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## Technical Report for

**Absaroka Solutions**

**GWA\_SDE\_Vaneta\_DAF\_Permitting**

**FID:760458 Reg:609 Freq.:0**

**SGS Job Number: DA13526**

**Sampling Date: 02/12/19**

### Report to:

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**Total number of pages in report: 51**



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

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

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Sample Summary

Absaroka Solutions

Job No: DA13526

GWA\_SDE\_Vaneta\_DAF\_Permitting  
Project No: FID:760458 Reg:609 Freq.:0

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
DA13526-1	02/12/19	10:30 JM	02/13/19	AQ	Surface Water	BW_SDE_V_SW_01 NENE_23_7N_80W
DA13526-1A	02/12/19	10:30 JM	02/13/19	AQ	Surface Water	BW_SDE_V_SW_01 NENE_23_7N_80W
DA13526-1B	02/12/19	10:30 JM	02/13/19	AQ	Surface Water	BW_SDE_V_SW_01 NENE_23_7N_80W
DA13526-1F	02/12/19	10:30 JM	02/13/19	AQ	Surface H2O Filtered	BW_SDE_V_SW_01 NENE_23_7N_80W
DA13526-2	02/12/19	00:00 JM	02/13/19	AQ	Trip Blank Water	TRIP BLANK

## CASE NARRATIVE / CONFORMANCE SUMMARY

2

**Client:** Absaroka Solutions

**Job No** DA13526

**Site:** GWA\_SDE\_Vaneta\_DAF\_Permitting

**Report Date** 2/22/2019 5:02:52 PM

On 02/13/2019, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at SGS North America Inc. (SGS) at a temperature of 0.5 °C. The samples were intact and properly preserved, unless noted below. An SGS Job Number of DA13526 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

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

### MS Volatiles By Method SW846 8260B

**Matrix:** AQ

**Batch ID:** V7V2999

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12301-31MS, DA12301-31MSD were used as the QC samples indicated.

### GC Volatiles By Method RSK175 MOD

**Matrix:** AQ

**Batch ID:** GFB1051

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12301-25MS, DA12301-25MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- DA13526-1A: The pH of the sample was >2 at time of analysis.

### GC Volatiles By Method SW846 8015B

**Matrix:** AQ

**Batch ID:** GGB2310

- All samples were analyzed within the recommended method holding time.
- Sample(s) DA12301-22MS, DA12301-22MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

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

**Matrix:** AQ

**Batch ID:** OP17465

- All samples were extracted and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA12300-2MS, DA12300-2MSD were used as the QC samples indicated.

### Metals Analysis By Method EPA 200.7

**Matrix:** AQ

**Batch ID:** MP27343

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13438-1MS, DA13438-1MSD were used as the QC samples for the metals analysis.

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## Metals Analysis By Method EPA 200.8

**Matrix:** AQ **Batch ID:** MP27357

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13485-5MS, DA13485-5MSD were used as the QC samples for the metals analysis.

## General Chemistry By Method EPA 300.0/SW846 9056

**Matrix:** AQ **Batch ID:** R46664

- The data for EPA 300.0/SW846 9056 meets quality control requirements.
- DA13526-1 for Nitrogen, Nitrate + Nitrite: Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

## General Chemistry By Method EPA 365.1

**Matrix:** AQ **Batch ID:** GP24591

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13422-3MS, DA13464-1DUP were used as the QC samples for the Phosphorus, Total analysis.

## General Chemistry By Method EPA300.0/SW846 9056A

**Matrix:** AQ **Batch ID:** GP24579

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13495-1MS, DA13495-1MSD were used as the QC samples for the Bromide, Chloride, Fluoride, Nitrogen, Nitrate, Nitrogen, Nitrite, Sulfate, Bromide analysis.

## General Chemistry By Method HACH IRB-BART

**Matrix:** AQ **Batch ID:** MB1146

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

## General Chemistry By Method HACH SLYM-BART

**Matrix:** AQ **Batch ID:** MB1147

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

## General Chemistry By Method HACH SRB-BART

**Matrix:** AQ **Batch ID:** MB1148

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

## General Chemistry By Method SM 2320B-2011

**Matrix:** AQ

**Batch ID:** GN46112

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

**Matrix:** AQ

**Batch ID:** GN46113

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13483-1DUP, DA13510-1MS, DA13510-1MSD were used as the QC samples for the Alkalinity, Total as CaCO<sub>3</sub> analysis.

**Matrix:** AQ

**Batch ID:** GN46114

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

## General Chemistry By Method SM 2510B-2011

**Matrix:** AQ

**Batch ID:** GP24586

- Sample(s) DA13483-1DUP were used as the QC samples for the Specific Conductivity analysis.

## General Chemistry By Method SM 2540C-2011

**Matrix:** AQ

**Batch ID:** GN46118

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) DA13605-2DUP were used as the QC samples for the Solids, Total Dissolved analysis.

## General Chemistry By Method SM1030E-2011

**Matrix:** AQ

**Batch ID:** GN46137

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

## General Chemistry By Method SM4500HB+-2011/9040C

**Matrix:** AQ

**Batch ID:** GN46109

- Sample(s) DA13483-1DUP were used as the QC samples for the pH analysis.
- The following samples were run outside of holding time for method SM4500HB+-2011/9040C: DA13526-1 Analysis performed past recommended hold time.

## Field Data By Method FIELD

**Matrix:** AQ

**Batch ID:** R46647

- The data for FIELD meets quality control requirements.

