

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Denver

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Arvada, CO 80002

Tel: (303)736-0100

TestAmerica Job ID: 280-88061-1

Client Project/Site: COGCC - Remediation Project #9678

For:

Colorado Oil&Gas Conservation Commision

1120 Lincoln St.

Suite 801

Denver, Colorado 80203

Attn: Mr. Steven Arauza



Authorized for release by:

9/27/2016 4:06:13 PM

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Case Narrative

Client: Colorado Oil&Gas Conservation Commission
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Job ID: 280-88061-1

Laboratory: TestAmerica Denver

Narrative

CASE NARRATIVE

Client: Colorado Oil&Gas Conservation Commission

Project: COGCC - Remediation Project #9678

Report Number: 280-88061-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 9/13/2016 at 1:35 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 3.3°C.

SODIUM ABSORPTION RATIO

Samples JOLLY PLATTS #5B (280-88061-1) and JOLLY PLATTS #3C (280-88061-2) were analyzed for Sodium Absorption Ratio in accordance with USDA Handbook 60 - 20B. The samples were prepared on 09/14/2016 and analyzed on 09/20/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PH

Samples JOLLY PLATTS #5B (280-88061-1) and JOLLY PLATTS #3C (280-88061-2) were analyzed for pH in accordance with EPA SW-846 Method 9045C. The samples were leached on 09/15/2016 and analyzed on 09/15/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

SPECIFIC CONDUCTANCE

Samples JOLLY PLATTS #5B (280-88061-1) and JOLLY PLATTS #3C (280-88061-2) were analyzed for specific conductance in accordance with EPA SW-846 9050A. The samples were leached on 09/22/2016 and analyzed on 09/22/2016.

No analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Definitions/Glossary

Client: Colorado Oil&Gas Conservation Commission
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Detection Summary

Client: Colorado Oil&Gas Conservation Commission
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Client Sample ID: JOLLY PLATTS #5B

Lab Sample ID: 280-88061-1

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
Sodium Adsorption Ratio	42		1.2	No Unit	10		20B	Soluble
pH adj. to 25 deg C	8.8		0.1	SU	1		9045C	Soluble
Specific Conductance	20000		20	umhos/cm	1		9050A	Soluble

Client Sample ID: JOLLY PLATTS #3C

Lab Sample ID: 280-88061-2

Analyte	Result	Qualifier	RL	Unit	Dil Fac	D	Method	Prep Type
pH adj. to 25 deg C	8.5		0.1	SU	1		9045C	Soluble
Specific Conductance	490		20	umhos/cm	1		9050A	Soluble

This Detection Summary does not include radiochemical test results.

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Method Summary

Client: Colorado Oil&Gas Conservation Commision
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Method	Method Description	Protocol	Laboratory
20B	Sodium Adsorption Ratio	USDA	TAL DEN
9045C	pH	SW846	TAL DEN
9050A	Specific Conductance	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

USDA = "USDA Agriculture Handbook 60, section 20B".

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Colorado Oil&Gas Conservation Commision
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-88061-1	JOLLY PLATTS #5B	Solid	09/13/16 09:40	09/13/16 13:35
280-88061-2	JOLLY PLATTS #3C	Solid	09/13/16 10:20	09/13/16 13:35

Client Sample Results

Client: Colorado Oil&Gas Conservation Commission
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Method: 20B - Sodium Adsorption Ratio - Soluble

Client Sample ID: JOLLY PLATTS #5B

Date Collected: 09/13/16 09:40

Date Received: 09/13/16 13:35

Lab Sample ID: 280-88061-1

Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	42		1.2	No Unit		09/14/16 14:52	09/20/16 18:38	10

Client Sample ID: JOLLY PLATTS #3C

Date Collected: 09/13/16 10:20

Date Received: 09/13/16 13:35

Lab Sample ID: 280-88061-2

Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	ND		1.2	No Unit		09/14/16 14:52	09/20/16 18:41	10

General Chemistry - Soluble

Client Sample ID: JOLLY PLATTS #5B

Date Collected: 09/13/16 09:40

Date Received: 09/13/16 13:35

Lab Sample ID: 280-88061-1

Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.8		0.1	SU			09/15/16 09:44	1
Specific Conductance	20000		20	umhos/cm			09/22/16 21:08	1

Client Sample ID: JOLLY PLATTS #3C

Date Collected: 09/13/16 10:20

Date Received: 09/13/16 13:35

Lab Sample ID: 280-88061-2

Matrix: Solid

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH adj. to 25 deg C	8.5		0.1	SU			09/15/16 09:44	1
Specific Conductance	490		20	umhos/cm			09/22/16 21:08	1

QC Association Summary

Client: Colorado Oil&Gas Conservation Commission
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Metals

Prep Batch: 342146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88061-1	JOLLY PLATTS #5B	Soluble	Solid	20B	
280-88061-2	JOLLY PLATTS #3C	Soluble	Solid	20B	
280-88061-2 DU	JOLLY PLATTS #3C	Soluble	Solid	20B	

Analysis Batch: 343198

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88061-1	JOLLY PLATTS #5B	Soluble	Solid	20B	342146
280-88061-2	JOLLY PLATTS #3C	Soluble	Solid	20B	342146
MB 280-343198/1	Method Blank	Total/NA	Solid	20B	
280-88061-2 DU	JOLLY PLATTS #3C	Soluble	Solid	20B	342146

General Chemistry

Leach Batch: 342254

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88061-1	JOLLY PLATTS #5B	Soluble	Solid	DI Leach	
280-88061-2	JOLLY PLATTS #3C	Soluble	Solid	DI Leach	
LCS 280-342254/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
280-88061-1 DU	JOLLY PLATTS #5B	Soluble	Solid	DI Leach	

Analysis Batch: 342289

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88061-1	JOLLY PLATTS #5B	Soluble	Solid	9045C	342254
280-88061-2	JOLLY PLATTS #3C	Soluble	Solid	9045C	342254
LCS 280-342254/1-A	Lab Control Sample	Soluble	Solid	9045C	342254
280-88061-1 DU	JOLLY PLATTS #5B	Soluble	Solid	9045C	342254

Leach Batch: 343382

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88061-1	JOLLY PLATTS #5B	Soluble	Solid	DI Leach	
280-88061-2	JOLLY PLATTS #3C	Soluble	Solid	DI Leach	
MB 280-343382/4-A	Method Blank	Soluble	Solid	DI Leach	
LCS 280-343382/3-A	Lab Control Sample	Soluble	Solid	DI Leach	
280-88061-1 DU	JOLLY PLATTS #5B	Soluble	Solid	DI Leach	

Analysis Batch: 343384

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-88061-1	JOLLY PLATTS #5B	Soluble	Solid	9050A	343382
280-88061-2	JOLLY PLATTS #3C	Soluble	Solid	9050A	343382
MB 280-343382/4-A	Method Blank	Soluble	Solid	9050A	343382
LCS 280-343382/3-A	Lab Control Sample	Soluble	Solid	9050A	343382
280-88061-1 DU	JOLLY PLATTS #5B	Soluble	Solid	9050A	343382

QC Sample Results

Client: Colorado Oil&Gas Conservation Commission
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Method: 20B - Sodium Adsorption Ratio

Lab Sample ID: MB 280-343198/1

Matrix: Solid

Analysis Batch: 343198

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium Adsorption Ratio	ND		1.2	No Unit			09/20/16 18:35	10

Lab Sample ID: 280-88061-2 DU

Matrix: Solid

Analysis Batch: 343198

Client Sample ID: JOLLY PLATTS #3C

Prep Type: Soluble

Prep Batch: 342146

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Sodium Adsorption Ratio	ND		ND		No Unit		NC	20

Method: 9045C - pH

Lab Sample ID: LCS 280-342254/1-A

Matrix: Solid

Analysis Batch: 342289

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
pH adj. to 25 deg C	7.00	7.0		SU		100	97 - 103

Lab Sample ID: 280-88061-1 DU

Matrix: Solid

Analysis Batch: 342289

Client Sample ID: JOLLY PLATTS #5B

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
pH adj. to 25 deg C	8.8		8.8		SU		0	5

Method: 9050A - Specific Conductance

Lab Sample ID: MB 280-343382/4-A

Matrix: Solid

Analysis Batch: 343384

Client Sample ID: Method Blank

Prep Type: Soluble

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Specific Conductance	ND		20	umhos/cm			09/22/16 21:08	1

Lab Sample ID: LCS 280-343382/3-A

Matrix: Solid

Analysis Batch: 343384

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Specific Conductance	14100	14300		umhos/cm		102	90 - 110

Lab Sample ID: 280-88061-1 DU

Matrix: Solid

Analysis Batch: 343384

Client Sample ID: JOLLY PLATTS #5B

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Specific Conductance	20000		20100		umhos/cm		0.9	20

TestAmerica Denver

Lab Chronicle

Client: Colorado Oil&Gas Conservation Commision
Project/Site: COGCC - Remediation Project #9678

TestAmerica Job ID: 280-88061-1

Client Sample ID: JOLLY PLATTS #5B

Date Collected: 09/13/16 09:40

Date Received: 09/13/16 13:35

Lab Sample ID: 280-88061-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Prep	20B			96.250 g	50 mL	342146	09/14/16 14:52	TEB	TAL DEN
Soluble	Analysis	20B		10			343198	09/20/16 18:38	CMK	TAL DEN
Soluble	Leach	DI Leach			40.39 g	40 mL	342254	09/15/16 08:18	JAP	TAL DEN
Soluble	Analysis	9045C		1	1 mL	1 mL	342289	09/15/16 09:44	JAP	TAL DEN
Soluble	Leach	DI Leach			10.00 g	100 mL	343382	09/22/16 20:20	RSM	TAL DEN
Soluble	Analysis	9050A		1			343384	09/22/16 21:08	RSM	TAL DEN

Client Sample ID: JOLLY PLATTS #3C

Date Collected: 09/13/16 10:20

Date Received: 09/13/16 13:35

Lab Sample ID: 280-88061-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Soluble	Prep	20B			96.776 g	50 mL	342146	09/14/16 14:52	TEB	TAL DEN
Soluble	Analysis	20B		10			343198	09/20/16 18:41	CMK	TAL DEN
Soluble	Leach	DI Leach			40.07 g	40 mL	342254	09/15/16 08:18	JAP	TAL DEN
Soluble	Analysis	9045C		1	1 mL	1 mL	342289	09/15/16 09:44	JAP	TAL DEN
Soluble	Leach	DI Leach			10.00 g	100 mL	343382	09/22/16 20:20	RSM	TAL DEN
Soluble	Analysis	9050A		1			343384	09/22/16 21:08	RSM	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Login Sample Receipt Checklist

Client: Colorado Oil&Gas Conservation Commision

Job Number: 280-88061-1

Login Number: 88061

List Source: TestAmerica Denver

List Number: 1

Creator: Muniz, Ashley T

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	Not requested on COC.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Chain of Custody Record

[illegible]