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04 March 2024

Kevin Fredrickson  
Hilcorp  
382 CR 3100  
Aztec, NM 87410  
RE: East

Enclosed are the results of analyses for samples received by the laboratory on 02/28/24 14:40. 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'.

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: TX-C24-00019

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

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Hilcorp  
382 CR 3100  
Aztec NM, 87410

Project: API - Oil Field "Complete Water"  
Project Name / Number: East  
Project Manager: Kevin Fredrickson

**Reported:**  
03/04/24 16:27

**ANALYTICAL REPORT FOR SAMPLES**

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Howell K 4	2402229-01	Water	02/28/24 08:00	02/28/24 14:40	

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Veronica Wells, Project Manager

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Reported:  
03/04/24 16:27

**Howell K 4**

**2402229-01 (Water)**

**Sampled Date: 02/28/24 08:00**

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

Alkalinity, Total as CaCO3*	310	10.0	8.00	mg/L	5	03/04/24 10:30	2320 B		IDB
Alkalinity, Hydroxide as CaCO3*	190	10.0	8.00	mg/L	5	03/04/24 10:30	2320 B		IDB
Alkalinity, Carbonate as CaCO3*	120	10.0	8.00	mg/L	5	03/04/24 10:30	2320 B		IDB
Alkalinity, Bicarbonate as CaCO3*	<10.0	10.0	8.00	mg/L	5	03/04/24 10:30	2320 B		IDB
Chloride*	413	100	5.55	mg/L	100	03/02/24 01:08	EPA300.0		AWG
Conductivity*	16000	1.00		umho/cm@25 C	1	03/01/24 10:20	2510 B		IDB
pH*	11.6			pH Units	1	02/28/24 15:45	EPA150.1		IDB
pH Temperature, degrees C	20.7			pH Units	1	02/28/24 15:45	EPA150.1		IDB
Resistivity	62.5			ohm/cm	1	03/04/24 08:56	2510 B		JDA
Specific Gravity	1.012	0.8000		No Unit	1	02/28/24 11:55	ASTM D1429-03		IDB
Sulfate*	8660	100	12.4	mg/L	100	03/02/24 01:08	EPA300.0		AWG
Total Dissolved Solids*	13700	20.0		mg/L	2	02/29/24 14:14	EPA160.1		IDB

**Potentially Dissolved Metals by ICP**

Barium*	<0.400	0.400	0.157	mg/L	20	03/04/24 13:32	EPA200.7		AES
Calcium*	354	2.00	0.360	mg/L	20	03/04/24 13:32	EPA200.7		AES
Hardness, as CaCO3	883	13.2	3.39	mg/L	20	03/04/24 13:32	2340 B		AES
Iron*	8.08	1.00	0.397	mg/L	20	03/04/24 13:32	EPA200.7		AES
Lead*	<2.00	2.00	0.211	mg/L	20	03/04/24 13:32	EPA200.7		AES
Magnesium*	<2.00	2.00	0.606	mg/L	20	03/04/24 13:32	EPA200.7		AES
Manganese*	<0.128	0.400	0.128	mg/L	20	03/04/24 13:32	EPA200.7		AES
Potassium*	<20.0	20.0	1.50	mg/L	20	03/04/24 13:32	EPA200.7		AES
Silica (SiO2)	8.91	21.4	1.99	mg/L	20	03/04/24 13:32	Calculation		AES
Silicon	<10.0	10.0	0.932	mg/L	20	03/04/24 13:32	EPA200.7		AES
Sodium*	4810	20.0	4.60	mg/L	20	03/04/24 13:32	EPA200.7		AES
Strontium*	13.3	2.00	0.230	mg/L	20	03/04/24 13:32	EPA200.7		AES
Zinc*	<2.00	2.00	0.183	mg/L	20	03/04/24 13:32	EPA200.7		AES

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Hilcorp 382 CR 3100 Aztec NM, 87410	Project: API - Oil Field "Complete Water" Project Name / Number: East Project Manager: Kevin Fredrickson	Reported: 03/04/24 16:27
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**General Chemistry - Quality Control**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
<b>Batch B240460 - General Prep - Wet Chem</b>										
Reference (B240460-SRM1) Prepared & Analyzed: 02/28/24										
pH	6.95		pH Units	7.00		99.3	98.57-101.42			
<b>Batch B240468 - General Prep - Wet Chem</b>										
Reference (B240468-SRM1) Prepared & Analyzed: 03/01/24										
Conductivity	990	1.00	umho/cm@25C	1000		99.0	90-110			
<b>Batch B240470 - General Prep - Wet Chem</b>										
Blank (B240470-BLK1) Prepared & Analyzed: 02/29/24										
Total Dissolved Solids	ND	10.0	mg/L							
Reference (B240470-SRM1) Prepared & Analyzed: 02/29/24										
Total Dissolved Solids	390	10.0	mg/L	400		97.5	85-115			
<b>Batch B240476 - IC- Ion Chromatograph</b>										
Blank (B240476-BLK1) Prepared & Analyzed: 03/01/24										
Chloride	ND	1.00	mg/L							
Sulfate	ND	1.00	mg/L							
LCS (B240476-BS1) Prepared & Analyzed: 03/01/24										
Chloride	23.8	1.00	mg/L	25.0		95.3	90-110			
Sulfate	23.9	1.00	mg/L	25.0		95.7	90-110			
LCS Dup (B240476-BSD1) Prepared & Analyzed: 03/01/24										
Chloride	24.8	1.00	mg/L	25.0		99.2	90-110	3.99	20	
Sulfate	24.8	1.00	mg/L	25.0		99.2	90-110	3.56	20	
<b>Batch B240478 - General Prep - Wet Chem</b>										
Blank (B240478-BLK1) Prepared & Analyzed: 03/04/24										
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 (B240478-BS1) Prepared & Analyzed: 03/04/24										
Alkalinity, Total as CaCO3	98.0	10.0	mg/L	100		98.0	85-115			

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Hilcorp 382 CR 3100 Aztec NM, 87410	Project: API - Oil Field "Complete Water" Project Name / Number: East Project Manager: Kevin Fredrickson	Reported: 03/04/24 16:27
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**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 B240478 - General Prep - Wet Chem (Continued)**

**LCS Dup (B240478-BSD1)**

Prepared & Analyzed: 03/04/24

Alkalinity, Total as CaCO3	100	10.0	mg/L	100	100	85-115	2.02	20	
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**Reference (B240478-SRM1)**

Prepared & Analyzed: 03/04/24

Alkalinity, Total as CaCO3	74.0	10.0	mg/L	72.7	102	85-115			
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Reported:  
03/04/24 16:27

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 B240475 - Potentially Dissolved ICP

Blank (B240475-BLK1)

Prepared: 03/01/24 Analyzed: 03/04/24

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 (B240475-BS1)

Prepared: 03/01/24 Analyzed: 03/04/24

Barium	1.98	0.020	mg/L	2.00		99.2	85-115			
Calcium	3.94	0.100	mg/L	4.00		98.5	85-115			
Iron	4.03	0.050	mg/L	4.00		101	85-115			
Lead	1.93	0.100	mg/L	2.00		96.3	85-115			
Magnesium	20.3	0.100	mg/L	20.0		101	85-115			
Manganese	2.03	0.020	mg/L	2.00		102	85-115			
Potassium	8.23	1.00	mg/L	8.00		103	85-115			
Silicon	3.96	0.500	mg/L	4.00		99.1	85-115			
Sodium	3.29	1.00	mg/L	3.24		101	85-115			
Strontium	3.95	0.100	mg/L	4.00		98.7	85-115			
Zinc	1.92	0.100	mg/L	2.00		95.9	85-115			

LCS Dup (B240475-BSD1)

Prepared: 03/01/24 Analyzed: 03/04/24

Barium	1.96	0.020	mg/L	2.00		97.8	85-115	1.42	20	
Calcium	3.86	0.100	mg/L	4.00		96.5	85-115	2.09	20	
Iron	3.94	0.050	mg/L	4.00		98.4	85-115	2.41	20	
Lead	1.92	0.100	mg/L	2.00		95.9	85-115	0.370	20	
Magnesium	20.0	0.100	mg/L	20.0		99.8	85-115	1.47	20	
Manganese	2.00	0.020	mg/L	2.00		100	85-115	1.43	20	
Potassium	8.16	1.00	mg/L	8.00		102	85-115	0.900	20	
Silicon	3.89	0.500	mg/L	4.00		97.3	85-115	1.79	20	
Sodium	3.24	1.00	mg/L	3.24		99.9	85-115	1.46	20	
Strontium	3.90	0.100	mg/L	4.00		97.5	85-115	1.19	20	
Zinc	1.91	0.100	mg/L	2.00		95.7	85-115	0.193	20	

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Hilcorp	Project: API - Oil Field "Complete Water"	
382 CR 3100	Project Name / Number: East	<b>Reported:</b>
Aztec NM, 87410	Project Manager: Kevin Fredrickson	03/04/24 16:27

**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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### Project Information

#### Hilcorp

382 CR 3100

Aztec, NM 87410

Laboratory PM: Veronica Wells

Phone:(505) 599-4005

Fax:(505) 599-4005

#### Hilcorp

2/28/2024

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	
<b>Hardness, [POTENTIALLY DISSOLVED] subanalyses:</b>	
Calcium Potentially Dissolved by ICP	
Magnesium Potentially Dissolved by ICP	



SAMPLE CONDITION RECEIPT FORM

Client Name: Hilcorp

Work Order # 2402-229

Courier:  Fed Ex  UPS  USPS  Client  Kangaroo  Third Party  Other

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: 15.8 °C Correction Factor: 0 °C Final Temp: 15.8 °C

\*Temp should be above freezing to 6°C

Date/Initials of person examining contents: VJW 2-28-24  
Labeled by initials: \_\_\_\_\_  
(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</u>
Rush Turn Around Time Requested:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	7. <u>3 day</u>
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. <u>poured off for metals &amp; nutrients</u>
Containers Intact:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	10.
Dissolved Testing Needed:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	11. <u>PO</u>
Field Filtered: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
Sample Labels match COC: -Includes Date/Time/ID	<input checked="" 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 type="checkbox"/> No <input type="checkbox"/> N/A	13.
Trip Blank Custody Seals Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	

Client Notification/Resolution:

Person Contacted: \_\_\_\_\_ Date/Time: \_\_\_\_\_

Comments/Resolution: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Sante Fe Main Office  
Phone: (505) 476-3441

General Information  
Phone: (505) 629-6116

Online Phone Directory  
<https://www.emnrd.nm.gov/ocd/contact-us>

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

CONDITIONS

Action 434031

**CONDITIONS**

Operator: HILCORP ENERGY COMPANY 1111 Travis Street Houston, TX 77002	OGRID: 372171
	Action Number: 434031
	Action Type: [UF-GA] Gas Analysis (GAS ANALYSIS)

**CONDITIONS**

Created By	Condition	Condition Date
mkuehling	report from 3/4/24 - tds 13700	5/1/2025