



75 Suttle Street
Durango, CO 81303
970.247.4220 Phone
970.247.4227 Fax
www.greenanalytical.com

09 June 2023

Bill Eaves
Hilcorp
382 CR 3100
Aztec, NM 87410
RE: East

Enclosed are the results of analyses for samples received by the laboratory on 05/30/23 13:20. 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 "Veronica J. Wells". The signature is written in a cursive style.

Veronica Wells
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: T104704514-23-17

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: T104704398-23-16



jeremy.allen@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp	Project: API - Oil Field "Complete Water"	
382 CR 3100	Project Name / Number: East	Reported:
Aztec NM, 87410	Project Manager: Bill Eaves	06/09/23 08:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
SJ 29-6 #58C BradenHead	2305323-01	Water	05/30/23 00:00	05/30/23 13:20	

Green Analytical Laboratories

Veronica Wells, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



jeremy.allen@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp
382 CR 3100
Aztec NM, 87410

Project: API - Oil Field "Complete Water"
Project Name / Number: East
Project Manager: Bill Eaves

Reported:
06/09/23 08:23

SJ 29-6 #58C BradenHead**2305323-01 (Produced Water)****Sampled Date: 05/30/23 00:00**

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
---------	--------	----	-----	-------	----------	----------	--------	-------	---------

General Chemistry

Alkalinity, Total as CaCO3*	580	10.0	6.06	mg/L	10	06/01/23 11:35	2320 B		KRW
Alkalinity, Hydroxide as CaCO3*	<10.0	10.0	6.06	mg/L	10	06/01/23 11:35	2320 B		KRW
Alkalinity, Carbonate as CaCO3*	140	10.0	6.06	mg/L	10	06/01/23 11:35	2320 B		KRW
Alkalinity, Bicarbonate as CaCO3*	440	10.0	6.06	mg/L	10	06/01/23 11:35	2320 B		KRW
Chloride*	182	20.0	1.11	mg/L	20	06/07/23 23:39	EPA300.0		AWG
Conductivity*	4020	1.00		umho/cm@25 C	1	06/01/23 09:11	2510 B		KRW
pH*	9.23			pH Units	1	06/01/23 09:11	EPA150.1	H4	KRW
pH Temperature, degrees C	16.1			pH Units	1	06/01/23 09:11	EPA150.1	H4	KRW
Resistivity	249			ohm/cm	1	05/31/23 17:19	2510 B		JDA
Specific Gravity	1.001	0.8000		No Unit	1	06/01/23 13:00	ASTM D1429-03		KRW
Sulfate*	1210	20.0	2.48	mg/L	20	06/07/23 23:39	EPA300.0		AWG
Total Dissolved Solids*	3240	40.0		mg/L	4	06/01/23 14:40	EPA160.1		AES

Potentially Dissolved Metals by ICP

Barium*	<0.400	0.400	0.156	mg/L	20	06/02/23 14:46	EPA200.7		AES
Calcium*	4.35	2.00	1.24	mg/L	20	06/02/23 14:46	EPA200.7	SD2	AES
Hardness, as CaCO3	10.9	13.2	5.98	mg/L	20	06/02/23 14:46	2340 B		AES
Iron*	5.45	1.00	0.302	mg/L	20	06/02/23 14:46	EPA200.7		AES
Lead*	<2.00	2.00	0.214	mg/L	20	06/02/23 14:46	EPA200.7	M5	AES
Magnesium*	<2.00	2.00	0.702	mg/L	20	06/02/23 14:46	EPA200.7		AES
Manganese*	<0.127	0.400	0.127	mg/L	20	06/02/23 14:46	EPA200.7		AES
Potassium*	83.9	20.0	2.08	mg/L	20	06/02/23 14:46	EPA200.7		AES
Silica (SiO2)	<3.26	21.4	3.26	mg/L	20	06/02/23 14:46	Calculation		AES
Silicon	<10.0	10.0	1.52	mg/L	20	06/02/23 14:46	EPA200.7	SD2	AES
Sodium*	840	20.0	8.18	mg/L	20	06/02/23 14:46	EPA200.7		AES
Strontium*	<2.00	2.00	0.341	mg/L	20	06/02/23 14:46	EPA200.7		AES
Zinc*	<2.00	2.00	0.155	mg/L	20	06/02/23 14:46	EPA200.7		AES

