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Effective Solutions

# **REMEDIATION SUMMARY**

# AND PROPOSED SITE

# **CLOSURE STRATEGY**

**CrownQuest Operating, LLC** New Mexico State 20 #5 Lea County, New Mexico UNIT LTR "H" (SE ¼ /NE ¼ ), Section 6, Township 14 South, Range 33 East Latitude 33°08' 07" North, Longitude 103° 38' 45" West NMOCD Reference # 1RP-2252

Prepared For:

CrownQuest Operating, LLC P.O. Box 53310 Midland, Texas 79710

Prepared By: Basin Environmental Consulting, LLC 2800 Plains Highway Lovington, New Mexico 88260

October 2009

Camille Brvant

Project Manager

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# INTRODUCTION AND BACKGROUND INFORMATION

Basin Environmental Consulting, LLC (Basin), on behalf of CrownQuest Operating, LLC (CrownQuest), has prepared this Remediation Summary and Proposed Site Closure Strategy for the release site known as New Mexico State 20 #5. The legal description of the release site is Unit Letter "H" (SE ¼ NE ¼), Section 6, Township 14 South, Range 33 East, in Lea County, New Mexico. The property affected by the release is owned by Mr. Norman Hahn. The release site GPS coordinates are 33° 08' 07" North and 103° 38' 45" West. Please reference Figure 1 for a Site Location Map and Figure 2 for a Site and Monitor Well Location Map. The Release Notification and Corrective Action (Form C-141) is provided as Appendix D.

On July 21, 2009, CrownQuest discovered a release from a two-inch poly flow line. The flow line failed at the seam, resulting in a release of crude oil/produced water. The release was reported to the New Mexico Oil Conservation Division (NMOCD) on July 21, 2009. CrownQuest conducted a line repair at the time of the release. Approximately fifty (50) barrels of crude oil and produced water was released from the flow line, with approximately twenty-five (25) barrels recovered. General photographs of the site are provided as Appendix C.

# NMOCD SITE CLASSIFICATION

According to data obtained from the New Mexico Office of the State Engineer (NMOSE), groundwater should be encountered at approximately one hundred thirty-three (133) feet below ground surface (bgs). The depth to groundwater in this area results in a score of zero (0) being assigned to the site based on the NMOCD depth to groundwater criteria.

The water well database, maintained by the NMOSE, indicated there are no water wells less than 1,000 feet from the release, resulting in zero (0) points being assigned to this site as a result of this criteria.

There are no surface water bodies located within 1,000 feet of the site. Based on the NMOCD ranking system zero (0) points will be assigned to the site as a result of the criteria.

The NMOCD guidelines indicate the New Mexico State 20 #5 release site has a ranking score of zero (0). Based on this score, the soil remediation levels for a site with a ranking score of zero (0) points are as follows:

- Benzene 10 mg/Kg (ppm)
- BTEX 50 mg/Kg (ppm)
- TPH 5,000 mg/Kg (ppm)

The NMOCD chlorides clean up level concentrations are site specific.

# SUMMARY OF SOIL REMEDIATION ACTIVITIES

On July 28, 2009, following initial response activities, excavation of the impacted soil began at the site. Excavated soil was stockpiled on-site on a plastic liner to mitigate the leaching of contaminants into the vadose zone.

On October 24, 2009, one (1) soil boring (SB-1) was advanced at the release site to vertically investigate the extent of soil impact. Soil boring logs are provided as Appendix A. Soil samples were collected at five (5) foot drilling intervals and field screened using a Photo-Ionization Detector (PID). Selected soil samples were submitted to the laboratory for determination of concentrations of benzene, toluene, ethyl-benzene and xylene (BTEX), total petroleum hydrocarbon (TPH) and chlorides using EPA SW-846 8021b, SW-846 8015M and E 300.0, respectively.

