZIP: Denver, CO 80202-1918	
Email: 		City, State ZIP: Denver, CO 80202-1918	
Sampler(s) Name(s): Tyler Scherden		Project Manager: Joel Mason Attention: Erik Mickelson User ID: fvv451	
Collection		Number of preserved Bottles	
Field ID / Point of Collection	Date	Time	Sampled by
BW_7_3N_66W_Henrickson	5/9/2019	1311	TS
SWSE_7_3N_66W			
Temperature, field	13.8	°C	
pH, field	8.70	s.u.	
Specific Conductivity, field	897.5	uS/cm	
Oxidation Reduction Potential, field	-165.9	mV	
Dissolved Oxygen, field	0.40	mg/L	
Turbidity, field	0.02	NTU	
Turnaround Time (Business days)		Data Deliverable Information	
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency		<input type="checkbox"/> Commercial "A" (Level 1, Results Only) <input type="checkbox"/> Commercial "B" (Level 2, Results + QC Summary) <input type="checkbox"/> COMMBN (Results/QC/Narrative) <input type="checkbox"/> COMMBN+ (Results/QC/Narrative (+ chromatograms)) <input type="checkbox"/> REDT2 <input type="checkbox"/> FULT1 <input checked="" type="checkbox"/> EDD Format: COGCC Compatible	
Special Reporting Instructions <input type="checkbox"/> Report in PPB <input type="checkbox"/> Report in PPM <input type="checkbox"/> Report MDLs		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 <i>Bubble / BSA</i>	
Emergency & Rush T/A data available VIA LabLink. RUSH TAT approval needed.			
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished by Sampler:	Date/Time:	Received By:	Date/Time:
1 <i>[Signature]</i>	5/9/19 1600	2 <i>[Signature]</i>	5/10/19 13:00
Relinquished by Sampler:	Date/Time:	Received By:	Date/Time:
3		4	
Custody Seal #	Intact <input type="checkbox"/> Not intact <input type="checkbox"/> Absent <input type="checkbox"/>	Preserved where applicable <input type="checkbox"/>	Cooler Temp. °C: 2.9 Therm. ID: 7080 On Ice <input checked="" type="checkbox"/>
		Form MSQA 064-01, RV 6/19/17	

DA15773: Chain of Custody

Page 1 of 2



SGS Accutest Sample Receipt Summary

Job Number: DA15773

Client: ABSAROKA SOLUTIONS

Project: GWA

Date / Time Received: 5/10/2019 1:00:00 PM

Delivery Method:

Airbill #'s: CO

Cooler Temps (Initial/Adjusted): #1: (2.9/2.9):

Cooler Security

Y or N

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Trip Blank listed on COC: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Samples preserved properly: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. VOCs headspace free: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample: | Intact | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 2. Bottles received for unspecified tests | <input type="checkbox"/> | <input checked="" type="checkbox"/> | |
| 3. Sufficient volume recvd for analysis: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | |
| 4. Compositing instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear: | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

Comments

DA15773: Chain of Custody

Page 2 of 2

MS Volatiles**QC Data Summaries**

Includes the following where applicable:

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

Method Blank Summary

Page 1 of 1

Job Number: DA15773

Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP

Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3073-MB	7V60489.D	1	05/10/19	MB	n/a	n/a	V7V3073

The QC reported here applies to the following samples:

Method: SW846 8260B

DA15773-1

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	98% 70-130%
17060-07-0	1,2-Dichloroethane-D4	96% 70-130%
2037-26-5	Toluene-D8	97% 70-130%
460-00-4	4-Bromofluorobenzene	96% 70-130%

Blank Spike Summary

Page 1 of 1

Job Number: DA15773

Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP

Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V3073-BS	7V60487.D	1	05/10/19	MB	n/a	n/a	V7V3073

The QC reported here applies to the following samples:

Method: SW846 8260B

DA15773-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	51.6	103	70-130
100-41-4	Ethylbenzene	50	50.0	100	69-130
108-88-3	Toluene	50	49.4	99	70-130
	m,p-Xylene	100	101	101	70-130
95-47-6	o-Xylene	50	51.0	102	70-130
1330-20-7	Xylene (total)	150	152	101	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	103%	70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	70-130%
2037-26-5	Toluene-D8	98%	70-130%
460-00-4	4-Bromofluorobenzene	97%	70-130%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: DA15773

Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP

Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12209-39MS	7V60490.D	1	05/10/19	MB	n/a	n/a	V7V3073
DA12209-39MSD	7V60491.D	1	05/10/19	MB	n/a	n/a	V7V3073
DA12209-39	7V60492.D	1	05/10/19	MB	n/a	n/a	V7V3073

The QC reported here applies to the following samples:

Method: SW846 8260B

DA15773-1

CAS No.	Compound	DA12209-39 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	50	50.4	101	50	50.3	101	0	67-130/30
100-41-4	Ethylbenzene	ND	50	49.5	99	50	49.2	98	1	69-130/30
108-88-3	Toluene	ND	50	49.3	99	50	48.9	98	1	70-130/30
	m,p-Xylene	ND	100	100	100	100	99.7	100	0	70-130/30
95-47-6	o-Xylene	ND	50	49.6	99	50	49.6	99	0	70-130/30
1330-20-7	Xylene (total)	ND	150	150	100	150	149	99	1	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12209-39	Limits
1868-53-7	Dibromofluoromethane	100%	100%	99%	70-130%
17060-07-0	1,2-Dichloroethane-D4	96%	99%	97%	70-130%
2037-26-5	Toluene-D8	98%	98%	97%	70-130%
460-00-4	4-Bromofluorobenzene	102%	101%	94%	70-130%

* = Outside of Control Limits.

GC Volatiles**QC Data Summaries**

7

Includes the following where applicable:

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

Method Blank Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2350-MB	GB50166.D	1	05/13/19	BB	n/a	n/a	GGB2350

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

DA15773-1

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	104% 60-140%

Method Blank Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_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

DA15773-1A

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	

7.1.2
7

Blank Spike Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2350-BS	GB50167.D	1	05/13/19	BB	n/a	n/a	GGB2350

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

DA15773-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	2.09	95	51-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	114%	60-140%

* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_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

DA15773-1A

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: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12210-8MS	GB50168.D	1	05/13/19	BB	n/a	n/a	GGB2350
DA12210-8MSD	GB50169.D	1	05/13/19	BB	n/a	n/a	GGB2350
DA12210-8	GB50170.D	1	05/13/19	BB	n/a	n/a	GGB2350

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

DA15773-1

CAS No.	Compound	DA12210-8 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	2.2	2.06	94	2.2	2.07	94	0	40-132/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12210-8	Limits
120-82-1	1,2,4-Trichlorobenzene	116%	116%	106%	60-140%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_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

DA15773-1A

CAS No.	Compound	DA12209-47 Spike 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: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17809-MB	FD63483.D	1	05/16/19	RB	05/15/19	OP17809	GFD2603

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

DA15773-1

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	55% 11-142%

Blank Spike Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17809-BS	FD63484.D	1	05/16/19	RB	05/15/19	OP17809	GFD2603

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

DA15773-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	3.30	66	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	70%	11-142%

* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA15773
Account: ANADACOD Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17809-MS	FD63485.D	1	05/16/19	RB	05/15/19	OP17809	GFD2603
OP17809-MSD	FD63486.D	1	05/16/19	RB	05/15/19	OP17809	GFD2603
DA12210-3	FD63487.D	1	05/16/19	RB	05/15/19	OP17809	GFD2603

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

DA15773-1

CAS No.	Compound	DA12210-3 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	5	3.09	62	5	3.86	77	22	22-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12210-3	Limits
84-15-1	o-Terphenyl	69%	82%	78%	11-142%

* = Outside of Control Limits.

