Mountain States ACCUTEST LABORATORIES

01/03/12

Technical Report for

KRW Consulting, Inc.

XOM PCU-12A

1105-16A

Accutest Job Number: D30465

Sampling Date: 12/19/11

Report to:

KRW Consulting, Inc.

dknudson@krwconsulting.com

ATTN: Dwayne Knudson

Total number of pages in report: **73**

ACCREDITED IN ACCORDANCE WITH nelac

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.

Brad Madadian
Laboratory Director

Client Service contact: 303-425-6021

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

Test results relate only to samples analyzed.

Sections: 1 2 3 4 5 6 7 8 9 10 11 12

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Sample Summary

KRW Consulting, Inc.

Job No: D30465

XOM PCU-12A
Project No: 1105-16A

Sample Number	Collected Date	Time	By	Received	Matrix Code	Type	Client Sample ID
D30465-1	12/19/11	09:15	RR	12/20/11	SO	Soil	CUT #1_SUBLINER
D30465-1A	12/19/11	09:15	RR	12/20/11	SO	Soil	CUT #1_SUBLINER

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

CASE NARRATIVE / CONFORMANCE SUMMARY

Client:	KRW Consulting, Inc.	**Job No**	D30465
Site:	XOM PCU-12A	**Report Dat**	12/28/2011 9:24:37 AM

On 12/20/2011, 1 sample(s), 0 Trip Blank(s), and 0 Field Blank(s) were received at Accutest Mountain States (AMS) at a temperature of 3 °C. The samples were intact and properly preserved, unless noted below. An AMS Job Number of D30465 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

Matrix SO **Batch ID:** V3V887

- All samples were analyzed within the recommended method holding time.
- Sample(s) D30465-1MS, D30465-1MSD 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

Matrix SO **Batch ID:** OP5042

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30465-1MS, D30465-1MSD were used as the QC samples indicated.
- All method blanks for this batch meet method specific criteria.
- The RPD(s) for the MS and MSD recoveries of Anthracene, Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Chrysene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Pyrene are outside control limits for sample OP5042-MSD. Variability of recovery may be due to sample matrix/homogeneity.

Volatiles by GC By Method SW846 8015B

Matrix SO **Batch ID:** GGB812

- All samples were analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30475-1MS, D30475-1MSD were used as the QC samples indicated.
- Sample(s) D30475-2MS, D30475-2MSD have surrogates outside control limits. Probable cause due to matrix interference.

Extractables by GC By Method SW846-8015B

Matrix SO **Batch ID:** OP5043

- All samples were extracted and analyzed within the recommended method holding time.
- Sample(s) D30465-1MS, D30465-1MSD 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:	MP6526

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30465-1AMS, D30465-1AMSD were used as the QC samples for the metals analysis.

Matrix	SO	Batch ID:	MP6509

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30414-3MS, D30414-3MSD, D30414-3SDL were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Nickel are outside control limits. Spike recovery indicates possible matrix interference.
- The serial dilution RPD(s) for Cadmium, Selenium are outside control limits for sample MP6509-SD1. Percent difference acceptable due to low initial sample concentration (< 50 times IDL).
- The serial dilution RPD(s) for Barium, Chromium, Copper, Lead, Nickel, Zinc are outside control limits for sample MP6509-SD1. Serial dilution indicates possible matrix interference.

Metals By Method SW846 6020

Matrix	SO	Batch ID:	MP6510

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30414-3MS, D30414-3MSD, D30414-3SDL were used as the QC samples for the metals analysis.
- The serial dilution RPD(s) for Arsenic are outside control limits for sample MP6510-SD1. Serial dilution indicates possible matrix interference.

Metals By Method SW846 7471A

Matrix	SO	Batch ID:	MP6508

- All samples were digested and analyzed within the recommended method holding time.
- All method blanks for this batch meet method specific criteria.
- Sample(s) D30387-1MSD, D30387-1MS were used as the QC samples for the metals analysis.
- The matrix spike (MS) and matrix spike duplicate (MSD) recovery(s) of Mercury are outside control limits. Spike recovery indicates possible matrix interference.

Wet Chemistry By Method ASTM D1498-76M

Matrix	SO	Batch ID:	GN12979

- Sample(s) D30431-1DUP were used as the QC samples for the Redox Potential Vs H2 analysis.

Wet Chemistry By Method SM19 2540B M

Matrix	SO	Batch ID:	GN12972

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

Wet Chemistry By Method SW846 3060/7196A M

Matrix	SO	Batch ID:	R11221

- The data for SW846 3060/7196A M meets quality control requirements.
- D30465-1 for Chromium, Trivalent: Calculated as: (Chromium) - (Chromium, Hexavalent)

Wet Chemistry By Method SW846 3060A/7196A

Matrix	SO	Batch ID:	M:GP13953

- The data for SW846 3060A/7196A meets quality control requirements.
- D30465-1 for Chromium, Hexavalent: Analysis performed at Accutest Laboratories, Marlborough, MA.

Wet Chemistry By Method USDA HANDBOOK 60

Matrix	SO	Batch ID:	MP6526

- D30465-1A for Sodium Adsorption Ratio: Calculated as: (Na meq/L) / sqrt [(Ca meq/L)+(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**	D30465
Site:	KRWCCOL: XOM PCU-12A	**Report Date**	12/22/2011 5:43:30 PM

1 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were collected on 12/19/2011 and were received at Accutest on 12/20/2011 properly preserved, at 1.6 Deg. C and intact. These Samples received an Accutest job number of D30465. 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:** GP13953

- 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) D30431-1DUP, D30431-1MS 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(D30465).

