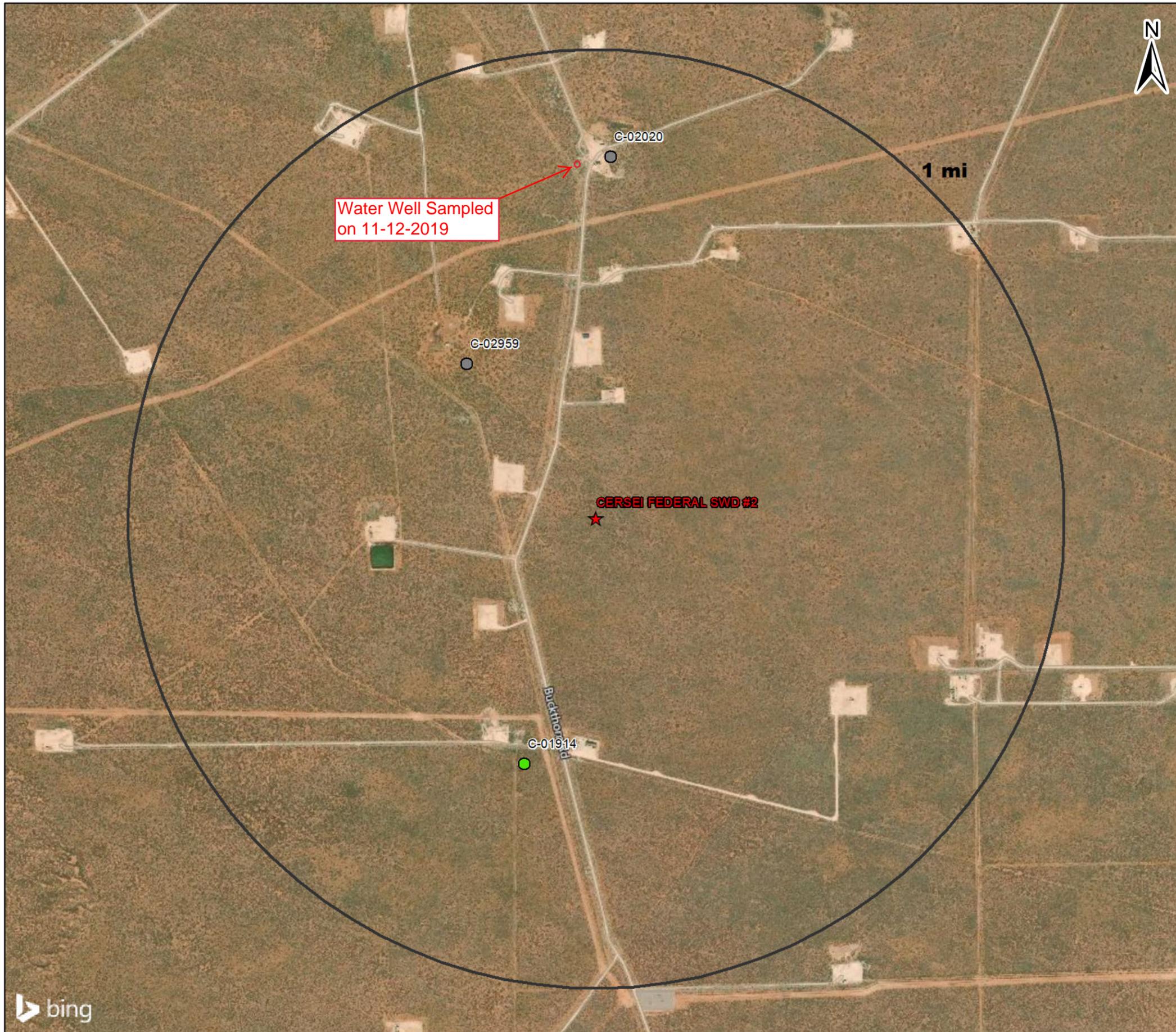


# Additional Information

Water Sample Results  
Received: 01/24/2020



### Legend

★ Proposed SWD

### NMOSE PODs

#### Status

- Active (0)
- Pending (1)
- Change Location of Well (0)
- Capped (0)
- Plugged (0)
- Incomplete (0)
- Unknown (2)