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

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

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

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## Summary of Hits

Job Number: DA13526  
 Account: Absaroka Solutions  
 Project: GWA\_SDE\_Vaneta\_DAF\_Permitting  
 Collected: 02/12/19

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
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DA13526-1 BW\_SDE\_V\_SW\_01 NENE\_23\_7N\_80W

Alkalinity, Bicarbonate as CaCO <sub>3</sub>	97.7	5.0		mg/l	SM 2320B-2011
Alkalinity, Total as CaCO <sub>3</sub>	97.7	5.0		mg/l	SM 2320B-2011
Cation Anion Balance	0.57			%	SM1030E-2011
Chloride	1.7	0.50		mg/l	EPA300.0/SW846 9056A
Fluoride	0.14	0.10		mg/l	EPA300.0/SW846 9056A
Nitrogen, Nitrate	0.052	0.010		mg/l	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite <sup>a</sup>	0.052	0.014		mg/l	EPA 300.0/SW846 9056
Phosphorus, Total	0.046	0.010		mg/l	EPA 365.1
Solids, Total Dissolved	156	10		mg/l	SM 2540C-2011
Specific Conductivity	202	1.0		umhos/cm	SM 2510B-2011
Sulfate	17.4	0.50		mg/l	EPA300.0/SW846 9056A
pH <sup>b</sup>	7.81			su	SM4500HB+ -2011/9040C
Specific Conductivity (Field)	237.5	0.50		umhos/cm	FIELD
pH (Field)	6.62			su	FIELD
Redox Potential Vs H <sub>2</sub>	197.6			mv	FIELD
Temperature (Field)	0.1			Deg. C	FIELD
Oxygen, Dissolved (Field)	10.69			mg/l	FIELD
Turbidity	4.97			NTU	FIELD

DA13526-1A BW\_SDE\_V\_SW\_01 NENE\_23\_7N\_80W

Methane <sup>c</sup>	0.0053	0.00080	0.00040	mg/l	RSK175 MOD
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DA13526-1B BW\_SDE\_V\_SW\_01 NENE\_23\_7N\_80W

Iron-Related Bacteria	35000	25		CFU/ml	HACH IRB-BART
Slime Forming Bacteria	440000	500		CFU/ml	HACH SLYM-BART
Sulfate Reducing Bacteria	115000	200		CFU/ml	HACH SRB-BART

DA13526-1F BW\_SDE\_V\_SW\_01 NENE\_23\_7N\_80W

Barium	0.0454	0.010		mg/l	EPA 200.8
Calcium	26.4	0.40		mg/l	EPA 200.7
Iron	0.124	0.010		mg/l	EPA 200.7
Magnesium	6.55	0.20		mg/l	EPA 200.7
Manganese	0.0898	0.0050		mg/l	EPA 200.7
Potassium	2.22	1.0		mg/l	EPA 200.7
Sodium	9.72	0.40		mg/l	EPA 200.7
Strontium	0.260	0.0050		mg/l	EPA 200.7

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

(b) Analysis performed past recommended hold time.

(c) The pH of the sample was > 2 at time of analysis.



Wheat Ridge, CO

Section 4

4

Sample Results

Report of Analysis



## Report of Analysis

Client Sample ID:	BW_SDE_V_SW_01 NENE_23_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13526-1	Date Received:	02/13/19
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846 8260B		
Project:	GWA_SDE_Vaneta_DAF_Permitting		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	7V58746.D	1	02/15/19 18:15	CH	n/a	n/a	V7V2999
Run #2							

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

## Purgeable Aromatics

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

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
1868-53-7	Dibromofluoromethane	110%		70-130%
17060-07-0	1,2-Dichloroethane-D4	99%		70-130%
2037-26-5	Toluene-D8	98%		70-130%
460-00-4	4-Bromofluorobenzene	101%		70-130%

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

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<b>Client Sample ID:</b>	BW_SDE_V_SW_01 NENE_23_7N_80W		
<b>Lab Sample ID:</b>	DA13526-1	<b>Date Sampled:</b>	02/12/19
<b>Matrix:</b>	AQ - Surface Water	<b>Date Received:</b>	02/13/19
<b>Method:</b>	SW846 8015B	<b>Percent Solids:</b>	n/a
<b>Project:</b>	GWA_SDE_Vaneta_DAF_Permitting		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB49082.D	1	02/15/19 17:37	BB	n/a	n/a	GGB2310
Run #2							

	Purge Volume
Run #1	5.0 ml
Run #2	

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	0.050	0.050	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
120-82-1	1,2,4-Trichlorobenzene	93%		60-140%		

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

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

## Report of Analysis

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Client Sample ID:	BW_SDE_V_SW_01 NENE_23_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13526-1	Date Received:	02/13/19
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	SW846-8015B SW846 3510C		
Project:	GWA_SDE_Vaneta_DAF_Permitting		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FC62575.D	1	02/16/19 11:17	RB	02/15/19	OP17465	GFC2561
Run #2							

Run #	Initial Volume	Final Volume
Run #1	1030 ml	1.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	0.19	0.17	mg/l	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	92%		11-142%		

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

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

## Report of Analysis

Client Sample ID:	BW_SDE_V_SW_01 NENE_23_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13526-1	Date Received:	02/13/19
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Project:	GWA_SDE_Vaneta_DAF_Permitting		

