

BW - _____28_____

ANALYTICAL DATA



06/16/15

Technical Report for

Key Energy

Eunice Brine Station

Accutest Job Number: TC68447

Sampling Date: 06/05/15

Report to:

Key Energy
6 Desota Drvie Suite 4300
Midland, TX 79705
dcrenshaw@keyenergy.com

ATTN: Desiree Crenshaw

Total number of pages in report: **26**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Electa Brown 713-271-4700

Certifications: TX (T104704220-15-21, 1M104704220-15-2) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2014-139) VA (7654)

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Test results relate only to samples analyzed.

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Sample Summary

Key Energy

Job No: TC68447

Eunice Brine Station

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
TC68447-1	06/05/15	09:45	06/09/15	AQ	Water	BRINE WELL

Summary of Hits

Job Number: TC68447
Account: Key Energy
Project: Eunice Brine Station
Collected: 06/05/15

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TC68447-1	BRINE WELL					
Sodium		41900000	250000		ug/l	SW846 6010B
Chloride		274000	10000		mg/l	EPA 300
Density ^a		1.2			g/ml	ASTM DEF
Solids, Total Dissolved		320000	5000		mg/l	SM 2540C-2000
pH ^b		7.01			su	SM 4500H+ B-2000

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Field analysis required. Received out of hold time and analyzed by request.temp 22.3 c

Sample Results

Report of Analysis

Report of Analysis

3.1
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Client Sample ID:	BRINE WELL	Date Sampled:	06/05/15
Lab Sample ID:	TC68447-1	Date Received:	06/09/15
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Eunice Brine Station		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Sodium	41900000	250000	ug/l	50	06/11/15	06/12/15 NS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA11093
(2) Prep QC Batch: MP26079

RL = Reporting Limit

Report of Analysis

Client Sample ID:	BRINE WELL	Date Sampled:	06/05/15
Lab Sample ID:	TC68447-1	Date Received:	06/09/15
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Eunice Brine Station		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	274000	10000	mg/l	20000	06/11/15 16:30	ES	EPA 300
Density ^a	1.2		g/ml	1	06/12/15	ANJ	ASTM DEF
Solids, Total Dissolved	320000	5000	mg/l	1	06/10/15	BG	SM 2540C-2000
pH ^b	7.01		su	1	06/09/15 19:00	OH	SM 4500H+ B-2000

- (a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Field analysis required. Received out of hold time and analyzed by request.temp 22.3 c

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

10165 Harwin Dr, Ste 150 Houston, TX 77036
TEL. 713-271-4700 FAX: 713-271-4770
www.accutest.com

Client / Reporting Information Company Name: <u>Kay Energy</u> Street Address: <u>6000a Dr</u> City: <u>Midland</u> State: <u>TX</u> Zip: <u>79705</u> Project Contact: <u>Deena Shaw</u> E-mail: <u>deena.shaw@kayenergy.com</u> Phone #: <u>432-258-1011</u> Sampler(s) Name(s): <u>Deena Shaw</u> Phone #: <u></u>		Project Information Project Name: <u>Carnegie Buns Station</u> Street: <u></u> City: <u>Guiney</u> State: <u>TX</u> Billing Information (if different from Report to) Company Name: <u></u> Street Address: <u></u> City: <u></u> State: <u></u> Zip: <u></u> Project #: <u></u> Client Purchase Order #: <u></u> Project Manager: <u></u> Attention: <u></u>		Requested Analyses Matrix Codes: <u></u> DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge SED - Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB - Field Blank EB - Equipment Blank RB - Rinse Blank TB - Trip Blank	
Turnaround Time (Business days) ☐ Standard ☐ 5 Day RUSH ☐ 4 Day RUSH ☐ 3 Day RUSH ☐ 2 Day RUSH ☐ 1 Day EMERGENCY Emergency & Rush TIA data available VIA Lablink		Approved By (Accutest PM): / Date: _____ _____ _____ _____		Data Deliverable Information ☐ Commercial "A" (Level 1) ☐ Commercial "B" (Level 2) ☐ FULT1 (Level 3+4) ☐ REDT1 (Level 3+4) ☐ Commercial "C" ☐ TRRP ☐ EDD Format ☐ Other _____ Commercial "A" = Results Only Commercial "B" = Results + QC Summary Commercial "C" = Results + QC & Surrogate Summary	
Sample Custody must be documented below each time samples change possession, including courier delivery.					
Relinquished By Sampler: <u>1 Deena Shaw</u> Date Time: <u>3:00 6-5-15</u>		Received By: <u>1 Jason Fisher</u> Date Time: <u>5:30 6-5-15</u>		Relinquished By: <u>2 Jason Fisher</u> Date Time: <u>12:00 6-5-15</u>	
Relinquished By Sampler: <u>3 Deena Shaw</u> Date Time: <u>09:00 6-5-15</u>		Received By: <u>3 Branka Henry</u> Date Time: <u></u>		Relinquished By: <u>4</u> Date Time: <u></u>	
Relinquished By: <u>5</u> Date Time: <u></u>		Received By: <u>5</u> Date Time: <u></u>		Custody Seal # ☐ Intact ☐ Not Intact Preserved where applicable ☐ On Ice ☐ Cooler Temp.	

