



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8 LABORATORY**

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Ref: 8TMS-L

MEMORANDUM

SUBJECT: Analytical Results--- Wyoming groundwater / 1609010

FROM: David Nguyen, Organic Chemist
Jesse Kiernan, Organic Chemist
Melissa Beedle, Analytical Chemist
Michael Bade, Inorganic Chemist
Tom Slabe, Biologist
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THRU: Mark Burkhardt, PhD, Director
Laboratory Services Program

TO: Treasure Bailey, 8WP-AAP
Clean Water Act

Attached are the analytical results for Wyoming groundwater 1609010. The table below shows the number of containers received, the work order number(s) assigned, and the date received:

	1609010	Total
16-Sep-2016	32	32

These samples were prepared, analyzed, and verified by the Region 8 Laboratory according to the requirements of the Laboratory Services Request (LSR) and procedures found in the laboratory Quality Assurance Manual (QSP-001) dated October 12, 2016.

Sample Receipt

All samples were received in acceptable condition except as noted in the Analyst Comments or Appendix A. The number of samples received and analyses are listed in Appendix B.

Sample Analysis

All sample results are reported on an as-received basis except as noted in the Analyst Comments. All samples were analyzed within holding times except as noted in Appendix A. All analyses met QC acceptance criteria except as noted in the Analyst Comments or Appendix A.

Field Measurements

All field measurements met QC acceptance criteria except as noted in the Analyst Comments or Appendix A.

QC Note

Routine sample quality control results such as blanks, matrix spikes, and laboratory duplicates, etc. are reported on the quality control pages of this report. Certain of the reported QC criteria may not be applicable or otherwise affect the data usability. Appendix C summarizes the guidelines used by the Region 8 Laboratory to qualify data. This is a general table and may or may not be applicable to this project.

Analyst Comments

**Project: Wyoming groundwater LSR No: 1609010
Metals (Dissolved) by EPA 200 Series Methods**

Certificate of Analysis

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder: 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 F

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
200.7/6010	Aluminum	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Antimony	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.8/6020	Arsenic	2.0	ug/L		1.0	1	10/07/2016	MFB	1600419
200.7/6010	Barium	264	ug/L		4.0	1	10/07/2016	MFB	1600418
200.7/6010	Beryllium	< 1.0	ug/L		1.0	1	10/07/2016	MFB	1600418
200.7/6010	Boron	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Cadmium	< 0.2	ug/L		0.2	1	10/07/2016	MFB	1600419
200.7/6010	Calcium	67100	ug/L		100	1	10/07/2016	MFB	1600418
200.7/6010	Chromium	< 5.0	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Cobalt	< 2.0	ug/L		2.0	1	10/07/2016	MFB	1600418
200.7/6010	Copper	< 5.0	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Iron	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Lead	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.7/6010	Magnesium	17000	ug/L		100	1	10/07/2016	MFB	1600418
200.7/6010	Manganese	< 2.0	ug/L		2.0	1	10/07/2016	MFB	1600418
200.7/6010	Molybdenum	6.3	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Nickel	< 4.0	ug/L		4.0	1	10/07/2016	MFB	1600418
200.7/6010	Potassium	1070	ug/L		1000	1	10/07/2016	MFB	1600418
200.8/6020	Selenium	1.7	ug/L		1.0	1	10/07/2016	MFB	1600419
200.7/6010	Silica (SiO2)	11500	ug/L		400	1	10/07/2016	MFB	1600418
200.8/6020	Silver	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.7/6010	Sodium	12200	ug/L		500	1	10/07/2016	MFB	1600418
200.7/6010	Strontium	192	ug/L		2.0	1	10/07/2016	MFB	1600418
200.8/6020	Thallium	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.8/6020	Uranium	1.1	ug/L		0.2	1	10/07/2016	MFB	1600419
200.7/6010	Vanadium	13.6	ug/L	J	10.0	1	10/07/2016	MFB	1600418
200.7/6010	Zinc	< 50.0	ug/L		50.0	1	10/07/2016	MFB	1600418

Project: Wyoming groundwater LSR No: 1609010
Metals (Dissolved) by EPA 200 Series Methods

Certificate of Analysis

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 F

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
200.7/6010	Aluminum	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Antimony	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.8/6020	Arsenic	2.0	ug/L		1.0	1	10/07/2016	MFB	1600419
200.7/6010	Barium	258	ug/L		4.0	1	10/07/2016	MFB	1600418
200.7/6010	Beryllium	< 1.0	ug/L		1.0	1	10/07/2016	MFB	1600418
200.7/6010	Boron	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Cadmium	< 0.2	ug/L		0.2	1	10/07/2016	MFB	1600419
200.7/6010	Calcium	66000	ug/L		100	1	10/07/2016	MFB	1600418
200.7/6010	Chromium	< 5.0	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Cobalt	< 2.0	ug/L		2.0	1	10/07/2016	MFB	1600418
200.7/6010	Copper	< 5.0	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Iron	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Lead	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.7/6010	Magnesium	16700	ug/L		100	1	10/07/2016	MFB	1600418
200.7/6010	Manganese	< 2.0	ug/L		2.0	1	10/07/2016	MFB	1600418
200.7/6010	Molybdenum	6.4	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Nickel	< 4.0	ug/L		4.0	1	10/07/2016	MFB	1600418
200.7/6010	Potassium	1040	ug/L		1000	1	10/07/2016	MFB	1600418
200.8/6020	Selenium	1.6	ug/L		1.0	1	10/07/2016	MFB	1600419
200.7/6010	Silica (SiO2)	11100	ug/L		400	1	10/07/2016	MFB	1600418
200.8/6020	Silver	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.7/6010	Sodium	12100	ug/L		500	1	10/07/2016	MFB	1600418
200.7/6010	Strontium	189	ug/L		2.0	1	10/07/2016	MFB	1600418
200.8/6020	Thallium	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.8/6020	Uranium	1.0	ug/L		0.2	1	10/07/2016	MFB	1600419
200.7/6010	Vanadium	11.7	ug/L	J	10.0	1	10/07/2016	MFB	1600418
200.7/6010	Zinc	< 50.0	ug/L		50.0	1	10/07/2016	MFB	1600418

Project: Wyoming groundwater LSR No: 1609010
 Metals (Dissolved) by EPA 200 Series Methods

Certificate of Analysis

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 F

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
200.7/6010	Aluminum	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Antimony	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.8/6020	Arsenic	1.7	ug/L		1.0	1	10/07/2016	MFB	1600419
200.7/6010	Barium	269	ug/L		4.0	1	10/07/2016	MFB	1600418
200.7/6010	Beryllium	< 1.0	ug/L		1.0	1	10/07/2016	MFB	1600418
200.7/6010	Boron	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Cadmium	< 0.2	ug/L		0.2	1	10/07/2016	MFB	1600419
200.7/6010	Calcium	64700	ug/L		100	1	10/07/2016	MFB	1600418
200.7/6010	Chromium	< 5.0	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Cobalt	< 2.0	ug/L		2.0	1	10/07/2016	MFB	1600418
200.7/6010	Copper	< 5.0	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Iron	< 100	ug/L		100	1	10/07/2016	MFB	1600418
200.8/6020	Lead	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.7/6010	Magnesium	16900	ug/L		100	1	10/07/2016	MFB	1600418
200.7/6010	Manganese	< 2.0	ug/L		2.0	1	10/07/2016	MFB	1600418
200.7/6010	Molybdenum	6.1	ug/L		5.0	1	10/07/2016	MFB	1600418
200.7/6010	Nickel	< 4.0	ug/L		4.0	1	10/07/2016	MFB	1600418
200.7/6010	Potassium	< 1000	ug/L		1000	1	10/07/2016	MFB	1600418
200.8/6020	Selenium	1.1	ug/L		1.0	1	10/07/2016	MFB	1600419
200.7/6010	Silica (SiO2)	10400	ug/L		400	1	10/07/2016	MFB	1600418
200.8/6020	Silver	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.7/6010	Sodium	6640	ug/L		500	1	10/07/2016	MFB	1600418
200.7/6010	Strontium	195	ug/L		2.0	1	10/07/2016	MFB	1600418
200.8/6020	Thallium	< 0.5	ug/L		0.5	1	10/07/2016	MFB	1600419
200.8/6020	Uranium	1.0	ug/L		0.2	1	10/07/2016	MFB	1600419
200.7/6010	Vanadium	11.9	ug/L	J	10.0	1	10/07/2016	MFB	1600418
200.7/6010	Zinc	< 50.0	ug/L		50.0	1	10/07/2016	MFB	1600418

Metals (Total) by EPA 200 Series Methods

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 G

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
200.7/6010	Aluminum	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Antimony	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.8/6020	Arsenic	2.5	ug/L		1.0	1	10/06/2016	MFB	1600413
200.7/6010	Barium	272	ug/L		4.0	1	10/06/2016	MFB	1600417
200.7/6010	Beryllium	< 1.0	ug/L		1.0	1	10/06/2016	MFB	1600417
200.7/6010	Boron	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Cadmium	< 0.2	ug/L		0.2	1	10/06/2016	MFB	1600413
200.7/6010	Chromium	< 5.0	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Cobalt	< 2.0	ug/L		2.0	1	10/06/2016	MFB	1600417
200.7/6010	Copper	< 5.0	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Iron	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Lead	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.7/6010	Manganese	3.1	ug/L		2.0	1	10/06/2016	MFB	1600417
200.7/6010	Molybdenum	7.9	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Nickel	< 4.0	ug/L		4.0	1	10/06/2016	MFB	1600417
200.8/6020	Selenium	< 1.0	ug/L		1.0	1	10/06/2016	MFB	1600413
200.7/6010	Silica (SiO ₂)	11800	ug/L	J	400	1	10/06/2016	MFB	1600417
200.8/6020	Silver	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.7/6010	Strontium	198	ug/L		2.0	1	10/06/2016	MFB	1600417
200.8/6020	Thallium	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.8/6020	Uranium	1.1	ug/L		0.2	1	10/06/2016	MFB	1600413
200.7/6010	Vanadium	10.1	ug/L		10.0	1	10/06/2016	MFB	1600417
200.7/6010	Zinc	< 50.0	ug/L		50.0	1	10/06/2016	MFB	1600417

Metals (Total) by EPA 200 Series Methods

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 G

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
200.7/6010	Aluminum	224	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Antimony	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.8/6020	Arsenic	2.4	ug/L		1.0	1	10/06/2016	MFB	1600413
200.7/6010	Barium	273	ug/L		4.0	1	10/06/2016	MFB	1600417
200.7/6010	Beryllium	< 1.0	ug/L		1.0	1	10/06/2016	MFB	1600417
200.7/6010	Boron	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Cadmium	< 0.2	ug/L		0.2	1	10/06/2016	MFB	1600413
200.7/6010	Chromium	< 5.0	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Cobalt	< 2.0	ug/L		2.0	1	10/06/2016	MFB	1600417
200.7/6010	Copper	< 5.0	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Iron	145	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Lead	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.7/6010	Manganese	8.5	ug/L		2.0	1	10/06/2016	MFB	1600417
200.7/6010	Molybdenum	8.2	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Nickel	< 4.0	ug/L		4.0	1	10/06/2016	MFB	1600417
200.8/6020	Selenium	< 1.0	ug/L		1.0	1	10/06/2016	MFB	1600413
200.7/6010	Silica (SiO2)	12500	ug/L	J	400	1	10/06/2016	MFB	1600417
200.8/6020	Silver	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.7/6010	Strontium	198	ug/L		2.0	1	10/06/2016	MFB	1600417
200.8/6020	Thallium	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.8/6020	Uranium	1.2	ug/L		0.2	1	10/06/2016	MFB	1600413
200.7/6010	Vanadium	12.6	ug/L		10.0	1	10/06/2016	MFB	1600417
200.7/6010	Zinc	< 50.0	ug/L		50.0	1	10/06/2016	MFB	1600417

Metals (Total) by EPA 200 Series Methods

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 G

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
200.7/6010	Aluminum	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Antimony	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.8/6020	Arsenic	2.2	ug/L		1.0	1	10/06/2016	MFB	1600413
200.7/6010	Barium	278	ug/L		4.0	1	10/06/2016	MFB	1600417
200.7/6010	Beryllium	< 1.0	ug/L		1.0	1	10/06/2016	MFB	1600417
200.7/6010	Boron	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Cadmium	< 0.2	ug/L		0.2	1	10/06/2016	MFB	1600413
200.7/6010	Chromium	< 5.0	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Cobalt	< 2.0	ug/L		2.0	1	10/06/2016	MFB	1600417
200.7/6010	Copper	< 5.0	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Iron	< 100	ug/L		100	1	10/06/2016	MFB	1600417
200.8/6020	Lead	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.7/6010	Manganese	< 2.0	ug/L		2.0	1	10/06/2016	MFB	1600417
200.7/6010	Molybdenum	7.2	ug/L		5.0	1	10/06/2016	MFB	1600417
200.7/6010	Nickel	< 4.0	ug/L		4.0	1	10/06/2016	MFB	1600417
200.8/6020	Selenium	< 1.0	ug/L		1.0	1	10/06/2016	MFB	1600413
200.7/6010	Silica (SiO2)	10600	ug/L	J	400	1	10/06/2016	MFB	1600417
200.8/6020	Silver	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.7/6010	Strontium	202	ug/L		2.0	1	10/06/2016	MFB	1600417
200.8/6020	Thallium	< 0.5	ug/L		0.5	1	10/06/2016	MFB	1600413
200.8/6020	Uranium	1.0	ug/L		0.2	1	10/06/2016	MFB	1600413
200.7/6010	Vanadium	12.0	ug/L		10.0	1	10/06/2016	MFB	1600417
200.7/6010	Zinc	< 50.0	ug/L		50.0	1	10/06/2016	MFB	1600417