## General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Alkalinity, Bicarbonate as CaC	97.7	5.0	mg/l	1	02/15/19	PV	SM 2320B-2011
Alkalinity, Carbonate	< 5.0	5.0	mg/l	1	02/15/19	PV	SM 2320B-2011
Alkalinity, Total as CaCO <sub>3</sub>	97.7	5.0	mg/l	1	02/15/19	PV	SM 2320B-2011
Bromide	< 0.050	0.050	mg/l	1	02/13/19 16:14	JB	EPA300.0/SW846 9056A
Cation Anion Balance	0.57		%	1	02/19/19	KM	SM1030E-2011
Chloride	1.7	0.50	mg/l	1	02/13/19 16:14	JB	EPA300.0/SW846 9056A
Fluoride	0.14	0.10	mg/l	1	02/13/19 16:14	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate	0.052	0.010	mg/l	1	02/13/19 16:14	JB	EPA300.0/SW846 9056A
Nitrogen, Nitrate + Nitrite <sup>a</sup>	0.052	0.014	mg/l	1	02/13/19 16:14	JB	EPA 300.0/SW846 9056
Nitrogen, Nitrite	< 0.0040	0.0040	mg/l	1	02/13/19 16:14	JB	EPA300.0/SW846 9056A
Phosphorus, Total	0.046	0.010	mg/l	1	02/16/19 14:38	AM	EPA 365.1
Solids, Total Dissolved	156	10	mg/l	1	02/18/19	SK	SM 2540C-2011
Specific Conductivity	202	1.0	umhos/cm	1	02/15/19 09:30	PV	SM 2510B-2011
Sulfate	17.4	0.50	mg/l	1	02/13/19 16:14	JB	EPA300.0/SW846 9056A
pH <sup>b</sup>	7.81		su	1	02/15/19	PV	SM4500HB+ -2011/9040C

## Field Parameters

Oxygen, Dissolved (Field)	10.69		mg/l	1	02/18/19	SUB	FIELD
Redox Potential Vs H <sub>2</sub>	197.6		mv	1	02/18/19	SUB	FIELD
Specific Conductivity (Field)	237.5	0.50	umhos/cm	1	02/18/19	SUB	FIELD
Temperature (Field)	0.1		Deg. C	1	02/18/19	SUB	FIELD
Turbidity	4.97		NTU	1	02/18/19	SUB	FIELD
pH (Field)	6.62		su	1	02/18/19	SUB	FIELD

(a) Calculated as: (Nitrogen, Nitrate) + (Nitrogen, Nitrite)

(b) Analysis performed past recommended hold time.

RL = Reporting Limit

## Report of Analysis

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Client Sample ID:	BW_SDE_V_SW_01 NENE_23_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13526-1A	Date Received:	02/13/19
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Method:	RSK175 MOD		
Project:	GWA_SDE_Vaneta_DAF_Permitting		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	FB23150.D	1	02/18/19 14:51	BB	n/a	n/a	GFB1051
Run #2							

Run #	Initial Volume	Headspace Volume	Volume Injected	Temperature
Run #1	39.0 ml	4.0 ml	500 ul	19.6 Deg. C
Run #2				

## Methane, Ethane and Propane

CAS No.	Compound	Result	RL	MDL	Units	Q
74-82-8	Methane	0.0053	0.00080	0.00040	mg/l	
74-84-0	Ethane	ND	0.0016	0.00080	mg/l	
74-98-6	Propane	ND	0.0022	0.0011	mg/l	

(a) The pH of the sample was &gt; 2 at time of analysis.

ND = Not detected MDL = Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	BW_SDE_V_SW_01 NENE_23_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13526-1B	Date Received:	02/13/19
Matrix:	AQ - Surface Water	Percent Solids:	n/a
Project:	GWA_SDE_Vaneta_DAF_Permitting		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Iron-Related Bacteria	35000	25	CFU/ml	1	02/18/19 12:30	SK	HACH IRB-BART
Slime Forming Bacteria	440000	500	CFU/ml	1	02/18/19 12:30	SK	HACH SLYM-BART
Sulfate Reducing Bacteria	115000	200	CFU/ml	1	02/18/19 12:30	SK	HACH SRB-BART

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BW_SDE_V_SW_01 NENE_23_7N_80W	Date Sampled:	02/12/19
Lab Sample ID:	DA13526-1F	Date Received:	02/13/19
Matrix:	AQ - Surface H2O Filtered	Percent Solids:	n/a
Project:	GWA_SDE_Vaneta_DAF_Permitting		

Dissolved Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analized By	Method	Prep Method
Barium	0.0454	0.010	mg/l	5	02/14/19	02/18/19 EP	EPA 200.8 <sup>2</sup>	EPA 200.8 <sup>5</sup>
Boron	< 0.050	0.050	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Calcium	26.4	0.40	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Iron	0.124	0.010	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Magnesium	6.55	0.20	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Manganese	0.0898	0.0050	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Potassium	2.22	1.0	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>
Selenium	< 0.0020	0.0020	mg/l	5	02/14/19	02/18/19 EP	EPA 200.8 <sup>2</sup>	EPA 200.8 <sup>5</sup>
Sodium	9.72	0.40	mg/l	1	02/14/19	02/19/19 JR	EPA 200.7 <sup>3</sup>	EPA 200.7 <sup>4</sup>
Strontium	0.260	0.0050	mg/l	1	02/14/19	02/14/19 JR	EPA 200.7 <sup>1</sup>	EPA 200.7 <sup>4</sup>

- (1) Instrument QC Batch: MA11040
- (2) Instrument QC Batch: MA11050
- (3) Instrument QC Batch: MA11053
- (4) Prep QC Batch: MP27343
- (5) Prep QC Batch: MP27357