TC68447: Chain of Custody

Page 1 of 3

Accutest Job Number: TC68447 **Client:** KEY ENERGY **Project:** N/A
Date / Time Received: 6/9/2015 9:00:00 AM **Delivery Method:** **Airbill #'s:** 617012758114
No. Coolers: 1 **Therm ID:** IR-5; **Temp Adjustment Factor:** 0;
Cooler Temps (Initial/Adjusted): #1: (1.4/1.4);

Cooler Security **Y or N** **Y or N**
 1. Custody Seals Present: ☒ ☐ 3. COC Present: ☒ ☐
 2. Custody Seals Intact: ☒ ☐ 4. Smpl Dates/Time OK: ☒ ☐

Cooler Temperature **Y or N**
 1. Temp criteria achieved: ☒ ☐
 2. Cooler temp verification: _____
 3. Cooler media: Ice (Bag)

Quality Control Preservation **Y or N** **N/A** **WTB** **STB**
 1. Trip Blank present / cooler: ☐ ☐ ☒ ☐ ☐
 2. Trip Blank listed on COC: ☐ ☐ ☒
 3. Samples preserved properly: ☒ ☐
 4. VOCs headspace free: ☐ ☐ ☒

Sample Integrity - Documentation **Y or N**
 1. Sample labels present on bottles: ☒ ☐
 2. Container labeling complete: ☒ ☐
 3. Sample container label / COC agree: ☒ ☐

Sample Integrity - Condition **Y or N**
 1. Sample recvd within HT: ☒ ☐
 2. All containers accounted for: ☒ ☐
 3. Condition of sample: Intact

Sample Integrity - Instructions **Y or N** **N/A**
 1. Analysis requested is clear: ☒ ☐
 2. Bottles received for unspecified tests: ☐ ☒
 3. Sufficient volume recvd for analysis: ☒ ☐
 4. Compositing instructions clear: ☐ ☐ ☒
 5. Filtering instructions clear: ☐ ☐ ☒

Comments

Job #: TC68447
Date / Time Received: 6/9/2015 9:00:00 AM 9:00:00
Initials: BH
Client: KEY ENERGY

Cooler #	Sample ID:	Vol	Bot #	Location	Pres	pH	Therm ID	Initial Temp	Therm CF	Corrected Temp
1	TC68447-1	500ml	1	3D	N/P	Note #2 - Preservative check not applicable.	IR-5	1.4	0	1.4

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TC68447: Chain of Custody
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Metals Analysis

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26079
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/11/15

Metal	RL	IDL	MDL	MB raw	final
Antimony	5.0	.56	1.1		
Arsenic	5.0	1	4.7		
Barium	200	.16	.39		
Beryllium	4.0	.1	.18		
Boron	100	.39	5.9		
Cadmium	4.0	.15	.23		
Calcium	5000	4	34		
Chromium	10	.22	.62		
Cobalt	50	.25	.23		
Copper	20	.24	2.9		
Lead	3.0	.65	.77		
Lithium	300	.65	2.2		
Magnesium	5000	7.7	19		
Manganese	15	.09	.25		
Molybdenum	10	.62	.41		
Nickel	40	.22	.4		
Potassium	5000	7.6	52		
Selenium	5.0	1.2	2.4		
Silver	10	.2	.59		
Sodium	5000	5.7	23	60.9	<5000
Strontium	10	.07	.21		
Thallium	10	.83	2.1		
Tin	50	.67	1		
Titanium	20	.19	.4		
Vanadium	50	.18	.51		
Zinc	20	.13	1.5		
Sulfur	50		5.8		

Associated samples MP26079: TC68447-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26079
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/11/15

Metal	TC68455-1 Original MS	SpikeLot MPTW11	% Rec	QC Limits	
Aluminum	anr				
Antimony					
Arsenic	anr				
Barium	anr				
Beryllium					
Boron					
Cadmium	anr				
Calcium					
Chromium	anr				
Cobalt					
Copper	anr				
Lead	anr				
Lithium					
Magnesium					
Manganese	anr				
Molybdenum					
Nickel	anr				
Potassium	anr				
Selenium	anr				
Silver	anr				
Sodium	24400	73200	50000	97.6	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc	anr				
Sulfur					

Associated samples MP26079: TC68447-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26079
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/11/15

Metal	TC68455-1 Original	MSD	SpikeLot MPTW11	% Rec	MSD RPD	QC Limit
Aluminum	anr					
Antimony						
Arsenic	anr					
Barium	anr					
Beryllium						
Boron						
Cadmium	anr					
Calcium						
Chromium	anr					
Cobalt						
Copper	anr					
Lead	anr					
Lithium						
Magnesium						
Manganese	anr					
Molybdenum						
Nickel	anr					
Potassium	anr					
Selenium	anr					
Silver	anr					
Sodium	24400	72400	50000	96.0	1.1	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc	anr					
Sulfur						

Associated samples MP26079: TC68447-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26079
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/11/15

Metal	BSP Result	SpikeLot MPTW11	% Rec	QC Limits
Aluminum	anr			
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Lead	anr			
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium	anr			
Selenium	anr			
Silver	anr			
Sodium	49700	50000	99.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			
Sulfur				

Associated samples MP26079: TC68447-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26079
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/11/15

Metal	TC68455-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum	anr			
Antimony				
Arsenic	anr			
Barium	anr			
Beryllium				
Boron				
Cadmium	anr			
Calcium				
Chromium	anr			
Cobalt				
Copper	anr			
Lead	anr			
Lithium				
Magnesium				
Manganese	anr			
Molybdenum				
Nickel	anr			
Potassium	anr			
Selenium	anr			
Silver	anr			
Sodium	24400	24800	1.6	0-10
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc	anr			
Sulfur				

