



75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
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www.greenanalytical.com

24 June 2022

Tony Snow
Element Specialty Products
PO Box 789
Bloomfield, NM 87413
RE: API +

Enclosed are the results of analyses for samples received by the laboratory on 06/13/22 16:35. The data to follow was performed, in whole or in part, by Green Analytical Laboratories. Any data that was performed by a subcontract laboratory is included within the GAL report, or with an additional report attached.

If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in blue ink that reads 'Brenna Kampf'. The signature is fluid and cursive, with the first and last names being more prominent.

Brenna Kampf
Project Manager

All accredited analytes contained in this report are denoted by an asterisk (*). For a complete list of accredited analytes please do not hesitate to contact us via any of the contact information contained in this report. All of our certifications can be viewed at <http://greenanalytical.com/certifications/>

Green Analytical Laboratories is NELAP accredited through the Texas Commission on Environmental Quality. Accreditation applies to drinking water and non-potable water matrices for trace metals and a variety of inorganic parameters. Green Analytical Laboratories is also accredited through the Colorado Department of Public Health and Environment and EPA region 8 for trace metals, Cyanide, Fluoride, Nitrate, and Nitrite in drinking water. TNI Certificate Number: T104704514-22-14

Our affiliate laboratory, Cardinal Laboratories, is also NELAP accredited through the Texas Commission on Environmental Quality for a variety of organic constituents in drinking water, non-potable water and solid matrices. Cardinal is also accredited for regulated VOCs, TTHM, and HAA-5 in drinking water through the Colorado Department of Public Health and Environment and EPA region 8. TNI Certificate Number: T104704398-22-15



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Element Specialty Products

Project: API +

PO Box 789

Project Name / Number: [none]

Reported:

Bloomfield NM, 87413

Project Manager: Tony Snow

06/24/22 09:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
WO Hughes #3	2206147-01	Water	06/13/22 16:35	06/13/22 16:35	

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A handwritten signature in blue ink that reads 'Brenna Kampf'.

Brenna Kampf, Project Manager

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Bloomfield NM, 87413

Project: API +
Project Name / Number: [none]
Project Manager: Tony Snow

Reported:
06/24/22 09:46

WO Hughes #3

2206147-01 (Produced Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
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General Chemistry

Alkalinity, Bicarbonate as CaCO ₃ *	500	10.0	2.27	mg/L	5	06/20/22 14:50	2320 B		VJW
Alkalinity, Carbonate as CaCO ₃ *	140	10.0	2.27	mg/L	5	06/20/22 14:50	2320 B		VJW
Alkalinity, Hydroxide as CaCO ₃ *	<10.0	10.0	2.27	mg/L	5	06/20/22 14:50	2320 B		VJW
Alkalinity, Total as CaCO ₃ *	640	10.0	2.27	mg/L	5	06/20/22 14:50	2320 B		VJW
Chloride*	<20.0	20.0	1.11	mg/L	20	06/21/22 17:25	EPA300.0		AES
Conductivity*	1120	1.00		umho/cm @ 25.0°C	1	06/15/22 15:00	2510 B		PMS
pH*	8.69			pH Units	1	06/15/22 15:00	EPA150.1		PMS
pH Temperature, degrees C	19.7			pH Units	1	06/15/22 15:00	EPA150.1		PMS
Resistivity	893			ohm/cm	1	06/15/22 15:00	2510 B		VJW
Total Dissolved Solids*	690	10.0		mg/L	1	06/15/22 16:25	EPA160.1		VJW
Specific Gravity	1.002	0.8000		No Unit	1	06/14/22 15:20	ASTM D1429-03		VJW
Sulfate*	<20.0	20.0	2.48	mg/L	20	06/21/22 17:25	EPA300.0		AES

Potentially Dissolved Metals by ICP

Hardness	3.63	3.31	0.928	mg/L	5	06/22/22 19:27	2340 B		AES
Silica Potentially Dissolved	5.77	5.35	0.341	mg/L	5	06/22/22 19:27	2340 B		AES
Barium*	<0.100	0.100	0.042	mg/L	5	06/22/22 19:27	EPA200.7		AES
Calcium*	1.45	0.500	0.118	mg/L	5	06/22/22 19:27	EPA200.7		AES
Iron*	0.346	0.250	0.178	mg/L	5	06/22/22 19:27	EPA200.7		AES
Lead*	<0.500	0.500	0.0960	mg/L	5	06/22/22 19:27	EPA200.7		AES
Magnesium*	<0.500	0.500	0.154	mg/L	5	06/22/22 19:27	EPA200.7		AES
Manganese*	<0.100	0.100	0.037	mg/L	5	06/22/22 19:27	EPA200.7		AES
Potassium*	<5.00	5.00	0.325	mg/L	5	06/22/22 19:26	EPA200.7		AES
Silicon	2.70	2.50	0.160	mg/L	5	06/22/22 19:27	EPA200.7		AES
Sodium*	272	5.00	0.528	mg/L	5	06/22/22 19:26	EPA200.7		AES
Strontium*	<0.500	0.500	0.021	mg/L	5	06/22/22 19:26	EPA200.7		AES
Zinc*	<0.500	0.500	0.037	mg/L	5	06/22/22 19:27	EPA200.7		AES