## Water Wells Area of Review

### CERSEI FEDERAL SWD #2 Eddy County, New Mexico

Proj Mgr:  
Dan Arthur

November 14, 2019

Mapped by:  
Ben Bockelmann

Prepared for:  
**SELECT**  
ENERGY SERVICES

Prepared by:  
**ALL**CONSULTING

0 0.25 0.5 1 Miles

Service Layer Credits: © 2019 Microsoft Corporation © 2019 DigitalGlobe ©CNES (2019) Distribution Airbus DS © 2019 HERE

Water Well Sampling Rationale					
Cersei Federal SWD #2					
Water Wells	Owner	Available Contact Information	Use	Sampling Required	Notes
C 02020	BLM	Brad Winger 575-234-5942	Livestock Watering	No	Coordinates (32.182816, -103.776288) Legal Location (SE 1/4 SE 1/4 S28 T24S R31E) Water well was initially drilled for oil and gas exploration. Once the exploration use of the well was completed the well was turned over to the BLM. BLM range specialist Kelsey Davis informed ALL that they could not find a record of this well. An onsite visit was conducted, and no water well was observed by the sampling personnel.
C 01914	Perry R. Bass	Perry R. Bass P.O. Box 2760 Midland, Texas 79702	Prospecting or Development of Natural Resources	No	Abstractors note on the well application states that no wells was drilled. Additionally there is no record of the well being drilled in the state engineers office.
C 02959	Richardson Cattle Company	Steve McCutchen (Owner): 575 706 7068 Email: Daggerdrawranchnm@gmail.com Garth Grizzle (Ranch Foreman): 575 200 7013 Jesus (Local Ranch Hand): 575 706 0384	Livestock watering	Yes	Coordinated (32.176463, -103.781613), Legal Location (S33 T24S R31E)  Met with Jesus to confirm the well location as it was located north of the mapped location from the OSE Pod location map. The well's electric water pump was plumbed directly into a water line leading to an above ground water tank, and cattle troughs. A cattle trough was sampled, as there was not a more direct Sample point to obtain a ground water sample.
Note:					

<b>Water Sampling Results Summary for Select Energy, LLC</b>			
Proposed SWD:		Cersei Federal SWD #2	-
Sample ID:		C-05929-GW-1	
Water Well ID:		C-05929	
<b>Group</b>	<b>Analyte</b>	<b>Results</b>	<b>Units</b>
<b>Inorganic Compounds</b>	Alkalinity, Bicarbonate	156	mg/L
	Alkalinity Carbonate	<1.00	mg/L
	Chloride	96	mg/L
	Conductivity	3800	uS/cm
	pH	8.75	pH/Units
	Resistivity	2.63	Ohms/m
	Sulfate	2160	mg/L
	TDS	3480	mg/L
	Alkalinity Total	128	mg/L
	TSS	9	mg/L
<b>Volatile Organic Compounds (VOC)</b>	Benzene	<0.001	mg/L
	Toluene	<0.001	mg/L
	Ethylbenzene	<0.001	mg/L
	Total Xylenes	<0.003	mg/L
	Total BTEX	<0.006	mg/L
<b>Total Recoverable Metals</b>	Barium	0.019	mg/L
	Calcium	545	mg/L
	Hardness As CaCo <sup>3</sup>	2000	mg/L
	Iron	0.198	mg/L
	Magnesium	155	mg/L
	Potassium	7.58	mg/L
	Sodium	253	mg/L
	Strontium	7.93	mg/L