Associated samples MP26079: TC68447-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Bromide	GP32437/GN66304	0.50	0.0	mg/l	10	9.68	96.8	90-110%
Chloride	GP32437/GN66304	0.50	0.0	mg/l	10	9.89	98.9	90-110%
Fluoride	GP32437/GN66304	0.50	0.0	mg/l	10	10.2	102.0	90-110%
Nitrogen, Nitrate	GP32437/GN66304	0.50	0.0	mg/l	10	9.98	99.8	90-110%
Nitrogen, Nitrite	GP32437/GN66304	0.50	0.0	mg/l	10	10.0	100.0	90-110%
Solids, Total Dissolved	GN66260	10	0.0	mg/l	500	480	96.0	88-110%
Sulfate	GP32437/GN66304	0.50	0.0	mg/l	10	10.4	104.0	90-110%

Associated Samples:
Batch GN66260: TC68447-1
Batch GP32437: TC68447-1
(*) Outside of QC limits

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DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Bromide	GP32437/GN66304	TC68381-1	mg/l	1.5	1.6	6.5	0-20%
Chloride	GP32437/GN66304	TC68381-1	mg/l	5010	4810	4.1	0-20%
Fluoride	GP32437/GN66304	TC68381-1	mg/l	1.5	0.99	41.0*	0-20%
Nitrogen, Nitrate	GP32437/GN66304	TC68381-1	mg/l	0.99	0.94	5.2	0-20%
Nitrogen, Nitrite	GP32437/GN66304	TC68381-1	mg/l	0.0	0.0	0.0	0-20%
Solids, Total Dissolved	GN66260	TC68483-1	mg/l	0.0	0.0	0.0	0-5%
Sulfate	GP32437/GN66304	TC68381-1	mg/l	2610	2600	0.4	0-20%
pH	GN66245	TC68447-1	su	7.01	7.01	0.0	0-10%

Associated Samples:

Batch GN66245: TC68447-1

Batch GN66260: TC68447-1

Batch GP32437: TC68447-1

(*) Outside of QC limits

6.2

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MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68447
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Bromide	GP32437/GN66304	TC68381-1	mg/l	1.5	10	10.3	88.0	80-120%
Chloride	GP32437/GN66304	TC68381-1	mg/l	5010	5000	10700	113.8	80-120%
Fluoride	GP32437/GN66304	TC68381-1	mg/l	1.5	10	12.7	112.0	80-120%
Nitrogen, Nitrate	GP32437/GN66304	TC68381-1	mg/l	0.99	10	10	90.1	80-120%
Nitrogen, Nitrite	GP32437/GN66304	TC68381-1	mg/l	0.0	10	0.0(a)	0.0N	80-130%
Sulfate	GP32437/GN66304	TC68381-1	mg/l	2610	5000	8220	112.2	80-120%

Associated Samples:

Batch GP32437: TC68447-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(a) Outside control limits due to matrix interference

Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody

10165 Harwin Drive, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutesl.com

FED-EX Tracking # <u>5642 4618 8286</u>				Bottle Order Control #			
Accutest Quote #				Accutest Job # TC68447			
Requested Analysis (see TEST CODE sheet)							Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL- Sludge SED- Sediment OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe FB-Field Blank EB-Equipment Blank RB- Rinse Blank TB- Trip Blank
LAB USE ONLY							
DENS. X							TX
Comments / Special Instructions							
Split off into 250ml container.							
INITIAL ASSESSMENT <u>HL</u> LABEL VERIFICATION <u>HL</u>							
Date Time: <u>10:00</u> <u>6-11-15</u>							Received By: <u>[Signature]</u> Date: <u>6-11-15</u>
Date Time:							Received By: <u>[Signature]</u> Date:
On Ice							Cooler Temp. <u>21°C</u>

7.1

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC68447 Client: _____ Project: _____
 Date / Time Received: 6/11/2015 10:00:00 AM Delivery Method: _____ Airbill #s: _____

Cooler Temps (Raw Measured) °C: Cooler 1: (2.1);
 Cooler Temps (Corrected) °C: Cooler 1: (1.8);

Cooler Security

Y or N

- | | | | | | |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | ☒ | ☐ | 3. COC Present: | ☒ | ☐ |
| 2. Custody Seals Intact: | ☒ | ☐ | 4. Smpl Dates/Time OK | ☒ | ☐ |

Cooler Temperature

Y or N

- | | | |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved: | ☒ | ☐ |
| 2. Cooler temp verification: | <u>IR Gun</u> | |
| 3. Cooler media: | <u>Ice (Bag)</u> | |
| 4. No. Coolers: | <u>1</u> | |

Quality Control Preservation

Y or N

N/A

- | | | | |
|---------------------------------|-------------------------------------|-------------------------------------|--------------------------|
| 1. Trip Blank present / cooler: | ☐ | ☒ | ☐ |
| 2. Trip Blank listed on COC: | ☐ | ☒ | ☐ |
| 3. Samples preserved properly: | ☒ | ☐ | |
| 4. VOCs headspace free: | ☐ | ☒ | ☐ |

Sample Integrity - Documentation

Y or N

- | | | |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles: | ☒ | ☐ |
| 2. Container labeling complete: | ☒ | ☐ |
| 3. Sample container label / COC agree: | ☒ | ☐ |

Sample Integrity - Condition

Y or N

- | | | |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT: | ☒ | ☐ |
| 2. All containers accounted for: | ☒ | ☐ |
| 3. Condition of sample: | <u>Intact</u> | |