Mountain States ACCUTEST LABORATORIES

Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	CUT #1_SUBLINER		
Lab Sample ID:	D30465-1	**Date Sampled:**	12/19/11
Matrix:	SO - Soil	**Date Received:**	12/20/11
Method:	SW846 8260B	**Percent Solids:**	84.3
Project:	XOM PCU-12A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3V15322.D	1	12/22/11	KV	n/a	n/a	V3V887
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.07 g	5.0 ml	100 ul
Run #2			

Purgeable Aromatics

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	0.068	0.030	mg/kg	
108-88-3	Toluene	ND	0.14	0.068	mg/kg	
100-41-4	Ethylbenzene	ND	0.14	0.034	mg/kg	
1330-20-7	Xylene (total)	ND	0.27	0.14	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
2037-26-5	Toluene-D8	108%		61-130%
460-00-4	4-Bromofluorobenzene	105%		53-131%
17060-07-0	1,2-Dichloroethane-D4	108%		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

Client Sample ID:	CUT #1_SUBLINER		
Lab Sample ID:	D30465-1	**Date Sampled:**	12/19/11
Matrix:	SO - Soil	**Date Received:**	12/20/11
Method:	SW846 8270C BY SIM SW846 3546	**Percent Solids:**	84.3
Project:	XOM PCU-12A		

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	3G07373.D	1	12/21/11	DC	12/20/11	OP5042	E3G274
Run #2							

	Initial Weight	Final Volume
Run #1	30.1 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	0.0079	0.0063	mg/kg	
120-12-7	Anthracene	ND	0.0079	0.0071	mg/kg	
56-55-3	Benzo(a)anthracene	ND	0.020	0.010	mg/kg	
50-32-8	Benzo(a)pyrene	ND	0.020	0.014	mg/kg	
205-99-2	Benzo(b)fluoranthene	ND	0.020	0.015	mg/kg	
207-08-9	Benzo(k)fluoranthene	ND	0.020	0.0087	mg/kg	
218-01-9	Chrysene	ND	0.020	0.0087	mg/kg	
53-70-3	Dibenzo(a,h)anthracene	ND	0.020	0.015	mg/kg	
206-44-0	Fluoranthene	ND	0.0079	0.0079	mg/kg	
86-73-7	Fluorene	ND	0.0079	0.0067	mg/kg	
193-39-5	Indeno(1,2,3-cd)pyrene	ND	0.024	0.022	mg/kg	
91-20-3	Naphthalene	ND	0.0079	0.0075	mg/kg	
129-00-0	Pyrene	ND	0.0079	0.0075	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
4165-60-0	Nitrobenzene-d5	41%		10-145%
321-60-8	2-Fluorobiphenyl	46%		10-130%
1718-51-0	Terphenyl-d14	58%		22-130%

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

Client Sample ID: CUT #1_SUBLINER
Lab Sample ID: D30465-1
Matrix: SO - Soil
Method: SW846 8015B
Project: XOM PCU-12A

Date Sampled: 12/19/11
Date Received: 12/20/11
Percent Solids: 84.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	GB14393.D	1	12/21/11	SK	n/a	n/a	GGB812
Run #2							

	Initial Weight	Final Volume	Methanol Aliquot
Run #1	5.1 g	5.0 ml	100 ul
Run #2			

CAS No.	Compound	Result	RL	MDL	Units	Q
	TPH-GRO (C6-C10)	7.55	14	6.8	mg/kg	J

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
120-82-1	1,2,4-Trichlorobenzene	94%		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

Client Sample ID: CUT #1_SUBLINER
Lab Sample ID: D30465-1
Matrix: SO - Soil
Method: SW846-8015B SW846 3540C
Project: XOM PCU-12A

Date Sampled: 12/19/11
Date Received: 12/20/11
Percent Solids: 84.3

	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	FH000609.D	1	12/20/11	TR	12/20/11	OP5043	GFH20
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)	17.1	16	10	mg/kg	

CAS No.	Surrogate Recoveries	Run# 1	Run# 2	Limits
84-15-1	o-Terphenyl	70%		43-136%

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: CUT #1_SUBLINER
Lab Sample ID: D30465-1
Matrix: SO - Soil
Project: XOM PCU-12A

Date Sampled: 12/19/11
Date Received: 12/20/11
Percent Solids: 84.3

Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Arsenic	6.6	0.49	mg/kg	5	12/20/11	12/20/11	JM	SW846 6020 [3]	SW846 3050B [6]
Barium	257	1.2	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Cadmium	< 1.2	1.2	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Chromium	54.1	1.2	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Copper	14.6	1.2	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Lead	11.9	6.2	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Mercury	< 0.12	0.12	mg/kg	1	12/20/11	12/20/11	JB	SW846 7471A [1]	SW846 7471A [4]
Nickel	22.2	3.7	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Selenium	< 6.2	6.2	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Silver	< 3.7	3.7	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]
Zinc	45.0	3.7	mg/kg	1	12/20/11	12/20/11	JB	SW846 6010B [2]	SW846 3050B [5]