January 10, 2020

NATE ALLEMAN  
ALL CONSULTING, LLC  
1718 S. CHEYENNE AVE.  
TULSA, OK 74119

RE: GW-1 WATER SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 11/12/19 13:40.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2      Total Haloacetic Acids (HAA-5)  
Method EPA 524.2      Total Trihalomethanes (TTHM)  
Method EPA 524.4      Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B      Total Coliform and E. coli (Colilert MMO-MUG)  
Method EPA 524.2      Regulated VOCs and Total Trihalomethanes (TTHM)  
Method EPA 552.2      Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**ALL CONSULTING, LLC  
1718 S. CHEYENNE AVE.  
TULSA OK, 74119Project: GW-1 WATER SAMPLES  
Project Number: NONE GIVEN  
Project Manager: NATE ALLEMAN  
Fax To: NAReported:  
10-Jan-20 15:06

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
C-02959 - GW-1	H903838-02	Water	12-Nov-19 12:05	12-Nov-19 13:40

01/10/2020- Client asked to split report into two separate reports. This is the revised report and will replace the one sent on 12/01/19.

Cardinal Laboratories

\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**C-02959 - GW-1**  
**H903838-02 (Water)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**
**Inorganic Compounds**

Alkalinity, Bicarbonate	156		5.00	mg/L	1	9111204	AC	13-Nov-19	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	9111204	AC	13-Nov-19	310.1	
Chloride*	96.0		4.00	mg/L	1	9111209	AC	13-Nov-19	4500-Cl-B	
Conductivity*	3800		1.00	uS/cm	1	9111312	AC	13-Nov-19	120.1	
pH*	8.75		0.100	pH Units	1	9111312	AC	13-Nov-19	150.1	
Resistivity	2.63			Ohms/m	1	9111312	AC	13-Nov-19	120.1	
Sulfate*	2160		500	mg/L	50	9111301	AC	13-Nov-19	375.4	
TDS*	3480		5.00	mg/L	1	9111205	AC	19-Nov-19	160.1	
Alkalinity, Total*	128		4.00	mg/L	1	9111204	AC	13-Nov-19	310.1	
TSS*	9.00		2.00	mg/L	1	9111402	AC	18-Nov-19	160.2	

**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.001		0.001	mg/L	1	9111314	MS	13-Nov-19	8021B	
Toluene*	<0.001		0.001	mg/L	1	9111314	MS	13-Nov-19	8021B	
Ethylbenzene*	<0.001		0.001	mg/L	1	9111314	MS	13-Nov-19	8021B	
Total Xylenes*	<0.003		0.003	mg/L	1	9111314	MS	13-Nov-19	8021B	
Total BTEX	<0.006		0.006	mg/L	1	9111314	MS	13-Nov-19	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 101 % 74-98 9111314 MS 13-Nov-19 8021B

**Green Analytical Laboratories**
**Total Recoverable Metals by ICP (E200.7)**

Barium*	0.019	0.010	0.500	mg/L	10	B911178	AES	22-Nov-19	EPA200.7	J
Calcium*	545	0.143	1.00	mg/L	10	B911178	AES	22-Nov-19	EPA200.7	
Hardness as CaCO3	2000		6.62	mg/L	10	[CALC]	AES	22-Nov-19	2340 B	
Iron*	0.198	0.174	0.500	mg/L	10	B911178	AES	22-Nov-19	EPA200.7	J
Magnesium*	155	0.226	1.00	mg/L	10	B911178	AES	22-Nov-19	EPA200.7	
Potassium*	7.58	0.677	10.0	mg/L	10	B911178	AES	22-Nov-19	EPA200.7	J
Sodium*	253	4.83	10.0	mg/L	10	B911178	AES	22-Nov-19	EPA200.7	

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**C-02959 - GW-1**  
**H903838-02 (Water)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Green Analytical Laboratories**
**Total Recoverable Metals by ICP (E200.7)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method
Strontium*	7.93	0.020	1.00	mg/L	10	B911178	AES	22-Nov-19	EPA200.7