Sample Integrity - Instructions

Y or N N/A

- | | | | |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear: | ☒ | ☐ | |
| 2. Bottles received for unspecified tests | ☐ | ☒ | |
| 3. Sufficient volume recvd for analysis: | ☒ | ☐ | |
| 4. Compositing instructions clear: | ☐ | ☐ | ☒ |
| 5. Filtering instructions clear: | ☐ | ☐ | ☒ |

Comments

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68447
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: KEYETXM: Eunice Brine Station

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Density	GN27040	TC68447-1	g/ml	1.2	1.2	0.0	0-20%

Associated Samples:
Batch GN27040: TC68447-1
(*) Outside of QC limits

8.1

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Griswold, Jim, EMNRD

From: wayne price <wayneprice77@earthlink.net>
Sent: Thursday, July 24, 2014 6:53 PM
To: Griswold, Jim, EMNRD
Cc: Mike Slaughter; Bobby Sisson; Dan Gibson
Subject: Key 2nd QTR BW-28
Attachments: BW-28 2nd Qtr_Summary + Full.pdf

Dear Jim,

Please find attached the 2014 2nd qtr water analysis for the Key Eunice Brine Well Bw-28. Please file.

Wayne Price-Price LLC

Summary Report

Wayne Price
Key Energy Services-Farmington
Rocky Mountain Rigs 26 Rd. 3720
P.O. Box 900
Farmington, NM 87401

Report Date: July 24, 2014

Work Order: 14071639



Project Location: Eunice, NM
Project Name: 1/4 Sampling
Project Number: BW-28

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
368528	Fresh	water	2014-07-10	15:16	2014-07-11
368529	Brine	water	2014-07-10	15:04	2014-07-11

Sample: 368528 - Fresh

Param	Flag	Result	Units	RL
Chloride		44.5	mg/L	2.5
Density		0.999	g/ml	
pH		7.81	s.u.	2
Total Dissolved Solids		432	mg/L	2.5

Sample: 368529 - Brine

Param	Flag	Result	Units	RL
Chloride		181000	mg/L	2.5
Density		1.20	g/ml	
Dissolved Sodium		105000	mg/L	1
pH		6.85	s.u.	2
Total Dissolved Solids		316000	mg/L	2.5



6701 Aberdeen Avenue, Suite 9
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Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Wayne Price
Key Energy Services-Farmington
Rocky Mountain Rigs 26 Rd. 3720
P.O. Box 900
Farmington, NM, 87401

Report Date: July 24, 2014

Work Order: 14071639



Project Location: Eunice, NM
Project Name: 1/4 Sampling
Project Number: BW-28

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
368528	Fresh	water	2014-07-10	15:16	2014-07-11
368529	Brine	water	2014-07-10	15:04	2014-07-11

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 16 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Dr. Blair Leftwich, Director
James Taylor, Assistant Director

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Case Narrative

Samples for project 1/4 Sampling were received by TraceAnalysis, Inc. on 2014-07-11 and assigned to work order 14071639. Samples for work order 14071639 were received intact at a temperature of 3.5 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Chloride (IC)	E 300.0	96346	2014-07-23 at 14:00	113911	2014-07-23 at 15:31
Density	ASTM D854-92	96173	2014-07-17 at 10:35	113705	2014-07-17 at 10:45
Na, Dissolved	S 6010C	96254	2014-07-21 at 12:38	113856	2014-07-22 at 16:27
pH	SM 4500-H+	96195	2014-07-17 at 14:34	113731	2014-07-17 at 14:34
TDS	SM 2540C	96314	2014-07-17 at 17:00	113871	2014-07-17 at 17:00

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 14071639 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

Page Number: 4 of 16
Eunice, NM

Analytical Report

Sample: 368528 - Fresh

Laboratory:	Lubbock	Analytical Method:	E 300.0	Prep Method:	N/A
Analysis:	Chloride (IC)	Date Analyzed:	2014-07-23	Analyzed By:	RL
QC Batch:	113911	Sample Preparation:		Prepared By:	RL
Prep Batch:	96346				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride	B	1,2,3,4,5	44.5	mg/L	5	2.50

Sample: 368528 - Fresh

Laboratory:	Lubbock	Analytical Method:	ASTM D854-92	Prep Method:	N/A
Analysis:	Density	Date Analyzed:	2014-07-17	Analyzed By:	CF
QC Batch:	113705	Sample Preparation:	2014-07-17	Prepared By:	CF
Prep Batch:	96173				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			0.999	g/ml	1	0.00

Sample: 368528 - Fresh

Laboratory:	Lubbock	Analytical Method:	SM 4500-H+	Prep Method:	N/A
Analysis:	pH	Date Analyzed:	2014-07-17	Analyzed By:	AT
QC Batch:	113731	Sample Preparation:	2014-07-17	Prepared By:	AT
Prep Batch:	96195				

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	7.81	s.u.	1	2.00

Sample: 368528 - Fresh

Laboratory:	Lubbock	Analytical Method:	SM 2540C	Prep Method:	N/A
Analysis:	TDS	Date Analyzed:	2014-07-17	Analyzed By:	RL
QC Batch:	113871	Sample Preparation:		Prepared By:	RL
Prep Batch:	96314				

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

Page Number: 5 of 16
Eunice, NM

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	432	mg/L	10	2.50

Sample: 368529 - Brine

Laboratory:	Lubbock				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	113911	Date Analyzed:	2014-07-23	Analyzed By:	RL
Prep Batch:	96346	Sample Preparation:		Prepared By:	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1,2,3,4,5	181000	mg/L	5000	2.50