Hardness (Dissolved) by EPA 200 Series Methods

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 F

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
SM 2340B	Hardness	238	mg CaCO3 / L		1.3	1	10/07/2016	MFB	1600418

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 F

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
SM 2340B	Hardness	233	mg CaCO3 / L		1.3	1	10/07/2016	MFB	1600418

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 F

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
SM 2340B	Hardness	231	mg CaCO3 / L		1.3	1	10/07/2016	MFB	1600418

Inorganic Chemistry Parameters

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 B

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 350.1	Ammonia as N	< 0.025	mg/L		0.025	1	09/23/2016	TJS	1600377

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 C

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Chloride	31.0	mg/L		0.20	1	09/21/2016	MNB	1600367
EPA 300.0	Fluoride	< 0.10	mg/L		0.10	1	09/21/2016	MNB	1600367
EPA 300.0	Sulfate as SO4	26.4	mg/L		0.50	1	09/21/2016	MNB	1600367

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 B

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 350.1	Ammonia as N	< 0.025	mg/L		0.025	1	09/23/2016	TJS	1600377

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 C

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Chloride	30.5	mg/L		0.20	1	09/21/2016	MNB	1600367
EPA 300.0	Fluoride	< 0.10	mg/L		0.10	1	09/21/2016	MNB	1600367
EPA 300.0	Sulfate as SO4	26.2	mg/L		0.50	1	09/21/2016	MNB	1600367

Inorganic Chemistry Parameters

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 B

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 350.1	Ammonia as N	< 0.025	mg/L		0.025	1	09/23/2016	TJS	1600377

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 C

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 300.0	Chloride	14.3	mg/L		0.20	1	09/21/2016	MNB	1600367
EPA 300.0	Fluoride	< 0.10	mg/L		0.10	1	09/21/2016	MNB	1600367
EPA 300.0	Sulfate as SO4	20.7	mg/L		0.50	1	09/21/2016	MNB	1600367

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B

Certificate of Analysis

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 A

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 8260B	1,1,1,2-Tetrachloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1,1-Trichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1,2,2-Tetrachloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1,2-Trichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1-Dichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1-Dichloroethene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1-Dichloropropene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,3-Trichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,3-Trichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,4-Trichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,4-Trimethylbenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dibromo-3-chloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dibromoethane (EDB)	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,3,5-Trimethylbenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,3-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,3-Dichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,4-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	2,2-Dichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	2-Butanone	< 0.500	ug/L		0.500	1	09/20/2016	DN	1600392
EPA 8260B	2-Chlorotoluene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	2-Hexanone	< 0.500	ug/L		0.500	1	09/20/2016	DN	1600392
EPA 8260B	4-Chlorotoluene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	4-Methyl-2-pentanone	< 0.500	ug/L		0.500	1	09/20/2016	DN	1600392
EPA 8260B	Acetone	0.500	ug/L	J	0.500	1	09/20/2016	DN	1600392
EPA 8260B	Acrylonitrile	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Allyl chloride	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Benzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromochloromethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromodichloromethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromoform	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromomethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Carbon disulfide	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Carbon tetrachloride	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chlorodibromomethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chloroform	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chloromethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	cis-1,2-Dichloroethene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	cis-1,3-Dichloropropene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392

Volatile Organic Compounds by EPA Method 8260B

EPA 8260B	Dibromomethane	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Dichlorodifluoromethane	< 1.00	ug/L	1.00	1	09/20/2016	DN	1600392
EPA 8260B	Ethyl Ether	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Ethylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Hexachlorobutadiene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Iodomethane	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Isopropylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	m,p-Xylene	< 0.500	ug/L	0.500	1	09/20/2016	DN	1600392
EPA 8260B	Methacrylonitrile	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Methyl Acrylate	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Methyl tert-Butyl Ether	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Methylene chloride	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Naphthalene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	n-Butyl Benzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	n-Propyl Benzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	o-Xylene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	p-Isopropyltoluene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	sec-Butylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Styrene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	tert-Butylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Tetrachloroethene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Toluene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	trans-1,2-Dichloroethene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	trans-1,3-Dichloropropene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Trichloroethene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Trichlorofluoromethane	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Vinyl chloride	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Xylenes (total)	< 0.500	ug/L	0.500	1	09/20/2016	DN	1600392
	Surrogate: 1,2-Dichloroethane-d4	110 %	Limit 70-130		1	09/20/2016	DN	1600392
	Surrogate: 4-Bromofluorobenzene	102 %	Limit 70-130		1	09/20/2016	DN	1600392
	Surrogate: Dibromofluoromethane	110 %	Limit 70-130		1	09/20/2016	DN	1600392
	Surrogate: Toluene-d8	96.8 %	Limit 70-130		1	09/20/2016	DN	1600392

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B

Certificate of Analysis

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 A

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 8260B	1,1,1,2-Tetrachloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1,1-Trichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1,2,2-Tetrachloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1,2-Trichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1-Dichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1-Dichloroethene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,1-Dichloropropene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,3-Trichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,3-Trichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,4-Trichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2,4-Trimethylbenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dibromo-3-chloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dibromoethane (EDB)	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dichloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,2-Dichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,3,5-Trimethylbenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,3-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,3-Dichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	1,4-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	2,2-Dichloropropane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	2-Butanone	< 0.500	ug/L		0.500	1	09/20/2016	DN	1600392
EPA 8260B	2-Chlorotoluene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	2-Hexanone	< 0.500	ug/L		0.500	1	09/20/2016	DN	1600392
EPA 8260B	4-Chlorotoluene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	4-Methyl-2-pentanone	< 0.500	ug/L		0.500	1	09/20/2016	DN	1600392
EPA 8260B	Acetone	< 0.500	ug/L	J	0.500	1	09/20/2016	DN	1600392
EPA 8260B	Acrylonitrile	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Allyl chloride	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Benzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromochloromethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromodichloromethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromoform	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Bromomethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Carbon disulfide	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Carbon tetrachloride	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chlorobenzene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chlorodibromomethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chloroethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chloroform	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	Chloromethane	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	cis-1,2-Dichloroethene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392
EPA 8260B	cis-1,3-Dichloropropene	< 0.250	ug/L		0.250	1	09/20/2016	DN	1600392

Volatile Organic Compounds by EPA Method 8260B

EPA 8260B	Dibromomethane	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Dichlorodifluoromethane	< 1.00	ug/L	1.00	1	09/20/2016	DN	1600392
EPA 8260B	Ethyl Ether	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Ethylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Hexachlorobutadiene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Iodomethane	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Isopropylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	m,p-Xylene	< 0.500	ug/L	0.500	1	09/20/2016	DN	1600392
EPA 8260B	Methacrylonitrile	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Methyl Acrylate	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Methyl tert-Butyl Ether	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Methylene chloride	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Naphthalene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	n-Butyl Benzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	n-Propyl Benzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	o-Xylene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	p-Isopropyltoluene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	sec-Butylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Styrene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	tert-Butylbenzene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Tetrachloroethene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Toluene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	trans-1,2-Dichloroethene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	trans-1,3-Dichloropropene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Trichloroethene	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Trichlorofluoromethane	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Vinyl chloride	< 0.250	ug/L	0.250	1	09/20/2016	DN	1600392
EPA 8260B	Xylenes (total)	< 0.500	ug/L	0.500	1	09/20/2016	DN	1600392
	Surrogate: 1,2-Dichloroethane-d4	111 %	Limit 70-130		1	09/20/2016	DN	1600392
	Surrogate: 4-Bromofluorobenzene	104 %	Limit 70-130		1	09/20/2016	DN	1600392
	Surrogate: Dibromofluoromethane	111 %	Limit 70-130		1	09/20/2016	DN	1600392
	Surrogate: Toluene-d8	96.6 %	Limit 70-130		1	09/20/2016	DN	1600392

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B

Certificate of Analysis

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 A

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 8260B	1,1,1,2-Tetrachloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,1,1-Trichloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,1,2,2-Tetrachloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,1,2-Trichloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,1-Dichloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,1-Dichloroethene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,1-Dichloropropene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2,3-Trichlorobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2,3-Trichloropropane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2,4-Trichlorobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2,4-Trimethylbenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2-Dibromo-3-chloropropane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2-Dibromoethane (EDB)	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2-Dichloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,2-Dichloropropane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,3,5-Trimethylbenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,3-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,3-Dichloropropane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	1,4-Dichlorobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	2,2-Dichloropropane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	2-Butanone	< 0.500	ug/L		0.500	1	09/21/2016	DN	1600392
EPA 8260B	2-Chlorotoluene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	2-Hexanone	< 0.500	ug/L		0.500	1	09/21/2016	DN	1600392
EPA 8260B	4-Chlorotoluene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	4-Methyl-2-pentanone	< 0.500	ug/L		0.500	1	09/21/2016	DN	1600392
EPA 8260B	Acetone	0.670	ug/L	J	0.500	1	09/21/2016	DN	1600392
EPA 8260B	Acrylonitrile	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Allyl chloride	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Benzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Bromobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Bromochloromethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Bromodichloromethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Bromoform	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Bromomethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Carbon disulfide	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Carbon tetrachloride	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Chlorobenzene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Chlorodibromomethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Chloroethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Chloroform	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	Chloromethane	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	cis-1,2-Dichloroethene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392
EPA 8260B	cis-1,3-Dichloropropene	< 0.250	ug/L		0.250	1	09/21/2016	DN	1600392

Volatile Organic Compounds by EPA Method 8260B

EPA 8260B	Dibromomethane	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Dichlorodifluoromethane	< 1.00	ug/L	1.00	1	09/21/2016	DN	1600392
EPA 8260B	Ethyl Ether	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Ethylbenzene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Hexachlorobutadiene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Iodomethane	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Isopropylbenzene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	m,p-Xylene	< 0.500	ug/L	0.500	1	09/21/2016	DN	1600392
EPA 8260B	Methacrylonitrile	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Methyl Acrylate	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Methyl tert-Butyl Ether	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Methylene chloride	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Naphthalene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	n-Butyl Benzene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	n-Propyl Benzene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	o-Xylene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	p-Isopropyltoluene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	sec-Butylbenzene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Styrene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	tert-Butylbenzene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Tetrachloroethene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Toluene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	trans-1,2-Dichloroethene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	trans-1,3-Dichloropropene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Trichloroethene	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Trichlorofluoromethane	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Vinyl chloride	< 0.250	ug/L	0.250	1	09/21/2016	DN	1600392
EPA 8260B	Xylenes (total)	< 0.500	ug/L	0.500	1	09/21/2016	DN	1600392
	Surrogate: 1,2-Dichloroethane-d4	112 %	Limit 70-130		1	09/21/2016	DN	1600392
	Surrogate: 4-Bromofluorobenzene	103 %	Limit 70-130		1	09/21/2016	DN	1600392
	Surrogate: Dibromofluoromethane	110 %	Limit 70-130		1	09/21/2016	DN	1600392
	Surrogate: Toluene-d8	96.6 %	Limit 70-130		1	09/21/2016	DN	1600392

Project: Wyoming groundwater LSR No: 1609010
TVPH/BTEX/MTBE/Naphthalene by GC PID/FID

Certificate of Analysis

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-01 E

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
8021/8015	Benzene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Ethyl Benzene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	m,p-Xylene	< 2.0	ug/L		2.0	1	09/20/2016	JAK	1600375
8021/8015	Methyl tert-Butyl Ether	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Naphthalene	< 2.0	ug/L		2.0	1	09/20/2016	JAK	1600375
8021/8015	o-Xylene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Toluene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	TPH as Gasoline	< 20.0	ug/L		20.0	1	09/20/2016	JAK	1600375
	<i>Surrogate: Bromofluorobenzene</i>	101 %	Limit 70-130			1	09/20/2016	JAK	1600375

Station ID: 411754105314601

Date / Time Sampled: 09/13/16 12:05

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-02 E

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
8021/8015	Benzene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Ethyl Benzene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	m,p-Xylene	< 2.0	ug/L		2.0	1	09/20/2016	JAK	1600375
8021/8015	Methyl tert-Butyl Ether	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Naphthalene	< 2.0	ug/L		2.0	1	09/20/2016	JAK	1600375
8021/8015	o-Xylene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Toluene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	TPH as Gasoline	< 20.0	ug/L		20.0	1	09/20/2016	JAK	1600375
	<i>Surrogate: Bromofluorobenzene</i>	101 %	Limit 70-130			1	09/20/2016	JAK	1600375

Station ID: 411809105321701

Date / Time Sampled: 09/14/16 12:00

Workorder 1609010

Comment:

Matrix: Water

Lab Number: 1609010-03 E

Method	Parameter	Results	Units	Qual- ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
8021/8015	Benzene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Ethyl Benzene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	m,p-Xylene	< 2.0	ug/L		2.0	1	09/20/2016	JAK	1600375
8021/8015	Methyl tert-Butyl Ether	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Naphthalene	< 2.0	ug/L		2.0	1	09/20/2016	JAK	1600375
8021/8015	o-Xylene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	Toluene	< 1.0	ug/L		1.0	1	09/20/2016	JAK	1600375
8021/8015	TPH as Gasoline	< 20.0	ug/L		20.0	1	09/20/2016	JAK	1600375
	<i>Surrogate: Bromofluorobenzene</i>	101 %	Limit 70-130			1	09/20/2016	JAK	1600375

Project: Wyoming groundwater LSR No: 1609010
Extractable Petroleum Hydrocarbons by 8015 DRO

Certificate of Analysis

Station ID: 411754105314601 **Date / Time Sampled:** 09/13/16 12:00 **Workorder:** 1609010
Comment: **Matrix:** Water **Lab Number:** 1609010-01 D

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 8015	Diesel range organics	30.2	ug/L		20.0	1	09/30/2016	JAK	1600373
	<i>Surrogate: o-Terphenyl</i>	90.4 %	<i>Limit 60-140</i>			1	09/30/2016	JAK	1600373

Station ID: 411754105314601 **Date / Time Sampled:** 09/13/16 12:05 **Workorder:** 1609010
Comment: **Matrix:** Water **Lab Number:** 1609010-02 D

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 8015	Diesel range organics	< 22.2	ug/L		22.2	1	09/30/2016	JAK	1600373
	<i>Surrogate: o-Terphenyl</i>	80.7 %	<i>Limit 60-140</i>			1	09/30/2016	JAK	1600373

Station ID: 411809105321701 **Date / Time Sampled:** 09/14/16 12:00 **Workorder:** 1609010
Comment: **Matrix:** Water **Lab Number:** 1609010-03 D

Method	Parameter	Results	Units	Qual-ifier	Report Limit	Dilution Factor	Analyzed	By	Batch
EPA 8015	Diesel range organics	< 20.0	ug/L	J	20.0	1	09/30/2016	JAK	1600373
	<i>Surrogate: o-Terphenyl</i>	82.6 %	<i>Limit 60-140</i>			1	09/30/2016	JAK	1600373

Note: "J" Qualifier indicates an estimated value.