RL = Reporting Limit

**Misc. Forms**

5

**Custody Documents and Other Forms**

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**Includes the following where applicable:**

- Chain of Custody





## CHAIN OF CUSTODY

Page 1 of 1

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

Bottle Order Control #	FED-EX Tracking #
SGS Quote #	SGS Job # DA13526

Client / Reporting Information		Project Information		Requested Analysis (see TEST CODE sheet)												Matrix Codes											
Company: (Report to) Absaroka Solutions	Project Name: GWA_SDE_Vaneta_DAF_Permitting	Frequency: 0														DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank											
Street: 112 High Street	Regulation: 609	Billing Information (if different from Report to)																									
City, State: Buffalo, WY 82834	Facility ID: 760458	Company: Absaroka Solutions, LLC.																									
Project Contact: Joel Mason	EQUIP Facility Code:	Street Address: 112 High Street																									
Phone: 307-262-8975	Client Purchase Order #: SDE.CO.0247.01	City, State ZIP: Buffalo, WY, 80824																									
Email: Joel.Mason@Absarokasolutions.com																											
Sampler(s) Name(s): Joel Mason	Project Manager: Joel Mason	Attention:																									
Collection		Number of preserved bottles																									
Field ID / Point of Collection	Date	Time	Sampled by	Matrix	# of bottles	NONE	HCl	NH4Cl	NH4OH	NH4SCN	DI Water	MECH	ENCORE	NE2204	PH, SCOD, TDS	XCARBICALK	BRO, CHL, F, NO2, XNO30, NO32, SO4	TPO4	Disolved Metals - Lab Filtered	RSK 175	V8260BTX	B8015DRO	V8015GRO	IRBAC, SPBAC, SO4RBAC	CABAL	LAB USE ONLY	
BW_SDE_V_SW_01	2/12/2019	10:30	JM	SW	14	2	6									X	X	X	X	X	X	X	X	X	X	01	
NENE_23_7N_80W					12	3																				TB-02	
Temperature, field	0.1	°C																									
pH, field	6.62	s.u.																									
Specific Conductivity, field	237.5	uS/cm																									
Oxidation Reduction Potential, field	197.6	mV																									
Dissolved Oxygen, field	10.69	mg/L																									
Turbidity, field	4.97	NTU																									
Turnaround Time (Business days)		Data Deliverable Information														Comments / Special Instructions											
<input checked="" type="checkbox"/> Std. 10 Business Days <input type="checkbox"/> 5 Day RUSH <input type="checkbox"/> 3 Day Emergency <input type="checkbox"/> 2 Day Emergency <input type="checkbox"/> 1 Day Emergency		Special Reporting Instructions <input type="checkbox"/> Report in PPB <input type="checkbox"/> Report in PPM <input type="checkbox"/> Report MDLs		<input type="checkbox"/> Commercial "A" (Level 1, Results Only) <input type="checkbox"/> Commercial "B" (Level 2, Results + QC Summary) <input type="checkbox"/> COMMBN (Results/QC/Narrative) <input type="checkbox"/> COMMBN+ (Results/QC/Narrative (+ chromatograms)) <input type="checkbox"/> REDT2 <input type="checkbox"/> FULT1 <input checked="" type="checkbox"/> EDD Format: COGCC Compatible												*Dissolved Metals (200.7/200.8): BaMS, B, Ca, Fe, Mg, Mn, K, SeMS, Na, Sr  Please also send reports to Joel.Mason@Absarokasolutions.com and Max.Moran@Absarokasolutions.com											
Emergency & Rush T/A data available VIA LabLink. RUSH TAT approval needed.																											
Sample Custody must be documented below each time samples change possession, including courier delivery.																											
Relinquished by Sampler:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:
1	2/12/19 4:00 PM	2	2/13/19 2:45	3		4																					
Relinquished by Sampler:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:	Relinquished By:	Date/Time:	Received By:	Date/Time:
3		4																									
Custody Seal #	Intact <input type="checkbox"/> Not Intact <input type="checkbox"/> Absent <input type="checkbox"/>	Preserved where applicable <input type="checkbox"/>	Cooler Temp. °C: 0.5	Therm. ID: 7070	On Ice <input checked="" type="checkbox"/>	Form MSQA 064-01, RV 6/19/17																					

DA13526: Chain of Custody

Page 1 of 2



# SGS Accutest Sample Receipt Summary

Job Number: DA13526

Client: ABSAROKA

Project: GWA

Date / Time Received: 2/13/2019 2:45:00 PM

Delivery Method:

Airbill #'s: CO

Cooler Temps (Initial/Adjusted): #1: (0.5/0.5); #2: (0.5/0.5);

## Cooler Security

Y or N

Y or N

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

## Cooler Temperature

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | IR Gun; IR Gun;                     |                          |
| 3. Cooler media:             | Ice (Bag)                           |                          |
| 4. No. Coolers:              | 2                                   |                          |

## Quality Control Preservation

Y or N N/A

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

## Sample Integrity - Documentation

Y or N

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

## Sample Integrity - Condition

Y or N

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

## Sample Integrity - Instructions

Y or N N/A

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

Comments

DA13526: Chain of Custody

Page 2 of 2

**MS Volatiles****QC Data Summaries**

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**Includes the following where applicable:**

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

## Method Blank Summary

Page 1 of 1

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V2999-MB	7V58737.D	1	02/15/19	CH	n/a	n/a	V7V2999

The QC reported here applies to the following samples:

Method: SW846 8260B

DA13526-1

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

CAS No.	Surrogate Recoveries	Limits
1868-53-7	Dibromofluoromethane	106% 70-130%
17060-07-0	1,2-Dichloroethane-D4	100% 70-130%
2037-26-5	Toluene-D8	101% 70-130%
460-00-4	4-Bromofluorobenzene	104% 70-130%

## Blank Spike Summary

Page 1 of 1

Job Number: DA13526

Account: ABSSWYB Absaroka Solutions

Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V7V2999-BS	7V58735.D	1	02/15/19	CH	n/a	n/a	V7V2999

The QC reported here applies to the following samples:

Method: SW846 8260B

DA13526-1

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
71-43-2	Benzene	50	52.7	105	70-130
100-41-4	Ethylbenzene	50	52.4	105	69-130
108-88-3	Toluene	50	52.4	105	70-130
1330-20-7	Xylene (total)	150	159	106	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
1868-53-7	Dibromofluoromethane	107%	70-130%
17060-07-0	1,2-Dichloroethane-D4	99%	70-130%
2037-26-5	Toluene-D8	99%	70-130%
460-00-4	4-Bromofluorobenzene	103%	70-130%

\* = Outside of Control Limits.

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

Job Number: DA13526

Account: ABSSWYB Absaroka Solutions

Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-31MS	7V58738.D	1	02/15/19	CH	n/a	n/a	V7V2999
DA12301-31MSD	7V58739.D	1	02/15/19	CH	n/a	n/a	V7V2999
DA12301-31	7V58740.D	1	02/15/19	CH	n/a	n/a	V7V2999

The QC reported here applies to the following samples:

Method: SW846 8260B

DA13526-1

CAS No.	Compound	DA12301-31 ug/l	Spike Q	MS ug/l	MS %	Spike ug/l	MSD ug/l	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND	50	53.4	107	50	53.0	106	1	67-130/30
100-41-4	Ethylbenzene	ND	50	51.8	104	50	53.3	107	3	69-130/30
108-88-3	Toluene	ND	50	51.4	103	50	53.0	106	3	70-130/30
1330-20-7	Xylene (total)	ND	150	161	107	150	163	109	1	67-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12301-31 Limits
1868-53-7	Dibromofluoromethane	105%	105%	107% 70-130%
17060-07-0	1,2-Dichloroethane-D4	100%	101%	100% 70-130%
2037-26-5	Toluene-D8	102%	100%	99% 70-130%
460-00-4	4-Bromofluorobenzene	102%	101%	97% 70-130%

\* = Outside of Control Limits.

**GC Volatiles****QC Data Summaries**

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**Includes the following where applicable:**

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

Method Blank Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2310-MB	GB49072.D	1	02/15/19	BB	n/a	n/a	GGB2310

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

DA13526-1

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

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	90% 60-140%



Method Blank Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB1051-MB	FB23143.D	1	02/18/19	BB	n/a	n/a	GFB1051

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

DA13526-1A

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

7.1.2  
7

Blank Spike Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB2310-BS	GB49073.D	1	02/15/19	BB	n/a	n/a	GGB2310

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

DA13526-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-GRO (C6-C10)	2.2	1.73	79	51-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	95%	60-140%

\* = Outside of Control Limits.

Blank Spike Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GFB1051-BS	FB23144.D	10	02/18/19	BB	n/a	n/a	GFB1051

The QC reported here applies to the following samples:

Method: RSK175 MOD

DA13526-1A

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
74-82-8	Methane	0.512	0.528	103	70-133
74-84-0	Ethane	0.923	1.08	117	70-137
74-98-6	Propane	1.38	1.61	117	70-137

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-22MS	GB49074.D	1	02/15/19	BB	n/a	n/a	GGB2310
DA12301-22MSD	GB49075.D	1	02/15/19	BB	n/a	n/a	GGB2310
DA12301-22	GB49076.D	1	02/15/19	BB	n/a	n/a	GGB2310

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

DA13526-1

CAS No.	Compound	DA12301-22 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND	2.2	1.67	76	2.2	1.70	77	2	40-132/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12301-22	Limits
120-82-1	1,2,4-Trichlorobenzene	96%	96%	94%	60-140%

\* = Outside of Control Limits.

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
DA12301-25MS	FB23146.D	10	02/18/19	BB	n/a	n/a	GFB1051
DA12301-25MSD	FB23147.D	10	02/18/19	BB	n/a	n/a	GFB1051
DA12301-25	FB23145.D	1	02/18/19	BB	n/a	n/a	GFB1051

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

DA13526-1A

CAS No.	Compound	DA12301-25		MS	MS	Spike	MSD	MSD	RPD	Limits
		mg/l	Q	mg/l	%	mg/l	mg/l	%		Rec/RPD
74-82-8	Methane	ND	0.512	0.505	99	0.512	0.501	98	1	15-196/30
74-84-0	Ethane	ND	0.923	1.03	112	0.923	1.02	111	1	53-144/30
74-98-6	Propane	ND	1.38	1.53	111	1.38	1.52	110	1	54-144/30

\* = Outside of Control Limits.

**GC/LC Semi-volatiles****QC Data Summaries**

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**Includes the following where applicable:**

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

Method Blank Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17465-MB	FC62555.D	1	02/15/19	RB	02/15/19	OP17465	GFC2561

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

DA13526-1

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

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	86% 11-142%

8.1.1  
8

Blank Spike Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17465-BS	FC62594.D	1	02/18/19	RB	02/15/19	OP17465	GFC2562

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

DA13526-1

CAS No.	Compound	Spike mg/l	BSP mg/l	BSP %	Limits
	TPH-DRO (C10-C28)	5	3.62	72	22-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	85%	11-142%

\* = Outside of Control Limits.