Sample: 368529 - Brine

Laboratory:	Lubbock				
Analysis:	Density	Analytical Method:	ASTM D854-92	Prep Method:	N/A
QC Batch:	113705	Date Analyzed:	2014-07-17	Analyzed By:	CF
Prep Batch:	96173	Sample Preparation:	2014-07-17	Prepared By:	CF

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Density			1.20	g/ml	1	0.00

Sample: 368529 - Brine

Laboratory:	Lubbock				
Analysis:	Na, Dissolved	Analytical Method:	S 6010C	Prep Method:	S 3005A
QC Batch:	113856	Date Analyzed:	2014-07-22	Analyzed By:	RR
Prep Batch:	96254	Sample Preparation:	2014-07-21	Prepared By:	RR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Dissolved Sodium		2,3,4,5	105000	mg/L	1000	1.00

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

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Eunice, NM

Sample: 368529 - Brine

Laboratory: Lubbock

Analysis: pH

QC Batch: 113731

Prep Batch: 96195

Analytical Method: SM 4500-H+

Date Analyzed: 2014-07-17

Sample Preparation: 2014-07-17

Prep Method: N/A

Analyzed By: AT

Prepared By: AT

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
pH		1,2,4,5	6.85	s.u.	1	2.00

Sample: 368529 - Brine

Laboratory: Lubbock

Analysis: TDS

QC Batch: 113871

Prep Batch: 96314

Analytical Method: SM 2540C

Date Analyzed: 2014-07-17

Sample Preparation:

Prep Method: N/A

Analyzed By: RL

Prepared By: RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Total Dissolved Solids		1,2,3,4,5	316000	mg/L	2000	2.50

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

Page Number: 7 of 16
Eunice, NM

Method Blanks

Method Blank (1) QC Batch: 113705

QC Batch: 113705 Date Analyzed: 2014-07-17 Analyzed By: CF
Prep Batch: 96173 QC Preparation: 2014-07-17 Prepared By: CF

Parameter	Flag	Cert	MDL Result	Units	RL
Density			0.997	g/ml	

Method Blank (1) QC Batch: 113856

QC Batch: 113856 Date Analyzed: 2014-07-22 Analyzed By: RR
Prep Batch: 96254 QC Preparation: 2014-07-21 Prepared By: PM

Parameter	Flag	Cert	MDL Result	Units	RL
Dissolved Sodium		2,3,4,5	<0.0184	mg/L	1

Method Blank (1) QC Batch: 113871

QC Batch: 113871 Date Analyzed: 2014-07-17 Analyzed By: RL
Prep Batch: 96314 QC Preparation: 2014-07-17 Prepared By: RL

Parameter	Flag	Cert	MDL Result	Units	RL
Total Dissolved Solids		1,2,3,4,5	<25.0	mg/L	2.5

Method Blank (1) QC Batch: 113911

QC Batch: 113911 Date Analyzed: 2014-07-23 Analyzed By: RL
Prep Batch: 96346 QC Preparation: 2014-07-23 Prepared By: RL

Report Date: July 24, 2014
BW-28

Work Order: 14071639
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Eunice, NM

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1,2,3,4,5	1.09	mg/L	2.5

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

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Eunice, NM

Duplicates

Duplicates (1) Duplicated Sample: 368450

QC Batch: 113705 Date Analyzed: 2014-07-17 Analyzed By: CF
Prep Batch: 96173 QC Preparation: 2014-07-17 Prepared By: CF

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Density	0.997	0.996	g/ml	1	0	20

Duplicates (1) Duplicated Sample: 365547

QC Batch: 113731 Date Analyzed: 2014-07-17 Analyzed By: AT
Prep Batch: 96195 QC Preparation: 2014-07-17 Prepared By: AT

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
pH	6.80	7.16	s.u.	1		20

Duplicates (1) Duplicated Sample: 368530

QC Batch: 113871 Date Analyzed: 2014-07-17 Analyzed By: RL
Prep Batch: 96314 QC Preparation: 2014-07-17 Prepared By: RL

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Total Dissolved Solids	2220	2200	mg/L	50	1	10

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

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Eunice, NM

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 113856
Prep Batch: 96254

Date Analyzed: 2014-07-22
QC Preparation: 2014-07-21

Analyzed By: RR
Prepared By: PM

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	51.5	mg/L	1	52.5	<0.0184	98	85 - 115

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		2,3,4,5	50.6	mg/L	1	52.5	<0.0184	96	85 - 115	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 113871
Prep Batch: 96314

Date Analyzed: 2014-07-17
QC Preparation: 2014-07-17

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Total Dissolved Solids		1,2,3,4,5	1020	mg/L	10	1000	<25.0	102	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Total Dissolved Solids		1,2,3,4,5	1000	mg/L	10	1000	<25.0	100	90 - 110	2	10

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Laboratory Control Spike (LCS-1)

QC Batch: 113911
Prep Batch: 96346

Date Analyzed: 2014-07-23
QC Preparation: 2014-07-23

Analyzed By: RL
Prepared By: RL

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	24.3	mg/L	1	25.0	1.09	93	90 - 110

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	24.4	mg/L	1	25.0	1.09	93	90 - 110	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

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Eunice, NM

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 366283

QC Batch: 113856
Prep Batch: 96254

Date Analyzed: 2014-07-22
QC Preparation: 2014-07-21

Analyzed By: RR
Prepared By: PM

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Dissolved Sodium		2,3,4,5	888	mg/L	1	525	467	80	75 - 125

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Dissolved Sodium		2,3,4,5	985	mg/L	1	525	467	99	75 - 125	10	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Matrix Spike (MS-1) Spiked Sample: 368528