Project: Wyoming groundwater LSR No: 1609010
 Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600418 - Default Prep Metals

Method Blank (1600418-BLK1)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	< 100	100	ug/L
Barium	< 4.0	4.0	"
Beryllium	< 1.0	1.0	"
Boron	< 100	100	"
Calcium	< 100	100	"
Chromium	< 5.0	5.0	"
Cobalt	< 2.0	2.0	"
Copper	< 5.0	5.0	"
Iron	< 100	100	"
Magnesium	< 100	100	"
Manganese	< 2.0	2.0	"
Molybdenum	< 5.0	5.0	"
Nickel	< 4.0	4.0	"
Potassium	< 1000	1000	"
Silica (SiO2)	< 400	400	"
Sodium	< 500	500	"
Strontium	< 2.0	2.0	"
Vanadium	< 10.0	10.0	"
Zinc	< 50.0	50.0	"

Method Blank (1600418-BLK2)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	< 100	100	ug/L
Barium	< 4.0	4.0	"
Beryllium	< 1.0	1.0	"
Boron	< 100	100	"
Calcium	< 100	100	"
Chromium	< 5.0	5.0	"
Cobalt	< 2.0	2.0	"
Copper	< 5.0	5.0	"
Iron	< 100	100	"
Magnesium	< 100	100	"
Manganese	< 2.0	2.0	"
Molybdenum	< 5.0	5.0	"
Nickel	< 4.0	4.0	"
Potassium	< 1000	1000	"
Silica (SiO2)	< 400	400	"
Sodium	< 500	500	"
Strontium	< 2.0	2.0	"
Vanadium	< 10.0	10.0	"
Zinc	< 50.0	50.0	"

Project: Wyoming groundwater LSR No: 1609010
 Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600418 - Default Prep Metals

Method Blank Spike (1600418-BS1)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	1882	100	ug/L	2000		94.1	85-115		
Barium	192.5	4.0	"	200		96.2	85-115		
Beryllium	187.3	1.0	"	200		93.7	85-115		
Boron	267.5	100	"	300		89.2	85-115		
Calcium	989.8	100	"	1000		99.0	85-115		
Chromium	359.3	5.0	"	400		89.8	85-115		
Cobalt	192.9	2.0	"	200		96.5	85-115		
Copper	275.4	5.0	"	300		91.8	85-115		
Iron	2939	100	"	3000		98.0	85-115		
Magnesium	1868	100	"	2000		93.4	85-115		
Manganese	203.8	2.0	"	200		102	85-115		
Molybdenum	373.3	5.0	"	400		93.3	85-115		
Nickel	476.0	4.0	"	500		95.2	85-115		
Potassium	9899	1000	"	10000		99.0	85-115		
Silica (SiO2)	2114	400	"	2000		106	85-115		
Sodium	3157	500	"	3000		105	85-115		
Strontium	195.4	2.0	"	200		97.7	85-115		
Vanadium	259.7	10.0	"	300		86.6	85-115		
Zinc	193.3	50.0	"	200		96.7	85-115		

Method Blank Spike (1600418-BS2)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	1905	100	ug/L	2000		95.2	85-115		
Barium	194.2	4.0	"	200		97.1	85-115		
Beryllium	183.8	1.0	"	200		91.9	85-115		
Boron	261.8	100	"	300		87.3	85-115		
Calcium	1003	100	"	1000		100	85-115		
Chromium	354.3	5.0	"	400		88.6	85-115		
Cobalt	189.0	2.0	"	200		94.5	85-115		
Copper	270.5	5.0	"	300		90.2	85-115		
Iron	2976	100	"	3000		99.2	85-115		
Magnesium	1901	100	"	2000		95.0	85-115		
Manganese	206.4	2.0	"	200		103	85-115		
Molybdenum	369.9	5.0	"	400		92.5	85-115		
Nickel	469.4	4.0	"	500		93.9	85-115		
Potassium	9927	1000	"	10000		99.3	85-115		
Silica (SiO2)	2146	400	"	2000		107	85-115		
Sodium	3204	500	"	3000		107	85-115		
Strontium	197.2	2.0	"	200		98.6	85-115		
Vanadium	254.2	10.0	"	300		84.7	85-115		
Zinc	195.8	50.0	"	200		97.9	85-115		

Project: Wyoming groundwater LSR No: 1609010
 Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
Batch 1600418 - Default Prep Metals								
Duplicate (1600418-DUP2)	Source: 1609010-03			Prepared: 10/05/16		Analyzed: 10/07/16		
Aluminum	19.48	100	ug/L		< 100			20
Barium	268.4	4.0	"		269.2		0.292	20
Beryllium	< 1.0	1.0	"		< 1.0			20
Boron	19.38	100	"		18.84		2.84	20
Calcium	64610	100	"		64660		0.0724	20
Chromium	0.98	5.0	"		1.05		7.15	20
Cobalt	< 2.0	2.0	"		< 2.0			20
Copper	0.99	5.0	"		0.95		4.87	20
Iron	< 100	100	"		< 100			20
Magnesium	16650	100	"		16890		1.43	20
Manganese	< 2.0	2.0	"		< 2.0			20
Molybdenum	7.55	5.0	"		6.09		21.4	20
Nickel	0.64	4.0	"		< 4.0			20
Potassium	934.1	1000	"		988.3		5.64	20
Silica (SiO2)	10240	400	"		10410		1.57	20
Sodium	6638	500	"		6636		0.0284	20
Strontium	195.0	2.0	"		195.3		0.118	20
Vanadium	12.97	10.0	"		11.93		8.35	20
Zinc	< 50.0	50.0	"		< 50.0			20

Batch 1600419 - Default Prep Metals

Method Blank (1600419-BLK1)				Prepared: 10/05/16		Analyzed: 10/06/16		
Antimony	< 0.5	0.5	ug/L					
Arsenic	< 1.0	1.0	"					
Cadmium	< 0.2	0.2	"					
Lead	< 0.5	0.5	"					
Selenium	< 1.0	1.0	"					
Silver	< 0.5	0.5	"					
Thallium	< 0.5	0.5	"					
Uranium	< 0.2	0.2	"					

Project: Wyoming groundwater LSR No: 1609010
Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600419 - Default Prep Metals

Method Blank (1600419-BLK2)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	< 0.5	0.5	ug/L						
Arsenic	< 1.0	1.0	"						
Cadmium	< 0.2	0.2	"						
Lead	< 0.5	0.5	"						
Selenium	< 1.0	1.0	"						
Silver	< 0.5	0.5	"						
Thallium	< 0.5	0.5	"						
Uranium	< 0.2	0.2	"						

Method Blank Spike (1600419-BS1)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	184	0.5	ug/L	200		92.2	85-115		
Arsenic	87.2	1.0	"	100		87.2	85-115		
Cadmium	46.4	0.2	"	50.0		92.7	85-115		
Lead	92.7	0.5	"	100		92.7	85-115		
Selenium	47.0	1.0	"	50.0		93.9	85-115		
Silver	44.6	0.5	"	50.0		89.2	85-115		
Thallium	46.2	0.5	"	50.0		92.3	85-115		
Uranium	45.4	0.2	"	50.0		90.7	85-115		

Method Blank Spike (1600419-BS2)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	183	0.5	ug/L	200		91.4	85-115		
Arsenic	86.4	1.0	"	100		86.4	85-115		
Cadmium	45.6	0.2	"	50.0		91.1	85-115		
Lead	91.4	0.5	"	100		91.4	85-115		
Selenium	46.4	1.0	"	50.0		92.8	85-115		
Silver	44.0	0.5	"	50.0		88.0	85-115		
Thallium	45.2	0.5	"	50.0		90.4	85-115		
Uranium	45.1	0.2	"	50.0		90.1	85-115		

Project: Wyoming groundwater LSR No: 1609010
Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600419 - Default Prep Metals

Matrix Spike (1600419-MS2)	Source: 1609010-03			Prepared: 10/05/16	Analyzed: 10/07/16				
Antimony	200	0.5	ug/L	200	< 0.5	100	80-120		
Arsenic	94.9	1.0	"	100	1.69	93.2	80-120		
Cadmium	44.9	0.2	"	50.0	< 0.2	89.7	80-120		
Lead	96.6	0.5	"	100	< 0.5	96.6	80-120		
Selenium	52.2	1.0	"	50.0	1.14	102	80-120		
Silver	46.8	0.5	"	50.0	< 0.5	93.6	80-120		
Thallium	46.9	0.5	"	50.0	< 0.5	93.8	80-120		
Uranium	47.4	0.2	"	50.0	0.95	92.8	80-120		

Matrix Spike Dup (1600419-MSD2)	Source: 1609010-03			Prepared: 10/05/16	Analyzed: 10/07/16				
Antimony	210	0.5	ug/L	200	< 0.5	105	80-120	4.65	20
Arsenic	98.0	1.0	"	100	1.69	96.3	80-120	3.21	20
Cadmium	46.2	0.2	"	50.0	< 0.2	92.4	80-120	2.96	20
Lead	98.3	0.5	"	100	< 0.5	98.3	80-120	1.71	20
Selenium	54.2	1.0	"	50.0	1.14	106	80-120	3.75	20
Silver	49.2	0.5	"	50.0	< 0.5	98.4	80-120	4.95	20
Thallium	48.8	0.5	"	50.0	< 0.5	97.6	80-120	3.94	20
Uranium	48.6	0.2	"	50.0	0.95	95.2	80-120	2.51	20

Batch 6J06002 - 1600419

Serial Dilution (6J06002-SRD1)	Source: 1608010-03			Prepared: 10/05/16	Analyzed: 10/06/16				
Antimony	0.29	2.5	ug/L		0.04			147	10
Arsenic	< 5.0	5.0	"		< 5.0				10
Cadmium	< 1.0	1.0	"		< 1.0				10
Lead	< 2.5	2.5	"		< 2.5				10
Selenium	< 5.0	5.0	"		0.36				10
Silver	< 2.5	2.5	"		< 2.5				10
Thallium	0.09	2.5	"		0.02			127	10
Uranium	< 1.0	1.0	"		0.02				10

Project: Wyoming groundwater LSR No: 1609010
 Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 6J06002 - 1600419

Serial Dilution (6J06002-SRD2)	Source: 1608044-07			Prepared: 10/05/16	Analyzed: 10/07/16				
Antimony	< 2.5	2.5	ug/L		< 2.5				10
Arsenic	< 5.0	5.0	"		< 5.0				10
Cadmium	< 1.0	1.0	"		< 1.0				10
Lead	< 2.5	2.5	"		< 2.5				10
Selenium	1.24	5.0	"		1.72			32.6	10
Silver	< 2.5	2.5	"		< 2.5				10
Thallium	< 2.5	2.5	"		< 2.5				10
Uranium	1.72	1.0	"		1.97			14.0	10

Batch 6J06004 - 1600418

Serial Dilution (6J06004-SRD1)	Source: 1608029-03			Prepared: 10/05/16	Analyzed: 10/06/16				
Aluminum	< 500	500	ug/L		< 500				10
Barium	9.73	20.0	"		9.53			2.07	10
Beryllium	< 5.0	5.0	"		< 5.0				10
Boron	90.48	500	"		87.70			3.12	10
Calcium	27710	500	"		27000			2.60	10
Chromium	< 25.0	25.0	"		< 25.0				10
Cobalt	3.09	10.0	"		1.05			98.9	10
Copper	< 50.0	50.0	"		< 50.0				10
Iron	< 500	500	"		40.47				10
Magnesium	8893	500	"		8868			0.281	10
Manganese	46.30	10.0	"		44.88			3.11	10
Molybdenum	< 50.0	50.0	"		4.94				10
Nickel	< 20.0	20.0	"		< 20.0				10
Potassium	3573	5000	"		3474			2.81	10
Silica (SiO2)	8312	2000	"		8554			2.87	10
Sodium	433600	2500	"		411800			5.17	10
Strontium	492.1	10.0	"		490.2			0.385	10
Vanadium	< 50.0	50.0	"		4.46				10
Zinc	< 250	250	"		12.49				10