Soil boring SB-1 was located in the northeast portion of the excavation and was advanced to a total depth of approximately forty (40) feet bgs. Soil samples were collected at five (5) foot drilling intervals. Soil samples collected at five (5) and fifteen (15) feet bgs were submitted to the laboratory for BTEX and TPH analysis. The laboratory analytical results indicated benzene concentrations were less than the appropriate laboratory method detection limit (MDL) in the soil sample collected at five (5) and fifteen (15) feet bgs. BTEX concentrations ranged from 0.075 mg/Kg in the soil sample collected at fifteen (15) feet bgs to 0.2765 mg Kg in the soil sample collected at five (5) feet bgs to 12.6 mg/Kg in the soil sample collected at five (5), fifteen (15), twenty-five (25) and thirty (30) feet bgs were submitted to the laboratory for chloride analysis. Chloride concentrations ranged from 79.0 mg/Kg in the soil sample collected at five (5) feet bgs. Table 1 summarizes the Concentrations of BTEX, TPH and Chlorides in Soil. Analytical reports are provided as Appendix B.

On October 29, 2009, one (1) soil boring (SB-2) was advanced at the site and was subsequently converted to a groundwater monitor well (MW-1). The monitor well (MW-1) was installed in the center of the excavated area to evaluate the status of the groundwater at the site. The monitor well was installed to a total depth of approximately one hundred forty-seven (147) feet bgs. Soil samples were collected at five (5) foot drilling intervals. Soil samples collected at five (5) and fifteen (15) foot drilling intervals were analyzed for benzene, BTEX and TPH concentrations. The laboratory analytical results indicated benzene concentrations were less than the laboratory MDL in the soil samples collected at five (5) and fifteen (15) feet bgs. BTEX concentrations ranged from less than the laboratory MDL in the soil sample collected at fifteen (15) feet bgs to 0.0374 mg/Kg in the soil sample collected at five (5) feet bgs. TPH concentrations ranged from 1.60 mg/Kg in the soil sample collected at fifteen (15) feet bgs to 4.05 mg/Kg in the soil sample collected at five (5) feet bgs. The soil samples collected at five (5), fifteen (15), twenty-five (25), thirty-five (35), forty-five (45), fifty-five (55), sixty-five (65), seventy-five (75), eighty-five (85), ninety-five (95), one hundred five (105), one hundred fifteen (115), one hundred twenty (120) and one hundred twenty-five (125) foot drilling intervals were submitted to the laboratory for chloride analysis. Chloride concentrations ranged from 46.6 mg/Kg in the soil sample collected at one hundred fifteen (115) feet bgs to 5,320 mg/Kg in the soil sample collected at thirty-five (35) feet bgs.

## SUMMARY OF GROUNDWATER INVESTIGATION ACTIVITIES

On October 5, 2009, the monitor well (MW-1) was gauged and purged of a minimum of three (3) well volumes of water or until the well was dry using a PVC bailer or electrical Grundfos Pump. Groundwater was allowed to recharge and samples were obtained using disposable Teflon

bailers. Water samples were stored in clean, containers provided by the laboratory and placed on ice in the field. Purge water was collected in a trailer mounted polystyrene tank and disposed of at an NMOCD approved disposal in Monument, New Mexico.

Groundwater samples collected from monitor well (MW-1) were delivered to TraceAnalysis, Inc, Midland, Texas for determination of chloride concentrations by EPA Method SM 4500-CL B or E 300 and Total Dissolved Solids (TDS) concentrations by EPA Method SM 2540. A summary of the analytical results are included in Table 2, Concentrations of Chlorides and TDS in Groundwater.

The laboratory analytical results of the October 5, 2009 groundwater sampling event indicated a TDS concentration of 756 mg/L and a chloride concentration of 109 mg/L. The laboratory analytical results indicated the chloride concentration was less than NMOCD regulatory standard for monitor well MW-1. Location of the groundwater monitor well is depicted on Figure 2 Site and Monitor Well Location Map.

# **PROPOSED SITE CLOSURE STRATEGY**

CrownQuest proposes the following remediation activities designed to progress the New Mexico State 20 #5 release site toward an NMOCD approved closure:

- CrownQuest requests NMOCD approval to plug and abandon monitor well MW-1. The monitor well will be plugged using the New Mexico Office of the State Engineer (NMOSE) guidelines. The plugging and abandonment activities will be conducted by a State of New Mexico certified water well drilling company and CrownQuest will provide the NMOCD with plugging reports documenting the plugging procedure.
- CrownQuest proposes to excavate the impacted soil to a depth of approximately five (5) feet bgs and stockpile the impacted soil on-site, pending transportation to an NMOCD permitted disposal facility. The sidewalls of the excavation will be sampled at seventy-five (75) feet linear intervals and submitted to the laboratory and analyzed for concentrations of benzene, BTEX, TPH and chlorides. When confirmation analytical results indicate the excavation sidewalls exhibit concentrations less than the NMOCD regulatory standards the excavation activities will cease.
- CrownQuest proposes to install a twenty (20) mil polyurethane liner in the floor of the excavation. The liner will be cushioned by a six (6) inch layer of sand above and below the liner to protect the liner from damage during excavation backfilling activities. The excavation will be backfilled with non-impacted soil purchased from an off-site source. Following backfill activities, the surface will be contoured to fit the surrounding topography. Reseeding of the site with vegetation acceptable to the landowner, will take place at the conclusion of the proposed remediation activities.

#### REPORTING

On completion of the proposed closure strategy activities, CrownQuest will submit a Remediation Summary and Site Closure Request for NMOCD approval.

# LIMITATIONS

Basin Environmental Consulting, LLC has prepared this Remediation Summary and Site Closure Strategy to the best of its ability. No other warranty, expressed or implied, is made or intended.

Basin Environmental Consulting, LLC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. Basin Environmental Consulting, LLC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. Basin Environmental Consulting, LLC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin Environmental Consulting, LLC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of CrownQuest Operating, LLC. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of Basin Environmental Consulting, LLC and/or CrownQuest Operating, LLC

# **DISTRIBUTION:**

- Copy 1: Geoffrey Leking New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (District 1) 1625 French Drive Hobbs, New Mexico 88240
   Copy 2: Don Rogers CrownQuest Operating, LLC P.O. Box 53310
- Copy 3: Basin Environmental Consulting, LLC P.O. Box 381 Lovington, New Mexico 88260 cjbryant@basin-consulting.com

Midland, Texas 79710

# Figures

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# Tables

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#### Table 1

#### CONCENTRATIONS OF BTEX,TPH AND CHLORIDE IN SOIL CROWNQUEST OPERATING, LLC NEW MEXICO STATE 20 #5 LEA COUNTY, NEW MEXICO NMOCD REF #1RP- 2252

				ME	THOD: EPA SV	846-8021B, 50	)30		E	EPA SW 846-80	15	EPA 4500 / E 300
SAMPLE DATE	SAMPLE LOCATION	SAMPLE DEPTH	SOIL STATUS	BENZENE (mg/Kg)	TOLUENE (mg/Kg)	ETHYL- BENZENE (mg/Kg)	XYLENE (mg/Kg)	BTEX (mg/Kg)	GRO (mg/Kg)	DRO (mg/Kg)	TOTAL TPH (mg/Kg)	Chloride (mg/Kg)
09/24/09	SB-1 @ 5'	5 Feet	In-Situ	<0.0100	0.0199	0.0556	0.201	0.2765	12.6	<50.0	12.6	11,000
09/24/09	SB-1 @ 15'	15 Feet	In-Situ	<0.0100	<0.0100	<0.0100	0.075	0.075	6 23	<50.0	6.23	2,760
09/24/09	SB-1 @ 25'	25 Feet	In-Situ	-	-	-	-	-		-	-	79
09/24/09	SB-1 @ 30'	30 Feet	In-Situ	-	-	-	-	-	-	-	-	87.9
09/29/09	MW-1 @ 5'	5 Feet	In-Situ	<0.0100	<0 0100	<0.0100	0.0374	0.0374	4.05	<50.0	4.05	4,660
09/29/09	MW-1 @ 15'	15 Feet	In-Situ	<0 0100	<0.0100	<0.0100	<0.0100	<0 0100	1.6	<50 0	1.6	3,600
09/29/09	MW-1 @ 25'	25 Feet	In-Situ	-	-	-	-	-	-	-	-	4,740
09/29/09	MW-1 @ 35'	35 Feet	In-Situ	-	-	-	-	-	-	-	-	5,320
09/29/09	MW-1 @ 45'	45 Feet	In-Situ	-	-	-	-	-	-	-	-	4,610
09/29/09	MW-1 @ 55'	55 Feet	In-Situ	-	-	-	-	_	-	-	-	4,250
09/29/09	MW-1 @ 65'	65 Feet	In-Situ	-	-	-	-	-	-	-	-	4,670
09/29/09	MW-1 @ 75'	75 Feet	In-Situ	-	-	-	-	-	-	-	-	5,100
09/29/09	MW-1 @ 85'	85 Feet	In-Situ	-	-	-	-	-	-	-	-	667
09/29/09	MW-1 @ 95'	95 Feet	In-Situ	-	-	-	-	-	-	-	-	422
09/29/09	MW-1 @ 105'	105 Feet	In-Situ	-	-	-	-	-	-	-	-	200
09/29/09	MW-1 @ 115'	115 Feet	In-Situ	-	-	-	-	-	-	-	-	46.6
09/29/09	MW-1 @ 120'	120 Feet	In-Situ	-	-	-	-	-	-	-	-	255
09/29/09	MW-1 @ 125'	125 Feet	In-Situ	-	-	-	-	-		-	-	287
				ALL ANT MAY	**************************************		AN ALLAFE		the second second second	All Start Start		With the Ke
NMOCD CL	EAN-UP LEVEL			10				50			5,000	250