(1) Instrument QC Batch: MA2064
(2) Instrument QC Batch: MA2065
(3) Instrument QC Batch: MA2066
(4) Prep QC Batch: MP6508
(5) Prep QC Batch: MP6509
(6) Prep QC Batch: MP6510

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT #1_SUBLINER		
Lab Sample ID:	D30465-1	**Date Sampled:**	12/19/11
Matrix:	SO - Soil	**Date Received:**	12/20/11
		Percent Solids:	84.3
Project:	XOM PCU-12A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Chromium, Hexavalent [a]	0.70	0.47	mg/kg	1	12/22/11 16:44	AMA	SW846 3060A/7196A
Chromium, Trivalent [b]	53.4	1.7	mg/kg	1	12/22/11 16:44	AMA	SW846 3060/7196A M
Redox Potential Vs H2	420		mv	1	12/20/11	JD	ASTM D1498-76M
Solids, Percent	84.3		%	1	12/20/11	SWT	SM19 2540B M
Specific Conductivity	908	1.0	umhos/cm	1	12/21/11	JD	DEPT.OF AG, BOOK N9
pH	9.95		su	1	12/20/11 14:00	JD	SW846 9045C

(a) Analysis performed at Accutest Laboratories, Marlborough, MA.
(b) Calculated as: (Chromium) - (Chromium, Hexavalent)

RL = Reporting Limit

Report of Analysis

Client Sample ID: CUT #1_SUBLINER
Lab Sample ID: D30465-1A
Matrix: SO - Soil
Project: XOM PCU-12A

Date Sampled: 12/19/11
Date Received: 12/20/11
Percent Solids: 84.3

SAR Metals Analysis

Analyte	Result	RL	Units	DF	Prep	Analyzed	By	Method	Prep Method
Calcium	8.54	2.0	mg/l	1	12/21/11	12/21/11	JM	SW846 6010B [1]	EPA 200.7 [2]
Magnesium	2.97	1.0	mg/l	1	12/21/11	12/21/11	JM	SW846 6010B [1]	EPA 200.7 [2]
Sodium	166	2.0	mg/l	1	12/21/11	12/21/11	JM	SW846 6010B [1]	EPA 200.7 [2]

(1) Instrument QC Batch: MA2069
(2) Prep QC Batch: MP6526

RL = Reporting Limit

Report of Analysis

Client Sample ID:	CUT #1_SUBLINER		
Lab Sample ID:	D30465-1A	**Date Sampled:**	12/19/11
Matrix:	SO - Soil	**Date Received:**	12/20/11
		Percent Solids:	84.3
Project:	XOM PCU-12A		

General Chemistry

Analyte	Result	RL	Units	DF	Analyzed	By	Method
Sodium Adsorption Ratio [a]	12.5		ratio	1	12/21/11 13:57	JM	USDA HANDBOOK 60

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

RL = Reporting Limit

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody

ACCUTEST LABORATORIES

CHAIN OF CUSTODY

PAGE ___ OF ___

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

FED-EX Tracking # | Bottle Order Control #

Accutest Quote # | Accutest Job # D30465

Client / Reporting Information

Company Name: KRW Consulting INC
Street Address: 8000 W. 14th Ave. Ste 200
City: Lakewood State: CO Zip: 80214
Project Contact: Duayne Knudson E-mail:
Phone #: 303-239-9011 Fax #:
Sampler(s) Name(s): Ron Kasnic Phone #: 970-756-2093

Project Information

Project Name: XOM-PCU-12A
Street:
City:
Project#: 1105-16A
Client PO#:
Project Manager: Joe Hess

Billing Information (If different from Report to)

Company Name:
Street Address:
City State Zip:
Attention: PO#:

Requested Analysis (see TEST CODE sheet)

X Table 910

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

Accutest Sample #	Field ID / Point of Collection	MEOH/DI Vial #	Collection Date	Collection Time	Sampled by	Matrix	# of bottles	Number of preserved Bottles: HCl	NaOH	HNO3	H2SO4	NONE	DI Water	MEOH	ENCORE	Bisulfate	LAB USE ONLY
	Cut #1 - subliner		12/19/11	9:15	RR	SO	5					X					01

12/20/11

Turnaround Time (Business days)

Approved By (Accutest PM): / Date:

- [ ] Std. 10 Business Days
- [ ] Std. 5 Business Days (By Contract only)
- [ ] 5 Day RUSH
- [ ] 3 Day EMERGENCY
- [x] 2 Day EMERGENCY
- [ ] 1 Day EMERGENCY

Emergency & Rush T/A data available VIA Lablink

Data Deliverable Information

- [ ] Commercial "A" (Level 1)
- [ ] Commercial "B" (Level 2)
- [ ] Commercial "B" +Narrative
- [ ] FULLT1 (Level 3+4)
- [ ] State Forms
- [ ] EDD Format
- [x] PDF

Commercial "A" = Results Only
Commercial "B" = Results + QC Summary

Comments / Special Instructions

Please email results to KRW Piceance Creek and XOM team

Sample Custody must be documented below each time samples change possession, including courier delivery.