Project: Wyoming groundwater LSR No: 1609010
 Metals (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 6J06004 - 1600418									
Serial Dilution (6J06004-SRD2)	Source: 1609010-03			Prepared: 10/05/16		Analyzed: 10/07/16			
Aluminum	< 500	500	ug/L		< 500				10
Barium	263.9	20.0	"		269.2			1.97	10
Beryllium	< 5.0	5.0	"		< 5.0				10
Boron	32.23	500	"		18.84			52.4	10
Calcium	63070	500	"		64660			2.49	10
Chromium	< 25.0	25.0	"		1.05				10
Cobalt	< 10.0	10.0	"		< 10.0				10
Copper	1.86	50.0	"		0.95			65.4	10
Iron	< 500	500	"		< 500				10
Magnesium	16260	500	"		16890			3.75	10
Manganese	< 10.0	10.0	"		< 10.0				10
Molybdenum	13.69	50.0	"		6.09			76.9	10
Nickel	< 20.0	20.0	"		< 20.0				10
Potassium	927.8	5000	"		988.3			6.32	10
Silica (SiO2)	10110	2000	"		10410			2.92	10
Sodium	5801	2500	"		6636			13.4	10
Strontium	190.7	10.0	"		195.3			2.35	10
Vanadium	15.00	50.0	"		11.93			22.8	10
Zinc	< 250	250	"		< 250				10

Project: Wyoming groundwater LSR No: 1609010
Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600413 - Default Prep Metals

Method Blank (1600413-BLK1)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	< 0.5	0.5	ug/L						
Arsenic	< 1.0	1.0	"						
Cadmium	< 0.2	0.2	"						
Lead	< 0.5	0.5	"						
Selenium	< 1.0	1.0	"						
Silver	< 0.5	0.5	"						
Thallium	< 0.5	0.5	"						
Uranium	< 0.2	0.2	"						

Method Blank (1600413-BLK2)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	< 0.5	0.5	ug/L						
Arsenic	< 1.0	1.0	"						
Cadmium	< 0.2	0.2	"						
Lead	< 0.5	0.5	"						
Selenium	< 1.0	1.0	"						
Silver	< 0.5	0.5	"						
Thallium	< 0.5	0.5	"						
Uranium	< 0.2	0.2	"						

Method Blank Spike (1600413-BS1)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	197	0.5	ug/L	200	98.3	85-115
Arsenic	92.9	1.0	"	100	92.9	85-115
Cadmium	47.9	0.2	"	50.0	95.9	85-115
Lead	98.1	0.5	"	100	98.1	85-115
Selenium	48.8	1.0	"	50.0	97.6	85-115
Silver	46.8	0.5	"	50.0	93.7	85-115
Thallium	48.4	0.5	"	50.0	96.8	85-115
Uranium	48.7	0.2	"	50.0	97.5	85-115

Project: Wyoming groundwater LSR No: 1609010
 Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600413 - Default Prep Metals

Method Blank Spike (1600413-BS2)				Prepared: 10/05/16		Analyzed: 10/06/16			
Antimony	197	0.5	ug/L	200		98.3	85-115		
Arsenic	94.0	1.0	"	100		94.0	85-115		
Cadmium	47.5	0.2	"	50.0		94.9	85-115		
Lead	97.7	0.5	"	100		97.7	85-115		
Selenium	49.5	1.0	"	50.0		99.0	85-115		
Silver	47.6	0.5	"	50.0		95.2	85-115		
Thallium	48.6	0.5	"	50.0		97.1	85-115		
Uranium	48.8	0.2	"	50.0		97.6	85-115		

Matrix Spike (1600413-MS2)				Source: 1609010-03		Prepared: 10/05/16		Analyzed: 10/06/16	
Antimony	199	0.5	ug/L	200	0.09	99.4	80-120		
Arsenic	95.5	1.0	"	100	2.15	93.3	80-120		
Cadmium	48.3	0.2	"	50.0	< 0.2	96.7	80-120		
Lead	100	0.5	"	100	< 0.5	100	80-120		
Selenium	49.7	1.0	"	50.0	0.68	98.0	80-120		
Silver	43.4	0.5	"	50.0	0.05	86.7	80-120		
Thallium	50.2	0.5	"	50.0	0.07	100	80-120		
Uranium	51.0	0.2	"	50.0	1.02	100	80-120		

Matrix Spike Dup (1600413-MSD2)				Source: 1609010-03		Prepared: 10/05/16		Analyzed: 10/06/16	
Antimony	198	0.5	ug/L	200	0.09	99.1	80-120	0.280	20
Arsenic	95.7	1.0	"	100	2.15	93.5	80-120	0.202	20
Cadmium	48.8	0.2	"	50.0	< 0.2	97.6	80-120	0.953	20
Lead	101	0.5	"	100	< 0.5	101	80-120	0.835	20
Selenium	49.8	1.0	"	50.0	0.68	98.2	80-120	0.161	20
Silver	44.2	0.5	"	50.0	0.05	88.3	80-120	1.85	20
Thallium	50.9	0.5	"	50.0	0.07	102	80-120	1.37	20
Uranium	51.1	0.2	"	50.0	1.02	100	80-120	0.136	20

Project: Wyoming groundwater LSR No: 1609010
Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600413 - Default Prep Metals

Reference (1600413-SRM1)

Prepared: 10/05/16 Analyzed: 10/06/16

Antimony	97.7	0.5	ug/L	100		97.7	80-120		
Arsenic	97.9	1.0	"	100		97.9	80-120		
Cadmium	95.0	0.2	"	100		95.0	80-120		
Lead	97.2	0.5	"	100		97.2	80-120		
Selenium	486	1.0	"	500		97.2	80-120		
Silver	93.8	0.5	"	100		93.8	80-120		
Thallium	96.7	0.5	"	100		96.7	80-120		
Uranium	98.0	0.2	"	100		98.0	80-120		

Batch 1600417 - Default Prep Metals

Method Blank (1600417-BLK1)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	< 100	100	ug/L						
Barium	< 4.0	4.0	"						
Beryllium	< 1.0	1.0	"						
Boron	< 100	100	"						
Chromium	< 5.0	5.0	"						
Cobalt	< 2.0	2.0	"						
Copper	< 5.0	5.0	"						
Iron	< 100	100	"						
Manganese	< 2.0	2.0	"						
Molybdenum	< 5.0	5.0	"						
Nickel	< 4.0	4.0	"						
Silica (SiO2)	< 400	400	"						
Strontium	< 2.0	2.0	"						
Vanadium	< 10.0	10.0	"						
Zinc	< 50.0	50.0	"						

Project: Wyoming groundwater LSR No: 1609010
Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600417 - Default Prep Metals

Method Blank (1600417-BLK2)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	< 100	100	ug/L						
Barium	< 4.0	4.0	"						
Beryllium	< 1.0	1.0	"						
Boron	< 100	100	"						
Chromium	< 5.0	5.0	"						
Cobalt	< 2.0	2.0	"						
Copper	< 5.0	5.0	"						
Iron	< 100	100	"						
Manganese	< 2.0	2.0	"						
Molybdenum	< 5.0	5.0	"						
Nickel	< 4.0	4.0	"						
Silica (SiO2)	< 400	400	"						
Strontium	< 2.0	2.0	"						
Vanadium	< 10.0	10.0	"						
Zinc	< 50.0	50.0	"						

Method Blank Spike (1600417-BS1)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	1930	100	ug/L	2000	96.7	85-115
Barium	198	4.0	"	200	99.1	85-115
Beryllium	194	1.0	"	200	96.9	85-115
Boron	273	100	"	300	91.0	85-115
Chromium	373	5.0	"	400	93.3	85-115
Cobalt	198	2.0	"	200	99.2	85-115
Copper	281	5.0	"	300	93.8	85-115
Iron	3000	100	"	3000	100	85-115
Manganese	209	2.0	"	200	105	85-115
Molybdenum	386	5.0	"	400	96.6	85-115
Nickel	485	4.0	"	500	96.9	85-115
Silica (SiO2)	2390	400	"	2000	119	85-115
Strontium	200	2.0	"	200	100	85-115
Vanadium	268	10.0	"	300	89.2	85-115
Zinc	195	50.0	"	200	97.7	85-115

Project: Wyoming groundwater LSR No: 1609010
Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600417 - Default Prep Metals

Method Blank Spike (1600417-BS2)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	1940	100	ug/L	2000		96.8	85-115		
Barium	199	4.0	"	200		99.4	85-115		
Beryllium	196	1.0	"	200		98.0	85-115		
Boron	275	100	"	300		91.8	85-115		
Chromium	376	5.0	"	400		94.1	85-115		
Cobalt	200	2.0	"	200		100	85-115		
Copper	285	5.0	"	300		95.0	85-115		
Iron	3020	100	"	3000		101	85-115		
Manganese	210	2.0	"	200		105	85-115		
Molybdenum	386	5.0	"	400		96.5	85-115		
Nickel	491	4.0	"	500		98.2	85-115		
Silica (SiO2)	2390	400	"	2000		119	85-115		
Strontium	200	2.0	"	200		100	85-115		
Vanadium	270	10.0	"	300		90.0	85-115		
Zinc	198	50.0	"	200		99.1	85-115		

Reference (1600417-SRM1)

Prepared: 10/05/16 Analyzed: 10/06/16

Aluminum	995	100	ug/L	1000		99.5	80-120		
Barium	1020	4.0	"	1000		102	80-120		
Beryllium	1020	1.0	"	1000		102	80-120		
Boron	975	100	"	1000		97.5	80-120		
Chromium	994	5.0	"	1000		99.4	80-120		
Cobalt	1050	2.0	"	1000		105	80-120		
Copper	986	5.0	"	1000		98.6	80-120		
Iron	1020	100	"	1000		102	80-120		
Manganese	1040	2.0	"	1000		104	80-120		
Molybdenum	957	5.0	"	1000		95.7	80-120		
Nickel	1030	4.0	"	1000		103	80-120		
Silica (SiO2)	5820	400	"	5000		116	80-120		
Strontium	1040	2.0	"	1000		104	80-120		
Vanadium	963	10.0	"	1000		96.3	80-120		
Zinc	1020	50.0	"	1000		102	80-120		

Project: Wyoming groundwater LSR No: 1609010
Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 6J06001 - 1600413

Serial Dilution (6J06001-SRD1)	Source: 1608010-03			Prepared: 10/05/16	Analyzed: 10/06/16
Antimony	< 2.5	2.5	ug/L	< 2.5	10
Arsenic	< 5.0	5.0	"	< 5.0	10
Cadmium	< 1.0	1.0	"	< 1.0	10
Lead	< 2.5	2.5	"	< 2.5	10
Selenium	< 5.0	5.0	"	< 5.0	10
Silver	< 2.5	2.5	"	0.05	10
Thallium	0.17	2.5	"	0.07	83.5 10
Uranium	< 1.0	1.0	"	0.02	10

Serial Dilution (6J06001-SRD2)	Source: 1608044-01			Prepared: 10/05/16	Analyzed: 10/06/16
Antimony	< 2.5	2.5	ug/L	0.06	10
Arsenic	< 5.0	5.0	"	< 5.0	10
Cadmium	< 1.0	1.0	"	0.05	10
Lead	< 2.5	2.5	"	< 2.5	10
Selenium	< 5.0	5.0	"	< 5.0	10
Silver	< 2.5	2.5	"	< 2.5	10
Thallium	< 2.5	2.5	"	< 2.5	10
Uranium	< 1.0	1.0	"	0.03	10

Batch 6J06003 - 1600417

Serial Dilution (6J06003-SRD1)	Source: 1608010-03			Prepared: 10/05/16	Analyzed: 10/06/16
Aluminum	< 500	500	ug/L	< 500	10
Barium	5.27	20.0	"	5.62	6.40 10
Beryllium	< 5.0	5.0	"	< 5.0	10
Boron	38.7	500	"	31.1	21.8 10
Chromium	< 25.0	25.0	"	0.46	10
Cobalt	< 10.0	10.0	"	0.34	10
Copper	91.2	50.0	"	93.8	2.77 10
Iron	149	500	"	130	13.4 10
Manganese	33.8	10.0	"	35.1	3.83 10
Molybdenum	14.5	50.0	"	7.25	66.8 10
Nickel	4.08	20.0	"	1.52	91.3 10
Silica (SiO2)	9910	2000	"	9860	0.458 10
Strontium	709	10.0	"	734	3.54 10
Vanadium	8.39	50.0	"	5.20	46.9 10
Zinc	< 250	250	"	< 250	10

Project: Wyoming groundwater LSR No: 1609010
Metals (Total) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 6J06003 - 1600417