BOLD indicates concentration exceeding NMOCD regulatory standards

# TABLE 2

## CONCENTRATIONS OF CHLORIDES AND TDS IN GROUNDWATER CROWNQUEST OPERATING, LLC NEW MEXICO STATE 20 #5 LEA COUNTY, NEW MEXICO NMOCD REF # 1PR-2252

		METHOD: 4500	SM 2540C	
SAMPLE	SAMPLE DATE		TOTAL	
LOCATION		CHLORIDE	DISSOLVED SOILDS	
MW-1	10/05/09	109	756	
		「二世紀」の「「「「「「」」」を		
NMOCD CRITER	A	250	10,000	

All concentrations recorded in mg/L

# Appendices

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# Appendix A Soil Boring and Monitor Well Logs

	PID	Chloride	Sc	oil Boi	ring SB-1	
Drilling Soil	Field	Field	Petroleum f	Petroleum		Soil Boring Details
Depth Colum	ns <u>Screen</u>	<u>Screen</u>	Odor	<u>Stain</u>	Soil Description	Date Drilled September 24, 2009
	3.5	6,272	None	None	0 - 5' - Clay, red, sandy, dry	Thickness of Bentonite Seat 50 Ft Depth of Exploratory Boring 50 Ft bgs Depth to Groundwater NA Ground Water Elevation
	3.2	1,276	None	None	5 - 15' - Caliche, tan, dry	_
		$\frown$	None	None		<ul> <li>Indicates the PSH level measured</li> <li>on</li> <li>Indicates the groundwater level</li> </ul>
	3.5	2,400	None	None	15 - 20' - Sand, tan to brown, very fine grained	measured on Indicates samples selected for Laboratory Analysis. PID Head-space reading in ppm obtained
	(3.0)	(120)	None	None	with caliche nodules, dry	with a photo-ionization detector.
	(2.9)	(124)	None	None	25 - 35' - Sand, tan to brown, very fine grained	
	3,1		None	None	with sandstone nodules, dry	
	з.1 тр 3.2	<120 <120	None	None	35 - 40' - Sand, brown, very fine grained	
L <sub>40</sub> (1993)	тр 3.2	<120				

#### Notes

1.) The soil boring was advanced on date using air rotary drilling techniques.

 The times between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.

Boring Log Details Soil Boring SB-1 New Mexico State 20 #5 Lea County, New Mexico CrownQuest Operating, LLC