	Relinquished by Sampler:	Date Time:	Received By:	Relinquished By:	Date Time:	Received By:
1	Colin Hollatz	12/19/11	1	2		2 Jacob Porter 12/20/11 0904
3	Relinquished by Sampler:	Date Time:	Received By: 3	Relinquished By: 4	Date Time:	Received By: 4
5	Relinquished by:	Date Time:	Received By: 5	Custody Seal # FX [x] Intact [ ] Not intact	Preserved where applicable [x]	On Ice [x] Cooler Temp. 3.0

D30465: Chain of Custody
Page 1 of 2

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30465 **Client:** KRW CONSULTING INC. **Immediate Client Services Action Required:** No

Date / Time Received: 12/20/2011 9:05:00 AM **No. Coolers:** 1 **Client Service Action Required at Login:** No

Project: XOM PCU 12A **Airbill #'s:** Fedex

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:	Infared gun		
3. Cooler media:	Ice (bag)		

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 rec'd for analysis:	☑		☐	
4. Compositing instructions clear:	☐		☐	☑
5. Filtering instructions clear:	☐		☐	☑

Comments

Accutest Laboratories
V:(303) 425-6021

4036 Youngfield Street
F: (303) 425-6854

Wheat Ridge, CO
www/accutest.com

D30465: Chain of Custody
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Mountain States ACCUTEST LABORATORIES

GC/MS Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V887-MB	3V15319.D	1	12/22/11	KV	n/a	n/a	V3V887

The QC reported here applies to the following samples: **Method:** SW846 8260B

D30465-1

CAS No.	Compound	Result	RL	MDL	Units	Q
71-43-2	Benzene	ND	1.0	0.44	ug/kg	
100-41-4	Ethylbenzene	ND	2.0	0.50	ug/kg	
108-88-3	Toluene	ND	2.0	1.0	ug/kg	
1330-20-7	Xylene (total)	ND	4.0	2.0	ug/kg	

CAS No.	Surrogate Recoveries		Limits
2037-26-5	Toluene-D8	111%	61-130%
460-00-4	4-Bromofluorobenzene	96%	53-131%
17060-07-0	1,2-Dichloroethane-D4	109%	62-130%

Blank Spike Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
V3V887-BS	3V15320.D	1	12/22/11	KV	n/a	n/a	V3V887

The QC reported here applies to the following samples: **Method:** SW846 8260B

D30465-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
71-43-2	Benzene	50	52.5	105	70-130
100-41-4	Ethylbenzene	50	53.5	107	70-130
108-88-3	Toluene	50	52.1	104	70-130
1330-20-7	Xylene (total)	150	158	105	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
2037-26-5	Toluene-D8	109%	61-130%
460-00-4	4-Bromofluorobenzene	112%	53-131%
17060-07-0	1,2-Dichloroethane-D4	102%	62-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30465-1MS	3V15323.D	1	12/22/11	KV	n/a	n/a	V3V887
D30465-1MSD	3V15324.D	1	12/22/11	KV	n/a	n/a	V3V887
D30465-1	3V15322.D	1	12/22/11	KV	n/a	n/a	V3V887

The QC reported here applies to the following samples: **Method:** SW846 8260B

D30465-1

CAS No.	Compound	D30465-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
71-43-2	Benzene	ND		3390	3550	105	3540	104	0	70-134/30
100-41-4	Ethylbenzene	ND		3390	3660	108	3770	111	3	70-137/30
108-88-3	Toluene	ND		3390	3560	105	3580	106	1	70-130/30
1330-20-7	Xylene (total)	ND		10200	10900	107	11200	110	3	61-131/30

CAS No.	Surrogate Recoveries	MS	MSD	D30465-1	Limits
2037-26-5	Toluene-D8	107%	106%	108%	61-130%
460-00-4	4-Bromofluorobenzene	116%	117%	105%	53-131%
17060-07-0	1,2-Dichloroethane-D4	99%	92%	108%	62-130%

Mountain States ACCUTEST LABORATORIES

GC/MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5042-MB	3G07371.D	1	12/21/11	DC	12/20/11	OP5042	E3G274

The QC reported here applies to the following samples: **Method:** SW846 8270C BY SIM

D30465-1

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	71%	10-145%
321-60-8	2-Fluorobiphenyl	74%	10-130%
1718-51-0	Terphenyl-d14	95%	22-130%

Blank Spike Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5042-BS	3G07372.D	1	12/21/11	DC	12/20/11	OP5042	E3G274

The QC reported here applies to the following samples: **Method:** SW846 8270C BY SIM

D30465-1

CAS No.	Compound	Spike ug/kg	BSP ug/kg	BSP %	Limits
83-32-9	Acenaphthene	83.3	65.8	79	34-130
120-12-7	Anthracene	83.3	65.1	78	35-130
56-55-3	Benzo(a)anthracene	83.3	68.5	82	36-130
50-32-8	Benzo(a)pyrene	83.3	61.3	74	36-130
205-99-2	Benzo(b)fluoranthene	83.3	68.6	82	35-130
207-08-9	Benzo(k)fluoranthene	83.3	72.4	87	37-130
218-01-9	Chrysene	83.3	74.9	90	40-130
53-70-3	Dibenzo(a,h)anthracene	83.3	64.4	77	32-130
206-44-0	Fluoranthene	83.3	65.8	79	38-130
86-73-7	Fluorene	83.3	65.8	79	35-130
193-39-5	Indeno(1,2,3-cd)pyrene	83.3	61.2	73	28-130
91-20-3	Naphthalene	83.3	67.2	81	35-130
129-00-0	Pyrene	83.3	69.4	83	37-130