QC Batch: 113911
Prep Batch: 96346

Date Analyzed: 2014-07-23
QC Preparation: 2014-07-23

Analyzed By: RL
Prepared By: RL

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1,2,3,4,5	184	mg/L	5	125	44.5	112	80 - 120

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1,2,3,4,5	177	mg/L	5	125	44.5	106	80 - 120	4	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Report Date: July 24, 2014
BW-28

Work Order: 14071639
1/4 Sampling

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Eunice, NM

Calibration Standards

Standard (ICV-1)

QC Batch: 113731

Date Analyzed: 2014-07-17

Analyzed By: AT

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		1,2,4,5	s.u.	7.00	7.01	100	98 - 102	2014-07-17

Standard (CCV-1)

QC Batch: 113731

Date Analyzed: 2014-07-17

Analyzed By: AT

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
pH		1,2,4,5	s.u.	7.00	7.01	100	98 - 102	2014-07-17

Standard (ICV-1)

QC Batch: 113856

Date Analyzed: 2014-07-22

Analyzed By: RR

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	51.0	51.5	101	90 - 110	2014-07-22

Standard (CCV-1)

QC Batch: 113856

Date Analyzed: 2014-07-22

Analyzed By: RR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Dissolved Sodium		2,3,4,5	mg/L	51.0	52.8	104	90 - 110	2014-07-22

Standard (CCV-1)

QC Batch: 113911				Date Analyzed: 2014-07-23			Analyzed By: RL	
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,3,4,5	mg/L	25.0	24.3	97	90 - 110	2014-07-23

Standard (CCV-2)

QC Batch: 113911				Date Analyzed: 2014-07-23			Analyzed By: RL	
Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1,2,3,4,5	mg/L	25.0	24.3	97	90 - 110	2014-07-23

Appendix

Report Definitions

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
2	Kansas	Kansas E-10317	Lubbock
3	LELAP	LELAP-02003	Lubbock
4	NELAP	T104704219-14-10	Lubbock
5		2013-083	Lubbock

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
MI1	Split peak or shoulder peak
MI2	Instrument software did not integrate
MI3	Instrument software misidentified the peak
MI4	Instrument software integrated improperly
MI5	Baseline correction
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.

F	Description
U	The analyte is not detected above the SDL

Attachments

The scanned attachments will follow this page.
Please note, each attachment may consist of more than one page.

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BioAquatic Testing
2501 Mayes Rd., Ste 100
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Tel (972) 242-7750

Company Name:	KEY ENERGY	Phone #:	505-715-2809
Address:	(Street, City, Zip)	Fax #:	
Contact Person:	WAYNE PRICE	E-mail:	wayneprice77@earthlink.net
Invoice to:			
(If different from above)	KEY ENERGY		
Project #:	BW-28	Project Name:	ky sampling
Project Location (including state):	EL PASO NM	Sampler Signature:	LUPON

ANALYSIS REQUEST
(Circle or Specify Method No.)

[illegible]

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST
L W PZ	PRICE LLC	7/11/14	4:45 PM	Bridget Bonds		7-11-14		OBS
								COR
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST
								OBS
								COR
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST
				Alex TA		7/11/14	10:10	OBS
								COR

LAB USE ONLY		REMARKS:
Intact	<u>Y</u> <u>N</u>	
Headspace	<u>Y</u> <u>N</u> <u>NA</u>	
Log-in-Review	<u>PL</u>	☐ Dry Weight Basis Required ☐ TRRP Report Required ☐ Check If Special Reporting Limits Are Needed

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier #

LS: ER 29 25 25

ORIGINAL COPY



06/22/15

Technical Report for

Key Energy

Eunice Brine Station

Accutest Job Number: TC68757

Sampling Date: 06/12/15

Report to:

Key Energy
6 Desota Drvie Suite 4300
Midland, TX 79705
dcrenshaw@keyenergy.com

ATTN: Desiree Crenshaw

Total number of pages in report: **24**



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable.


Richard Rodriguez
Laboratory Director

Client Service contact: Electa Brown 713-271-4700

Certifications: TX (T104704220-15-21, 1M104704220-15-2) AR (14-016-0) AZ (AZ0769) FL (E87628)
KS (E-10366) LA (85695/04004) NJ (TX010) OK (2014-172) VA (7654)

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Test results relate only to samples analyzed.

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Sample Summary

Key Energy

Job No: TC68757

Eunice Brine Station

Sample Number	Collected		Received	Matrix		Client Sample ID
	Date	Time By		Code	Type	
TC68757-1	06/12/15	09:45	06/13/15	AQ	Water	FRESH WATER

Summary of Hits

Job Number: TC68757
Account: Key Energy
Project: Eunice Brine Station
Collected: 06/12/15

Lab Sample ID	Client Sample ID	Result/ Qual	RL	MDL	Units	Method
TC68757-1	FRESH WATER					
Sodium		40500	5000		ug/l	SW846 6010B
Chloride		46.3	2.5		mg/l	EPA 300
Density ^a		0.98			g/ml	ASTM DEF
Solids, Total Dissolved		367	10		mg/l	SM 2540C-2000
pH ^b		7.67			su	SM 4500H+ B-2000

(a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Field analysis required. Received out of hold time and analyzed by request.temp 20.0 c

Sample Results

Report of Analysis

Report of Analysis

3.1
3

Client Sample ID:	FRESH WATER	Date Sampled:	06/12/15
Lab Sample ID:	TC68757-1	Date Received:	06/13/15
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Eunice Brine Station		

Total Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Sodium	40500	5000	ug/l	1	06/17/15	06/17/15 NS	SW846 6010B ¹	SW846 3010A ²