Serial Dilution (6J06003-SRD2)	Source: 1608044-01			Prepared: 10/05/16		Analyzed: 10/06/16	
Aluminum	< 500	500	ug/L		44.1		10
Barium	6.46	20.0	"		8.44	26.6	10
Beryllium	< 5.0	5.0	"		< 5.0		10
Boron	197	500	"		218	10.4	10
Chromium	< 25.0	25.0	"		1.78		10
Cobalt	2.22	10.0	"		0.77	97.0	10
Copper	< 50.0	50.0	"		< 50.0		10
Iron	1240	500	"		1210	2.30	10
Manganese	58.7	10.0	"		57.4	2.20	10
Molybdenum	22.8	50.0	"		6.34	113	10
Nickel	3.46	20.0	"		2.61	27.9	10
Silica (SiO2)	16500	2000	"		16900	2.53	10
Strontium	6230	10.0	"		6420	2.93	10
Vanadium	41.9	50.0	"		14.6	96.3	10
Zinc	< 250	250	"		< 250		10

Project: Wyoming groundwater LSR No: 1609010
Hardness (Dissolved) by EPA 200 Series Methods - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600418 - Default Prep Metals

Method Blank (1600418-BLK1) Prepared: 10/05/16 Analyzed: 10/06/16

Hardness	< 1.3	1.3 mg CaCO3 /	L						
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Method Blank (1600418-BLK2) Prepared: 10/05/16 Analyzed: 10/06/16

Hardness	< 1.3	1.3 mg CaCO3 /	L						
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Duplicate (1600418-DUP2) Source: 1609010-03 Prepared: 10/05/16 Analyzed: 10/07/16

Hardness	230	1.3 mg CaCO3 /	L		231			0.478	20
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Batch 6J06004 - 1600418

Serial Dilution (6J06004-SRD1) Source: 1608029-03 Prepared: 10/05/16 Analyzed: 10/06/16

Hardness	106	6.6 mg CaCO3 /	L		104			1.79	20
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Serial Dilution (6J06004-SRD2) Source: 1609010-03 Prepared: 10/05/16 Analyzed: 10/07/16

Hardness	224	6.6 mg CaCO3 /	L		231			2.87	20
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Project: Wyoming groundwater LSR No: 1609010
Inorganic Chemistry Parameters - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600367 - Filter thru 0.45

Method Blank (1600367-BLK1)

Prepared: 09/15/16 Analyzed: 09/21/16

Chloride	< 0.20	0.20	mg/L						
Fluoride	< 0.10	0.10	"						
Sulfate as SO4	< 0.50	0.50	"						

Method Blank Spike (1600367-BS1)

Prepared: 09/15/16 Analyzed: 09/21/16

Chloride	17.2	0.20	mg/L	16.0	14.3	107	90-110		
Fluoride	8.67	0.10	"	8.00	0.04	108	90-110		
Sulfate as SO4	43.4	0.50	"	40.0	20.7	108	90-110		

Duplicate (1600367-DUP1)

Source: 1609010-03

Prepared: 09/15/16 Analyzed: 09/21/16

Chloride	14.2	0.20	mg/L	14.3				0.627	20
Fluoride	0.04	0.10	"	0.04				5.01	20
Sulfate as SO4	20.7	0.50	"	20.7				0.00242	20

Matrix Spike (1600367-MS1)

Source: 1609010-03

Prepared: 09/15/16 Analyzed: 09/21/16

Chloride	28.0	0.20	mg/L	16.0	14.3	85.7	80-120		
Fluoride	7.96	0.10	"	8.00	0.04	98.9	80-120		
Sulfate as SO4	59.6	0.50	"	40.0	20.7	97.3	80-120		

Matrix Spike Dup (1600367-MSD1)

Source: 1609010-03

Prepared: 09/15/16 Analyzed: 09/21/16

Chloride	28.9	0.20	mg/L	16.0	14.3	91.0	80-120	2.98	20
Fluoride	7.85	0.10	"	8.00	0.04	97.6	80-120	1.27	20
Sulfate as SO4	59.5	0.50	"	40.0	20.7	97.1	80-120	0.158	20

Reference (1600367-SRM1)

Prepared: 09/15/16 Analyzed: 09/21/16

Chloride	20.8	0.20	mg/L	20.0		104	0-200		
Fluoride	10.6	0.10	"	10.0		106	0-200		
Sulfate as SO4	51.9	0.50	"	50.0		104	0-200		

Project: Wyoming groundwater LSR No: 1609010
Inorganic Chemistry Parameters - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600367 - Filter thru 0.45

Reference (1600367-SRM2)			Prepared: 09/15/16 Analyzed: 09/22/16						
Chloride	20.8	0.20	mg/L	20.0		104	0-200		
Fluoride	10.8	0.10	"	10.0		108	0-200		
Sulfate as SO4	51.8	0.50	"	50.0		104	0-200		

Batch 1600377 - Default Prep GenChem

Method Blank (1600377-BLK1)			Prepared & Analyzed: 09/23/16						
Ammonia as N	< 0.025	0.025	mg/L						
Method Blank (1600377-BLK2)			Prepared & Analyzed: 09/23/16						
Ammonia as N	< 0.025	0.025	mg/L						
Method Blank Spike (1600377-BS1)			Prepared & Analyzed: 09/23/16						
Ammonia as N	0.498	0.025	mg/L	0.500		99.7	80-120		
Method Blank Spike (1600377-BS2)			Prepared & Analyzed: 09/23/16						
Ammonia as N	0.497	0.025	mg/L	0.500		99.4	80-120		
Duplicate (1600377-DUP2)		Source: 1609010-01		Prepared & Analyzed: 09/23/16					
Ammonia as N	< 0.025	0.025	mg/L	< 0.025					20
Matrix Spike (1600377-MS2)		Source: 1609010-01		Prepared & Analyzed: 09/23/16					
Ammonia as N	0.437	0.025	mg/L	0.500	< 0.025	87.4	80-120		
Matrix Spike Dup (1600377-MSD2)		Source: 1609010-01		Prepared & Analyzed: 09/23/16					
Ammonia as N	0.436	0.025	mg/L	0.500	< 0.025	87.2	80-120	0.229	20

Project: Wyoming groundwater LSR No: 1609010
Inorganic Chemistry Parameters - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600377 - Default Prep GenChem

Reference (1600377-SRM1)

Prepared & Analyzed: 09/23/16

Ammonia as N	4.79	0.125	mg/L	4.80		99.9	90-110		
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Project: Wyoming groundwater LSR No: 1609010
Volatile Organic Compounds by EPA Method 8260B - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600392 - Default Prep VOC

Method Blank (1600392-BLK1)

Prepared & Analyzed: 09/20/16

1,1,1,2-Tetrachloroethane	< 0.250	0.250	ug/L
1,1,1-Trichloroethane	< 0.250	0.250	"
1,1,2,2-Tetrachloroethane	< 0.250	0.250	"
1,1,2-Trichloroethane	< 0.250	0.250	"
1,1-Dichloroethane	< 0.250	0.250	"
1,1-Dichloroethene	< 0.250	0.250	"
1,1-Dichloropropene	< 0.250	0.250	"
1,2,3-Trichlorobenzene	< 0.250	0.250	"
1,2,3-Trichloropropane	< 0.250	0.250	"
1,2,4-Trichlorobenzene	< 0.250	0.250	"
1,2,4-Trimethylbenzene	< 0.250	0.250	"
1,2-Dibromo-3-chloropropane	< 0.250	0.250	"
1,2-Dibromoethane (EDB)	< 0.250	0.250	"
1,2-Dichlorobenzene	< 0.250	0.250	"
1,2-Dichloroethane	< 0.250	0.250	"
1,2-Dichloropropane	< 0.250	0.250	"
1,3,5-Trimethylbenzene	< 0.250	0.250	"
1,3-Dichlorobenzene	< 0.250	0.250	"
1,3-Dichloropropane	< 0.250	0.250	"
1,4-Dichlorobenzene	< 0.250	0.250	"
2,2-Dichloropropane	< 0.250	0.250	"
2-Butanone	< 0.500	0.500	"
2-Chlorotoluene	< 0.250	0.250	"
2-Hexanone	< 0.500	0.500	"
4-Chlorotoluene	< 0.250	0.250	"
4-Methyl-2-pentanone	< 0.500	0.500	"
Acetone	< 0.500	0.500	"
Acrylonitrile	< 0.250	0.250	"
Allyl chloride	< 0.250	0.250	"
Benzene	< 0.250	0.250	"
Bromobenzene	< 0.250	0.250	"
Bromochloromethane	< 0.250	0.250	"
Bromodichloromethane	< 0.250	0.250	"
Bromoform	< 0.250	0.250	"
Bromomethane	< 0.250	0.250	"
Carbon disulfide	< 0.250	0.250	"
Carbon tetrachloride	< 0.250	0.250	"
Chlorobenzene	< 0.250	0.250	"
Chlorodibromomethane	< 0.250	0.250	"
Chloroethane	< 0.250	0.250	"
Chloroform	< 0.250	0.250	"
Chloromethane	< 0.250	0.250	"
cis-1,2-Dichloroethene	< 0.250	0.250	"
cis-1,3-Dichloropropene	< 0.250	0.250	"
Dibromomethane	< 0.250	0.250	"
Dichlorodifluoromethane	< 1.00	1.00	"
Ethyl Ether	< 0.250	0.250	"
Ethylbenzene	< 0.250	0.250	"
Hexachlorobutadiene	< 0.250	0.250	"
Iodomethane	< 0.250	0.250	"
Isopropylbenzene	< 0.250	0.250	"
m,p-Xylene	< 0.500	0.500	"
Methacrylonitrile	< 0.250	0.250	"
Methyl Acrylate	< 0.250	0.250	"

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600392 - Default Prep VOC

Method Blank (1600392-BLK1)

Prepared & Analyzed: 09/20/16

Methyl tert-Butyl Ether	< 0.250	0.250	ug/L						
Methylene chloride	< 0.250	0.250	"						
Naphthalene	< 0.250	0.250	"						
n-Butyl Benzene	< 0.250	0.250	"						
n-Propyl Benzene	< 0.250	0.250	"						
o-Xylene	< 0.250	0.250	"						
p-Isopropyltoluene	< 0.250	0.250	"						
sec-Butylbenzene	< 0.250	0.250	"						
Styrene	< 0.250	0.250	"						
tert-Butylbenzene	< 0.250	0.250	"						
Tetrachloroethene	< 0.250	0.250	"						
Toluene	< 0.250	0.250	"						
trans-1,2-Dichloroethene	< 0.250	0.250	"						
trans-1,3-Dichloropropene	< 0.250	0.250	"						
Trichloroethene	< 0.250	0.250	"						
Trichlorofluoromethane	< 0.250	0.250	"						
Vinyl chloride	< 0.250	0.250	"						
Xylenes (total)	< 0.500	0.500	"						
Surrogate: 1,2-Dichloroethane-d4	5.62		"	5.00		112	70-130		
Surrogate: 4-Bromofluorobenzene	5.08		"	5.00		102	70-130		
Surrogate: Dibromofluoromethane	5.70		"	5.00		114	70-130		
Surrogate: Toluene-d8	4.78		"	5.00		95.6	70-130		

Matrix Spike (1600392-MS2)

Source: 1609010-03

Prepared: 09/20/16 Analyzed: 09/21/16

1,1,1,2-Tetrachloroethane	5.20	0.250	ug/L	5.00	< 0.250	104	70-130		
1,1,1-Trichloroethane	5.28	0.250	"	5.00	< 0.250	106	70-130		
1,1,2,2-Tetrachloroethane	4.65	0.250	"	5.00	< 0.250	93.0	70-130		
1,1,2-Trichloroethane	5.06	0.250	"	5.00	< 0.250	101	70-130		
1,1-Dichloroethane	5.24	0.250	"	5.00	< 0.250	105	70-130		
1,1-Dichloroethene	5.48	0.250	"	5.00	< 0.250	110	70-130		
1,1-Dichloropropene	5.31	0.250	"	5.00	< 0.250	106	70-130		
1,2,3-Trichlorobenzene	4.61	0.250	"	5.00	< 0.250	92.2	70-130		
1,2,3-Trichloropropane	4.60	0.250	"	5.00	< 0.250	92.0	70-130		
1,2,4-Trichlorobenzene	4.49	0.250	"	5.00	< 0.250	89.8	70-130		
1,2,4-Trimethylbenzene	5.07	0.250	"	5.00	< 0.250	101	70-130		
1,2-Dibromo-3-chloropropane	4.65	0.250	"	5.00	< 0.250	93.0	70-130		
1,2-Dibromoethane (EDB)	4.91	0.250	"	5.00	< 0.250	98.2	70-130		
1,2-Dichlorobenzene	4.71	0.250	"	5.00	< 0.250	94.2	70-130		
1,2-Dichloroethane	5.05	0.250	"	5.00	< 0.250	101	70-130		
1,2-Dichloropropane	5.09	0.250	"	5.00	< 0.250	102	70-130		
1,3,5-Trimethylbenzene	5.09	0.250	"	5.00	< 0.250	102	70-130		
1,3-Dichlorobenzene	4.97	0.250	"	5.00	< 0.250	99.4	70-130		
1,3-Dichloropropane	5.05	0.250	"	5.00	< 0.250	101	70-130		
1,4-Dichlorobenzene	4.83	0.250	"	5.00	< 0.250	96.6	70-130		
2,2-Dichloropropane	5.23	0.250	"	5.00	< 0.250	105	70-130		
2-Butanone	7.45	0.500	"	10.0	< 0.500	74.5	70-130		
2-Chlorotoluene	5.08	0.250	"	5.00	< 0.250	102	70-130		
2-Hexanone	7.99	0.500	"	10.0	< 0.500	79.9	70-130		
4-Chlorotoluene	5.20	0.250	"	5.00	< 0.250	104	70-130		
4-Methyl-2-pentanone	9.50	0.500	"	10.0	< 0.500	95.0	70-130		
Acetone	8.39	0.500	"	10.0	0.670	77.2	70-130		
Acrylonitrile	4.96	0.250	"	5.00	< 0.250	99.2	70-130		
Allyl chloride	4.72	0.250	"	5.00	< 0.250	94.4	70-130		

