



09/26/11

## Technical Report for

**KRW Consulting, Inc.**

**XOM FRU 297-28C**

**1108-08A**

**Accutest Job Number: D27857**

**Sampling Date: 09/20/11**

### Report to:

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**Total number of pages in report: 74**



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

A handwritten signature in black ink, appearing to read 'John Hamilton'.

**John Hamilton**  
**Laboratory Director**

**Client Service contact: 303-425-6021**

Certifications: CO, ID, NE, NM, ND (R-027) (PW) UT (NELAP CO00049)

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Test results relate only to samples analyzed.

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Sample Summary

KRW Consulting, Inc.

Job No: D27857

XOM FRU 297-28C  
Project No: 1108-08A

Sample Number	Collected		Matrix Code Type	Client	
	Date	Time By	Received	Sample ID	
D27857-1	09/20/11	14:50 CB	09/21/11	SO	Sludge
					RESERVE CONTENTS
D27857-1A	09/20/11	14:50 CB	09/21/11	SO	Sludge
					RESERVE CONTENTS

Soil samples reported on a dry weight basis unless otherwise indicated on result page.

## CASE NARRATIVE / CONFORMANCE SUMMARY

**Client:** KRW Consulting, Inc.

**Job No** D27857

**Site:** XOM FRU 297-28C

**Report Dat** 9/26/2011 3:32:58 PM

On 09/21/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 2.9 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D27857 was assigned to the project. The lab sample ID, client sample ID, and date of sample collection are detailed in the report's Results Summary.

Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

### Volatiles by GCMS By Method SW846 8260B

<b>Matrix</b> SO	<b>Batch ID:</b> V5V1048
------------------	--------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D27929-1MS, D27929-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GCMS By Method SW846 8270C BY SIM

<b>Matrix</b> SO	<b>Batch ID:</b> OP4520
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D27856-1MS, D27856-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Benzo(b)fluoranthene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene are outside control limits. Outside control limits due to matrix interference. Refer to Blank Spike.
- The RPD(s) for the MS and MSD recoveries of Benzo(b)fluoranthene are outside control limits for sample OP4520-MSD. Variability of recovery may be due to sample matrix/homogeneity.
- D27857-1: Elevated RL due to matrix interference.

### Volatiles by GC By Method SW846 8015B

<b>Matrix</b> SO	<b>Batch ID:</b> GGB748
------------------	-------------------------

- All samples were analyzed within the recommended method holding time.
- Sample(s) D27762-2MS, D27762-2MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

### Extractables by GC By Method SW846-8015B

<b>Matrix</b> SO	<b>Batch ID:</b> OP4519
------------------	-------------------------

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D27796-8MS, D27796-8MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.

## Metals By Method SW846 6010B

**Matrix** AQ

**Batch ID:** MP5836

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27856-1AMS, D27856-1AMSD were used as the QC samples for the metals analysis.

**Matrix** SO

**Batch ID:** MP5834

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27856-1MS, D27856-1MSD, D27856-1SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Chromium, Nickel, Zinc are outside control limits. Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.
- The matrix spike (MS) recovery(s) of Barium are outside control limits. Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- The serial dilution RPD(s) for Cadmium, Selenium, Silver are outside control limits for sample MP5834-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- D27857-1 for Selenium: Elevated detection limit due to dilution required for possible matrix interference.
- The serial dilution RPD(s) for Barium, Chromium, Nickel, Zinc are outside control limits for sample MP5834-SD1. Serial dilution indicates possible matrix interference.

## Metals By Method SW846 6020

**Matrix** SO

**Batch ID:** MP5835

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27856-1MS, D27856-1MSD, D27856-1SDL were used as the QC samples for the metals analysis.

## Metals By Method SW846 7471A

**Matrix** SO

**Batch ID:** MP5837

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27740-1MS, D27740-1MSD were used as the QC samples for the metals analysis.

## Wet Chemistry By Method ASTM D1498-76M

**Matrix** SO

**Batch ID:** GN11680

- Sample(s) D27858-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

## Wet Chemistry By Method DEPT.OF AG, BOOK N9

**Matrix** SO

**Batch ID:** GP5539

- All samples were prepared and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.

## Wet Chemistry By Method SM19 2540B M

**Matrix** SO

**Batch ID:** GN11671

- The data for SM19 2540B M meets quality control requirements.

### Wet Chemistry By Method SW846 3060/7196A M

**Matrix** SO

**Batch ID:** R9863

- The data for SW846 3060/7196A M meets quality control requirements.
- D27857-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

### Wet Chemistry By Method SW846 3060A/7196A

**Matrix** SO

**Batch ID:** M:GP13552

- The data for SW846 3060A/7196A meets quality control requirements.
- D27857-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

### Wet Chemistry By Method USDA HANDBOOK 60

**Matrix** SO

**Batch ID:** MP5836

- D27857-1A for Sodium Adsorption Ratio: Calculated as:  $(\text{Na meq/L}) / \sqrt{[(\text{Ca meq/L}) + (\text{Mg meq/L})/2]}$

AMS certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting AMS's Quality System precision, accuracy and completeness objectives except as noted.

Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria.

AMS is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety. This report is authorized by AMS indicated via signature on the report cover.

## SAMPLE DELIVERY GROUP CASE NARRATIVE

**Client:** Accutest Mountain States

**Job No** D27857

**Site:** KRWCCOL: XOM FRU 297-28C

**Report Date** 9/26/2011 3:56:55 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 09/20/2011 and were received at Accutest on 09/21/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of D27857. A listing of the Laboratory Sample ID, Client Sample ID and dates of collection are presented in the Results Summary Section of this report.