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9111204 - General Prep - Wet Chem**
**Blank (9111204-BLK1)**

Prepared &amp; Analyzed: 13-Nov-19

Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	5.00	5.00	mg/L							
Alkalinity, Total	4.00	4.00	mg/L							

**LCS (9111204-BS1)**

Prepared &amp; Analyzed: 13-Nov-19

Alkalinity, Carbonate	ND	2.50	mg/L				80-120			
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120			
Alkalinity, Total	260	10.0	mg/L	250		104	80-120			

**LCS Dup (9111204-BSD1)**

Prepared &amp; Analyzed: 13-Nov-19

Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	305	12.5	mg/L				80-120	4.02	20	
Alkalinity, Total	250	10.0	mg/L	250		100	80-120	3.92	20	

**Batch 9111205 - Filtration**
**Blank (9111205-BLK1)**

Prepared: 12-Nov-19 Analyzed: 14-Nov-19

TDS	ND	5.00	mg/L							
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**LCS (9111205-BS1)**

Prepared: 12-Nov-19 Analyzed: 14-Nov-19

TDS	564		mg/L	527		107	80-120			
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**Duplicate (9111205-DUP1)**

Source: H903816-01

Prepared: 12-Nov-19 Analyzed: 14-Nov-19

TDS	122000	5.00	mg/L		121000			0.964	20	
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**Batch 9111209 - General Prep - Wet Chem**
**Blank (9111209-BLK1)**

Prepared: 12-Nov-19 Analyzed: 13-Nov-19

Chloride	ND	4.00	mg/L							
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9111209 - General Prep - Wet Chem**
**LCS (9111209-BS1)**

Prepared: 12-Nov-19 Analyzed: 13-Nov-19

Chloride	104	4.00	mg/L	100		104	80-120			
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**LCS Dup (9111209-BSD1)**

Prepared: 12-Nov-19 Analyzed: 13-Nov-19

Chloride	104	4.00	mg/L	100		104	80-120	0.00	20	
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**Batch 9111301 - General Prep - Wet Chem**
**Blank (9111301-BLK1)**

Prepared &amp; Analyzed: 13-Nov-19

Sulfate	ND	10.0	mg/L							
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**LCS (9111301-BS1)**

Prepared &amp; Analyzed: 13-Nov-19

Sulfate	19.5	10.0	mg/L	20.0		97.4	80-120			
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**LCS Dup (9111301-BSD1)**

Prepared &amp; Analyzed: 13-Nov-19

Sulfate	19.2	10.0	mg/L	20.0		95.8	80-120	1.60	20	
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**Batch 9111312 - General Prep - Wet Chem**
**LCS (9111312-BS1)**

Prepared &amp; Analyzed: 13-Nov-19

pH	7.06		pH Units	7.00		101	90-110			
Conductivity	52100		uS/cm	50000		104	80-120			

**Duplicate (9111312-DUP1)**

Source: H903838-01

Prepared &amp; Analyzed: 13-Nov-19

pH	7.29	0.100	pH Units		7.24			0.688	20	
Conductivity	3030	1.00	uS/cm		3040			0.329	20	
Resistivity	3.30		Ohms/m		3.29			0.329	20	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9111402 - Filtration**
**Blank (9111402-BLK1)**

Prepared: 14-Nov-19 Analyzed: 15-Nov-19

TSS	ND	2.00	mg/L							
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**Duplicate (9111402-DUP1)**

Source: H903838-01

Prepared: 14-Nov-19 Analyzed: 15-Nov-19

TSS	ND	2.00	mg/L		ND				52.7	
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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**Volatile Organic Compounds by EPA Method 8021 - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 9111314 - Volatiles**
**Blank (9111314-BLK1)**