- -

# **Basin Environmental Services**

Prep By: CDS	Checked By: CJB	
October 16, 2009		

		Chloride	Soi	Bori	ng SB-2 / Monitor Well M	W-1	
Drilling	Soil	Field	Petroleum P				Soil Boring SB-2 / Monitor Well MW-1
•	Columns	<u>Screen</u>	Odor	Stain	Soil Description		Date Drilled September 29, 2009
ǰ		(5,760)	None	None	0 - 5' bgs - Clay, red, sandy		Thickness of Bentonite Seal <u>99 Feel</u> Depth of Exploratory Boning <u>147 Feet Bos</u> Depth to Groundwater <u>78 Ft (Approx, 95 ft bp</u> s)
E 10		6,700	None	None	5 - 10' bgs - Caliche, white to tan, dry		Ground Water Elevation
- - - - - -		6,192	None	None	10 - 15' bgs - Sand, tan, dry with caliche nodules		Indicates the PSH lovel measured     on Indicates the groundwater lovel
- 20		6,700	None	None	15 - 20' bgs - Sand, tan to brown, with callche nodules and clay stringers		measured on Indicates semples selected for Laboratory Analysis,
- 25	×	6,700	None	None	20 - 25' bgs - Sand, light brown, dry with sandstone nodules and some clay		
- - - 30		5,284	None	None	25 - 30' bgs - Sand, light brown, slightly damp with sandstone nodule		
- 35		5,292	None	None			
- 40		4,860	None	None	30 - 50' bgs - Sand, brown, very fine grained,	Ø	
- 45		(4,464)	None	None	slightly damp		/
- - - 50		5,292	None	None			
55		4,860	None	None	50 - 55' bgs - Sand, brown, very fine grained, slightly damp with sandstone nodule		Grout Surface Seel
- 60		4,464	None	None			Bentonite Petiet Seal
- 65		4,464	None	None			Sand Pack
- 70		5,292	None	None			Screen
- 75		5,292	None	None	55 - 85' bgs - Sand, brown, very fine grained, damp with sandstone nodule		
- - - 80 -		4,860	None	None			
- as		3,760	None	None			
- 90		2,180	None	None	85 - 95 bgs- Sand, brown, very fine grained, moist		
- 95	X	2,632	None	None			
- - 100 -	瀫	1,608	None	None	95 - 110' bgs - Sand, brown, very fine grained,	N I I	
- - - 105 -		928	None	None None	molist with sandstone nodule	25.4.2	
E 110		432	None	None		<u>83340</u> 2	Completion Notes
115		336	None	None		2.52.450	<ol> <li>The monitor well was advanced on date using atr / water rotary drilling techniques,</li> <li>The well was constructed with 2" 10, 0.010 her heater clickled threaded in the schedule.</li> </ol>
- - 120 		216	None	None		Start.	Inch factory slotled, threaded joint, schedule 40 PVC pipe. 3.) The well is protected with a locked slick up steel cover and compression cap.
- 125 -		296	None	None	110 - 147 bgs- Sand, brown, very fine grained, pointst		<ol> <li>The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be</li> </ol>
- - - -						5.225 111111	gradual.
- 135 -						111111	
- - 140 -						1277 124 1111111	
- 145 - 147	<u>з</u> п						
Soil Bor		etails	Nev	/ Mex	ico State 20 #5 Basin En	viro	nmental Consulting
Ionitor \		Details	Lea	Coun	ty, New Mexico		Checked By: CDS
M	W-1	- 1	Crowr	Jues	st Operating, LLC	16, 2009	

Appendix B Analytical Reports



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**WBENC:** 237019

HUB:1752439743100-86536NCTRCAWFWB38444Y0909

Certifications

**DBE:** VN 20657

# **NELAP** Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317 El Paso: T104704221-08-TX LELAP-02002 Midland: T104704392-08-TX

# Analytical and Quality Control Report

Camille Bryant Basin Environmental Consulting 2800 Plains Hwy. P. O. Box 381 Lovington, NM, 88260

Report Date: October 9, 2009

Work Order: 9100503

Project Location:Lea County, NMProject Name:Crownquest/New Mexico State 20 #5Project Number:Crownquest/New Mexico State 20 #5

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
211512	SB-1 @ 5'	soil	2009-09-24	08:30	2009-10-03
211513	SB-1 @ 15'	soil	2009-09-24	10:00	2009-10-03
211514	SB-1 @ 25'	soil	2009-09-24	11:10	2009-10-03
211515	SB-1 @ 30'	soil	2009-09-24	12:05	2009-10-03
211516	MW-1 @ 5'	soil	2009-09-29	09:00	2009-10-03
211517	MW-1 @ 15'	soil	2009-09-29	09:20	2009-10-03
211518	MW-1 @ 25'	soil	2009-09-29	09:45	2009-10-03
211519	MW-1 @ 35'	soil	2009-09-29	10:05	2009-10-03
211520	MW-1 @ 45'	soil	2009-09-29	10:30	2009-10-03