Matrix Spike/Matrix Spike Duplicate Summary

Job Number: DA13526  
Account: ABSSWYB Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP17465-MS	FC62595.D	1	02/18/19	RB	02/15/19	OP17465	GFC2562
OP17465-MSD	FC62596.D	1	02/18/19	RB	02/15/19	OP17465	GFC2562
DA12300-2	FC62559.D	1	02/16/19	RB	02/15/19	OP17465	GFC2561

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

DA13526-1

CAS No.	Compound	DA12300-2 mg/l	Spike Q mg/l	MS mg/l	MS %	Spike mg/l	MSD mg/l	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	5	4.19	84	5	4.34	87	4	22-130/30

CAS No.	Surrogate Recoveries	MS	MSD	DA12300-2	Limits
84-15-1	o-Terphenyl	98%	105%	89%	11-142%

\* = Outside of Control Limits.

## Metals Analysis

### QC Data Summaries

Includes the following where applicable:

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27343  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date: 02/14/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	100	11	30		
Antimony	30	2.1	10		
Arsenic	25	3.8	7		
Barium	10	.2	2		
Beryllium	10	.9	1.3		
Boron	50	.8	7.4	-1.1	<50
Cadmium	10	.2	1.6		
Calcium	400	2.4	53	29.6	<400
Chromium	10	.3	1.7		
Cobalt	5.0	.5	2.3		
Copper	10	.8	2.3		
Iron	10	1.5	3.1	0.50	<10
Lead	50	2.1	6.3		
Lithium	5.0	.4	4		
Magnesium	200	6.8	31	8.6	<200
Manganese	5.0	.5	1.1	0.10	<5.0
Molybdenum	10	.4	4.3		
Nickel	30	.5	6.1		
Phosphorus	100	15	24		
Potassium	1000	84	250	41.7	<1000
Selenium	50	7.1	21		
Silicon	50	4.7	45		
Silver	30	.3	4		
Sodium	400	13	51	42.5	<400
Strontium	5.0	.01	.6	-0.10	<5.0
Thallium	10	1.8	7.5		
Tin	60	12	51		
Titanium	10	.1	1.9		
Uranium	50	2.9	8.5		
Vanadium	10	.4	.7		
Zinc	30	.4	3.8		

Associated samples MP27343: DA13526-1F

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27343  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date: 02/14/19

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

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13526  
 Account: ABSSWYB - Absaroka Solutions  
 Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27343  
 Matrix Type: AQUEOUS

Methods: EPA 200.7  
 Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MS	Spikelot ICPAL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron	180	1200	1000	104.3 70-130
Cadmium	anr			
Calcium	30900	58400	25000	110.0 70-130
Chromium	anr			
Cobalt				
Copper	anr			
Iron	101	5310	5000	104.3 70-130
Lead	anr			
Lithium				
Magnesium	1570	26300	25000	98.9 70-130
Manganese	12.8	521	500	101.6 70-130
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	46200	76200	25000	113.2 70-130
Selenium	anr			
Silicon				
Silver	anr			
Sodium	58100	83900	25000	108.0 70-130
Strontium	102	600	500	99.6 70-130
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP27343: DA13526-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27343  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MS	SpikeLot ICPALL2	% Rec	QC Limits
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(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13526  
 Account: ABSSWYB - Absaroka Solutions  
 Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27343  
 Matrix Type: AQUEOUS

Methods: EPA 200.7  
 Units: ug/l

Prep Date: 02/14/19

	DA13438-1		Spikelot		MSD	QC
Metal	Original	MSD	ICPALL2	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Boron	180	1180	1000	102.3	1.7	20
Cadmium	anr					
Calcium	30900	56900	25000	104.0	2.6	20
Chromium	anr					
Cobalt						
Copper	anr					
Iron	101	5260	5000	103.3	0.9	20
Lead	anr					
Lithium						
Magnesium	1570	26000	25000	97.7	1.1	20
Manganese	12.8	513	500	100.0	1.5	20
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium	46200	75300	25000	109.6	1.2	20
Selenium	anr					
Silicon						
Silver	anr					
Sodium	58100	82600	25000	102.8	1.6	20
Strontium	102	595	500	98.6	0.8	20
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP27343: DA13526-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

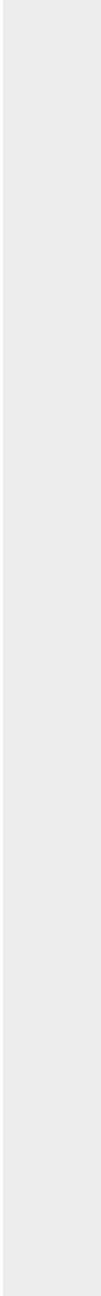
QC Batch ID: MP27343  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date: 02/14/19

Metal	DA13438-1 Original MSD	Spike ICPAL2	% Rec	MSD RPD	QC Limit
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(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested





## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13526

Account: ABSSWYB - Absaroka Solutions

Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27343

Methods: EPA 200.7

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

02/14/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron	1030	1000	103.0	85-115
Cadmium	anr			
Calcium	26400	25000	105.6	85-115
Chromium	anr			
Cobalt				
Copper	anr			
Iron	5250	5000	105.0	85-115
Lead	anr			
Lithium				
Magnesium	24300	25000	97.2	85-115
Manganese	505	500	101.0	85-115
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium	27400	25000	109.6	85-115
Selenium	anr			
Silicon				
Silver	anr			
Sodium	25900	25000	103.6	85-115
Strontium	505	500	101.0	85-115
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP27343: DA13526-1F