Cation/Anion Balance -6.05

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Brenna Kampf, Project Manager

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Bloomfield NM, 87413

Project: API +
Project Name / Number: [none]
Project Manager: Tony Snow

Reported:
06/24/22 09:46

General Chemistry - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B221571 - General Prep - Wet Chem										
Duplicate (B221571-DUP1)		Source: 2206109-01		Prepared & Analyzed: 06/14/22						
Specific Gravity	1.035	0.8000	No Unit		1.037			0.193	20	
Batch B221577 - General Prep - Wet Chem										
Blank (B221577-BLK1)		Prepared & Analyzed: 06/15/22								
Total Dissolved Solids	ND	10.0	mg/L							
Duplicate (B221577-DUP1)		Source: 2206128-01		Prepared & Analyzed: 06/15/22						
Total Dissolved Solids	155	10.0	mg/L		145			6.61	20	
Reference (B221577-SRM1)		Prepared & Analyzed: 06/15/22								
Total Dissolved Solids	390	10.0	mg/L	380		103	85-115			
Batch B221594 - General Prep - Wet Chem										
Duplicate (B221594-DUP1)		Source: 2206147-01		Prepared & Analyzed: 06/15/22						
pH	8.70		pH Units		8.69			0.115	20	
pH Temperature, degrees C	19.7		pH Units		19.7			0.00	200	
Reference (B221594-SRM1)		Prepared & Analyzed: 06/15/22								
pH	7.02		pH Units	7.00		100	98.57-101.42			
Batch B221595 - General Prep - Wet Chem										
Duplicate (B221595-DUP1)		Source: 2206147-01		Prepared & Analyzed: 06/15/22						
Conductivity	1110	1.00	umho/cm @ 25.0°C		1120			0.627	20	
Reference (B221595-SRM1)		Prepared & Analyzed: 06/15/22								
Conductivity	1020	1.00	umho/cm @ 25.0°C	1000		102	90-110			
Batch B221626 - General Prep - Wet Chem										
Blank (B221626-BLK1)		Prepared & Analyzed: 06/20/22								
Alkalinity, Bicarbonate as CaCO ₃	ND	10.0	mg/L							
Alkalinity, Carbonate as CaCO ₃	ND	10.0	mg/L							
Alkalinity, Hydroxide as CaCO ₃	ND	10.0	mg/L							
Alkalinity, Total as CaCO ₃	ND	10.0	mg/L							
LCS (B221626-BS1)		Prepared & Analyzed: 06/20/22								

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06/24/22 09:46

General Chemistry - Quality Control (Continued)

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B221626 - General Prep - Wet Chem (Continued)

LCS (B221626-BS1) (Continued)

Prepared & Analyzed: 06/20/22

Alkalinity, Bicarbonate as CaCO ₃	106	10.0	mg/L	100		106	85-115			
Alkalinity, Carbonate as CaCO ₃	ND	10.0	mg/L				85-115			
Alkalinity, Hydroxide as CaCO ₃	ND	10.0	mg/L				85-115			
Alkalinity, Total as CaCO ₃	106	10.0	mg/L	100		106	85-115			

LCS Dup (B221626-BS1)

Prepared & Analyzed: 06/20/22

Alkalinity, Bicarbonate as CaCO ₃	104	10.0	mg/L	100		104	85-115	1.90	20	
Alkalinity, Carbonate as CaCO ₃	ND	10.0	mg/L				85-115		20	
Alkalinity, Hydroxide as CaCO ₃	ND	10.0	mg/L				85-115		20	
Alkalinity, Total as CaCO ₃	104	10.0	mg/L	100		104	85-115	1.90	20	

Batch B221639 - IC- Ion Chromatograph

Blank (B221639-BLK1)

Prepared & Analyzed: 06/21/22

Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							

LCS (B221639-BS1)

Prepared & Analyzed: 06/21/22

Chloride	24.6	1.00	mg/L	25.0		98.6	90-110			
Sulfate	24.1	1.00	mg/L	25.0		96.3	90-110			

LCS Dup (B221639-BS1)