Prepared &amp; Analyzed: 13-Nov-19

Benzene	ND	0.001	mg/L							
Toluene	ND	0.001	mg/L							
Ethylbenzene	ND	0.001	mg/L							
Total Xylenes	ND	0.003	mg/L							
Total BTEX	ND	0.006	mg/L							
Surrogate: 4-Bromofluorobenzene (PID)	0.0488		mg/L	0.0500		97.7	74-98			

**LCS (9111314-BS1)**

Prepared &amp; Analyzed: 13-Nov-19

Benzene	0.020	0.001	mg/L	0.0200		99.3	83.2-115			
Toluene	0.020	0.001	mg/L	0.0200		99.5	77.4-114			
Ethylbenzene	0.021	0.001	mg/L	0.0200		103	71.7-116			
Total Xylenes	0.060	0.003	mg/L	0.0600		101	73.4-116			
Surrogate: 4-Bromofluorobenzene (PID)	0.0478		mg/L	0.0500		95.5	74-98			

**LCS Dup (9111314-BSD1)**

Prepared &amp; Analyzed: 13-Nov-19

Benzene	0.020	0.001	mg/L	0.0200		101	83.2-115	1.96	4.87	
Toluene	0.021	0.001	mg/L	0.0200		103	77.4-114	3.37	2.88	QR-02
Ethylbenzene	0.021	0.001	mg/L	0.0200		106	71.7-116	3.11	3.24	
Total Xylenes	0.062	0.003	mg/L	0.0600		104	73.4-116	3.25	2.62	QR-02
Surrogate: 4-Bromofluorobenzene (PID)	0.0494		mg/L	0.0500		98.8	74-98			

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\* = Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 ALL CONSULTING, LLC  
 1718 S. CHEYENNE AVE.  
 TULSA OK, 74119

 Project: GW-1 WATER SAMPLES  
 Project Number: NONE GIVEN  
 Project Manager: NATE ALLEMAN  
 Fax To: NA

 Reported:  
 10-Jan-20 15:06

**Total Recoverable Metals by ICP (E200.7) - Quality Control**
**Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

**Batch B911178 - Total Rec. 200.7/200.8/200.2**
**Blank (B911178-BLK1)**

Prepared: 19-Nov-19 Analyzed: 22-Nov-19

Sodium	ND	1.00	mg/L							
Iron	ND	0.050	mg/L							
Potassium	ND	1.00	mg/L							
Magnesium	ND	0.100	mg/L							
Barium	ND	0.050	mg/L							
Calcium	ND	0.100	mg/L							
Strontium	ND	0.100	mg/L							

**LCS (B911178-BS1)**

Prepared: 19-Nov-19 Analyzed: 22-Nov-19

Sodium	3.15	1.00	mg/L	3.24		97.3	85-115			
Potassium	7.94	1.00	mg/L	8.00		99.3	85-115			
Strontium	3.90	0.100	mg/L	4.00		97.4	85-115			
Magnesium	19.4	0.100	mg/L	20.0		96.9	85-115			
Iron	3.78	0.050	mg/L	4.00		94.6	85-115			
Calcium	3.70	0.100	mg/L	4.00		92.5	85-115			
Barium	1.94	0.050	mg/L	2.00		96.8	85-115			

**LCS Dup (B911178-BSD1)**

Prepared: 19-Nov-19 Analyzed: 22-Nov-19

Magnesium	20.0	0.100	mg/L	20.0		100	85-115	3.17	20	
Potassium	8.04	1.00	mg/L	8.00		100	85-115	1.18	20	
Sodium	3.20	1.00	mg/L	3.24		98.9	85-115	1.62	20	
Calcium	3.84	0.100	mg/L	4.00		96.1	85-115	3.86	20	
Strontium	3.87	0.100	mg/L	4.00		96.7	85-115	0.764	20	
Barium	1.99	0.050	mg/L	2.00		99.4	85-115	2.59	20	
Iron	3.87	0.050	mg/L	4.00		96.7	85-115	2.21	20	

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

QR-02	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
J	Estimated concentration. Analyte concentration between MDL and RL.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