			Date	$\mathbf{T}$ ime	Date
Sample	Description	Matrix	Taken	Taken	Received
211521	MW-1 @ 55'	soil	2009-09-29	11:00	2009-10-03
211522	MW-1 @ 65'	soil	2009-09-29	11:20	2009-10-03
211523	MW-1 @ 75'	soil	2009-09-29	11:40	2009-10-03
211524	MW-1 @ 85'	soil	2009-09-29	12:00	2009-10-03
211525	MW-1 @ 95'	soil	2009-09-29	12:30	2009-10-03
211526	MW-1 @ 105'	soil	2009-09-29	12:50	2009-10-03
211527	MW-1 @ 115'	soil	2009-09-29	13:30	2009-10-03
211528	MW-1 @ 120'	soil	2009-09-29	13:55	2009-10-03
211529	MW-1 @ 125'	soil	2009-09-29	14:20	2009-10-03

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

This report consists of a total of 22 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

#### Standard Flags

 ${\bf B}\,$  - The sample contains less than ten times the concentration found in the method blank.

# **Case Narrative**

Samples for project Crownquest/New Mexico State 20 #5 were received by TraceAnalysis, Inc. on 2009-10-03 and assigned to work order 9100503. Samples for work order 9100503 were received intact at a temperature of 2.1 deg. C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	54819	2009-10-05 at 16:00	64189	2009-10-05 at 17:01
Chloride (IC)	E 300.0	54809	2009-10-06 at $09:02$	64216	2009-10-06 at $17:40$
Chloride (IC)	E 300.0	54810	2009-10-06 at 09:02	64218	2009-10-06 at 22:41
Chloride (IC)	E 300.0	54811	2009-10-06 at $09:03$	64219	2009-10-07 at 01:43
TPH DRO	Mod. 8015B	54798	2009-10-05 at 09:48	64164	2009-10-05 at 09:48
TPH GRO	S 8015B	54819	2009-10-05 at 16:00	<b>6419</b> 0	2009-10-05 at 17:29

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9100503 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

# **Analytical Report**

#### Sample: 211512 - SB-1 @ 5'

Laboratory:MidlauAnalysis:BTEXQC Batch:64189Prep Batch:54819		Analytical Method: Date Analyzed: Sample Preparation:	S 8021B 2009-10-05 2009-10-05	Prep Method: Analyzed By: Prepared By:	S 5035 AG AG
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Benzene		< 0.0100	mg/Kg	1	0.0100
Toluene		0.0199	mg/Kg	1	0.0100
Ethylbenzene		0.0556	mg/Kg	1	0.0100
Xylene		0.201	mg/Kg	1	0.0100

					Spike	Percent	Recovery
Surrogate	$\mathbf{Flag}$	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		1.86	mg/Kg	1	2.00	93	64.4 - 111.2
4-Bromofluorobenzene (4-BFB)		2.01	mg/Kg	1	2.00	100	43.1 - 128.4

## Sample: 211512 - SB-1 @ 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64216 54809	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		11000	mg/Kg	500	1.00

#### Sample: 211512 - SB-1 @ 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 64164 54798	Analytical Method: Date Analyzed: Sample Preparation:	Mod. 8015B 2009-10-05 2009-10-05	Prep Method: Analyzed By: Prepared By:	kg
D .		RL		24	
<u>Parameter</u>	Flag	Result	Units	Dilution	$\mathbf{RL}$
DRO		<50.0	mg/Kg	1	50.0

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontan	e	98.4	mg/Kg	1	100	98	13.2 - 219.3
Sample: 21 Laboratory: Analysis: QC Batch: Prep Batch:	1512 - SB-1 @ Midland TPH GRO 64190 54819	5,	Analytical M Date Analyz Sample Prep	ed: 2009-	10-05	Prep M Analyz Prepar	ed By: AG

			$\mathbf{RL}$					
Parameter FI	lag		$\mathbf{Result}$		Units		Dilution	$\operatorname{RL}$
GRO			12.6		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		$\mathbf{Flag}$	$\mathbf{Result}$	Units	Dilution	$\operatorname{Amount}$	Recovery	Limits
Trifluorotoluene (TFT)			2.07	mg/Kg	1	2.00	104	65.3 - 109.9
4-Bromofluorobenzene (4-BF	Ϋ́B)	1	2.67	mg/Kg	1	2.00	134	61.7 - 119.9

# Sample: 211513 - SB-1 @ 15'

Laboratory:MidlandAnalysis:BTEXQC Batch:64189Prep Batch:54819			Analytical Date Analy Sample Pre	yzed:	S 8021B 2009-10-05 2009-10-05		Prep Me Analyze Preparec	d By: AG	35
			RI						
Parameter	Flag		Resul	t	Units	I	Dilution	R	λΓ
Benzene			< 0.010	)	mg/Kg		1	0.010	00
Toluene			< 0.010	)	mg/Kg		1	0.010	00
Ethylbenzene			< 0.010	)	mg/Kg		1	0.010	00
Xylene			0.0750	)	mg/Kg		1	0.010	00
						Spike	Percent	Recovery	y
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits	•
Trifluorotoluene (TFT)			1.83	mg/Kg	1	2.00	92	64.4 - 111	2
4-Bromofluorobenzene (4-B	FB)		2.02	mg/Kg	1	2.00	101	43.1 - 128	.4

## Sample: 211513 - SB-1 @ 15'

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	64216	Date Analyzed:	2009-10-06	Analyzed By:	AR
Prep Batch:	54809	Sample Preparation:	2009-10-06	Prepared By:	$\mathbf{AR}$

<sup>1</sup>High surrogate recovery due to peak interference.

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Parameter	Flag	RL Result	Units	Dilution	RL	
Chloride	1 105	2760	mg/Kg	100	1.00	

## Sample: 211513 - SB-1 @ 15'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 64164 54798		Analytical Method: Date Analyzed: Sample Preparation:		Iod. 8015B 009-10-05 009-10-05	Anal	Method: N/A yzed By: kg ared By: kg
Parameter	Fla	g	$\operatorname{RL}$ Result		Units	Dilution	RL
DRO		ð	<50.0		mg/Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike 1 Amount	Percent Recovery	$\begin{array}{c} {\rm Recovery} \\ {\rm Limits} \end{array}$
n-Triacontane	e	95.9	mg/Kg	1	100	96	13.2 - 219.3

#### Sample: 211513 - SB-1 @ 15'

Laboratory:MidlandAnalysis:TPH GROQC Batch:64190Prep Batch:54819			Analytical Method: Date Analyzed: Sample Preparation:		S 8015B 2009-10-05 2009-10-05		Prep Method: Analyzed By: Prepared By:		
	х х		$\operatorname{RL}$						
Parameter	$\mathbf{Flag}$		$\operatorname{Result}$		Units		Dilution	$\mathbf{RL}$	
GRO	·		6.23		mg/Kg		1	1.00	
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluo	ene (TFT)		2.02	mg/Kg	1	2.00	101	65.3 - 109.9	
4-Bromofluor	obenzene (4-BFB)		2.36	mg/Kg	1	2.00	118	61.7 - 119.9	

## Sample: 211514 - SB-1 @ 25'

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	64216	Date Analyzed:	2009-10-06	Analyzed By:	AR
Prep Batch:	54809	Sample Preparation:	2009-10-06	Prepared By:	$\mathbf{AR}$

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Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$	
Chloride		79.0	mg/Kg	5	1.00	

# Sample: 211515 - SB-1 @ 30'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (IC) 64216	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	AR
		$\mathbf{RL}$			
Parameter	$\mathbf{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		87.9	mg/Kg	5	1.00

## Sample: 211516 - MW-1 @ 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 64189 54819		Analytical Date Analy Sample Pro	zed:	S 8021B 2009-10-05 2009-10-05		Prep Me Analyzed Prepared	d By:	S 5035 AG AG
			RI	J					
Parameter	Flag		$\operatorname{Resul}$	t	Units		Dilution		$\mathbf{RL}$
Benzene			< 0.0100	)	mg/Kg		1		0.0100
Toluene			< 0.0100	)	mg/Kg		1		0.0100
Ethylbenzene	<u>)</u>		< 0.0100	)	mg/Kg		1		0.0100
Xylene			0.0374	l	mg/Kg		1		0.0100
						Spike	Percent	Re	covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	$\mathbf{L}_{i}$	imits
Trifluorotolue	ene (TFT)		1.84	mg/Kg	1	2.00	92	64.4	- 111.2
4-Bromofluor	obenzene (4-BFB)		1.99	mg/Kg	11	2.00	100	43.1	- 128.4