Except as noted below, all method specified calibrations and quality control performance criteria were met for this job. For more information, please refer to QC summary pages.

### Wet Chemistry By Method SW846 3060A/7196A

**Matrix** SO

**Batch ID:** GP13552

- All samples were distilled within the recommended method holding time.
- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D27856-1DUP, D27856-1MS were used as the QC samples for Chromium, Hexavalent.

The Accutest Laboratories of New England certifies that all analysis were performed within method specification. It is further recommended that this report to be used in its entirety. The Accutest Laboratories of NE, Laboratory Director or assignee as verified by the signature on the cover page has authorized the release of this report(D27857).

### Sample Results

### Report of Analysis



## Report of Analysis

<b>Client Sample ID:</b>	RESERVE CONTENTS			<b>Date Sampled:</b>	09/20/11
<b>Lab Sample ID:</b>	D27857-1			<b>Date Received:</b>	09/21/11
<b>Matrix:</b>	SO - Sludge			<b>Percent Solids:</b>	24.8
<b>Method:</b>	SW846 8260B				
<b>Project:</b>	XOM FRU 297-28C				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	5V17627.D	1	09/23/11	DC	n/a	n/a	V5V1048
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.16 g	5.0 ml	100 ul
Run #2			

## Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	350	150	ug/kg	
108-88-3	Toluene	ND	690	350	ug/kg	
100-41-4	Ethylbenzene	ND	690	170	ug/kg	
1330-20-7	Xylene (total)	ND	1400	690	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	107%		61-130%
460-00-4	4-Bromofluorobenzene	101%		53-131%
17060-07-0	1,2-Dichloroethane-D4	117%		62-130%

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RESERVE CONTENTS			<b>Date Sampled:</b>	09/20/11
<b>Lab Sample ID:</b>	D27857-1			<b>Date Received:</b>	09/21/11
<b>Matrix:</b>	SO - Sludge			<b>Percent Solids:</b>	24.8
<b>Method:</b>	SW846 8270C BY SIM SW846 3546				
<b>Project:</b>	XOM FRU 297-28C				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1 <sup>a</sup>	3G06190.D	2	09/24/11	TMB	09/22/11	OP4520	E3G224
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	1.0 ml
Run #2		

## COGCC Table 910-1 PAH List

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	54	43	ug/kg	
120-12-7	Anthracene	ND	54	48	ug/kg	
56-55-3	Benzo(a)anthracene	ND	130	70	ug/kg	
50-32-8	Benzo(a)pyrene	ND	130	97	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	130	99	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	130	59	ug/kg	
218-01-9	Chrysene	ND	130	59	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	130	99	ug/kg	
206-44-0	Fluoranthene	ND	54	54	ug/kg	
86-73-7	Fluorene	ND	54	46	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	160	150	ug/kg	
91-20-3	Naphthalene	ND	54	51	ug/kg	
129-00-0	Pyrene	ND	54	51	ug/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	65%		10-145%
321-60-8	2-Fluorobiphenyl	55%		10-130%
1718-51-0	Terphenyl-d14	67%		22-130%

(a) Elevated RL due to matrix interference.

ND = Not detected MDL - Method Detection Limit

RL = Reporting Limit

E = Indicates value exceeds calibration range

J = Indicates an estimated value

B = Indicates analyte found in associated method blank

N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RESERVE CONTENTS			<b>Date Sampled:</b>	09/20/11		
<b>Lab Sample ID:</b>	D27857-1			<b>Date Received:</b>	09/21/11		
<b>Matrix:</b>	SO - Sludge			<b>Percent Solids:</b>	24.8		
<b>Method:</b>	SW846 8015B						
<b>Project:</b>	XOM FRU 297-28C						

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB13122.D	1	09/22/11	SK	n/a	n/a	GGB748
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.2 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	69	35	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	86%		60-140%

ND = Not detected      MDL - Method Detection Limit  
RL = Reporting Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

<b>Client Sample ID:</b>	RESERVE CONTENTS			<b>Date Sampled:</b>	09/20/11
<b>Lab Sample ID:</b>	D27857-1			<b>Date Received:</b>	09/21/11
<b>Matrix:</b>	SO - Sludge			<b>Percent Solids:</b>	24.8
<b>Method:</b>	SW846-8015B SW846 3546				
<b>Project:</b>	XOM FRU 297-28C				

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FD10228.D	1	09/23/11	KV	09/22/11	OP4519	GFD479
Run #2							

	Initial Weight	Final Volume
Run #1	30.0 g	2.0 ml
Run #2		

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	179	54	35	mg/kg	
CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits		
84-15-1	o-Terphenyl	68%		61-142%		

ND = Not detected      MDL - Method Detection Limit  
RL = Reporting Limit  
E = Indicates value exceeds calibration range

J = Indicates an estimated value  
B = Indicates analyte found in associated method blank  
N = Indicates presumptive evidence of a compound

## Report of Analysis

**Client Sample ID:** RESERVE CONTENTS**Lab Sample ID:** D27857-1**Matrix:** SO - Sludge**Project:** XOM FRU 297-28C**Date Sampled:** 09/20/11**Date Received:** 09/21/11**Percent Solids:** 24.8**Metals Analysis**