Metals Analysis

QC Data Summaries

6

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: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28010
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/13/19

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	-0.20	<50
Cadmium	10	1.9	1.6		
Calcium	400	6.6	53	30.5	<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	2.2	<10
Lead	50	13	6.3		
Lithium	5.0	.6	4		
Magnesium	200	50	31	5.7	<200
Manganese	5.0	.5	1.1	0.10	<5.0
Molybdenum	10	8.5	4.3		
Nickel	30	6.2	6.1		
Phosphorus	100	91	24		
Potassium	1000	84	250	18.7	<1000
Selenium	50	30	21		
Silicon	50	41	45		
Silver	30	.6	4		
Sodium	400	13	51	26.0	<400
Strontium	5.0	.1	.6	0.30	<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 MP28010: DA15773-1F

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

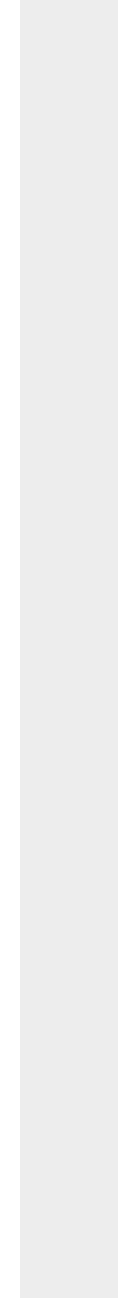
QC Batch ID: MP28010
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/13/19

Metal	RL	IDL	MDL	MB raw	final
-------	----	-----	-----	-----------	-------

(anr) Analyte not requested



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15773
 Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
 Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28010
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 05/13/19

Metal	DA15776-1A Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron	155	1240	1000	108.5	70-130
Cadmium					
Calcium	122000	144000	25000	88.0	70-130
Chromium					
Cobalt					
Copper					
Iron	47.0	6150	5000	122.1	70-130
Lead					
Lithium					
Magnesium	54100	61100	25000	100.4	70-130
Manganese	5.3	632	500	125.3	70-130
Molybdenum					
Nickel					
Phosphorus					
Potassium	6630	31100	25000	107.2	70-130
Selenium					
Silicon					
Silver					
Sodium	69700	82800	25000	101.2	70-130
Strontium	1280	1800	500	104.0	70-130
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP28010: DA15773-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28010
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/13/19

Metal	DA15776-1A 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: DA15773
 Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
 Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28010
 Matrix Type: AQUEOUS

Methods: EPA 200.7
 Units: ug/l

Prep Date: 05/13/19

	DA15776-1A		Spikelot		MSD	QC
Metal	Original	MSD	ICPAL2	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron	155	1190	1000	103.5	4.1	20
Cadmium						
Calcium	122000	141000	25000	76.0	2.1	20
Chromium						
Cobalt						
Copper						
Iron	47.0	6110	5000	121.3	0.7	20
Lead						
Lithium						
Magnesium	54100	60100	25000	96.4	1.7	20
Manganese	5.3	615	500	121.9	2.7	20
Molybdenum						
Nickel						
Phosphorus						
Potassium	6630	30800	25000	106.0	1.0	20
Selenium						
Silicon						
Silver						
Sodium	69700	81900	25000	97.6	1.1	20
Strontium	1280	1800	500	104.0	0.0	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP28010: DA15773-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

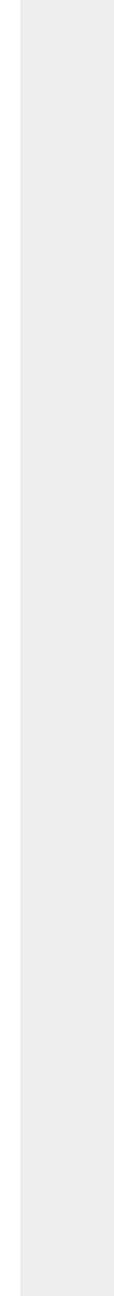
QC Batch ID: MP28010
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/13/19

