



30-045-32689

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www.GreenAnalytical.com

Hilcorp 382 Road 3100 Aztec NM, 87410	Project: API - Oil Field "Complete Water" Project Name / Number: Asset: North Project Manager: Kevin Fredrickson	Reported: 11/11/19 17:00
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Valance 33 #2 / Bradenhead

1911055-02 (Produced Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
General Chemistry									
Chloride*	3570	100	19.3	mg/L	100	11/06/19 17:20	EPA300.0		AES
pH*	11.5			pH Units	1	11/06/19 08:10	EPA150.1		FGH
Total Dissolved Solids*	8270	20.0		mg/L	2	11/07/19 14:24	EPA160.1		VJL
Sulfate*	311	100	29.5	mg/L	100	11/06/19 17:20	EPA300.0		AES
Cation/Anion Balance	-100.								

Green Analytical Laboratories

Debbie Zufelt, Reports Manager

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**Valance 33 #2 / Tubing
Area 2**

1911055-01 (Produced Water)

Analyte	Result	RL	MDL	Units	Dilution	Analyzed	Method	Notes	Analyst
General Chemistry									
Alkalinity, Bicarbonate as CaCO3*	320	10.0		mg/L	5	11/07/19 15:30	2320 B		VJL
Alkalinity, Carbonate as CaCO3*	<10.0	10.0		mg/L	5	11/07/19 15:30	2320 B		VJL
Alkalinity, Hydroxide as CaCO3*	<10.0	10.0		mg/L	5	11/07/19 15:30	2320 B		VJL
Alkalinity, Total as CaCO3*	320	10.0	3.06	mg/L	5	11/07/19 15:30	2320 B		VJL
Chloride*	1260	100	19.3	mg/L	100	11/06/19 17:02	EPA300.0		AES
Conductivity*	5230	10.0		umho/cm @ 25.0°C	1	11/06/19 08:15	2510 B		FGH
pH*	8.02			pH Units	1	11/06/19 08:10	EPA150.1		FGH
Resistivity	191			ohm/cm	1	11/06/19 08:10	2510 B		FGH
Total Dissolved Solids*	2660	10.0		mg/L	1	11/07/19 14:22	EPA160.1		VJL
Specific Gravity	1.001	0.8000		No Unit	1	11/06/19 13:50	ASTM D1429-03		VJL
Sulfate*	<29.5	100	29.5	mg/L	100	11/06/19 17:02	EPA300.0		AES
Potentially Dissolved Metals by ICP									
Barium*	2.04	0.400	0.042	mg/L	20	11/06/19 17:03	EPA200.7		AES
Calcium*	8.18	2.00	0.257	mg/L	20	11/06/19 17:03	EPA200.7		AES
Hardness, as CaCO3	20.4	13.2	2.19	mg/L	20	11/06/19 17:03	2340 B		AES
Iron*	2.58	1.00	0.553	mg/L	20	11/06/19 17:03	EPA200.7		AES
Lead*	<2.00	2.00	0.142	mg/L	20	11/06/19 17:03	EPA200.7		AES
Magnesium*	<2.00	2.00	0.375	mg/L	20	11/06/19 17:03	EPA200.7		AES
Manganese*	0.058	0.400	0.054	mg/L	20	11/06/19 17:03	EPA200.7	J	AES
Potassium*	<20.0	20.0	1.91	mg/L	20	11/06/19 17:03	EPA200.7		AES
Silica (SiO2)	0.00			mg/L	20	11/06/19 17:03	Calculation		AES
Silicon	<10.0	10.0	0.534	mg/L	20	11/06/19 17:03	EPA200.7		AES
Sodium*	998	20.0	7.34	mg/L	20	11/06/19 17:03	EPA200.7		AES
Strontium*	<2.00	2.00	0.057	mg/L	20	11/06/19 17:03	EPA200.7		AES
Zinc*	<2.00	2.00	0.043	mg/L	20	11/06/19 17:03	EPA200.7		AES
Cation/Anion Balance	2.45								

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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received	Notes
Valance 33 #2 / Tubing	1911055-01	Water	11/06/19 08:00	11/06/19 08:30	
Valance 33 #2 / Bradenhead	1911055-02	Water	11/06/19 08:00	11/06/19 08:30	

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Notes and Definitions

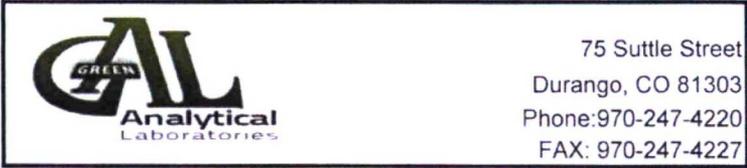
- J Estimated concentration. Analyte concentration between MDL and RL.
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
*Results reported on as received basis unless designated as dry.
- RPD Relative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

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Client: **Hilcorp** Asset: **North** Phone# **505-634-6059** Contact **Kevin Fredrickson**
 Address: 382 Road 3100, Aztec, NM. 87410 E-Mail Address kfredrickson@hilcorp.com



CHAIN OF CUSTODY RECORD
 GAL Work Order # **1911-055**
 PO#
 Project Name:

Sample Location:

(1)BumperSpring, (2)CompressorDischarge, (3)Flowline, (4)Meter, (5)Oil Tank
 (6)PigLauncher, (7)PigReceiver, (8)Pipeline, (9)Pit Tank, (10)PostFilter, (11)PreFilter
 (12)SeparatorInlet, (13)SeparatorOutlet, (14)SeparatorDump, (15)SWDInlet
 (16)SWDOutlet, (17)TransferPump, (18)ValveCan, (19)WaterTank, (20)Wellhead
 (21)Other

Sample Type:

(1)Casing, (2)CO2GasTube, (3)Coupon, (4)Water, (5)H2SGasTube, (6)Metals
 (7)O2GasTube, (8)PipeSection, (9)Residual, (10)Sludge, (11)Solid, (12)Tubing, (13)Other

	Collection				Preservative				Analyses Required							
	Post Rig water	Area	Date	Time	Collected By: (Init.)	Sample Location	Sample Type	No. of Containers	Filtered: Y / N	Unpreserved	H2SO4	Other:	Iron and Manganese	Phosphate	Full Water API	Bradenhead
1	Valance 33 # 2 / Tubing	2	11/6/2019	8am	NH	20	4	1	N	X					X	
2	Valance 33 # 2 / Bradenhead	2	11/6/2019	8am	NH	20	4	1	N	X						X
3																
4																
5																
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19																
20																

Relinquished by: *[Signature]* Date: **11-6-19** Time: **8:30am** Received By: *[Signature]* Date: **11-6-19** Time: **0830**

16.3/16.1°C
 No Ice

5 day TAT



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11 November 2019

Kevin Fredrickson

Hilcorp

382 Road 3100

Aztec, NM 87410

RE: API - Oil Field "Complete Water"

Enclosed are the results of analyses for samples received by the laboratory on 11/06/19 08:30.
If you need any further assistance, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads 'Debbie Zufelt'.

Debbie Zufelt

Reports 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.

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.