Project: Wyoming groundwater LSR No: 1609010
Volatile Organic Compounds by EPA Method 8260B - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600392 - Default Prep VOC

Matrix Spike (1600392-MS2)	Source: 1609010-03			Prepared: 09/20/16		Analyzed: 09/21/16	
Benzene	5.23	0.250	ug/L	5.00	< 0.250	105	70-130
Bromobenzene	4.51	0.250	"	5.00	< 0.250	90.2	70-130
Bromochloromethane	4.87	0.250	"	5.00	< 0.250	97.4	70-130
Bromodichloromethane	5.09	0.250	"	5.00	< 0.250	102	70-130
Bromoform	4.29	0.250	"	5.00	< 0.250	85.8	70-130
Bromomethane	10.3	0.250	"	10.0	< 0.250	103	70-130
Carbon disulfide	4.38	0.250	"	5.00	< 0.250	87.6	70-130
Carbon tetrachloride	5.46	0.250	"	5.00	< 0.250	109	70-130
Chlorobenzene	5.01	0.250	"	5.00	< 0.250	100	70-130
Chlorodibromomethane	4.71	0.250	"	5.00	< 0.250	94.2	70-130
Chloroethane	11.0	0.250	"	10.0	< 0.250	110	70-130
Chloroform	5.26	0.250	"	5.00	< 0.250	105	70-130
Chloromethane	10.8	0.250	"	10.0	< 0.250	108	70-130
cis-1,2-Dichloroethene	5.03	0.250	"	5.00	< 0.250	101	70-130
cis-1,3-Dichloropropene	4.62	0.250	"	5.00	< 0.250	92.4	70-130
Dibromomethane	4.95	0.250	"	5.00	< 0.250	99.0	70-130
Dichlorodifluoromethane	16.4	1.00	"	10.0	< 1.00	164	70-130
Ethyl Ether	4.83	0.250	"	5.00	< 0.250	96.6	70-130
Ethylbenzene	5.28	0.250	"	5.00	< 0.250	106	70-130
Hexachlorobutadiene	4.59	0.250	"	5.00	< 0.250	91.8	70-130
Iodomethane	5.04	0.250	"	5.00	< 0.250	101	70-130
Isopropylbenzene	5.40	0.250	"	5.00	< 0.250	108	70-130
m,p-Xylene	10.8	0.500	"	10.0	< 0.500	108	70-130
Methacrylonitrile	5.13	0.250	"	5.00	< 0.250	103	70-130
Methyl Acrylate	4.82	0.250	"		< 0.250		70-130
Methyl tert-Butyl Ether	4.72	0.250	"	5.00	< 0.250	94.4	70-130
Methylene chloride	4.92	0.250	"	5.00	< 0.250	98.4	70-130
Naphthalene	4.57	0.250	"	5.00	< 0.250	91.4	70-130
n-Butyl Benzene	5.27	0.250	"	5.00	< 0.250	105	70-130
n-Propyl Benzene	5.10	0.250	"		< 0.250		70-130
o-Xylene	5.08	0.250	"	5.00	< 0.250	102	70-130
p-Isopropyltoluene	5.46	0.250	"	5.00	< 0.250	109	70-130
sec-Butylbenzene	5.62	0.250	"	5.00	< 0.250	112	70-130
Styrene	4.70	0.250	"	5.00	< 0.250	94.0	70-130
tert-Butylbenzene	5.23	0.250	"	5.00	< 0.250	105	70-130
Tetrachloroethene	4.96	0.250	"	5.00	< 0.250	99.2	70-130
Toluene	5.10	0.250	"	5.00	< 0.250	102	70-130
trans-1,2-Dichloroethene	5.21	0.250	"	5.00	< 0.250	104	70-130
trans-1,3-Dichloropropene	4.63	0.250	"	5.00	< 0.250	92.6	70-130
Trichloroethene	5.01	0.250	"	5.00	< 0.250	100	70-130
Trichlorofluoromethane	12.8	0.250	"	10.0	< 0.250	128	70-130
Vinyl chloride	12.4	0.250	"	10.0	< 0.250	124	70-130
Xylenes (total)	15.9	0.500	"	15.0	0.00	106	70-130
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>5.15</i>		<i>"</i>	<i>5.00</i>		<i>103</i>	<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>4.67</i>		<i>"</i>	<i>5.00</i>		<i>93.4</i>	<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>5.09</i>		<i>"</i>	<i>5.00</i>		<i>102</i>	<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>4.99</i>		<i>"</i>	<i>5.00</i>		<i>99.8</i>	<i>70-130</i>

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600392 - Default Prep VOC									
Matrix Spike Dup (1600392-MSD2)	Source: 1609010-03			Prepared: 09/20/16		Analyzed: 09/21/16			
1,1,1,2-Tetrachloroethane	5.19	0.250	ug/L	5.00	< 0.250	104	70-130	0.192	25
1,1,1-Trichloroethane	5.17	0.250	"	5.00	< 0.250	103	70-130	2.11	25
1,1,2,2-Tetrachloroethane	4.70	0.250	"	5.00	< 0.250	94.0	70-130	1.07	25
1,1,2-Trichloroethane	5.03	0.250	"	5.00	< 0.250	101	70-130	0.595	25
1,1-Dichloroethane	5.19	0.250	"	5.00	< 0.250	104	70-130	0.959	25
1,1-Dichloroethene	5.45	0.250	"	5.00	< 0.250	109	70-130	0.549	25
1,1-Dichloropropene	5.40	0.250	"	5.00	< 0.250	108	70-130	1.68	25
1,2,3-Trichlorobenzene	4.79	0.250	"	5.00	< 0.250	95.8	70-130	3.83	25
1,2,3-Trichloropropane	4.69	0.250	"	5.00	< 0.250	93.8	70-130	1.94	25
1,2,4-Trichlorobenzene	4.66	0.250	"	5.00	< 0.250	93.2	70-130	3.72	25
1,2,4-Trimethylbenzene	5.08	0.250	"	5.00	< 0.250	102	70-130	0.197	25
1,2-Dibromo-3-chloropropane	4.72	0.250	"	5.00	< 0.250	94.4	70-130	1.49	25
1,2-Dibromoethane (EDB)	4.90	0.250	"	5.00	< 0.250	98.0	70-130	0.204	25
1,2-Dichlorobenzene	4.76	0.250	"	5.00	< 0.250	95.2	70-130	1.06	25
1,2-Dichloroethane	4.96	0.250	"	5.00	< 0.250	99.2	70-130	1.80	25
1,2-Dichloropropane	5.06	0.250	"	5.00	< 0.250	101	70-130	0.591	25
1,3,5-Trimethylbenzene	5.19	0.250	"	5.00	< 0.250	104	70-130	1.95	25
1,3-Dichlorobenzene	5.05	0.250	"	5.00	< 0.250	101	70-130	1.60	25
1,3-Dichloropropane	5.05	0.250	"	5.00	< 0.250	101	70-130	0.00	25
1,4-Dichlorobenzene	4.90	0.250	"	5.00	< 0.250	98.0	70-130	1.44	25
2,2-Dichloropropane	5.14	0.250	"	5.00	< 0.250	103	70-130	1.74	25
2-Butanone	7.64	0.500	"	10.0	< 0.500	76.4	70-130	2.52	25
2-Chlorotoluene	5.28	0.250	"	5.00	< 0.250	106	70-130	3.86	25
2-Hexanone	8.17	0.500	"	10.0	< 0.500	81.7	70-130	2.23	25
4-Chlorotoluene	5.36	0.250	"	5.00	< 0.250	107	70-130	3.03	25
4-Methyl-2-pentanone	9.79	0.500	"	10.0	< 0.500	97.9	70-130	3.01	25
Acetone	8.75	0.500	"	10.0	0.670	80.8	70-130	4.20	25
Acrylonitrile	5.01	0.250	"	5.00	< 0.250	100	70-130	1.00	25
Allyl chloride	4.75	0.250	"	5.00	< 0.250	95.0	70-130	0.634	25
Benzene	5.21	0.250	"	5.00	< 0.250	104	70-130	0.383	25
Bromobenzene	4.64	0.250	"	5.00	< 0.250	92.8	70-130	2.84	25
Bromochloromethane	4.82	0.250	"	5.00	< 0.250	96.4	70-130	1.03	25
Bromodichloromethane	5.00	0.250	"	5.00	< 0.250	100	70-130	1.78	25
Bromoform	4.28	0.250	"	5.00	< 0.250	85.6	70-130	0.233	25
Bromomethane	9.98	0.250	"	10.0	< 0.250	99.8	70-130	3.35	25
Carbon disulfide	4.29	0.250	"	5.00	< 0.250	85.8	70-130	2.08	25
Carbon tetrachloride	5.33	0.250	"	5.00	< 0.250	107	70-130	2.41	25
Chlorobenzene	5.03	0.250	"	5.00	< 0.250	101	70-130	0.398	25
Chlorodibromomethane	4.70	0.250	"	5.00	< 0.250	94.0	70-130	0.213	25
Chloroethane	10.6	0.250	"	10.0	< 0.250	106	70-130	3.51	25
Chloroform	5.19	0.250	"	5.00	< 0.250	104	70-130	1.34	25
Chloromethane	10.8	0.250	"	10.0	< 0.250	108	70-130	0.741	25
cis-1,2-Dichloroethene	5.05	0.250	"	5.00	< 0.250	101	70-130	0.397	25
cis-1,3-Dichloropropene	4.73	0.250	"	5.00	< 0.250	94.6	70-130	2.35	25
Dibromomethane	4.84	0.250	"	5.00	< 0.250	96.8	70-130	2.25	25
Dichlorodifluoromethane	15.9	1.00	"	10.0	< 1.00	159	70-130	3.04	25
Ethyl Ether	5.05	0.250	"	5.00	< 0.250	101	70-130	4.45	25
Ethylbenzene	5.39	0.250	"	5.00	< 0.250	108	70-130	2.06	25
Hexachlorobutadiene	4.78	0.250	"	5.00	< 0.250	95.6	70-130	4.06	25
Iodomethane	4.97	0.250	"	5.00	< 0.250	99.4	70-130	1.40	25
Isopropylbenzene	5.57	0.250	"	5.00	< 0.250	111	70-130	3.10	25
m,p-Xylene	11.3	0.500	"	10.0	< 0.500	113	70-130	4.08	25
Methacrylonitrile	5.20	0.250	"	5.00	< 0.250	104	70-130	1.36	25
Methyl Acrylate	4.96	0.250	"	< 0.250			70-130	2.86	25

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600392 - Default Prep VOC

Matrix Spike Dup (1600392-MSD2)	Source: 1609010-03			Prepared: 09/20/16	Analyzed: 09/21/16				
Methyl tert-Butyl Ether	4.88	0.250	ug/L	5.00	< 0.250	97.6	70-130	3.33	25
Methylene chloride	4.82	0.250	"	5.00	< 0.250	96.4	70-130	2.05	25
Naphthalene	4.79	0.250	"	5.00	< 0.250	95.8	70-130	4.70	25
n-Butyl Benzene	5.46	0.250	"	5.00	< 0.250	109	70-130	3.54	25
n-Propyl Benzene	5.31	0.250	"		< 0.250		70-130	4.03	25
o-Xylene	5.21	0.250	"	5.00	< 0.250	104	70-130	2.53	25
p-Isopropyltoluene	5.64	0.250	"	5.00	< 0.250	113	70-130	3.24	25
sec-Butylbenzene	5.79	0.250	"	5.00	< 0.250	116	70-130	2.98	25
Styrene	4.56	0.250	"	5.00	< 0.250	91.2	70-130	3.02	25
tert-Butylbenzene	5.48	0.250	"	5.00	< 0.250	110	70-130	4.67	25
Tetrachloroethene	4.99	0.250	"	5.00	< 0.250	99.8	70-130	0.603	25
Toluene	5.17	0.250	"	5.00	< 0.250	103	70-130	1.36	25
trans-1,2-Dichloroethene	5.20	0.250	"	5.00	< 0.250	104	70-130	0.192	25
trans-1,3-Dichloropropene	4.67	0.250	"	5.00	< 0.250	93.4	70-130	0.860	25
Trichloroethene	4.99	0.250	"	5.00	< 0.250	99.8	70-130	0.400	25
Trichlorofluoromethane	12.3	0.250	"	10.0	< 0.250	123	70-130	3.66	25
Vinyl chloride	12.1	0.250	"	10.0	< 0.250	121	70-130	2.77	25
Xylenes (total)	16.5	0.500	"	15.0	0.00	110	70-130	3.58	25
Surrogate: 1,2-Dichloroethane-d4	5.04		"	5.00		101	70-130		
Surrogate: 4-Bromofluorobenzene	4.78		"	5.00		95.6	70-130		
Surrogate: Dibromofluoromethane	4.97		"	5.00		99.4	70-130		
Surrogate: Toluene-d8	5.05		"	5.00		101	70-130		

Trip Blank (1609010-05)