Analyte	Result	RL	Units	DF	Prep	Analyzed By	Method	Prep Method
Arsenic	8.1	1.7	mg/kg	5	09/22/11	09/22/11 GJ	SW846 6020 <sup>2</sup>	SW846 3050B <sup>5</sup>
Barium	19600	21	mg/kg	5	09/22/11	09/23/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Cadmium	< 4.2	4.2	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Chromium	29.8	4.2	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Copper	30.8	4.2	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Lead	< 21	21	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Mercury	< 0.37	0.37	mg/kg	1	09/22/11	09/23/11 JM	SW846 7471A <sup>3</sup>	SW846 7471A <sup>6</sup>
Nickel	17.3	13	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Selenium <sup>a</sup>	< 110	110	mg/kg	5	09/22/11	09/23/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Silver	< 13	13	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>
Zinc	42.7	13	mg/kg	1	09/22/11	09/22/11 JM	SW846 6010B <sup>1</sup>	SW846 3050B <sup>4</sup>

(1) Instrument QC Batch: MA1843

(2) Instrument QC Batch: MA1845

(3) Instrument QC Batch: MA1847

(4) Prep QC Batch: MP5834

(5) Prep QC Batch: MP5835

(6) Prep QC Batch: MP5837

(a) Elevated detection limit due to dilution required for possible matrix interference.

RL = Reporting Limit

## Report of Analysis

**Client Sample ID:** RESERVE CONTENTS**Lab Sample ID:** D27857-1**Matrix:** SO - Sludge**Project:** XOM FRU 297-28C**Date Sampled:** 09/20/11**Date Received:** 09/21/11**Percent Solids:** 24.8**General Chemistry**

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent <sup>a</sup>	< 1.6	1.6	mg/kg	1	09/26/11 14:53	AMA	SW846 3060A/7196A
Chromium, Trivalent <sup>b</sup>	28.3	5.8	mg/kg	1	09/26/11 14:53	AMA	SW846 3060/7196A M
Redox Potential Vs H2	3.0		mv	1	09/21/11	JD	ASTM D1498-76M
Solids, Percent	24.8		%	1	09/21/11	SWT	SM19 2540B M
Specific Conductivity	1800	1.0	umhos/cm	1	09/26/11	JK	DEPT.OF AG, BOOK N9
pH	11.22		su	1	09/21/11 15:00	JD	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.

(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	RESERVE CONTENTS				
<b>Lab Sample ID:</b>	D27857-1A			<b>Date Sampled:</b>	09/20/11
<b>Matrix:</b>	SO - Sludge			<b>Date Received:</b>	09/21/11
				<b>Percent Solids:</b>	24.8
<b>Project:</b>	XOM FRU 297-28C				

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed By		Method	Prep Method
Calcium	6.85	2.0	mg/l	1	09/22/11	09/22/11	JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Magnesium	< 1.0	1.0	mg/l	1	09/22/11	09/22/11	JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>
Sodium	377	2.0	mg/l	1	09/22/11	09/22/11	JM	SW846 6010B <sup>1</sup>	EPA 200.7 <sup>2</sup>

(1) Instrument QC Batch: MA1843  
(2) Prep QC Batch: MP5836

RL = Reporting Limit

Report of Analysis

<b>Client Sample ID:</b>	RESERVE CONTENTS			<b>Date Sampled:</b>	09/20/11	
<b>Lab Sample ID:</b>	D27857-1A			<b>Date Received:</b>	09/21/11	
<b>Matrix:</b>	SO - Sludge			<b>Percent Solids:</b>	24.8	
<b>Project:</b>	XOM FRU 297-28C					

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio <sup>a</sup>	38.2		ratio	1	09/22/11 14:34	JM	USDA HANDBOOK 60

(a) Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+ (Mg meq/L)/2]

RL = Reporting Limit



## Misc. Forms

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### Custody Documents and Other Forms

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Includes the following where applicable:

- Chain of Custody

Accutest Laboratories Mountain States  
4036 Youngfield Street Wheat Ridge, Co 80033  
TEL. 303-425-6021 877-737-4521  
FAX 303-425-6021

[illegible]

## D27857: Chain of Custody

Page 1 of 2

# Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D27857

Client: KRW

Immediate Client Services Action Required: No

Date / Time Received: 9/21/2011 12:45:00 PM

No. Coolers: 1

Client Service Action Required at Login: No

Project: XOM

Airbill #'s: CO

## Cooler Security

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Cooler Temperature

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun                        |                          |
| 3. Cooler media:             | Ice (bag)                           |                          |

## Quality Control Preservation

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> |                                     |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

## Sample Integrity - Documentation

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

## Sample Integrity - Condition

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

## Sample Integrity - Instructions

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume rec'd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments

Accutest Laboratories  
V:(303) 425-6021

4036 Youngfield Street  
F: (303) 425-6854

Wheat Ridge, CO  
www.accutest.com

**D27857: Chain of Custody**

**Page 2 of 2**

## GC/MS Volatiles

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### QC Data Summaries

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Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

**Job Number:** D27857

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1048-MB	5V17625.D	1	09/23/11	DC	n/a	n/a	V5V1048

The QC reported here applies to the following samples:

Method: SW846 8260B

D27857-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	50	22	ug/kg	
100-41-4	Ethylbenzene	ND	100	25	ug/kg	
108-88-3	Toluene	ND	100	50	ug/kg	
1330-20-7	Xylene (total)	ND	200	100	ug/kg	

CAS No.	Surrogate Recoveries	Limits
2037-26-5	Toluene-D8	105% 61-130%
460-00-4	4-Bromofluorobenzene	92% 53-131%
17060-07-0	1,2-Dichloroethane-D4	113% 62-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D27857