Metal	DA15776-1A 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: DA15773

Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP

Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28010

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

05/13/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron	1070	1000	107.0	85-115
Cadmium				
Calcium	24000	25000	96.0	85-115
Chromium				
Cobalt				
Copper				
Iron	5210	5000	104.2	85-115
Lead				
Lithium				
Magnesium	24200	25000	96.8	85-115
Manganese	496	500	99.2	85-115
Molybdenum				
Nickel				
Phosphorus				
Potassium	25400	25000	101.6	85-115
Selenium				
Silicon				
Silver				
Sodium	24400	25000	97.6	85-115
Strontium	527	500	105.4	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP28010: DA15773-1F

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

9.1.3

9

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

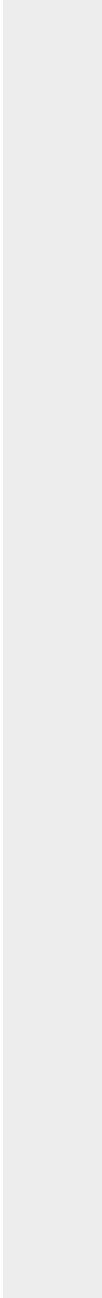
QC Batch ID: MP28010
Matrix Type: AQUEOUS

Methods: EPA 200.7
Units: ug/l

Prep Date: 05/13/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
-------	---------------	---------------------	-------	--------------

(anr) Analyte not requested



BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28011
Matrix Type: AQUEOUS

Methods: EPA 200.8
Units: ug/l

Prep Date: 05/13/19

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	0.092	<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	0.0060	<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 MP28011: DA15773-1F

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: DA15773
 Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
 Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28011
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 05/13/19

Metal	DA15739-1 Original MS		Spikelot ICPAL2	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium	112	532	400	105.0	70-130
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum	anr				
Nickel					
Phosphorus					
Potassium					
Selenium	2.3	203	200	100.4	70-130
Silver	anr				
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium	anr				
Vanadium					
Zinc					

Associated samples MP28011: DA15773-1F

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: DA15773
 Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
 Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28011
 Matrix Type: AQUEOUS

Methods: EPA 200.8
 Units: ug/l

Prep Date: 05/13/19

Metal	DA15739-1 Original	MSD	Spikelot ICPALL2	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium	112	531	400	104.8	0.2	20
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum	anr					
Nickel						
Phosphorus						
Potassium						
Selenium	2.3	201	200	99.4	1.0	20
Silver	anr					
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium	anr					
Vanadium						
Zinc						

Associated samples MP28011: DA15773-1F

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: DA15773

Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP

Project: GWA_Henrickson_Water_Well

QC Batch ID: MP28011

Methods: EPA 200.8

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

05/13/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium	414	400	103.5	85-115
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum	anr			
Nickel				
Phosphorus				
Potassium				
Selenium	201	200	100.5	85-115
Silver	anr			
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium	anr			
Vanadium				
Zinc				

Associated samples MP28011: DA15773-1F

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: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN46974	5.0	2.2	mg/l	100	99.7	99.7	90-110%
Alkalinity, Carbonate	GN46975	5.0	2.2	mg/l	100	99.7	99.7	80-120%
Alkalinity, Total as CaCO3	GN46976	5.0	2.2	mg/l	100	99.7	99.7	90-110%
Bromide	GP25086/GN46909	0.050	0.0	mg/l	0.5	0.489	97.8	90-110%
Chloride	GP25086/GN46909	0.50	0.0	mg/l	5	4.99	99.8	90-110%
Fluoride	GP25086/GN46909	0.10	0.0	mg/l	1	0.989	98.9	90-110%
Iron-Related Bacteria	MB1188	25	<25	CFU/ml				
Nitrogen, Nitrate	GP25086/GN46909	0.010	0.0	mg/l	0.1	0.0981	98.1	90-110%
Nitrogen, Nitrite	GP25086/GN46909	0.0040	0.0	mg/l	0.05	0.0535	107.0	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	GN46913	10	0.0	mg/l	400	384	96.0	90-110%
Specific Conductivity	GP25124/GN46972			umhos/cm	1413	1390	98.1	90-110%
Specific Conductivity	GP25124/GN46972			umhos/cm	98.8	98.4	99.6	90-110%
Specific Conductivity	GP25124/GN46972			umhos/cm	1004	953	94.9	90-110%
Sulfate	GP25086/GN46909	0.50	0.0	mg/l	5	4.95	99.0	90-110%
Sulfate Reducing Bacteria	MB1184	200	<200	CFU/ml				
pH	GN46971			su	8.00	7.98	99.8	99.1-100.9%
pH	GN46971			su	6.00	5.99	99.8	99.1-100.9%
pH	GN46971			su	8.00	7.96	99.5	99.1-100.9%