(1) Instrument QC Batch: MA11107
(2) Prep QC Batch: MP26107

RL = Reporting Limit

Report of Analysis

Client Sample ID:	FRESH WATER	Date Sampled:	06/12/15
Lab Sample ID:	TC68757-1	Date Received:	06/13/15
Matrix:	AQ - Water	Percent Solids:	n/a
Project:	Eunice Brine Station		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chloride	46.3	2.5	mg/l	5	06/19/15 15:31	ES	EPA 300
Density ^a	0.98		g/ml	1	06/20/15	ANJ	ASTM DEF
Solids, Total Dissolved	367	10	mg/l	1	06/17/15	BG	SM 2540C-2000
pH ^b	7.67		su	1	06/13/15	KJ	SM 4500H+ B-2000

- (a) Analysis performed at Accutest Laboratories, Dayton, NJ.
(b) Field analysis required. Received out of hold time and analyzed by request.temp 20.0 c

RL = Reporting Limit

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

Metals Analysis

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QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Matrix Spike and Duplicate Summaries
- Blank Spike and Lab Control Sample Summaries
- Serial Dilution Summaries

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26107
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/17/15

Metal	RL	IDL	MDL	MB raw	final
Aluminum	200	6.9	18		
Antimony	5.0	.56	1.1		
Arsenic	5.0	1	4.7		
Barium	200	.16	.39		
Beryllium	4.0	.1	.18		
Boron	100	.39	5.9		
Cadmium	4.0	.15	.23		
Calcium	5000	4	34		
Chromium	10	.22	.62		
Cobalt	50	.25	.23		
Copper	20	.24	2.9		
Iron	100	4.6	30		
Lead	3.0	.65	.77		
Lithium	300	.65	2.2		
Magnesium	5000	7.7	19		
Manganese	15	.09	.25		
Molybdenum	10	.62	.41		
Nickel	40	.22	.4		
Potassium	5000	7.6	52		
Selenium	5.0	1.2	2.4		
Silver	10	.2	.59		
Sodium	5000	5.7	23	-1.3	<5000
Strontium	10	.07	.21		
Thallium	10	.83	2.1		
Tin	50	.67	1		
Titanium	20	.19	.4		
Vanadium	50	.18	.51		
Zinc	20	.13	1.5		
Sulfur	50		5.8		

Associated samples MP26107: TC68757-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26107
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/17/15

Metal	TC68766-1 Original MS		SpikeLot MPTW11	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron	anr				
Lead					
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium	26200	74400	50000	96.4	75-125
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					
Sulfur					

Associated samples MP26107: TC68757-1

Results < IDL are shown as zero for calculation purposes

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26107
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/17/15

Metal	TC68766-1 Original	MSD	SpikeLot MPTW11	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron	anr					
Lead						
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Potassium						
Selenium						
Silver						
Sodium	26200	74000	50000	95.6	0.5	20
Strontium						
Thallium						
Tin						
Titanium						
Vanadium						
Zinc						
Sulfur						

Associated samples MP26107: TC68757-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits
(anr) Analyte not requested

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

QC Batch ID: MP26107
Matrix Type: AQUEOUS

Methods: SW846 6010B
Units: ug/l

Prep Date: 06/17/15

Metal	BSP Result	SpikeLot MPTW11	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron	anr			
Lead				
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Potassium				
Selenium				
Silver				
Sodium	48500	50000	97.0	80-120
Strontium				
Thallium				
Tin				
Titanium				
Vanadium				
Zinc				
Sulfur				

Associated samples MP26107: TC68757-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: TC68757
 Account: KEYETXM - Key Energy
 Project: Eunice Brine Station

QC Batch ID: MP26107
 Matrix Type: AQUEOUS

Methods: SW846 6010B
 Units: ug/l

Prep Date: 06/17/15

Metal		TC68766-1 Original SDL 1:5		%DIF	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron	anr				
Lead					
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Potassium					
Selenium					
Silver					
Sodium	26200	25500	2.6	0-10	
Strontium					
Thallium					
Tin					
Titanium					
Vanadium					
Zinc					
Sulfur					

Associated samples MP26107: TC68757-1

Results < IDL are shown as zero for calculation purposes
 (*) Outside of QC limits
 (anr) Analyte not requested

General Chemistry

QC Data Summaries

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

METHOD BLANK AND SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chloride	GP32525/GN66488	0.50	0.0	mg/l	10	10.1	101.0	90-110%
Solids, Total Dissolved	GN66393	10	0.0	mg/l	500	495	99.0	88-110%
Sulfate	GP32525/GN66488	0.50	0.0	mg/l	10	10.8	108.0	90-110%

Associated Samples:
Batch GN66393: TC68757-1
Batch GP32525: TC68757-1
(*) Outside of QC limits

6.1
6

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chloride	GP32525/GN66488	TC68707-10	mg/l	51.8	51.9	0.2	0-20%
Solids, Total Dissolved	GN66393	TC68764-1	mg/l	12900	13100	1.5	0-5%
Sulfate	GP32525/GN66488	TC68707-10	mg/l	33.6	33.5	0.3	0-20%
pH	GN66361	TC68757-1	su	7.67	7.67	0.0	0-10%

Associated Samples:

Batch GN66361: TC68757-1

Batch GN66393: TC68757-1

Batch GP32525: TC68757-1

(*) Outside of QC limits

6.2

6

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68757
Account: KEYETXM - Key Energy
Project: Eunice Brine Station