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V5V1048-BS	5V17626.D	1	09/23/11	DC	n/a	n/a	V5V1048

The QC reported here applies to the following samples:

Method: SW846 8260B

D27857-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	50.8	102	70-130
100-41-4	Ethylbenzene	50	48.4	97	70-130
108-88-3	Toluene	50	50.0	100	70-130
1330-20-7	Xylene (total)	150	150	100	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	108%	61-130%
460-00-4	4-Bromofluorobenzene	106%	53-131%
17060-07-0	1,2-Dichloroethane-D4	114%	62-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D27857  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D27929-1MS	5V17629.D	1	09/23/11	DC	n/a	n/a	V5V1048
D27929-1MSD	5V17630.D	1	09/23/11	DC	n/a	n/a	V5V1048
D27929-1	5V17628.D	1	09/23/11	DC	n/a	n/a	V5V1048

The QC reported here applies to the following samples:

Method: SW846 8260B

D27857-1

CAS No.	Compound	D27929-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3080	3070	100	3150	102	3	70-134/30
100-41-4	Ethylbenzene	ND		3080	2950	96	3000	97	2	70-137/30
108-88-3	Toluene	ND		3080	2950	96	3000	97	2	70-130/30
1330-20-7	Xylene (total)	ND		9240	9280	100	9390	102	1	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D27929-1	Limits
2037-26-5	Toluene-D8	107%	106%	107%	61-130%
460-00-4	4-Bromofluorobenzene	117%	115%	104%	53-131%
17060-07-0	1,2-Dichloroethane-D4	113%	114%	115%	62-130%

## GC/MS Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

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



## Method Blank Summary

Page 1 of 1

**Job Number:** D27857  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4520-MB	3G06171.D	1	09/22/11	TMB	09/22/11	OP4520	E3G223

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D27857-1

CAS No.	Compound	Result	RL	MDL	Units	Q
83-32-9	Acenaphthene	ND	6.7	5.3	ug/kg	
120-12-7	Anthracene	ND	6.7	6.0	ug/kg	
56-55-3	Benzo(a)anthracene	ND	17	8.7	ug/kg	
50-32-8	Benzo(a)pyrene	ND	17	12	ug/kg	
205-99-2	Benzo(b)fluoranthene	ND	17	12	ug/kg	
207-08-9	Benzo(k)fluoranthene	ND	17	7.3	ug/kg	
218-01-9	Chrysene	ND	17	7.3	ug/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	17	12	ug/kg	
206-44-0	Fluoranthene	ND	6.7	6.7	ug/kg	
86-73-7	Fluorene	ND	6.7	5.7	ug/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	20	18	ug/kg	
91-20-3	Naphthalene	ND	6.7	6.3	ug/kg	
129-00-0	Pyrene	ND	6.7	6.3	ug/kg	

CAS No.	Surrogate Recoveries	Limits
4165-60-0	Nitrobenzene-d5	96% 10-145%
321-60-8	2-Fluorobiphenyl	94% 10-130%
1718-51-0	Terphenyl-d14	107% 22-130%

## Blank Spike Summary

Page 1 of 1

**Job Number:** D27857

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4520-BS	3G06172.D	1	09/22/11	TMB	09/22/11	OP4520	E3G223

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D27857-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	64.1	77	34-130
120-12-7	Anthracene	83.3	69.8	84	35-130
56-55-3	Benzo(a)anthracene	83.3	63.7	76	36-130
50-32-8	Benzo(a)pyrene	83.3	60.8	73	36-130
205-99-2	Benzo(b)fluoranthene	83.3	61.2	73	35-130
207-08-9	Benzo(k)fluoranthene	83.3	77.4	93	37-130
218-01-9	Chrysene	83.3	69.0	83	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	56.6	68	32-130
206-44-0	Fluoranthene	83.3	61.8	74	38-130
86-73-7	Fluorene	83.3	66.7	80	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	49.2	59	28-130
91-20-3	Naphthalene	83.3	67.6	81	35-130
129-00-0	Pyrene	83.3	75.3	90	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	91%	10-145%
321-60-8	2-Fluorobiphenyl	82%	10-130%
1718-51-0	Terphenyl-d14	99%	22-130%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D27857  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4520-MS	3G06174.D	5	09/22/11	TMB	09/22/11	OP4520	E3G223
OP4520-MSD	3G06175.D	5	09/22/11	TMB	09/22/11	OP4520	E3G223
D27856-1	3G06173.D	5	09/22/11	TMB	09/22/11	OP4520	E3G223

The QC reported here applies to the following samples:

Method: SW846 8270C BY SIM

D27857-1

CAS No.	Compound	D27856-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		95.8	73.8	77	71.9	75	3	10-155/30
120-12-7	Anthracene	ND		95.8	74.3	78	73.6	77	1	10-155/30
56-55-3	Benzo(a)anthracene	ND		95.8	81.5	85	80.2	84	2	10-175/30
50-32-8	Benzo(a)pyrene	ND		95.8	72.4	76	74.4	78	3	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		95.8	ND	0* a	72.2	76	200* b	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		95.8	79.5	83	79.6	83	0	10-178/30
218-01-9	Chrysene	ND		95.8	73.3	76	72.7	76	1	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		95.8	ND	0* a	ND	0* a	nc	10-144/30
206-44-0	Fluoranthene	ND		95.8	86.0	90	96.4	101	11	10-207/30
86-73-7	Fluorene	73.2		95.8	129	58	129	58	0	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		95.8	ND	0* a	ND	0* a	nc	10-180/30
91-20-3	Naphthalene	66.6		95.8	134	70	122	58	9	10-198/30
129-00-0	Pyrene	ND		95.8	107	112	102	107	5	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D27856-1	Limits
4165-60-0	Nitrobenzene-d5	84%	79%	83%	10-145%
321-60-8	2-Fluorobiphenyl	70%	66%	72%	10-130%
1718-51-0	Terphenyl-d14	82%	82%	83%	22-130%

(a) Outside control limits due to matrix interference. Refer to Blank Spike.

(b) Variability of recovery may be due to sample matrix/homogeneity.

## GC Volatiles

## QC Data Summaries

Includes the following where applicable:

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

## Method Blank Summary

Page 1 of 1

**Job Number:** D27857

**Account:** KRWCCOL KRW Consulting, Inc.

**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB748-MB	GB13117.D	1	09/22/11	SK	n/a	n/a	GGB748

The QC reported here applies to the following samples:

Method: SW846 8015B

D27857-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	ND	10	5.0	mg/kg	

CAS No.	Surrogate Recoveries	Limits
120-82-1	1,2,4-Trichlorobenzene	86% 60-140%

Blank Spike Summary

Job Number: D27857  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB748-BS	GB13118.D	1	09/22/11	SK	n/a	n/a	GGB748

The QC reported here applies to the following samples: Method: SW846 8015B

D27857-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	119	108	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	98%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D27857  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D27762-2MS	GB13120.D	1	09/22/11	SK	n/a	n/a	GGB748
D27762-2MSD	GB13121.D	1	09/22/11	SK	n/a	n/a	GGB748
D27762-2	GB13119.D	1	09/22/11	SK	n/a	n/a	GGB748

The QC reported here applies to the following samples: Method: SW846 8015B

D27857-1

CAS No.	Compound	D27762-2 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	ND		354	388	110	396	112	2	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D27762-2	Limits
120-82-1	1,2,4-Trichlorobenzene	92%	95%	78%	60-140%

## GC Semi-volatiles

### QC Data Summaries

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Includes the following where applicable:

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



## Method Blank Summary

Page 1 of 1

**Job Number:** D27857  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4519-MB	FD10185.D	1	09/22/11	KV	09/22/11	OP4519	GFD475

The QC reported here applies to the following samples:

Method: SW846-8015B

D27857-1

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-DRO (C10-C28)	ND	13	8.7	mg/kg	

CAS No.	Surrogate Recoveries	Limits
84-15-1	o-Terphenyl	86% 61-142%

8.1.1

8

Blank Spike Summary

Job Number: D27857  
Account: KRWCCOL KRW Consulting, Inc.  
Project: XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4519-BS	FD10186.D	1	09/22/11	KV	09/22/11	OP4519	GFD475

The QC reported here applies to the following samples: Method: SW846-8015B

D27857-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	548	82	60-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	91%	61-142%

# Matrix Spike/Matrix Spike Duplicate Summary

Page 1 of 1

**Job Number:** D27857  
**Account:** KRWCCOL KRW Consulting, Inc.  
**Project:** XOM FRU 297-28C

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP4519-MS	FD10187.D	1	09/22/11	KV	09/22/11	OP4519	GFD475
OP4519-MSD	FD10188.D	1	09/22/11	KV	09/22/11	OP4519	GFD475
D27796-8	FD10189.D	1	09/22/11	KV	09/22/11	OP4519	GFD475

The QC reported here applies to the following samples:

Method: SW846-8015B

D27857-1

CAS No.	Compound	D27796-8 mg/kg	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	ND	710	548	77	546	77	0	24-157/35

CAS No.	Surrogate Recoveries	MS	MSD	D27796-8	Limits
84-15-1	o-Terphenyl	82%	86%	88%	61-142%

8.3.1  
8

## Metals Analysis

### QC Data Summaries

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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: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 09/22/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	10	.59	.59		
Antimony	3.0	.31	.31		
Arsenic	2.5	.59	.59		
Barium	1.0	.11	.11	0.060	<1.0
Beryllium	1.0	.044	.1		
Boron	5.0	.48	.48		
Cadmium	1.0	.027	.27	0.030	<1.0
Calcium	40	.96	1.1		
Chromium	1.0	.018	.031	-0.030	<1.0
Cobalt	0.50	.035	.035		
Copper	1.0	.085	.16	-0.14	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.16	<5.0
Lithium	0.20	.028	.031		
Magnesium	20	.58	1.4		
Manganese	0.50	.0053	.012		
Molybdenum	1.0	.045	.054		
Nickel	3.0	.043	.099	-0.050	<3.0
Phosphorus	10	1.1	1.2		
Potassium	200	5.5	9.2		
Selenium	5.0	.38	.5	0.060	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.010	<3.0
Sodium	40	11	11		
Strontium	5.0		.017		
Thallium	1.0	.29	.34		
Tin	5.0	.55	1.3		
Titanium	1.0	.011	.1		
Uranium	5.0	.15	.2		
Vanadium	1.0	.016	.025		
Zinc	3.0	.028	.06	-0.17	<3.0

Associated samples MP5834: D27857-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 09/22/11

Metal	D27856-1 Original MS		SpikeLot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	1530	1840	240	129.2(a)	75-125
Beryllium					
Boron					
Cadmium	0.46	52.4	60	86.6	75-125
Calcium					
Chromium	32.7	76.8	60	73.5N(b)	75-125
Cobalt					
Copper	15.9	70.2	60	90.5	75-125
Iron					
Lead	13.7	111	120	81.1	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	18.8	61.6	60	71.3N(b)	75-125
Phosphorus					
Potassium					
Selenium	3.0	105	120	85.0	75-125
Silicon					
Silver	0.035	22.2	24	92.3	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	44.3	86.4	60	70.2N(b)	75-125

Associated samples MP5834: D27857-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- (b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date: 09/22/11

	D27856-1		Spikelot		MSD	QC
Metal	Original	MSD	MPICPAL	% Rec	RPD	Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	1530	1840	230	134.5(a)	0.0	20
Beryllium						
Boron						
Cadmium	0.46	50.2	57.6	86.3	4.3	20
Calcium						
Chromium	32.7	74.5	57.6	72.6N(b)	3.0	20
Cobalt						
Copper	15.9	67.0	57.6	88.7	4.7	20
Iron						
Lead	13.7	107	115	81.0	3.7	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	18.8	60.2	57.6	71.9N(b)	2.3	20
Phosphorus						
Potassium						
Selenium	3.0	101	115	85.1	3.9	20
Silicon						
Silver	0.035	21.0	23	91.0	5.6	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	44.3	85.0	57.6	70.7N(b)	1.6	20

Associated samples MP5834: D27857-1

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

- (N) Matrix Spike Rec. outside of QC limits
- (anr) Analyte not requested
- (a) Spike amount low relative to the sample amount. Refer to lab control or spike blank for recovery information.
- (b) Spike recovery indicates possible matrix interference and/or sample nonhomogeneity.

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5834  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: mg/kg

Prep Date: 09/22/11

Metal	BSP Result	Spikelot MPICPAL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	178	200	89.0	80-120
Beryllium				
Boron				
Cadmium	44.8	50	89.6	80-120
Calcium				
Chromium	45.3	50	90.6	80-120
Cobalt				
Copper	45.1	50	90.2	80-120
Iron				
Lead	90.2	100	90.2	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	44.2	50	88.4	80-120
Phosphorus				
Potassium				
Selenium	89.2	100	89.2	80-120
Silicon				
Silver	18.8	20	94.0	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	44.1	50	88.2	80-120

Associated samples MP5834: D27857-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

# SERIAL DILUTION RESULTS SUMMARY

Login Number: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5834  
 Matrix Type: SOLID

Methods: SW846 6010B  
 Units: ug/l

Prep Date: 09/22/11

Metal	D27856-1 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	13300	15500	16.4*(a)	0-10
Beryllium				
Boron				
Cadmium	4.00	2.50	37.5 (b)	0-10
Calcium				
Chromium	284	328	15.7*(a)	0-10
Cobalt				
Copper	138	142	2.6	0-10
Iron				
Lead	119	125	4.8	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	163	201	22.8*(a)	0-10
Phosphorus				
Potassium				
Selenium	26.1	46.5	78.2 (b)	0-10
Silicon				
Silver	0.300	2.00	566.7(b)	0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	385	466	21.1*(a)	0-10

Associated samples MP5834: D27857-1

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits

SERIAL DILUTION RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5834  
Matrix Type: SOLID

Methods: SW846 6010B  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

(a) Serial dilution indicates possible matrix interference.

(b) Percent difference acceptable due to low initial sample concentration (< 50 times IDL).

9.1.4

9

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5835  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 09/22/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	5.0	.028	.24		
Antimony	0.040	.0002	.0019		
Arsenic	0.080	.0098	.043	0.047	<0.080
Barium	0.20	.0007	.02		
Beryllium	0.020	.0015	.0028		
Boron	4.0	.19	.21		
Cadmium	0.010	.0045	.0095		
Calcium	40	.36	1.6		
Chromium	0.20	.0041	.048		
Cobalt	0.020	.00065	.0006		
Copper	0.20	.0021	.013		
Iron	4.0	.16	.74		
Lead	0.050	.00024	.003		
Magnesium	10	.013	.52		
Manganese	0.10	.0014	.0058		
Molybdenum	0.10	.00087	.0046		
Nickel	0.20	.00057	.0061		
Phosphorus	6.0	.36	.7		
Potassium	20	.4	.64		
Selenium	0.040	.015	.037		
Silver	0.010	.00016	.0004		
Sodium	50	.16	.87		
Strontium	2.0	.00079	.008		
Thallium	0.020	.0029	.004		
Tin	1.0	.0012	.0056		
Titanium	0.20	.0069	.012		
Uranium	0.050	.000076	.00018		
Vanadium	0.40	.01	.059		
Zinc	1.0	.0077	.023		

Associated samples MP5835: D27857-1

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: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5835  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 09/22/11

Metal	D27856-1 Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic	8.3	132	120	103.1	60-119
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP5835: D27857-1

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: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5835  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: mg/kg

Prep Date: 09/22/11

Metal	D27856-1 Original	MSD	Spikelot MPICPAL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	8.3	126	115	102.2	4.7	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead	anr					
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP5835: D27857-1

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: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5835  
Matrix Type: SOLID

Methods: SW846 6020  
Units: mg/kg

Prep Date: 09/22/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	99.8	100	99.8	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead	anr			
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP5835: D27857-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5835  
 Matrix Type: SOLID

Methods: SW846 6020  
 Units: ug/l

Prep Date: 09/22/11

Metal		D27856-1		QC	
		Original	SDL 5:25	%DIF	Limits
Aluminum					
Antimony					
Arsenic	71.9	76.2	5.9	0-10	
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead	anr				
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP5835: D27857-1

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

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 09/22/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	500	30	30		
Antimony	150	16	16		
Arsenic	130	30	30		
Barium	50	5.5	5.5		
Beryllium	50	2.2	2.5		
Boron	250	24	24		
Cadmium	50	1.4	1.4		
Calcium	2000	48	75	269	<2000
Chromium	50	.9	4		
Cobalt	25	1.8	1.8		
Copper	50	4.3	14		
Iron	350	17	65		
Lead	250	8	11		
Lithium	10	1.4	6		
Magnesium	1000	29	50	14.0	<1000
Manganese	25	.27	1.6		
Molybdenum	50	2.3	4.4		
Nickel	150	2.2	5		
Phosphorus	500	55	100		
Potassium	5000	280	280		
Selenium	250	19	19		
Silicon	250	19	19		
Silver	150	.9	1.6		
Sodium	2000	570	570	293	<2000
Strontium	25		1.3		
Thallium	50	15	15		
Tin	250	28	50		
Titanium	50	.55	1.6		
Uranium	250	7.5	18		
Vanadium	50	.8	1.1		
Zinc	150	1.4	9		

Associated samples MP5836: D27857-1A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 09/22/11

Metal	D27856-1A Original MS		Spikelot MPICPALL % Rec		QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	104000	244000	125000	112.0	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	1670	135000	125000	106.7	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	544000	683000	125000	111.2	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP5836: D27857-1A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5836  
 Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
 Units: ug/l

Prep Date: 09/22/11

Metal	D27856-1A Original MSD	Spikelot MPICPAL % Rec	MSD RPD	QC Limit
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	104000	238000	125000	107.2
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	1670	135000	125000	106.7
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	544000	640000	125000	76.8
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP5836: D27857-1A

Results < IDL are shown as zero for calculation purposes  
 (\*) Outside of QC limits



MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(N) Matrix Spike Rec. outside of QC limits  
(anr) Analyte not requested

## SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date: 09/22/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	139000	125000	111.2	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	135000	125000	108.0	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	133000	125000	106.4	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP5836: D27857-1A

Results < IDL are shown as zero for calculation purposes  
(\*) Outside of QC limits

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5836  
Matrix Type: AQUEOUS

Methods: SW846 6010B, USDA HANDBOOK 60  
Units: ug/l

Prep Date:

Metal

(anr) Analyte not requested

BLANK RESULTS SUMMARY  
Part 2 - Method Blanks

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5837  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 09/22/11

Metal	RL	IDL	MDL	MB	
				raw	final
Mercury	0.10	.0011	.013	0.0021	<0.10

Associated samples MP5837: D27857-1

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: D27857  
 Account: KRWCCOL - KRW Consulting, Inc.  
 Project: XOM FRU 297-28C

QC Batch ID: MP5837  
 Matrix Type: SOLID

Methods: SW846 7471A  
 Units: mg/kg

Prep Date: 09/22/11

Metal	D27740-1		Spikelot		QC	
	Original	MS	HGWSR1	% Rec	Limits	
Mercury	0.046	1.9	1.88	98.4	85-115	

Associated samples MP5837: D27857-1

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

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

Methods: SW846 7471A  
Units: mg/kg

09/22/11

Associated samples MP5837: D27857-1

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: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

QC Batch ID: MP5837  
Matrix Type: SOLID

Methods: SW846 7471A  
Units: mg/kg

Prep Date: 09/22/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.39	0.4	97.5	80-120

Associated samples MP5837: D27857-1

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

## General Chemistry

### QC Data Summaries

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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: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP5539/GN11727	1.0	<1.0	umhos/cm	9980	9850	98.7	90-110%
pH	GN11678			su	8.00	8.00	100.0	99.3-100.7%

Associated Samples:  
Batch GN11678: D27857-1  
Batch GP5539: D27857-1  
(\*) Outside of QC limits

DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D27857  
Account: KRWCCOL - KRW Consulting, Inc.  
Project: XOM FRU 297-28C

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN11680	D27858-1	mv	287	300	4.4	0-20%

Associated Samples:  
Batch GN11680: D27857-1  
(\*) Outside of QC limits

## Misc. Forms

### Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

---

Includes the following where applicable:

- Chain of Custody



## CHAIN OF CUSTODY

4036 Youngfield St., Wheat Ridge, CO 80033  
303-425-6021 FAX: 303-425-6854

Accutest Job #:	D27857X
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information										Analytical Information										
Name <b>Accutest Mountain States (AMS)</b>			Name <b>Accutest - New England</b>																				
Address <b>4036 Youngfield St.</b>			Address <b>495 Technology Center West, BLDG C</b>																				
City <b>Wheat Ridge,</b>	State <b>CO</b>	Zip <b>80033</b>	City <b>Marlborough</b>			State <b>MA</b>			Zip <b>01752</b>														
Send Report to: <b>Tiffany Pham</b>			Contact: <b>Sample Management</b>																				
Any questions contact: <b>Shea Greiner</b>			Phone: <b>(508) 481-6200</b>																				
Phone/Fax #: <b>(303) 425-6021; (303) 425-6854</b>			Collection										Preservation										
Field ID / Point of Collection <b>D27857X-1</b>			Date <b>9/20/11</b>	Time <b>2:50 PM</b>	Matrix <b>Soil</b>	# of bottles <b>1</b>	HCL	NaOH	HN03	H2SO4	None	XCRA <b>X</b>	Comments										
Turnaround Information			Data Deliverable Information										Comments / Remarks										
<input checked="" type="checkbox"/> 1 - 2 Business Day Rush <input type="checkbox"/> Other (Days) <b>RUSH!</b>			Approved By: _____			<input type="checkbox"/> Commercial "A" <input type="checkbox"/> Commercial "B" <input type="checkbox"/> Commercial "BN" <input type="checkbox"/> Reduced Tier 1 <input type="checkbox"/> Full Tier 1					<input type="checkbox"/> PDF <input type="checkbox"/> Compact Disk Deliverable <input type="checkbox"/> Electronic Delivery: <input type="checkbox"/> State Forms <input type="checkbox"/> Other (Specify) _____					Please use Colorado regulations and RLs.  <b>12E</b>							
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.																							
Sample Custody must be documented below each time samples change possession, including courier delivery.																		For Subcontract Laboratory Use Only					
Relinquished by: <b>1</b>			Date & Time: <b>9/21/11</b>			Received By: <b>1</b>			Date & Time: <b>1</b>			Seal #:			Headspace: Yes <input type="checkbox"/> No <input type="checkbox"/> NA <input type="checkbox"/>								
Relinquished by: <b>2</b>			Date & Time: <b>9/22/11 9:45</b>			Received By: <b>2</b>			Date & Time: <b>2</b>			Preserved where applicable: <input type="checkbox"/>											
Relinquished by: <b>3</b>			Date & Time:			Received By: <b>3</b>			Date & Time: <b>3</b>			Temperature °C <b>1.6</b>			On Ice <input checked="" type="checkbox"/>								

D27857: Chain of Custody

Page 1 of 2

Accutest Labs of New England, Inc.

## Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D27857

Client: AMS

Immediate Client Services Action Required: No

Date / Time Received: 9/22/2011

Delivery Method:

Client Service Action Required at Login: No

Project:

No. Coolers: 1

Airbill #'s:

### Cooler Security

Y or N

Y or N

- |                           |                                     |                          |                       |                                     |                          |
|---------------------------|-------------------------------------|--------------------------|-----------------------|-------------------------------------|--------------------------|
| 1. Custody Seals Present: | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 3. COC Present:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Custody Seals Intact:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | 4. Smpl Dates/Time OK | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Cooler Temperature

Y or N

- |                              |                                     |                          |
|------------------------------|-------------------------------------|--------------------------|
| 1. Temp criteria achieved:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Cooler temp verification: | Infrared gun                        |                          |
| 3. Cooler media:             | Ice (bag)                           |                          |

### Quality Control Preservation

Y or N

N/A

- |                                 |                                     |                          |                                     |
|---------------------------------|-------------------------------------|--------------------------|-------------------------------------|
| 1. Trip Blank present / cooler: | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 2. Trip Blank listed on COC:    | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| 3. Samples preserved properly:  | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                                     |
| 4. VOCs headspace free:         | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

### Sample Integrity - Documentation

Y or N

- |  |                                     |                          |
|--|-------------------------------------|--------------------------|
| 1. Sample labels present on bottles:   | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Container labeling complete:        | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Sample container label / COC agree: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

### Sample Integrity - Condition

Y or N

- |                                  |                                     |                          |
|----------------------------------|-------------------------------------|--------------------------|
| 1. Sample recvd within HT:       | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. All containers accounted for: | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 3. Condition of sample:          | Intact                              |                          |

### Sample Integrity - Instructions

Y or N N/A

- |   |                                     |                                     |                                     |
|---|-------------------------------------|-------------------------------------|-------------------------------------|
| 1. Analysis requested is clear:           | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 2. Bottles received for unspecified tests | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |                                     |
| 3. Sufficient volume recvd for analysis:  | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |                                     |
| 4. Compositing instructions clear:        | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 5. Filtering instructions clear:          | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

Comments

## General Chemistry

### QC Data Summaries

(Accutest Labs of New England, Inc.)

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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: D27857  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-28C

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP13552/GN36269	0.40	0.0	mg/kg	40	42.4	106.0	80-120%
Chromium, Hexavalent	GP13552/GN36269			mg/kg	1000	946	94.6	80-120%

Associated Samples:  
Batch GP13552: D27857-1  
(\*) Outside of QC limits

BLANK SPIKE DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D27857  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-28C

Analyte	Batch ID	Units	Spike Amount	BSD Result	RPD	QC Limit
Chromium, Hexavalent	GP13552/GN36269	mg/kg	40	41.0	3.4	

Associated Samples:  
Batch GP13552: D27857-1  
(\*) Outside of QC limits



DUPLICATE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D27857  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-28C

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP13552/GN36269	D27856-1	mg/kg	0.0	0.0	0.0	0-20%

Associated Samples:  
Batch GP13552: D27857-1  
(\*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY  
GENERAL CHEMISTRY

Login Number: D27857  
Account: ALMS - Accutest Mountain States  
Project: KRWCCOL: XOM FRU 297-28C

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP13552/GN36269	D27856-1	mg/kg	0.0	45.4	43.0	94.8	75-125%
Chromium, Hexavalent	GP13552/GN36269	D27856-1	mg/kg	0.0	825	987	119.7	75-125%

Associated Samples:

Batch GP13552: D27857-1

(\*) Outside of QC limits

(N) Matrix Spike Rec. outside of QC limits