CAS No.	Surrogate Recoveries	BSP	Limits
4165-60-0	Nitrobenzene-d5	72%	10-145%
321-60-8	2-Fluorobiphenyl	79%	10-130%
1718-51-0	Terphenyl-d14	81%	22-130%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5042-MS	3G07374.D	1	12/21/11	DC	12/20/11	OP5042	E3G274
OP5042-MSD	3G07375.D	1	12/21/11	DC	12/20/11	OP5042	E3G274
D30465-1	3G07373.D	1	12/21/11	DC	12/20/11	OP5042	E3G274

The QC reported here applies to the following samples: **Method:** SW846 8270C BY SIM

D30465-1

CAS No.	Compound	D30465-1 ug/kg	Q	Spike ug/kg	MS ug/kg	MS %	MSD ug/kg	MSD %	RPD	Limits Rec/RPD
83-32-9	Acenaphthene	ND		98.7	42.3	43	55.6	56	27	10-155/30
120-12-7	Anthracene	ND		98.7	49.1	50	68.0	69	32* [a]	10-155/30
56-55-3	Benzo(a)anthracene	ND		98.7	56.7	57	78.2	79	32* [a]	10-175/30
50-32-8	Benzo(a)pyrene	ND		98.7	52.1	53	71.2	72	31* [a]	10-164/30
205-99-2	Benzo(b)fluoranthene	ND		98.7	44.3	45	70.6	71	46* [a]	10-165/30
207-08-9	Benzo(k)fluoranthene	ND		98.7	54.5	55	62.3	63	13	10-178/30
218-01-9	Chrysene	ND		98.7	48.3	49	67.8	69	34* [a]	10-147/30
53-70-3	Dibenzo(a,h)anthracene	ND		98.7	43.3	44	61.2	62	34* [a]	10-144/30
206-44-0	Fluoranthene	ND		98.7	49.0	50	71.5	72	37* [a]	10-207/30
86-73-7	Fluorene	ND		98.7	48.9	50	65.9	67	30	10-163/30
193-39-5	Indeno(1,2,3-cd)pyrene	ND		98.7	45.9	47	67.1	68	38* [a]	10-180/30
91-20-3	Naphthalene	ND		98.7	45.2	46	58.0	59	25	10-198/30
129-00-0	Pyrene	ND		98.7	52.0	53	73.7	75	35* [a]	10-189/30

CAS No.	Surrogate Recoveries	MS	MSD	D30465-1	Limits
4165-60-0	Nitrobenzene-d5	40%	46%	41%	10-145%
321-60-8	2-Fluorobiphenyl	40%	48%	46%	10-130%
1718-51-0	Terphenyl-d14	44%	56%	58%	22-130%

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

Mountain States ACCUTEST LABORATORIES

GC Volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB812-MB	GB14388.D	1	12/21/11	SK	n/a	n/a	GGB812

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

D30465-1

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	96%	60-140%

Blank Spike Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
GGB812-BS	GB14389.D	1	12/21/11	SK	n/a	n/a	GGB812

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

D30465-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-GRO (C6-C10)	110	114	104	70-130

CAS No.	Surrogate Recoveries	BSP	Limits
120-82-1	1,2,4-Trichlorobenzene	108%	60-140%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
D30475-1MS	GB14391.D	1	12/21/11	SK	n/a	n/a	GGB812
D30475-1MSD	GB14392.D	1	12/21/11	SK	n/a	n/a	GGB812
D30475-1	GB14390.D	1	12/21/11	SK	n/a	n/a	GGB812

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

D30465-1

CAS No.	Compound	D30475-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-GRO (C6-C10)	3190		13600	17100	103	17200	103	1	70-130/30

CAS No.	Surrogate Recoveries	MS	MSD	D30475-1	Limits
120-82-1	1,2,4-Trichlorobenzene	123%	129%	214%* [a]	60-140%

(a) Outside control limits due to possible matrix interference.

Mountain States ACCUTEST LABORATORIES

GC Semi-volatiles

QC Data Summaries

Includes the following where applicable:

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

Method Blank Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5043-MB	FH000601.D	1	12/20/11	TR	12/20/11	OP5043	GFH20

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

D30465-1

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	82%	43-136%

Blank Spike Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5043-BS	FH000603.D	1	12/20/11	TR	12/20/11	OP5043	GFH20

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

D30465-1

CAS No.	Compound	Spike mg/kg	BSP mg/kg	BSP %	Limits
	TPH-DRO (C10-C28)	667	663	99	58-130

CAS No.	Surrogate Recoveries	BSP	Limits
84-15-1	o-Terphenyl	88%	43-136%

Matrix Spike/Matrix Spike Duplicate Summary

Job Number: D30465
Account: KRWCCOL KRW Consulting, Inc.
Project: XOM PCU-12A

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP5043-MS	FH000605.D	1	12/20/11	TR	12/20/11	OP5043	GFH20
OP5043-MSD	FH000607.D	1	12/20/11	TR	12/20/11	OP5043	GFH20
D30465-1	FH000609.D	1	12/20/11	TR	12/20/11	OP5043	GFH20

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

D30465-1

CAS No.	Compound	D30465-1 mg/kg	Q	Spike mg/kg	MS mg/kg	MS %	MSD mg/kg	MSD %	RPD	Limits Rec/RPD
	TPH-DRO (C10-C28)	17.1		791	625	77	651	80	4	20-183/43