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chloride	GP32525/GN66488	TC68707-10	mg/l	51.8	50	103	102.4	80-120%
Sulfate	GP32525/GN66488	TC68707-10	mg/l	33.6	50	83.4	99.6	80-120%

Associated Samples:

Batch GP32525: TC68757-1

(*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits

6.3

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Misc. Forms

Custody Documents and Other Forms

(Accutest New Jersey)

Includes the following where applicable:

- Chain of Custody

10165 Harwin Drive, Houston, TX 77036
TEL: 713-271-4700 FAX: 713-271-4770
www.accutest.com

Rep-EX Testing # 3042 468 8540		Bottle Order Control #	
Accutest Order #		TC68757	
Client / Reporting Information		Project Information	
Company Name Accutest Laboratories		Project Name Eunice Brine Station	
Street Address 10165 Harwin Drive		Street	
City State Zip Houston TX 77036		City State	
Project Contact electab electab@accutest.com		Billing Information (if different from Report to) Company Name	
Phone # 713-271-4700		Project #	
Fax #		Street Address	
Sampler(s) Name(s)		Client Purchase Order #	
Phone		City State Zip	
Project Manager Electa Brown		Attention:	
Turnaround Time (Business days)		Data Deliverable Information	
☐ Std. 10 Business Days ☐ 5 Day RUSH ☐ 3 Day EMERGENCY ☐ 2 Day EMERGENCY ☐ 1 Day EMERGENCY ☒ other Due 6/22/2015 Emergency & Rush T/A data available VIA Lablink		☐ Commercial "A" (Level 1) ☐ Commercial "B" (Level 2) ☐ FULLT1 (Level 3+4) ☐ NJ Reduced ☐ Commercial "C" ☐ NYASP Category A ☐ NYASP Category B ☒ State I CUMMMS ☐ EDD Format ☐ Other	
Approved By (Accutest PM): I Date:		Comments / Special Instructions Split off 100mls for NJ. INITIAL ASSESSMENT <u>3A</u> LABEL VERIFICATION <u>62</u>	
Sample Custody must be documented below each time samples change possession, including courier delivery.			
Relinquished By Sampler:	Date Tr	Received By:	Date Time
1 <u>[Signature]</u>	6-13-15	1 <u>Fed EX</u>	9:30
Relinquished by Sampler:	Date Time:	Received By:	Date Time:
3 <u>[Signature]</u>		2 <u>[Signature]</u>	
Relinquished by:	Date Time:	Received By:	Date Time:
5 <u>[Signature]</u>		4 <u>[Signature]</u>	
Custody Seal #		Preserved where applicable	
client		☐ Inlet ☐ Risk Inlet	
On Ice		Cooler Temp.	
✓		330 CIP	

TC68757: Chain of Custody

Page 1 of 2

Accutest New Jersey

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: TC68757 **Client:** _____ **Project:** _____
Date / Time Received: 6/19/2015 9:30:00 AM **Delivery Method:** _____ **Airbill #s:** _____

Cooler Temps (Raw Measured) °C: Cooler 1: (3.3);
 Cooler Temps (Corrected) °C: Cooler 1: (3.0);

Cooler Security
Y or N
Y or N

- | | |
|--|--|
| 1. Custody Seals Present: ☒ ☐ | 3. COC Present: ☒ ☐ |
| 2. Custody Seals Intact: ☒ ☐ | 4. Smpl Dates/Time OK ☒ ☐ |

Cooler Temperature
Y or N

- | | |
|---|-----------|
| 1. Temp criteria achieved: ☒ ☐ | |
| 2. Cooler temp verification: _____ | IR Gun |
| 3. Cooler media: _____ | Ice (Bag) |
| 4. No. Coolers: _____ | 1 |

Quality Control Preservation
Y or N
N/A

- | | |
|---|--|
| 1. Trip Blank present / cooler: ☐ ☒ ☐ | |
| 2. Trip Blank listed on COC: ☐ ☒ ☐ | |
| 3. Samples preserved properly: ☒ ☐ ☐ | |
| 4. VOCs headspace free: ☐ ☐ ☒ | |

Sample Integrity - Documentation
Y or N

- | | |
|---|--|
| 1. Sample labels present on bottles: ☒ ☐ | |
| 2. Container labeling complete: ☒ ☐ | |
| 3. Sample container label / COC agree: ☒ ☐ | |

Sample Integrity - Condition
Y or N

- | | |
|---|--------|
| 1. Sample recvd within HT: ☒ ☐ | |
| 2. All containers accounted for: ☒ ☐ | |
| 3. Condition of sample: _____ | Intact |

Sample Integrity - Instructions
Y or N N/A

- | | |
|---|-------------------------------------|
| 1. Analysis requested is clear: ☒ ☐ | |
| 2. Bottles received for unspecified tests: ☐ ☒ | |
| 3. Sufficient volume recvd for analysis: ☒ ☐ | |
| 4. Compositing instructions clear: ☐ ☐ | ☒ |
| 5. Filtering instructions clear: ☐ ☐ | ☒ |

 Comments

General Chemistry

QC Data Summaries

(Accutest New Jersey)

Includes the following where applicable:

- Method Blank and Blank Spike Summaries
- Duplicate Summaries
- Matrix Spike Summaries

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: TC68757
Account: ALGC - Accutest Laboratories Gulf Coast, Inc.
Project: KEYETXM: Eunice Brine Station

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Density	GN27543	TC68757-1	g/ml	0.98	0.98	0.0	0-20%

Associated Samples:
Batch GN27543: TC68757-1
(*) Outside of QC limits

8.1

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