Results &lt; IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

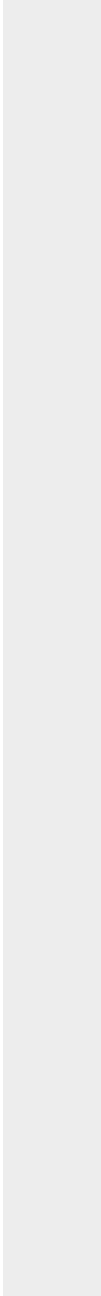
QC Batch ID: MP27343  
Matrix Type: AQUEOUS

Methods: EPA 200.7  
Units: ug/l

Prep Date: 02/14/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
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(anr) Analyte not requested



BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27357  
Matrix Type: AQUEOUS

Methods: EPA 200.8  
Units: ug/l

Prep Date: 02/14/19

Metal	RL	IDL	MDL	MB raw	final
Aluminum	50	1.1	2		
Antimony	0.40	.0022	.011		
Arsenic	0.20	.017	.044		
Barium	2.0	.016	.079	0.15	<2.0
Beryllium	0.20	.016	.069		
Boron	40	.49	2.1		
Calcium	400	5.6	12		
Chromium	2.0	.053	.053		
Cobalt	0.20	.0049	.015		
Copper	2.0	.06	.13		
Iron	10	3.5	4.6		
Lead	0.50	.0079	.008		
Magnesium	100	1.3	1.3		
Manganese	1.0	.12	.13		
Molybdenum	1.0	.049	.029		
Nickel	2.0	.0088	.027		
Phosphorus	60	2.6	4.3		
Potassium	200	2.9	2.9		
Selenium	0.40	.06	.21	-0.084	<0.40
Silver	0.10	.0019	.008		
Sodium	500	4.9	4.9		
Strontium	20	.01	.015		
Thallium	0.20	.0024	.005		
Tin	10	.063	1.3		
Titanium	2.0	.059	.092		
Uranium	0.20	.0017	.002		
Vanadium	1.0	.037	.2		
Zinc	10	.21	.96		

Associated samples MP27357: DA13526-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13526  
 Account: ABSSWYB - Absaroka Solutions  
 Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27357  
 Matrix Type: AQUEOUS

Methods: EPA 200.8  
 Units: ug/l

Prep Date: 02/14/19

Metal	DA13485-5 Original MS		Spikelot ICPALL2 % Rec		QC Limits
Aluminum					
Antimony	anr				
Arsenic	anr				
Barium	47.0	445	400	99.6	70-130
Beryllium	anr				
Boron					
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Iron	anr				
Lead	anr				
Magnesium					
Manganese	anr				
Molybdenum	anr				
Nickel	anr				
Phosphorus					
Potassium					
Selenium	1.3	191	200	94.9	70-130
Silver	anr				
Sodium					
Strontium					
Thallium	anr				
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	anr				

Associated samples MP27357: DA13526-1F

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: DA13526  
 Account: ABSSWYB - Absaroka Solutions  
 Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27357  
 Matrix Type: AQUEOUS

Methods: EPA 200.8  
 Units: ug/l

Prep Date: 02/14/19

Metal	DA13485-5 Original MSD	Spikelot ICPALL2 % Rec			MSD RPD	QC Limit
Aluminum						
Antimony	anr					
Arsenic	anr					
Barium	47.0	451	400	101.1	1.3	20
Beryllium	anr					
Boron						
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Iron	anr					
Lead	anr					
Magnesium						
Manganese	anr					
Molybdenum	anr					
Nickel	anr					
Phosphorus						
Potassium						
Selenium	1.3	187	200	92.9	2.1	20
Silver	anr					
Sodium						
Strontium						
Thallium	anr					
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	anr					

Associated samples MP27357: DA13526-1F

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

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: DA13526

Account: ABSSWYB - Absaroka Solutions

Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

QC Batch ID: MP27357

Methods: EPA 200.8

Matrix Type: AQUEOUS

Units: ug/l

Prep Date:

02/14/19

Metal	BSP Result	Spikelot ICPALL2	% Rec	QC Limits
Aluminum				
Antimony	anr			
Arsenic	anr			
Barium	395	400	98.8	85-115
Beryllium	anr			
Boron				
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Iron	anr			
Lead	anr			
Magnesium				
Manganese	anr			
Molybdenum	anr			
Nickel	anr			
Phosphorus				
Potassium				
Selenium	193	200	96.5	85-115
Silver	anr			
Sodium				
Strontium				
Thallium	anr			
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	anr			

Associated samples MP27357: DA13526-1F

Results &lt; IDL are shown as zero for calculation purposes

(\*) Outside of QC limits

(anr) Analyte not requested

## General Chemistry

### QC Data Summaries

Includes the following where applicable:

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

METHOD BLANK AND SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Alkalinity, Bicarbonate as CaC	GN46112	5.0	2.4	mg/l	100	100	100.0	90-110%
Alkalinity, Carbonate	GN46114	5.0	2.4	mg/l	100	100	100.0	80-120%
Alkalinity, Total as CaCO3	GN46113	5.0	2.4	mg/l	100	100	100.0	90-110%
Bromide	GP24579/GN46097	0.050	0.0	mg/l	0.5	0.517	103.4	90-110%
Chloride	GP24579/GN46097	0.50	0.0	mg/l	5	5.00	100.0	90-110%
Fluoride	GP24579/GN46097	0.10	0.0	mg/l	1	1.00	100.0	90-110%
Iron-Related Bacteria	MB1146	25	<25	CFU/ml				
Nitrogen, Nitrate	GP24579/GN46097	0.010	0.0	mg/l	0.1	0.103	103.0	90-110%
Nitrogen, Nitrite	GP24579/GN46097	0.0040	0.0	mg/l	0.05	0.0497	99.4	90-110%
Phosphorus, Total	GP24591/GN46117	0.010	0.00	mg/l	0.2	0.193	96.5	90-110%
Phosphorus, Total	GP24591/GN46117	0.010	0.00	mg/l	0.2	0.193	96.5	90-110%
Slime Forming Bacteria	MB1147	500	<500	CFU/ml				
Solids, Total Dissolved	GN46118	10	0.0	mg/l	400	409	102.3	90-110%
Specific Conductivity	GP24586/GN46110			umhos/cm	1.49	1.6	105.4	90-110%
Specific Conductivity	GP24586/GN46110			umhos/cm	998	1000	100.5	90-110%
Specific Conductivity	GP24586/GN46110			umhos/cm	98.8	99.5	100.6	90-110%
Sulfate	GP24579/GN46097	0.50	0.0	mg/l	5	5.02	100.4	90-110%
Sulfate Reducing Bacteria	MB1148	200	<200	CFU/ml				
pH	GN46109			su	6.00	6.00	100.0	99.1-100.9%
pH	GN46109			su	8.00	7.98	99.8	99.1-100.9%
pH	GN46109			su	8.00	7.98	99.8	99.1-100.9%
pH	GN46109			su	8.00	7.99	99.9	99.1-100.9%
pH	GN46109			su	8.00	7.99	99.9	99.1-100.9%
pH	GN46109			su	6.00	6.00	100.0	99.1-100.9%

Associated Samples:

Batch MB1146: DA13526-1B  
Batch MB1147: DA13526-1B  
Batch MB1148: DA13526-1B  
Batch GN46109: DA13526-1  
Batch GN46112: DA13526-1  
Batch GN46113: DA13526-1  
Batch GN46114: DA13526-1  
Batch GN46118: DA13526-1  
Batch GP24579: DA13526-1  
Batch GP24586: DA13526-1  
Batch GP24591: DA13526-1  
(\*) Outside of QC limits



DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Alkalinity, Total as CaCO3	GN46113	DA13483-1	mg/l	466	464	0.5	0-20%
Phosphorus, Total	GP24591/GN46117	DA13464-1	mg/l	0.093	0.106	13.1	0-20%
Solids, Total Dissolved	GN46118	DA13605-2	mg/l	525	527	0.4	0-5%
Specific Conductivity	GP24586/GN46110	DA13483-1	umhos/cm	792	821	3.6	0-20%
pH	GN46109	DA13483-1	su	8.61	8.59	0.2	0-5%
pH	GN46109	DA13483-1	su	8.61	8.59	0.2	0-5%

Associated Samples:

Batch GN46109: DA13526-1  
Batch GN46113: DA13526-1  
Batch GN46118: DA13526-1  
Batch GP24586: DA13526-1  
Batch GP24591: DA13526-1  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Alkalinity, Total as CaCO <sub>3</sub>	GN46113	DA13510-1	mg/l	174	100	268	93.8	80-120%
Bromide	GP24579/GN46097	DA13495-1	mg/l	0.0	5	5.1	102.0	80-120%
Chloride	GP24579/GN46097	DA13495-1	mg/l	133	50	182	98.0	80-120%
Fluoride	GP24579/GN46097	DA13495-1	mg/l	0.87	10	10.8	99.3	80-120%
Nitrogen, Nitrate	GP24579/GN46097	DA13495-1	mg/l	0.29	1	1.3	101.0	80-120%
Nitrogen, Nitrite	GP24579/GN46097	DA13495-1	mg/l	0.26	0.5	0.72	92.0	80-120%
Phosphorus, Total	GP24591/GN46117	DA13422-3	mg/l	0.0070 U	0.2	0.200	97.0	90-110%
Sulfate	GP24579/GN46097	DA13495-1	mg/l	210	50	257	94.0	80-120%

Associated Samples:

Batch GN46113: DA13526-1

Batch GP24579: DA13526-1

Batch GP24591: DA13526-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

MATRIX SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: DA13526  
Account: ABSSWYB - Absaroka Solutions  
Project: GWA\_SDE\_Vaneta\_DAF\_Permitting

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MSD Result	RPD	QC Limit
Alkalinity, Total as CaCO3	GN46113	DA13510-1	mg/l	174	100	269	0.6	20%
Bromide	GP24579/GN46097	DA13495-1	mg/l	0.0	5	5.1	0.0	20%
Chloride	GP24579/GN46097	DA13495-1	mg/l	133	50	182	0.0	20%
Fluoride	GP24579/GN46097	DA13495-1	mg/l	0.87	10	10.8	0.0	20%
Nitrogen, Nitrate	GP24579/GN46097	DA13495-1	mg/l	0.29	1	1.3	0.0	20%
Nitrogen, Nitrite	GP24579/GN46097	DA13495-1	mg/l	0.26	0.5	0.72	0.0	20%
Sulfate	GP24579/GN46097	DA13495-1	mg/l	210	50	257	0.0	20%

Associated Samples:  
Batch GN46113: DA13526-1  
Batch GP24579: DA13526-1  
(\*) Outside of QC limits  
(N) Matrix Spike Rec. outside of QC limits