Green Analytical Laboratories

Veronica Wells, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



jeremy.allen@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp
382 CR 3100
Aztec NM, 87410

Project: API - Oil Field "Complete Water"
Project Name / Number: East
Project Manager: Bill Eaves

Reported:
06/09/23 08:23

General Chemistry - Quality Control

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

Batch B231455 - General Prep - Wet Chem

Blank (B231455-BLK1)

Prepared & Analyzed: 06/01/23

Total Dissolved Solids	ND	10.0	mg/L							
------------------------	----	------	------	--	--	--	--	--	--	--

Reference (B231455-SRM1)

Prepared & Analyzed: 06/01/23

Total Dissolved Solids	395	10.0	mg/L	370		107	85-115			
------------------------	-----	------	------	-----	--	-----	--------	--	--	--

Batch B231466 - General Prep - Wet Chem

Blank (B231466-BLK1)

Prepared & Analyzed: 06/01/23

Alkalinity, Bicarbonate as CaCO3	ND	10.0	mg/L							
Alkalinity, Carbonate as CaCO3	ND	10.0	mg/L							
Alkalinity, Hydroxide as CaCO3	ND	10.0	mg/L							
Alkalinity, Total as CaCO3	ND	10.0	mg/L							

LCS (B231466-BS1)

Prepared & Analyzed: 06/01/23

Alkalinity, Total as CaCO3	107	10.0	mg/L	100		107	85-115			
----------------------------	-----	------	------	-----	--	-----	--------	--	--	--

LCS Dup (B231466-BSD1)

Prepared & Analyzed: 06/01/23

Alkalinity, Total as CaCO3	103	10.0	mg/L	100		103	85-115	3.81	20	
----------------------------	-----	------	------	-----	--	-----	--------	------	----	--

Batch B231509 - General Prep - Wet Chem

Reference (B231509-SRM1)

Prepared & Analyzed: 06/01/23

pH	7.01		pH Units	7.00		100	98.57-101.42			
----	------	--	----------	------	--	-----	--------------	--	--	--

Batch B231511 - General Prep - Wet Chem

Reference (B231511-SRM1)

Prepared & Analyzed: 06/01/23

Conductivity	1020	1.00	umho/cm@25C	1000		102	90-110			
--------------	------	------	-------------	------	--	-----	--------	--	--	--

Batch B231533 - IC- Ion Chromatograph

Blank (B231533-BLK1)

Prepared: 06/06/23 Analyzed: 06/07/23

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

LCS (B231533-BS1)

Prepared: 06/06/23 Analyzed: 06/07/23

Chloride	25.0	1.00	mg/L	25.0		100	90-110			
Sulfate	24.4	1.00	mg/L	25.0		97.6	90-110			

LCS Dup (B231533-BSD1)

Prepared: 06/06/23 Analyzed: 06/07/23

Green Analytical Laboratories

Veronica Wells, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



jeremy.allen@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp 382 CR 3100 Aztec NM, 87410	Project: API - Oil Field "Complete Water" Project Name / Number: East Project Manager: Bill Eaves	Reported: 06/09/23 08:23
---	---	-----------------------------

**General Chemistry - Quality Control
(Continued)**

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

Batch B231533 - IC- Ion Chromatograph (Continued)

LCS Dup (B231533-BSD1) (Continued)

Prepared: 06/06/23 Analyzed: 06/07/23

Chloride	24.7	1.00	mg/L	25.0		98.8	90-110	1.24	20	
Sulfate	24.1	1.00	mg/L	25.0		96.5	90-110	1.20	20	

Green Analytical Laboratories

Veronica Wells, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



jeremy.allen@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp 382 CR 3100 Aztec NM, 87410	Project: API - Oil Field "Complete Water" Project Name / Number: East Project Manager: Bill Eaves	Reported: 06/09/23 08:23
---	---	-----------------------------

Potentially Dissolved Metals by ICP - Quality Control

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

Batch B231498 - Potentially Dissolved ICP

Blank (B231498-BLK1)

Prepared & Analyzed: 06/02/23

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 (B231498-BS1)

Prepared & Analyzed: 06/02/23

Barium	1.83	0.020	mg/L	2.00		91.6	85-115			
Calcium	3.72	0.100	mg/L	4.00		92.9	85-115			
Iron	3.69	0.050	mg/L	4.00		92.2	85-115			
Lead	1.82	0.100	mg/L	2.00		90.9	85-115			
Magnesium	18.9	0.100	mg/L	20.0		94.6	85-115			
Manganese	1.91	0.020	mg/L	2.00		95.4	85-115			
Potassium	7.61	1.00	mg/L	8.00		95.1	85-115			
Silicon	3.91	0.500	mg/L	4.00		97.7	85-115			
Sodium	3.15	1.00	mg/L	3.24		97.2	85-115			
Strontium	3.71	0.100	mg/L	4.00		92.8	85-115			
Zinc	1.80	0.100	mg/L	2.00		89.8	85-115			

LCS Dup (B231498-BSD1)

Prepared & Analyzed: 06/02/23

Barium	1.79	0.020	mg/L	2.00		89.5	85-115	2.36	20	
Calcium	3.68	0.100	mg/L	4.00		91.9	85-115	1.05	20	
Iron	3.61	0.050	mg/L	4.00		90.2	85-115	2.24	20	
Lead	1.80	0.100	mg/L	2.00		89.9	85-115	1.14	20	
Magnesium	18.6	0.100	mg/L	20.0		93.1	85-115	1.55	20	
Manganese	1.84	0.020	mg/L	2.00		92.0	85-115	3.60	20	
Potassium	7.32	1.00	mg/L	8.00		91.5	85-115	3.83	20	
Silicon	3.84	0.500	mg/L	4.00		95.9	85-115	1.86	20	
Sodium	3.08	1.00	mg/L	3.24		94.9	85-115	2.37	20	
Strontium	3.66	0.100	mg/L	4.00		91.6	85-115	1.36	20	
Zinc	1.80	0.100	mg/L	2.00		90.0	85-115	0.200	20	

Green Analytical Laboratories

Veronica Wells, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.



jeremy.allen@greenanalytical.com p: 970.247.4220 f: 970.247.4227 75 Suttle Street Durango, CO 81303

www.GreenAnalytical.com

Hilcorp 382 CR 3100 Aztec NM, 87410	Project: API - Oil Field "Complete Water" Project Name / Number: East Project Manager: Bill Eaves	Reported: 06/09/23 08:23
---	---	-----------------------------

Notes and Definitions

- SD2 Serial Dilution RPD exceeded the laboratory control limit. All other QC for analyte acceptable.
- M5 Sample was chosen for matrix spike. Spike recovery did not meet laboratory acceptance criteria, possible matrix interference in sample.
- H4 pH analysis performed more than 48 hours after sampling.
- 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

Green Analytical Laboratories

Veronica Wells, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. In no event shall Green Analytical Laboratories be liable for incidental or consequential damages. GALs liability, and clients exclusive remedy for any claim arising, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever, shall be deemed waived unless made in writing and received within thirty days after completion of the applicable service.

Client: Hilcorp	Asset: East	Phone# 505-860-5425	Contact Bill Eaves
Address: 9A CR# 5793, Farmington NM 87401		E-Mail Address: weaves@hilcorp.com	



75 Suttle Street
 Durango, CO 81303
 Phone: 970-247-4220
 FAX: 970-247-4227

CHAIN OF CUSTODY RECORD

GAL Work Order #
PO# <i>2305-323</i>
Project Name:

Sample Location:

- (1) Bumper Spring, (2) Compressor Discharge, (3) Flowline, (4) Meter, (5) Oil Tank
- (6) Pig Launcher, (7) Pig Receiver, (8) Pipeline, (9) Pit Tank, (10) Post Filter, (11) Pre Filter
- (12) Separator Inlet, (13) Separator Outlet, (14) Separator Dump, (15) SWD Inlet
- (16) SWD Outlet, (17) Transfer Pump, (18) Valve Can, (19) Water Tank, (20) Wellhead
- (21) Other

Sample Type:

- (1) Casing, (2) CO2 Gas Tube, (3) Coupon, (4) Water, (5) H2S Gas Tube, (6) Metals
- (7) O2 Gas Tube, (8) Pipe Section, (9) Residual, (10) Sludge, (11) Solid, (12) Tubing, (13) Other