Prepared & Analyzed: 09/20/16

1,1,1,2-Tetrachloroethane	< 0.250	0.250	ug/L						
1,1,1-Trichloroethane	< 0.250	0.250	"						
1,1,2,2-Tetrachloroethane	< 0.250	0.250	"						
1,1,2-Trichloroethane	< 0.250	0.250	"						
1,1-Dichloroethane	< 0.250	0.250	"						
1,1-Dichloroethene	< 0.250	0.250	"						
1,1-Dichloropropene	< 0.250	0.250	"						
1,2,3-Trichlorobenzene	< 0.250	0.250	"						
1,2,3-Trichloropropane	< 0.250	0.250	"						
1,2,4-Trichlorobenzene	< 0.250	0.250	"						
1,2,4-Trimethylbenzene	< 0.250	0.250	"						
1,2-Dibromo-3-chloropropane	< 0.250	0.250	"						
1,2-Dibromoethane (EDB)	< 0.250	0.250	"						
1,2-Dichlorobenzene	< 0.250	0.250	"						
1,2-Dichloroethane	< 0.250	0.250	"						
1,2-Dichloropropane	< 0.250	0.250	"						
1,3,5-Trimethylbenzene	< 0.250	0.250	"						
1,3-Dichlorobenzene	< 0.250	0.250	"						
1,3-Dichloropropane	< 0.250	0.250	"						
1,4-Dichlorobenzene	< 0.250	0.250	"						
2,2-Dichloropropane	< 0.250	0.250	"						
2-Butanone	< 0.500	0.500	"						
2-Chlorotoluene	< 0.250	0.250	"						
2-Hexanone	< 0.500	0.500	"						
4-Chlorotoluene	< 0.250	0.250	"						
4-Methyl-2-pentanone	< 0.500	0.500	"						
Acetone	1.44	0.500	"						
Acrylonitrile	< 0.250	0.250	"						
Allyl chloride	< 0.250	0.250	"						

Volatile Organic Compounds by EPA Method 8260B - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600392 - Default Prep VOC									
Trip Blank (1609010-05)				Prepared & Analyzed: 09/20/16					
Benzene	< 0.250	0.250	ug/L						
Bromobenzene	< 0.250	0.250	"						
Bromochloromethane	< 0.250	0.250	"						
Bromodichloromethane	< 0.250	0.250	"						
Bromoform	< 0.250	0.250	"						
Bromomethane	< 0.250	0.250	"						
Carbon disulfide	< 0.250	0.250	"						
Carbon tetrachloride	< 0.250	0.250	"						
Chlorobenzene	< 0.250	0.250	"						
Chlorodibromomethane	< 0.250	0.250	"						
Chloroethane	< 0.250	0.250	"						
Chloroform	< 0.250	0.250	"						
Chloromethane	< 0.250	0.250	"						
cis-1,2-Dichloroethene	< 0.250	0.250	"						
cis-1,3-Dichloropropene	< 0.250	0.250	"						
Dibromomethane	< 0.250	0.250	"						
Dichlorodifluoromethane	< 1.00	1.00	"						
Ethyl Ether	< 0.250	0.250	"						
Ethylbenzene	< 0.250	0.250	"						
Hexachlorobutadiene	< 0.250	0.250	"						
Iodomethane	< 0.250	0.250	"						
Isopropylbenzene	< 0.250	0.250	"						
m,p-Xylene	< 0.500	0.500	"						
Methacrylonitrile	< 0.250	0.250	"						
Methyl Acrylate	< 0.250	0.250	"						
Methyl tert-Butyl Ether	< 0.250	0.250	"						
Methylene chloride	< 0.250	0.250	"						
Naphthalene	< 0.250	0.250	"						
n-Butyl Benzene	< 0.250	0.250	"						
n-Propyl Benzene	< 0.250	0.250	"						
o-Xylene	< 0.250	0.250	"						
p-Isopropyltoluene	< 0.250	0.250	"						
sec-Butylbenzene	< 0.250	0.250	"						
Styrene	< 0.250	0.250	"						
tert-Butylbenzene	< 0.250	0.250	"						
Tetrachloroethene	< 0.250	0.250	"						
Toluene	< 0.250	0.250	"						
trans-1,2-Dichloroethene	< 0.250	0.250	"						
trans-1,3-Dichloropropene	< 0.250	0.250	"						
Trichloroethene	< 0.250	0.250	"						
Trichlorofluoromethane	< 0.250	0.250	"						
Vinyl chloride	< 0.250	0.250	"						
Xylenes (total)	< 0.500	0.500	"						
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.45		"	5.00		109	70-130		
<i>Surrogate: 4-Bromofluorobenzene</i>	5.13		"	5.00		103	70-130		
<i>Surrogate: Dibromofluoromethane</i>	5.33		"	5.00		107	70-130		
<i>Surrogate: Toluene-d8</i>	4.73		"	5.00		94.6	70-130		

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600392 - Default Prep VOC									
Holding Blank (1609010-06)				Prepared & Analyzed: 09/20/16					
1,1,1,2-Tetrachloroethane	< 0.250	0.250	ug/L						
1,1,1-Trichloroethane	< 0.250	0.250	"						
1,1,2,2-Tetrachloroethane	< 0.250	0.250	"						
1,1,2-Trichloroethane	< 0.250	0.250	"						
1,1-Dichloroethane	< 0.250	0.250	"						
1,1-Dichloroethene	< 0.250	0.250	"						
1,1-Dichloropropene	< 0.250	0.250	"						
1,2,3-Trichlorobenzene	< 0.250	0.250	"						
1,2,3-Trichloropropane	< 0.250	0.250	"						
1,2,4-Trichlorobenzene	< 0.250	0.250	"						
1,2,4-Trimethylbenzene	< 0.250	0.250	"						
1,2-Dibromo-3-chloropropane	< 0.250	0.250	"						
1,2-Dibromoethane (EDB)	< 0.250	0.250	"						
1,2-Dichlorobenzene	< 0.250	0.250	"						
1,2-Dichloroethane	< 0.250	0.250	"						
1,2-Dichloropropane	< 0.250	0.250	"						
1,3,5-Trimethylbenzene	< 0.250	0.250	"						
1,3-Dichlorobenzene	< 0.250	0.250	"						
1,3-Dichloropropane	< 0.250	0.250	"						
1,4-Dichlorobenzene	< 0.250	0.250	"						
2,2-Dichloropropane	< 0.250	0.250	"						
2-Butanone	< 0.500	0.500	"						
2-Chlorotoluene	< 0.250	0.250	"						
2-Hexanone	< 0.500	0.500	"						
4-Chlorotoluene	< 0.250	0.250	"						
4-Methyl-2-pentanone	< 0.500	0.500	"						
Acetone	1.41	0.500	"						
Acrylonitrile	< 0.250	0.250	"						
Allyl chloride	< 0.250	0.250	"						
Benzene	< 0.250	0.250	"						
Bromobenzene	< 0.250	0.250	"						
Bromochloromethane	< 0.250	0.250	"						
Bromodichloromethane	< 0.250	0.250	"						
Bromoform	< 0.250	0.250	"						
Bromomethane	< 0.250	0.250	"						
Carbon disulfide	< 0.250	0.250	"						
Carbon tetrachloride	< 0.250	0.250	"						
Chlorobenzene	< 0.250	0.250	"						
Chlorodibromomethane	< 0.250	0.250	"						
Chloroethane	< 0.250	0.250	"						
Chloroform	< 0.250	0.250	"						
Chloromethane	< 0.250	0.250	"						
cis-1,2-Dichloroethene	< 0.250	0.250	"						
cis-1,3-Dichloropropene	< 0.250	0.250	"						
Dibromomethane	< 0.250	0.250	"						
Dichlorodifluoromethane	< 1.00	1.00	"						
Ethyl Ether	< 0.250	0.250	"						
Ethylbenzene	< 0.250	0.250	"						
Hexachlorobutadiene	< 0.250	0.250	"						
Iodomethane	< 0.250	0.250	"						
Isopropylbenzene	< 0.250	0.250	"						
m,p-Xylene	< 0.500	0.500	"						
Methacrylonitrile	< 0.250	0.250	"						
Methyl Acrylate	< 0.250	0.250	"						

Project: Wyoming groundwater LSR No: 1609010
 Volatile Organic Compounds by EPA Method 8260B - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600392 - Default Prep VOC

Holding Blank (1609010-06)			Prepared & Analyzed: 09/20/16						
Methyl tert-Butyl Ether	< 0.250	0.250	ug/L						
Methylene chloride	< 0.250	0.250	"						
Naphthalene	< 0.250	0.250	"						
n-Butyl Benzene	< 0.250	0.250	"						
n-Propyl Benzene	< 0.250	0.250	"						
o-Xylene	< 0.250	0.250	"						
p-Isopropyltoluene	< 0.250	0.250	"						
sec-Butylbenzene	< 0.250	0.250	"						
Styrene	< 0.250	0.250	"						
tert-Butylbenzene	< 0.250	0.250	"						
Tetrachloroethene	< 0.250	0.250	"						
Toluene	< 0.250	0.250	"						
trans-1,2-Dichloroethene	< 0.250	0.250	"						
trans-1,3-Dichloropropene	< 0.250	0.250	"						
Trichloroethene	< 0.250	0.250	"						
Trichlorofluoromethane	< 0.250	0.250	"						
Vinyl chloride	< 0.250	0.250	"						
Xylenes (total)	< 0.500	0.500	"						
Surrogate: 1,2-Dichloroethane-d4	5.45		"	5.00		109	70-130		
Surrogate: 4-Bromofluorobenzene	5.09		"	5.00		102	70-130		
Surrogate: Dibromofluoromethane	5.48		"	5.00		110	70-130		
Surrogate: Toluene-d8	4.74		"	5.00		94.8	70-130		

Project: Wyoming groundwater LSR No: 1609010
 TVPH/BTEX/MTBE/Naphthalene by GC PID/FID - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600375 - EPA 5030B-R8									
Method Blank (1600375-BLK1)				Prepared & Analyzed: 09/19/16					
Benzene	< 1.0	1.0	ug/L						
Ethyl Benzene	< 1.0	1.0	"						
m,p-Xylene	< 2.0	2.0	"						
Methyl tert-Butyl Ether	< 1.0	1.0	"						
Naphthalene	< 2.0	2.0	"						
o-Xylene	< 1.0	1.0	"						
Toluene	< 1.0	1.0	"						
TPH as Gasoline	< 20.0	20.0	"						
Surrogate: Bromofluorobenzene	52.7		"	50.0		105	70-130		
Matrix Spike (1600375-MS3)				Source: 1609010-03		Prepared: 09/19/16		Analyzed: 09/20/16	
TPH as Gasoline	995	20.0	ug/L	1000	< 20.0	99.5	70-130		
Surrogate: Bromofluorobenzene	53.2		"	50.0		106	70-130		
Matrix Spike (1600375-MS4)				Source: 1609010-03		Prepared: 09/19/16		Analyzed: 09/20/16	
Benzene	49.9	1.0	ug/L	50.0	< 1.0	99.7	70-130		
Ethyl Benzene	50.7	1.0	"	50.0	< 1.0	101	70-130		
m,p-Xylene	101	2.0	"	100	< 2.0	101	70-130		
Methyl tert-Butyl Ether	46.1	1.0	"	50.0	< 1.0	92.2	70-130		
Naphthalene	51.8	2.0	"	50.0	< 2.0	104	70-130		
o-Xylene	50.3	1.0	"	50.0	< 1.0	101	70-130		
Toluene	49.7	1.0	"	50.0	< 1.0	99.5	70-130		
Surrogate: Bromofluorobenzene	50.4		"	50.0		101	70-130		
Matrix Spike Dup (1600375-MSD3)				Source: 1609010-03		Prepared: 09/19/16		Analyzed: 09/20/16	
TPH as Gasoline	980	20.0	ug/L	1000	< 20.0	98.0	70-130	1.51	25
Surrogate: Bromofluorobenzene	52.6		"	50.0		105	70-130		

Project: Wyoming groundwater LSR No: 1609010
 TVPH/BTEX/MTBE/Naphthalene by GC PID/FID - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
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Batch 1600375 - EPA 5030B-R8

Matrix Spike Dup (1600375-MSD4)	Source: 1609010-03			Prepared: 09/19/16	Analyzed: 09/20/16				
Benzene	50.9	1.0	ug/L	50.0	< 1.0	102	70-130	2.15	25
Ethyl Benzene	51.3	1.0	"	50.0	< 1.0	103	70-130	1.06	25
m,p-Xylene	102	2.0	"	100	< 2.0	102	70-130	1.28	25
Methyl tert-Butyl Ether	45.5	1.0	"	50.0	< 1.0	91.0	70-130	1.30	25
Naphthalene	53.8	2.0	"	50.0	< 2.0	108	70-130	3.93	25
o-Xylene	51.0	1.0	"	50.0	< 1.0	102	70-130	1.29	25
Toluene	50.6	1.0	"	50.0	< 1.0	101	70-130	1.75	25
Surrogate: Bromofluorobenzene	50.3		"	50.0		101	70-130		

Reference (1600375-SRM1)	Prepared & Analyzed: 09/19/16								
TPH as Gasoline	1820	20.0	ug/L	1740		105	70-130		
Surrogate: Bromofluorobenzene	56.9		"	50.0		114	70-130		