CAS No.	Surrogate Recoveries	MS	MSD	D30465-1	Limits
84-15-1	o-Terphenyl	70%	73%	70%	43-136%

8.3.1

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Mountain States ACCUTEST LABORATORIES

Metals Analysis

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6508 Methods: SW846 7471A
Matrix Type: SOLID Units: mg/kg

Prep Date: 12/20/11

Metal	RL	IDL	MDL	MB raw	final
Mercury	0.10	.0011	.013	0.0034	<0.10

Associated samples MP6508: D30465-1

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6508
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 12/20/11

Metal	D30387-1 Original	MS	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.080	0.35	0.498	54.2N(a)	85-115

Associated samples MP6508: D30465-1

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
(a) Spike recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6508 Methods: SW846 7471A
Matrix Type: SOLID Units: mg/kg

Prep Date: 12/20/11

Metal	D30387-1 Original	MSD	Spikelot HGWSR1	% Rec	MSD RPD	QC Limit
Mercury	0.080	0.41	0.489	67.4N(a)	15.8	20

Associated samples MP6508: D30465-1

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
(a) Spike recovery indicates possible matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6508
Matrix Type: SOLID

Methods: SW846 7471A
Units: mg/kg

Prep Date: 12/20/11

Metal	BSP Result	Spikelot HGWSR1	% Rec	QC Limits
Mercury	0.41	0.4	102.5	80-120

Associated samples MP6508: D30465-1

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/20/11

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	0.11	<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	0.0	<1.0
Iron	7.0	.34	2		
Lead	5.0	.16	.21	-0.040	<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	0.090	<5.0
Silicon	5.0	.38	.51		
Silver	3.0	.018	.051	-0.050	<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	0.51	<3.0

Associated samples MP6509: D30465-1

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509 Methods: SW846 6010B
Matrix Type: SOLID Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/20/11

Metal	D30414-3 Original	MS	Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	anr				
Barium	191	383	238	80.6	75-125
Beryllium					
Boron					
Cadmium	0.15	46.7	59.5	78.2	75-125
Calcium					
Chromium	32.0	77.6	59.5	76.6	75-125
Cobalt					
Copper	13.2	64.3	59.5	85.9	75-125
Iron					
Lead	12.8	107	119	79.1	75-125
Lithium					
Magnesium					
Manganese					
Molybdenum					
Nickel	16.2	59.7	59.5	73.1N(a)	75-125
Phosphorus					
Potassium					
Selenium	1.2	92.8	119	76.9	75-125
Silicon					
Silver	0.0	19.3	23.8	81.1	75-125
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc	40.8	85.5	59.5	75.1	75-125

Associated samples MP6509: D30465-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
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 recovery indicates possible matrix interference.

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/20/11

Metal	D30414-3 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	anr					
Barium	191	434	236	103.1	12.5	20
Beryllium						
Boron						
Cadmium	0.15	46.2	58.9	78.2	1.1	20
Calcium						
Chromium	32.0	78.3	58.9	78.6	0.9	20
Cobalt						
Copper	13.2	63.5	58.9	85.4	1.3	20
Iron						
Lead	12.8	105	118	78.2	1.9	20
Lithium						
Magnesium						
Manganese						
Molybdenum						
Nickel	16.2	59.5	58.9	73.5N(a)	0.3	20
Phosphorus						
Potassium						
Selenium	1.2	91.6	118	76.7	1.3	20
Silicon						
Silver	0.0	19.2	23.6	81.5	0.5	20
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc	40.8	86.1	58.9	76.9	0.7	20

Associated samples MP6509: D30465-1

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
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 recovery indicates possible matrix interference.

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date: 12/20/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	196	200	98.0	80-120
Beryllium				
Boron				
Cadmium	45.6	50	91.2	80-120
Calcium				
Chromium	47.4	50	94.8	80-120
Cobalt				
Copper	48.0	50	96.0	80-120
Iron				
Lead	95.3	100	95.3	80-120
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	45.7	50	91.4	80-120
Phosphorus				
Potassium				
Selenium	92.5	100	92.5	80-120
Silicon				
Silver	19.3	20	96.5	80-120
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	45.4	50	90.8	80-120

Associated samples MP6509: D30465-1

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
Matrix Type: SOLID

Methods: SW846 6010B
Units: mg/kg

Prep Date:

Metal

(anr) Analyte not requested

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
Matrix Type: SOLID

Methods: SW846 6010B
Units: ug/l

Prep Date: 12/20/11

Metal	D30414-3 Original	SDL 1:5	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	anr			
Barium	1690	2050	21.5*(a)	0-10
Beryllium				
Boron				
Cadmium	1.30	0.00	100.0(b)	0-10
Calcium				
Chromium	283	344	21.5*(a)	0-10
Cobalt				
Copper	116	131	12.2*(a)	0-10
Iron				
Lead	114	138	21.6*(a)	0-10
Lithium				
Magnesium				
Manganese				
Molybdenum				
Nickel	143	181	26.3*(a)	0-10
Phosphorus				
Potassium				
Selenium	10.8	0.00	100.0(b)	0-10
Silicon				
Silver	0.00	2.00		0-10
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc	361	473	31.0*(a)	0-10

Associated samples MP6509: D30465-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6509
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).

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6510
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 12/20/11

Metal	RL	IDL	MDL	MB raw	final
Aluminum	25	.14	1.2		
Antimony	0.20	.001	.0095		
Arsenic	0.40	.049	.22	0.13	<0.40
Barium	1.0	.0035	.1		
Beryllium	0.10	.0075	.014		
Boron	20	.97	1		
Cadmium	0.050	.023	.048		
Calcium	200	1.8	8.2		
Chromium	1.0	.021	.24		
Cobalt	0.10	.0033	.003		
Copper	1.0	.011	.063		
Iron	20	.81	3.7		
Lead	0.25	.0012	.015		
Magnesium	50	.067	2.6		
Manganese	0.50	.007	.029		
Molybdenum	0.50	.0044	.023		
Nickel	1.0	.0029	.031		
Phosphorus	30	1.8	3.5		
Potassium	100	2	3.2		
Selenium	0.20	.075	.19		
Silver	0.050	.0008	.002		
Sodium	250	.8	4.4		
Strontium	10	.004	.04		
Thallium	0.10	.015	.02		
Tin	5.0	.006	.028		
Titanium	1.0	.035	.062		
Uranium	0.25	.00038	.0009		
Vanadium	2.0	.052	.29		
Zinc	5.0	.039	.12		

Associated samples MP6510: D30465-1

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6510
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 12/20/11

Metal	D30414-3 Original	MS	Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic	3.7	123	119	100.2	75-125
Barium					
Beryllium					
Boron					
Cadmium					
Calcium					
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Magnesium					
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silver					
Sodium					
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6510: D30465-1

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6510 Methods: SW846 6020
Matrix Type: SOLID Units: mg/kg

Prep Date: 12/20/11

Metal	D30414-3 Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic	3.7	123	118	101.2	0.0	20
Barium						
Beryllium						
Boron						
Cadmium						
Calcium						
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Magnesium						
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silver						
Sodium						
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6510: D30465-1

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6510
Matrix Type: SOLID

Methods: SW846 6020
Units: mg/kg

Prep Date: 12/20/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic	101	100	101.0	80-120
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6510: D30465-1

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

SERIAL DILUTION RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6510
Matrix Type: SOLID

Methods: SW846 6020
Units: ug/l

Prep Date: 12/20/11

Metal	D30414-3 Original	SDL 5:25	%DIF	QC Limits
Aluminum				
Antimony				
Arsenic	32.5	35.8	10.2*(a)	0-10
Barium				
Beryllium				
Boron				
Cadmium				
Calcium				
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Magnesium				
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silver				
Sodium				
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6510: D30465-1

Results < IDL are shown as zero for calculation purposes
(*) Outside of QC limits
(anr) Analyte not requested
(a) Serial dilution indicates possible matrix interference.

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
Matrix Type: AQUEOUS

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

Prep Date: 12/21/11

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	-31	<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	14.5	<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	-330	<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 MP6526: D30465-1A

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

BLANK RESULTS SUMMARY
Part 2 - Method Blanks

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
Matrix Type: AQUEOUS

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

Prep Date: 12/21/11

Metal	D30465-1A Original MS		Spikelot MPICPALL	% Rec	QC Limits
Aluminum					
Antimony					
Arsenic					
Barium					
Beryllium					
Boron					
Cadmium					
Calcium	8540	152000	125000	114.8	75-125
Chromium					
Cobalt					
Copper					
Iron					
Lead					
Lithium					
Magnesium	2970	133000	125000	104.0	75-125
Manganese					
Molybdenum					
Nickel					
Phosphorus					
Potassium					
Selenium					
Silicon					
Silver					
Sodium	166000	300000	125000	107.2	75-125
Strontium					
Thallium					
Tin					
Titanium					
Uranium					
Vanadium					
Zinc					

Associated samples MP6526: D30465-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
Matrix Type: AQUEOUS

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

Prep Date: 12/21/11

Metal	D30465-1A Original	MSD	Spikelot MPICPALL	% Rec	MSD RPD	QC Limit
Aluminum						
Antimony						
Arsenic						
Barium						
Beryllium						
Boron						
Cadmium						
Calcium	8540	153000	125000	115.6	0.7	20
Chromium						
Cobalt						
Copper						
Iron						
Lead						
Lithium						
Magnesium	2970	134000	125000	104.8	0.7	20
Manganese						
Molybdenum						
Nickel						
Phosphorus						
Potassium						
Selenium						
Silicon						
Silver						
Sodium	166000	298000	125000	105.6	0.7	20
Strontium						
Thallium						
Tin						
Titanium						
Uranium						
Vanadium						
Zinc						

Associated samples MP6526: D30465-1A

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

MATRIX SPIKE AND DUPLICATE RESULTS SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
Matrix Type: AQUEOUS

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

Prep Date: 12/21/11

Metal	BSP Result	Spikelot MPICPALL	% Rec	QC Limits
Aluminum				
Antimony				
Arsenic				
Barium				
Beryllium				
Boron				
Cadmium				
Calcium	144000	125000	115.2	80-120
Chromium				
Cobalt				
Copper				
Iron				
Lead				
Lithium				
Magnesium	131000	125000	104.8	80-120
Manganese				
Molybdenum				
Nickel				
Phosphorus				
Potassium				
Selenium				
Silicon				
Silver				
Sodium	127000	125000	101.6	80-120
Strontium				
Thallium				
Tin				
Titanium				
Uranium				
Vanadium				
Zinc				

Associated samples MP6526: D30465-1A

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

SPIKE BLANK AND LAB CONTROL SAMPLE SUMMARY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

QC Batch ID: MP6526
Matrix Type: AQUEOUS

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

Prep Date:

Metal

(anr) Analyte not requested

Mountain States ACCUTEST LABORATORIES

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: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Specific Conductivity	GP6168/GN12995			umhos/cm	10008	10100	101.0	90-110%
pH	GN12977			su	8.00	7.97	99.6	99.3-100.7%

Associated Samples:
Batch GN12977: D30465-1
Batch GP6168: D30465-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30465
Account: KRWCCOL - KRW Consulting, Inc.
Project: XOM PCU-12A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Redox Potential Vs H2	GN12979	D30431-1	mv	403	410	1.7	0-20%

Associated Samples:
Batch GN12979: D30465-1
(*) Outside of QC limits

Mountain States ACCUTEST LABORATORIES

Misc. Forms

Custody Documents and Other Forms

(Accutest Labs of New England, Inc.)

Includes the following where applicable:

- Chain of Custody

CHAIN OF CUSTODY

ACCUTEST

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

Accutest Job #:	D30465
Accutest Quote #:	0
AMS P.O. #:	
Project No.:	

Client Information			Subcontract Laboratory Information			Analytical Information
Name: Accutest Mountain States (AMS)			Name: Accutest - New England			
Address: 4036 Youngfield St.			Address: 495 Technology Center West, BLDG C			
City: Wheat Ridge,	State: CO	Zip: 80033	City: Marlborough	State: MA	Zip: 01752	
Send Report to: Tiffany Pham			Contact: Sample Management			
Any questions contact: Shea Greiner						
Phone/Fax #: (303) 425-6021; (303)425-6854			Phone: (508) 481-6200			

Field ID / Point of Collection	Collection Date	Collection Time	Matrix	# of bottles	Preservation HCL	NaOH	HNO3	H2So4	None	XCRA	Comments
D30465 -1	12/19/11	9:15 AM	Soil	1						X	

Turnaround Information	Data Deliverable Information	Comments / Remarks
[X] 1 - 2 Business Day Rush — Approved By:	[ ] Commercial "A" [ ] PDF	Please use Colorado regulations and RLs.
[ ] Other 3 (Days)	[ ] Commercial "B" [ ] Compact Disk Deliverable	
RUSH!	[ ] Commercial "BN" [ ] Electronic Delivery:	
10 Day Turnaround Hardcopy, RUSH is FAX Data unless previously approved.	[ ] Reduced Tier 1 [ ] State Forms	
	[ ] Full Tier 1 [ ] Other (Specify)	14A

Sample Custody must be documented below each time samples change possession, including courier delivery.

Relinquished by:	Date & Time:	Received By:	Date & Time:
1	12/20/11	1 FedEx	1
2 FedEx	12/21/11 9:30	2	2
3		3	3

For Subcontract Laborartory Use Only

Seal #: Headspace: Yes [ ] No [ ] NA [ ]

Preserved where applicable: [ ]

Temperature °C 1.6 On Ice [X]

11.1 11

D30465: Chain of Custody
Page 1 of 2
Accutest Labs of New England, Inc.

Accutest Laboratories Sample Receipt Summary

Accutest Job Number: D30465 **Client:** AMS **Immediate Client Services Action Required:** No

Date / Time Received: 12/21/2011 **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:	☑		☐	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:	Infared gun		
3. Cooler media:	Ice (bag)		

Quality Control Preservatio	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

Mountain States ACCUTEST LABORATORIES

General Chemistry

QC Data Summaries

(Accutest Labs of New England, Inc.)

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: D30465
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM PCU-12A

Analyte	Batch ID	RL	MB Result	Units	Spike Amount	BSP Result	BSP %Recov	QC Limits
Chromium, Hexavalent	GP13953/GN37311	0.40	0.32	mg/kg	40	38.8	97.0	80-120%
Chromium, Hexavalent	GP13953/GN37311			mg/kg	1370	1510	110.2	80-120%

Associated Samples:
Batch GP13953: D30465-1
(*) Outside of QC limits

DUPLICATE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30465
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM PCU-12A

Analyte	Batch ID	QC Sample	Units	Original Result	DUP Result	RPD	QC Limits
Chromium, Hexavalent	GP13953/GN37311	D30431-1	mg/kg	0.98	1.0	2.0	0-20%

Associated Samples:
Batch GP13953: D30465-1
(*) Outside of QC limits

MATRIX SPIKE RESULTS SUMMARY
GENERAL CHEMISTRY

Login Number: D30465
Account: ALMS - Accutest Mountain States
Project: KRWCCOL: XOM PCU-12A

Analyte	Batch ID	QC Sample	Units	Original Result	Spike Amount	MS Result	%Rec	QC Limits
Chromium, Hexavalent	GP13953/GN37311	D30431-1	mg/kg	0.98	43.3	45.9	103.8	75-125%
Chromium, Hexavalent	GP13953/GN37311	D30431-1	mg/kg	0.98	779	962	123.3	75-125%

Associated Samples:
Batch GP13953: D30465-1
(*) Outside of QC limits
(N) Matrix Spike Rec. outside of QC limits