*27.3 C
 NOTICE*

Collection							Preservative				Analyses Required			
Well Name (Sample Name)	Area	Date	Collected By: (Init.)	Sample Location	Sample Type	No. of Containers	Filtered: Y / N	Unpreserved	H2SO4	Other:	Iron and Manganese	Phosphate	Full Water API	Formationa Com
<i>2305-323</i> SJ 29-6 # 58C BradenHead	13	5/30/2023	MSO	20	4	1							X	

Relinquished by:	Date:	Time:	Received By:	Date:	Time:
<i>Reddon</i>	<i>5/30/23</i>	<i>13:20</i>	<i>Christen Clark</i>	<i>5/30/23</i>	<i>13:20</i>
<i>Christen Clark</i>	<i>5/30/23</i>	<i>16:55</i>	<i>Kangaroo Express</i>	<i>5/30/23</i>	<i>16:55</i>
<i>Kangaroo Express</i>	<i>5/21/23</i>	<i>08:35</i>	<i>EL</i>	<i>5/31</i>	<i>08:35</i>

*Temp: 3.1°C / ~~LABOR # 2~~
 ON ICE*

Project Information

Hilcorp

382 CR 3100

Aztec, NM 87410

Laboratory PM: Veronica Wells

Phone:(505) 599-4005

Fax:(505) 599-4005

Hilcorp

5/31/2023

Project Name: API - Oil Field "Complete Water"

Project Number: [none]

Client PM: Bill Eaves

Comments:

Analysis	Comment
Alkalinity, Total	
Barium Potentially Dissolved by ICP	
Chloride [IC]	
Conductivity	
Hardness, [POTENTIALLY DISSOLVED]	
Iron Potentially Dissolved by ICP	
Lead Potentially Dissolved by ICP	
Manganese Potentially Dissolved by ICP	
pH	
Potassium Potentially Dissolved by ICP	
Resistivity	
Silica Potentially Dissolved by ICP	
Silicon Potentially Dissolved by ICP	
Sodium Potentially Dissolved by ICP	
Specific Gravity	
Strontium Potentially Dissolved by ICP	
Sulfate [IC]	
Total Dissolved Solids [TDS]	
Zinc Potentially Dissolved by ICP	
Hardness, [POTENTIALLY DISSOLVED] subanalyses:	
Calcium Potentially Dissolved by ICP	
Magnesium Potentially Dissolved by ICP	



SAMPLE CONDITION RECEIPT FORM

Client Name: Hicorp

Work Order # 2305-323

Courier: Fed Ex UPS USPS Client Kangaroo

Custody Seals on Box/Cooler Present: Yes No

Seals Intact: Yes No

Thermometer Used: #2 Samples on ice, cooling process has begun: Yes No

Type of Ice: Wet Blue None

Cooler Temp: Observed Temp 2.1 °C Correction Factor: 0 °C Final Temp 2.1 °C
* Temp should be above freezing to 6°C

Date/Initials of person examining contents: 5/31/23
Labeled by Initials: [Signature]
(If different than above)

Chain of Custody Present:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	1.
Chain of Custody Filled Out:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	2.
Chain of Custody Relinquished:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	3.
Sampler Name and Signature on COC:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	4.
Samples arrived within hold time:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	5.
Short Hold Time Analysis (<72hr):	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	6. <u>PH/PR</u>
Rush Turn Around Time Requested:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	7.
Sufficient Volume:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	8.
Correct Containers Used:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	9.
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Dissolved Testing Needed:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	11.
Field Filtered:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
Sample Labels match COC: -Includes Date/Time/ID	<input type="checkbox"/> Yes <input type="checkbox"/> No	12.
Matrix:	<input checked="" type="checkbox"/> WT <input type="checkbox"/> SL <input type="checkbox"/> OT	
Trip Blank Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	

Client Notification/Resolution:

Person Contacted: _____

Date/Time: _____

Comments/Resolution: _____

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 229159

CONDITIONS

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 229159
	Action Type: [UF-GA] Gas Analysis (GAS ANALYSIS)

CONDITIONS

Created By	Condition	Condition Date
mkuehling	TDS 3240	10/6/2023