Associated Samples:

Batch MB1183: DA15773-1B
Batch MB1184: DA15773-1B
Batch MB1188: DA15773-1B
Batch GN46913: DA15773-1
Batch GN46971: DA15773-1
Batch GN46974: DA15773-1
Batch GN46975: DA15773-1
Batch GN46976: DA15773-1
Batch GP25086: DA15773-1
Batch GP25107: DA15773-1
Batch GP25124: DA15773-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN46976	DA15771-1	mg/l	377	380	1.0	0-20%
Phosphorus, Total	GP25107/GN46948	DA15651-3	mg/l	0.11	0.111	0.0	0-20%
Solids, Total Dissolved	GN46913	DA15717-1	mg/l	98.0	102	4.0	0-5%
Specific Conductivity	GP25124/GN46972	DA15771-1	umhos/cm	3610	3590	0.6	0-20%
pH	GN46971	DA15771-1	su	8.21	8.22	0.1	0-5%

Associated Samples:

Batch GN46913: DA15773-1
Batch GN46971: DA15773-1
Batch GN46976: DA15773-1
Batch GP25107: DA15773-1
Batch GP25124: DA15773-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO ₃	GN46976	DA12210-23	mg/l	7.7	100	103	95.3	80-120%
Bromide	GP25086/GN46909	DA15696-1	mg/l	0.0	5	5.1	102.0	80-120%
Chloride	GP25086/GN46909	DA15696-1	mg/l	11.3	50	64.2	105.8	80-120%
Fluoride	GP25086/GN46909	DA15696-1	mg/l	0.73	10	11.2	104.7	80-120%
Nitrogen, Nitrate	GP25086/GN46909	DA15696-1	mg/l	0.11	1	1.1	99.0	80-120%
Nitrogen, Nitrite	GP25086/GN46909	DA15696-1	mg/l	0.0	0.5	0.54	108.0	80-120%
Phosphorus, Total	GP25107/GN46948	DA15773-1	mg/l	0.038	0.2	0.240	101.0	90-110%
Sulfate	GP25086/GN46909	DA15696-1	mg/l	28.1	50	79.6	103.0	80-120%

Associated Samples:

Batch GN46976: DA15773-1

Batch GP25086: DA15773-1

Batch GP25107: DA15773-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: DA15773
Account: ANADACOD - Kerr-McGee Oil & Gas Onshore LP
Project: GWA_Henrickson_Water_Well

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN46976	DA12210-23	mg/l	7.7	100	105	1.6	20%
Bromide	GP25086/GN46909	DA15696-1	mg/l	0.0	5	5.0	2.0	20%
Chloride	GP25086/GN46909	DA15696-1	mg/l	11.3	50	63.2	1.6	20%
Fluoride	GP25086/GN46909	DA15696-1	mg/l	0.73	10	11.0	1.8	20%
Nitrogen, Nitrate	GP25086/GN46909	DA15696-1	mg/l	0.11	1	1.1	0.0	20%
Nitrogen, Nitrite	GP25086/GN46909	DA15696-1	mg/l	0.0	0.5	0.54	0.0	20%
Sulfate	GP25086/GN46909	DA15696-1	mg/l	28.1	50	78.7	1.1	20%

Associated Samples:

Batch GN46976: DA15773-1

Batch GP25086: DA15773-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits