

October 20, 2020

HAYDEN HOLUB

Rice Operating Company

112 W. Taylor

Hobbs, NM 88240

RE: N-7

Enclosed are the results of analyses for samples received by the laboratory on 10/13/20 9:30.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-20-13. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**Rice Operating Company  
112 W. Taylor  
Hobbs NM, 88240Project: N-7  
Project Number: SWD N-7  
Project Manager: HAYDEN HOLUB  
Fax To: (575) 397-1471Reported:  
20-Oct-20 09:33

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
WATER SAMPLE - N7 FORMATION V	H002710-01	Water	13-Oct-20 08:15	13-Oct-20 09:30

Cardinal Laboratories

\* = Accredited Analyte

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Caley D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Rice Operating Company  
 112 W. Taylor  
 Hobbs NM, 88240

 Project: N-7  
 Project Number: SWD N-7  
 Project Manager: HAYDEN HOLUB  
 Fax To: (575) 397-1471

 Reported:  
 20-Oct-20 09:33

**WATER SAMPLE - N7 FORMATION WATER**  
**H002710-01 (Water)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories**
**Inorganic Compounds**

Alkalinity, Bicarbonate	1100		5.00	mg/L	1	0100210	AC	13-Oct-20	310.1	
Alkalinity, Carbonate	<1.00		1.00	mg/L	1	0100210	AC	13-Oct-20	310.1	
Chloride*	60000		4.00	mg/L	1	0100504	AC	13-Oct-20	4500-Cl-B	
Conductivity*	106000		1.00	umhos/cm @ 25°C	1	0101303	AC	13-Oct-20	120.1	
pH*	7.18		0.100	pH Units	1	0101303	AC	13-Oct-20	150.1	
Temperature °C	21.7			pH Units	1	0101303	AC	13-Oct-20	150.1	
Sulfate*	2340		500	mg/L	50	0101402	GM	14-Oct-20	375.4	
TDS*	100000		5.00	mg/L	1	0100903	GM	14-Oct-20	160.1	
Alkalinity, Total*	900		4.00	mg/L	1	0100210	AC	13-Oct-20	310.1	

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	11.2		1.00	mg/L	0.1	0101305	MS	13-Oct-20	8015B	
DRO >C10-C28*	50.5		1.00	mg/L	0.1	0101305	MS	13-Oct-20	8015B	
EXT DRO >C28-C36	8.61		1.00	mg/L	0.1	0101305	MS	13-Oct-20	8015B	
Surrogate: 1-Chlorooctane			86.4 %	34.5-148		0101305	MS	13-Oct-20	8015B	
Surrogate: 1-Chlorooctadecane			87.0 %	46.4-149		0101305	MS	13-Oct-20	8015B	

**Green Analytical Laboratories**
**Total Recoverable Metals by ICP (E200.7)**

Calcium*	2930		10.0	mg/L	100	B202185	AES	19-Oct-20	EPA200.7	
Magnesium*	841		10.0	mg/L	100	B202185	AES	19-Oct-20	EPA200.7	
Potassium*	851		100	mg/L	100	B202185	AES	19-Oct-20	EPA200.7	
Sodium*	36100		100	mg/L	100	B202185	AES	19-Oct-20	EPA200.7	

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Rice Operating Company  
 112 W. Taylor  
 Hobbs NM, 88240

 Project: N-7  
 Project Number: SWD N-7  
 Project Manager: HAYDEN HOLUB  
 Fax To: (575) 397-1471

 Reported:  
 20-Oct-20 09:33

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 0100210 - General Prep - Wet Chem**
**Blank (0100210-BLK1)**

Prepared &amp; Analyzed: 02-Oct-20

Alkalinity, Carbonate	ND	1.00	mg/L							
Alkalinity, Bicarbonate	5.00	5.00	mg/L							
Alkalinity, Total	4.00	4.00	mg/L							

**LCS (0100210-BS1)**

Prepared &amp; Analyzed: 02-Oct-20

Alkalinity, Carbonate	ND	2.50	mg/L				80-120			
Alkalinity, Bicarbonate	292	12.5	mg/L				80-120			
Alkalinity, Total	240	10.0	mg/L	250		96.0	80-120			

**LCS Dup (0100210-BSD1)**

Prepared &amp; Analyzed: 02-Oct-20

Alkalinity, Carbonate	ND	2.50	mg/L				80-120		20	
Alkalinity, Bicarbonate	318	12.5	mg/L				80-120	8.20	20	
Alkalinity, Total	260	10.0	mg/L	250		104	80-120	8.00	20	

**Batch 0100504 - General Prep - Wet Chem**
**Blank (0100504-BLK1)**

Prepared &amp; Analyzed: 05-Oct-20

Chloride	ND	4.00	mg/L							
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**LCS (0100504-BS1)**

Prepared &amp; Analyzed: 05-Oct-20

Chloride	100	4.00	mg/L	100		100	80-120			
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**LCS Dup (0100504-BSD1)**

Prepared &amp; Analyzed: 05-Oct-20

Chloride	100	4.00	mg/L	100		100	80-120	0.00	20	
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**Batch 0100903 - Filtration**
**Blank (0100903-BLK1)**

Prepared: 09-Oct-20 Analyzed: 13-Oct-20

TDS	ND	5.00	mg/L							
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Rice Operating Company  
 112 W. Taylor  
 Hobbs NM, 88240

 Project: N-7  
 Project Number: SWD N-7  
 Project Manager: HAYDEN HOLUB  
 Fax To: (575) 397-1471

 Reported:  
 20-Oct-20 09:33

**Inorganic Compounds - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 0100903 - Filtration**
**LCS (0100903-BS1)**

Prepared: 09-Oct-20 Analyzed: 13-Oct-20

TDS	497		mg/L	500		99.4	80-120			
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**Duplicate (0100903-DUP1)**

Source: H002664-01

Prepared: 09-Oct-20 Analyzed: 13-Oct-20

TDS	5410	5.00	mg/L		5470			1.12	20	
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**Batch 0101303 - General Prep - Wet Chem**
**LCS (0101303-BS1)**

Prepared &amp; Analyzed: 13-Oct-20

Conductivity	100000		uS/cm	100000		100	80-120			
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pH	7.07		pH Units	7.00		101	90-110			
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**Duplicate (0101303-DUP1)**

Source: H002710-01

Prepared &amp; Analyzed: 13-Oct-20

pH	7.23	0.100	pH Units		7.18			0.694	20	
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Conductivity	104000	1.00	umhos/cm @ 25°C		106000			1.90	20	
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Temperature °C	21.6		pH Units		21.7			0.462	200	
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**Batch 0101402 - General Prep - Wet Chem**
**Blank (0101402-BLK1)**

Prepared &amp; Analyzed: 14-Oct-20

Sulfate	ND	10.0	mg/L							
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**LCS (0101402-BS1)**

Prepared &amp; Analyzed: 14-Oct-20

Sulfate	18.4	10.0	mg/L	20.0		92.0	80-120			
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**LCS Dup (0101402-BSD1)**

Prepared &amp; Analyzed: 14-Oct-20

Sulfate	18.9	10.0	mg/L	20.0		94.3	80-120	2.41	20	
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Celey D. Keene, Lab Director/Quality Manager

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 112 W. Taylor  
 Hobbs NM, 88240

 Project: N-7  
 Project Number: SWD N-7  
 Project Manager: HAYDEN HOLUB  
 Fax To: (575) 397-1471

 Reported:  
 20-Oct-20 09:33

**Petroleum Hydrocarbons by GC FID - Quality Control**
**Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 0101305 - General Prep - Organics**
**Blank (0101305-BLK1)**

Prepared &amp; Analyzed: 13-Oct-20

GRO C6-C10	ND	1.00	mg/L							
DRO >C10-C28	ND	1.00	mg/L							
EXT DRO >C28-C36	ND	1.00	mg/L							
<i>Surrogate: 1-Chlorooctane</i>	3.26		mg/L	5.00		65.3	34.5-148			
<i>Surrogate: 1-Chlorooctadecane</i>	3.22		mg/L	5.00		64.4	46.4-149			

**LCS (0101305-BS1)**

Prepared &amp; Analyzed: 13-Oct-20

GRO C6-C10	48.9	1.00	mg/L	50.0		97.8	73.2-116			
DRO >C10-C28	48.3	1.00	mg/L	50.0		96.6	81.3-121			
<i>Surrogate: 1-Chlorooctane</i>	4.00		mg/L	5.00		80.0	34.5-148			
<i>Surrogate: 1-Chlorooctadecane</i>	3.83		mg/L	5.00		76.6	46.4-149			

**LCS Dup (0101305-BSD1)**

Prepared &amp; Analyzed: 13-Oct-20

GRO C6-C10	50.3	1.00	mg/L	50.0		101	73.2-116	2.91	4.68	
DRO >C10-C28	49.7	1.00	mg/L	50.0		99.5	81.3-121	2.92	9.19	
<i>Surrogate: 1-Chlorooctane</i>	4.37		mg/L	5.00		87.5	34.5-148			
<i>Surrogate: 1-Chlorooctadecane</i>	4.35		mg/L	5.00		87.0	46.4-149			

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

 Rice Operating Company  
 112 W. Taylor  
 Hobbs NM, 88240

 Project: N-7  
 Project Number: SWD N-7  
 Project Manager: HAYDEN HOLUB  
 Fax To: (575) 397-1471

 Reported:  
 20-Oct-20 09:33

**Total Recoverable Metals by ICP (E200.7) - Quality Control**
**Green Analytical Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch B202185 - Total Rec. 200.7/200.8/200.2**
**Blank (B202185-BLK1)**

Prepared: 15-Oct-20 Analyzed: 19-Oct-20

Magnesium	ND	0.100	mg/L							
Calcium	ND	0.100	mg/L							
Potassium	ND	1.00	mg/L							
Sodium	ND	1.00	mg/L							

**LCS (B202185-BS1)**

Prepared: 15-Oct-20 Analyzed: 19-Oct-20

Magnesium	19.9	0.100	mg/L	20.0		99.7	85-115			
Calcium	3.98	0.100	mg/L	4.00		99.4	85-115			
Potassium	7.91	1.00	mg/L	8.00		98.9	85-115			
Sodium	3.25	1.00	mg/L	3.24		100	85-115			

**LCS Dup (B202185-BSD1)**

Prepared: 15-Oct-20 Analyzed: 19-Oct-20

Calcium	3.95	0.100	mg/L	4.00		98.8	85-115	0.603	20	
Magnesium	19.8	0.100	mg/L	20.0		99.1	85-115	0.654	20	
Sodium	3.27	1.00	mg/L	3.24		101	85-115	0.612	20	
Potassium	7.90	1.00	mg/L	8.00		98.8	85-115	0.0694	20	

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Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager

101 East Marland, Hobbs, NM 88240  
 (575) 393-2326 FAX (575) 393-2476

**BILL TO**

**ANALYSIS REQUEST**

Company Name: *Rice Operating Company*  
 Project Manager: *Royden Hobbs*  
 Address: *112 W Taylor*  
 City: *Hobbs* State: *NM* Zip: *88240*  
 Phone #: *575 393 9174* Fax #: \_\_\_\_\_  
 Project #: \_\_\_\_\_ Project Owner: \_\_\_\_\_  
 Project Name: *SLP N-7* City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
 Project Location: *Oil Center* Phone #: \_\_\_\_\_ Fax #: \_\_\_\_\_  
 Sampler Name: *JSI*

Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP. # CONTAINERS	MATRIX						PRESERV.		DATE	TIME	ANALYSIS REQUEST							
			GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL			OTHER :							
<i>AD08710</i>	<i>Water Sample - G5</i>	<i>1</i>									<i>10-3-20</i>	<i>8:15</i>	<i>ations</i>	<i>ions</i>	<i>TDS</i>	<i>TPH</i>				

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Relinquished By: *Hoyden Hobbs*  
 Date: *10/3/20*  
 Time: *9:30*  
 Received By: *Jawana*  
 Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Verbal Result:  Yes  No  Add'l Phone #: \_\_\_\_\_  
 All Results are emailed. Please provide Email address: \_\_\_\_\_  
 REMARKS: *Rush email results: hkellogg@cardinallabsnm.com*  
*Brought straight to lab from field*

Delivered By: (Circle One)  
 Sampler - UPS - Bus - Other: \_\_\_\_\_  
 Observed Temp. °C: *25.3*  
 Corrected Temp. °C: \_\_\_\_\_  
 Sample Condition: Cool Intact  Yes  No  
 Checked By: (Initials) *JS*

Turnaround Time: *Rush* Standard  Rush   
 Thermometer ID #113  
 Correction Factor None  Yes  No   
 Bacteria (only) Sample Condition: Cool Intact  Yes  No   
 Observed Temp. °C: \_\_\_\_\_  
 Corrected Temp. °C: \_\_\_\_\_

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com