Prepared & Analyzed: 06/21/22

Chloride	24.6	1.00	mg/L	25.0		98.5	90-110	0.130	20	
Sulfate	24.0	1.00	mg/L	25.0		96.2	90-110	0.158	20	

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Bloomfield NM, 87413

Project Manager: Tony Snow

06/24/22 09:46

Potentially Dissolved Metals by ICP - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B221665 - Potentially Dissolved ICP

Blank (B221665-BLK1)

Prepared & Analyzed: 06/22/22

Barium	ND	0.020	mg/L
Calcium	ND	0.100	mg/L
Iron	ND	0.050	mg/L
Lead	ND	0.100	mg/L
Magnesium	ND	0.100	mg/L
Manganese	ND	0.020	mg/L
Potassium	ND	1.00	mg/L
Silicon	ND	0.500	mg/L
Sodium	ND	1.00	mg/L
Strontium	ND	0.100	mg/L
Zinc	ND	0.100	mg/L

LCS (B221665-BS1)

Prepared & Analyzed: 06/22/22

Barium	2.41	0.020	mg/L	2.50	96.4	85-115
Calcium	4.64	0.100	mg/L	5.00	92.9	85-115
Iron	4.60	0.050	mg/L	5.00	92.0	85-115
Lead	2.34	0.100	mg/L	2.50	93.8	85-115
Magnesium	24.4	0.100	mg/L	25.0	97.5	85-115
Manganese	2.33	0.020	mg/L	2.50	93.1	85-115
Potassium	9.47	1.00	mg/L	10.0	94.7	85-115
Silicon	4.98	0.500	mg/L	5.00	99.6	85-115
Sodium	3.92	1.00	mg/L	4.05	96.7	85-115
Strontium	4.72	0.100	mg/L	5.00	94.3	85-115
Zinc	2.32	0.100	mg/L	2.50	92.9	85-115

LCS Dup (B221665-BS1)

Prepared & Analyzed: 06/22/22

Barium	2.46	0.020	mg/L	2.50	98.3	85-115	1.88	20
Calcium	4.66	0.100	mg/L	5.00	93.2	85-115	0.303	20
Iron	4.61	0.050	mg/L	5.00	92.2	85-115	0.266	20
Lead	2.36	0.100	mg/L	2.50	94.5	85-115	0.720	20
Magnesium	24.5	0.100	mg/L	25.0	98.2	85-115	0.721	20
Manganese	2.37	0.020	mg/L	2.50	94.6	85-115	1.57	20
Potassium	9.64	1.00	mg/L	10.0	96.4	85-115	1.77	20
Silicon	4.87	0.500	mg/L	5.00	97.5	85-115	2.23	20
Sodium	3.97	1.00	mg/L	4.05	98.0	85-115	1.26	20
Strontium	4.78	0.100	mg/L	5.00	95.7	85-115	1.44	20
Zinc	2.33	0.100	mg/L	2.50	93.3	85-115	0.377	20

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Element Specialty Products

Project: API +

PO Box 789

Project Name / Number: [none]

Reported:

Bloomfield NM, 87413

Project Manager: Tony Snow

06/24/22 09:46

Notes and Definitions

DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis *Results reported on as received basis unless designated as dry.
RPD	Relative Percent Difference
LCS	Laboratory Control Sample (Blank Spike)
RL	Report Limit
MDL	Method Detection Limit

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A handwritten signature in blue ink that reads 'Brenna Kampf'.

Brenna Kampf, Project Manager

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Fax: (970) 247-4227

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

FORM-006
COC - Revision 6.0

Company or Client:	Element Specialty Products		<div>ANALYSIS REQUEST</div>
Address:	6673 Hwy 64		
City:	Alconville	State: AL Zip: 37413	
Phone #:	505-402-9306		
Contact Person:	Tony Snow		
Email Report to:	Tony.Snow@element-spn.net		
Project Name(optional):	elementspn.net		
Sampler Name (Print):			
	P.O. #:	Bill to (if different):	
	Company:		
	Attn:		
	Address:		
	City:		
	State:	Zip:	
	Phone #:		
	Email:		

[illegible]

PLEASE NOTE: GAL's liability and client's exclusivity for any claim arising or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by GAL, regardless of whether such claim is based upon any of the above stated reasons or otherwise.

[illegible]

* Chain of Custody must be signed in "Relinquished By:" as an acceptance of services and all applicable charges.

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District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 137739

CONDITIONS

Operator: LOGOS OPERATING, LLC 2010 Afton Place Farmington, NM 87401	OGRID: 289408
	Action Number: 137739
	Action Type: [UF-BHT] Bradenhead Test (BRADENHEAD TEST)

CONDITIONS

Created By	Condition	Condition Date
mkuehling	for record only	8/26/2022