Reference (1600375-SRM2)	Prepared & Analyzed: 09/19/16								
Benzene	14.3	1.0	ug/L	14.8		96.4	70-130		
Ethyl Benzene	78.3	1.0	"	78.0		100	70-130		
m,p-Xylene	42.7	2.0	"	41.0		104	70-130		
Methyl tert-Butyl Ether	50.9	1.0	"	50.0		102	70-130		
Naphthalene	53.3	2.0	"	50.0		107	70-130		
o-Xylene	34.2	1.0	"	33.5		102	70-130		
Toluene	45.9	1.0	"	46.5		98.7	70-130		
Surrogate: Bromofluorobenzene	50.7		"	50.0		101	70-130		

Trip Blank (1609010-05)	Prepared: 09/19/16 Analyzed: 09/20/16								
Benzene	< 1.0	1.0	ug/L						
Ethyl Benzene	< 1.0	1.0	"						
m,p-Xylene	< 2.0	2.0	"						
Methyl tert-Butyl Ether	< 1.0	1.0	"						
Naphthalene	< 2.0	2.0	"						
o-Xylene	< 1.0	1.0	"						
Toluene	< 1.0	1.0	"						
TPH as Gasoline	< 20.0	20.0	"						
Surrogate: Bromofluorobenzene	50.5		"	50.0		101	70-130		

Project: Wyoming groundwater LSR No: 1609010
 TVPH/BTEX/MTBE/Naphthalene by GC PID/FID - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600375 - EPA 5030B-R8									
Holding Blank (1609010-06)				Prepared: 09/19/16 Analyzed: 09/20/16					
Benzene	< 1.0	1.0	ug/L						
Ethyl Benzene	< 1.0	1.0	"						
m,p-Xylene	< 2.0	2.0	"						
Methyl tert-Butyl Ether	< 1.0	1.0	"						
Naphthalene	< 2.0	2.0	"						
o-Xylene	< 1.0	1.0	"						
Toluene	< 1.0	1.0	"						
TPH as Gasoline	< 20.0	20.0	"						
Surrogate: Bromofluorobenzene	50.7		"	50.0		101	70-130		

Project: Wyoming groundwater LSR No: 1609010
 Extractable Petroleum Hydrocarbons by 8015 DRO - Quality Control

Certificate of Analysis

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch 1600373 - EPA 3520C									
Method Blank (1600373-BLK1)				Prepared: 09/19/16 Analyzed: 09/29/16					
Diesel range organics	< 20.0	20.0	ug/L						
Surrogate: <i>o</i> -Terphenyl	4.83		"	5.00		96.6	60-140		
Matrix Spike (1600373-MS2)				Source: 1609010-03		Prepared: 09/19/16 Analyzed: 09/30/16			
Diesel range organics	120	20.0	ug/L	100	< 20.0	120	60-120		
Surrogate: <i>o</i> -Terphenyl	5.09		"	5.00		102	60-140		
Matrix Spike Dup (1600373-MSD2)				Source: 1609010-03		Prepared: 09/19/16 Analyzed: 09/30/16			
Diesel range organics	121	20.0	ug/L	100	< 20.0	121	60-120	0.874	25
Surrogate: <i>o</i> -Terphenyl	5.10		"	5.00		102	60-140		
Reference (1600373-SRM1)				Prepared: 09/19/16 Analyzed: 09/29/16					
Diesel range organics	162	20.0	ug/L	178		91.1	60-140		
Surrogate: <i>o</i> -Terphenyl	4.72		"	5.00		94.5	60-140		

NOTE:
 %REC is percent recovery, Result (less sample contribution) divided by the Spike Level
 RPD is the Relative Percent Difference (difference between the Result and the Source Result) divided by their average



US ENVIRONMENTAL PROTECTION AGENCY REGION 8 - Chain Of Custody

Region 8 Laboratory
16194 W 45th Drive
Golden, CO 80403
Fax: 303.312.7800

PROJECT NAME Wyoming Groundwater		LSR # 1609010		COMMENTS	
NAME: <i>CHES ROSSIGNOL</i>		SIGNATURE: <i>[Signature]</i>		DATE: <i>9/15/16</i>	
STATION ID: <i>4117</i>		STATION-BEFORE/NOTES: <i>54105314K01</i>		DATE: <i>9/12/16</i>	
DATE: <i>9/10/16</i>		TIME: <i>12:00</i>		LAB ID:	
1. Requested By: <i>[Signature]</i>		2. Received By: <i>[Signature]</i>		3. Requested By: <i>[Signature]</i>	
DATE/TIME: <i>9/15/16 @ 12:00</i>		DATE/TIME: <i>9/14/16 12:00</i>		DATE/TIME: <i>9/15/16 @ 10:15</i>	
PRESERVATIVES: 1-INO ₃ , 2-H ₂ SO ₄ , 3-NH ₄ OH, 4-DCI, 5-Hg, SO ₂ , 7-ice, 8-Other		MATRIX: W-4, W-2, W-7, W-4, W-4, W-1, W-1		ANALYSIS: 8260 Frac 2018, Ammonia -R8, Anions by cap IC, Diesel - low, Gas - low, Dissolved Metals & Hardne, Total Metals	
DATE/TIME: <i>9-10-16 @ 10:15</i>		DATE/TIME: <i>9/14/16 12:00</i>		DATE/TIME: <i>9-10-16 @ 10:15</i>	
4118 09105321701		9/14/16 12:00		1.92	
W-4		X		3	
W-2		X		1	
W-7		X		1	
W-4		X		1	
W-4		X		1	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	
W-1		X		1	
W-1		X		1	
W-4		X		3	
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W-1		X		1	
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W-4		X		3	
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W-1		X		1	
W-1		X		1	
W-4		X		3	
W-4		X		3	



US ENVIRONMENTAL PROTECTION AGENCY REGION 8 - Chain Of Custody

Region 8 Laboratory
16194 W. 48th Drive
Golden, CO 80403
Fax: 303-412-7800

PROJECT NAME:

Wyoming Groundwater

LSR #

1609010

SAMPLER(S):

Name: MES BOLSON Signature: [Signature]
Date: 9/15/18

STATION ID: STATION DESCRIPTION + NOTES

DATE: TIME:

MATRIX	PRESERVATIVE	ANALYSIS	NUMBER OF CONTAINERS	COMMENTS
W	1	8260 Frac 2016	1	1609010-Q1 G
W	4	Ammonia -RB	1	1609010-Q4 A
W	2	Anions by cap IC	1	1609010-Q4 B
W	7	Diesel - low	1	1609010-Q4 C
W	4	Gas - low	1	1609010-Q4 D
W	4	Dissolved Metals & Hardness	3	1609010-Q4 E
W	1	Total Metals	1	1609010-Q4 F
W	1		1	1609010-Q4 G
W	4		3	1609010-Q4 A
W	4		3	1609010-Q4 B
W	4		3	1609010-Q4 C
W	4		3	1609010-Q4 D
W	4		3	1609010-Q4 E
W	4		3	1609010-Q4 F
W	4		3	1609010-Q4 G

TRIP BLANK: 6/30/2016 1100
 HOLDING BLANK: 6/30/2016 1100

4/18 09/10/5 32/701
 4/18 09/10/5 32/701
 4/18 09/10/5 32/701

1-Received By: [Signature] Date/Time: 9/15/18 @ 12:00
 2-Received By: [Signature] Date/Time: 9/15/18 @ 12:00
 3-Received By: [Signature] Date/Time: 9/15/18 @ 12:00

PREPARED BY: 1-180, 2-180, 3-NCH, 4-NCI
 5-NA, 6-DR, 7-DR, 8-DR, 9-DR, 10-DR, 11-DR, 12-DR

MAATRIX: W- Water, S- Sol, Sp- Spill, Bn- Bn, T- Tissue, O- Other

Cover Temp: 1.9°C

Appendix A - Exceptions Report

<u>Lab Number</u>	<u>Sample Name</u>	<u>Analysis</u>	<u>Analyte Name</u>	<u>Explanation</u>
1609010-01	411754105314601	8260 Frac 2016	Acetone	Blank contamination
1609010-01	411754105314601	8260 Frac 2016	Acetone	Initial calibration criteria not met - low
1609010-01	411754105314601	ICP Dissolved Metals -R8	Vanadium	Control sample acceptance criteria not met - low
1609010-01	411754105314601	ICP Total Metals -R8	Silica (SiO2)	Control sample acceptance criteria not met - high
1609010-02	411754105314601	8260 Frac 2016	Acetone	Initial calibration criteria not met - low
1609010-02	411754105314601	ICP Dissolved Metals -R8	Vanadium	Control sample acceptance criteria not met - low
1609010-02	411754105314601	ICP Total Metals -R8	Silica (SiO2)	Control sample acceptance criteria not met - high
1609010-03	411809105321701	8260 Frac 2016	Acetone	Blank contamination
1609010-03	411809105321701	8260 Frac 2016	Acetone	Initial calibration criteria not met - low
1609010-03	411809105321701	Diesel-Low-1000ml	Diesel range organics	Matrix spike duplicate acceptance criteria not met - high
1609010-03	411809105321701	ICP Dissolved Metals -R8	Vanadium	Control sample acceptance criteria not met - low
1609010-03	411809105321701	ICP Total Metals -R8	Silica (SiO2)	Control sample acceptance criteria not met - high
1609010-05	Trip Blank	8260 Frac 2016	Acetone	Blank contamination
1609010-05	Trip Blank	8260 Frac 2016	Acetone	Initial calibration criteria not met - low
1609010-06	Holding Blank	8260 Frac 2016	Acetone	Blank contamination
1609010-06	Holding Blank	8260 Frac 2016	Acetone	Initial calibration criteria not met - low

Project: Wyoming groundwater LSR No: 1609010

Certificate of Analysis

Appendix B - Samples and Analysis

<u>Work Order #</u>	<u># Samples</u>	<u>Analysis</u>	<u>Method Name</u>	<u>Lab SOP</u>
1609010	3	8260 Frac 2016	EPA 8260B	ORGM-501v12_8260C
1609010	3	Ammonia -R8	EPA 350.1	INORM-316v12_NH3-N
1609010	3	Anions by cap IC	EPA 300.0	INORM-004v12_Anions -ICS5000
1609010	3	Diesel-Low-1000ml	EPA 8015	ORGM-508v14_Diesel
1609010	3	Gasoline-Low	8021/8015	ORGM-506v13_ BTEX_80218015
1609010	3	Hardness -R8	SM 2340B	Draft SOP
1609010	3	ICP Dissolved Metals -R8	200.7/6010	METLM-004v10_Optim a8300_ICP-OE
1609010	3	ICP Total Metals -R8	200.7/6010	METLM-004v10_Optim a8300_ICP-OE
1609010	3	ICP-MS dissolved metals - R8 2015	200.8/6020	METLM-003v10_ICP- MS_NexION350D
1609010	3	ICP-MS total metals - R8 2015	200.8/6020	METLM-003v10_ICP- MS_NexION350D

Appendix C - Data Assessment Guidelines

QC Check (Symbol)	Flagging Criteria
Initial Calibration (ICAL)	All failing analytes for all samples are qualified as estimated.
Initial Calibration Verification (ICV) or Standard Reference Material (SRM)	High failure: All detections for failing analytes for all samples are qualified as estimated. Low failure: All failing analytes for all samples are qualified as estimated.
Continuing Calibration Verification (CCV)	High failure: All detections for failing analytes for all associated samples are qualified as estimated. Low failure: All failing analytes for all associated samples are qualified as estimated.
Continuing Calibration Blank (CCB)	All detections for failing analytes for all associated samples where the concentration in the blank is greater than 1/10 the amount measured in the sample OR the blank contamination otherwise affects the sample results are qualified as estimated.
Blanks (BLK) Preparation Blank, Method, Trip, Storage, etc.	All detections for failing analytes for all samples where the concentration in the blank is greater than 1/10 the amount measured in the sample OR the blank contamination otherwise affects the sample results are qualified as estimated.
Lab Control Sample (LCS) or Standard Reference Material (SRM) or Blank Spike (BS)	High failure: All detections for failing analytes for all associated samples are qualified as estimated. Low failure: All failing analytes for all associated samples are qualified as estimated.
Matrix Spike (MS)	High failure: All detections for failing analytes in the parent sample are qualified as estimated. Low failure: All failing analytes in the parent sample are qualified as estimated. No qualification if the native concentration is greater than or equal to 4x the spike concentration.
Matrix Spike Duplicate (MSD)	%R Failure: Same as matrix spike. RPD Failure: All failing analytes in the parent sample are qualified as estimated.
Duplicate Sample (DUP)	All failing analytes in the parent sample are qualified as estimated. No qualification if the native concentration is less than the RL.
Serial Dilution (SD)	All failing analytes in the parent sample are qualified as estimated. No qualification if native concentration is less than or equal to 50x the RL.
Detection Limit Standard (CRA) or (CRL)	High failure: All detections for failing analytes less than or equal to 5x the concentration in the CRL for all associated samples are qualified as estimated. Low failure: All failing analytes less than or equal to 5x the RL for all associated samples are qualified as estimated.
Internal Standard (IS)	All analytes associated with the failing IS are qualified as estimated.
Surrogate Spike (SURR)	High failure: All detections for all analytes associated with the failing surrogate are qualified as estimated. Low failure: All analytes associated with the failing surrogate are qualified as estimated. If obvious chromatographic interference with the surrogate is present, qualification may not be necessary and will be based on the professional judgment of the analyst.

Note: The J Qualifier is used to indicate an estimated value.