# Sample: 211516 - MW-1 @ 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64216 54809	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		4660	mg/Kg	100	1.00

# Sample: 211516 - MW-1 @ 5'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DRO 64164 54798		Analytical M Date Analyz Sample Prep	ed: 2009-		Analy	Method: N/A yzed By: kg ared By: kg
			RL				
Parameter	Flag	g	Result		nits	Dilution	RL
DRO			<50.0	mg/	'Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontan		94.5	mg/Kg	1	100	94	13.2 - 219.3
Sample: 21	1516 - MW-1 @	9 5'					
Laboratory:	Midland						
Analysis:	TPH GRO		Analytical M	lethod: S 801	$5\mathrm{B}$	Prep M	lethod: S 5035
QC Batch:	64190		Date Analyz	ed: 2009-1	10-05	Analyz	ed By: AG
Prep Batch:	54819		Sample Prep	aration: 2009-	10-05	Prepare	ed By: AG
			$\mathbf{RL}$				
Parameter	Flag	g	$\operatorname{Result}$	Ui	nits	Dilution	$\operatorname{RL}$
GRO			4.05	mg/	′Kg	1	1.00

				0, 0			
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.05	mg/Kg	1	2.00	102	65.3 - 109.9
4-Bromofluorobenzene (4-BFB)	2	2.42	mg/Kg	1	2.00	121	61.7 - 119.9

# Sample: 211517 - MW-1 @ 15'

Laboratory:	Midland					
Analysis:	BTEX		Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	64189		Date Analyzed:	2009-10-05	Analyzed By:	$\mathbf{AG}$
Prep Batch:	54819		Sample Preparation:	2009-10-05	Prepared By:	AG
			$\operatorname{RL}$			
Parameter		Flag	$\mathbf{Result}$	Units	Dilution	$\mathbf{RL}$
Benzene			< 0.0100	mg/Kg	1	0.0100
Toluene			< 0.0100	mg/Kg	1	0.0100
Ethylbenzene	e		< 0.0100	mg/Kg	1	0.0100
Xylene			< 0.0100	mg/Kg	1	0.0100

<sup>2</sup>High surrogate recovery due to peak interference.

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Surrogate	Flag	Result	Units	Dilution	${ m Spike} \ { m Amount}$	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	1.005	1.86	mg/Kg	1	2.00	93	64.4 - 111.2
4-Bromofluorobenzene (4-BFB)		1.96	mg/Kg	1	2.00	98	43.1 - 128.4

# Sample: 211517 - MW-1 @ 15'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64216 54809	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	$\mathbf{AR}$
		$\mathbf{RL}$			
Parameter	$\mathbf{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		3600	mg/Kg	500	1.00

# Sample: 211517 - MW-1 @ 15'

n-Triacontane	e	85.8	mg/Kg	1	100	86	13.2 - 219.3
Surrogate	Flag	Result	Units	Dilutio	n Amount	Recovery	Limits
		tu "			Spike	Percent	Recovery
DRO			<50.0		mg/Kg	1	50.0
Parameter	Fla	g	$\operatorname{RL}$ Result		Units	Dilution	RL
Prep Batch:	54798		Sample Prep	paration: 2	009-10-05	Prepa	ared By: kg
QC Batch:	64164		Date Analyz	ed: 2	009-10-05	Analy	yzed By: kg
Laboratory: Analysis:	Midland TPH DRO		Analytical M	lethod: N	Aod. 8015B	Prep	Method: N/A

## Sample: 211517 - MW-1 @ 15'

f

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Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH GRO 64190 54819	Analytical Method: Date Analyzed: Sample Preparation:	S 8015B 2009-10-05 2009-10-05	Prep Method: Analyzed By: Prepared By:	AG
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
GRO		1.60	mg/Kg	1	1.00

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)		2.06 2.17	mg/Kg mg/Kg	1 1	2.00 2.00	103 108	65.3 - 109.9 61.7 - 119.9	

# Sample: 211518 - MW-1 @ 25'

# Sample: 211519 - MW-1 @ 35'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64216 54809	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	$\mathbf{AR}$
		$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	Result	$\mathbf{Units}$	Dilution	$\mathbf{RL}$
Chloride		5320	mg/Kg	100	1.00

## Sample: 211520 - MW-1 @ 45'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64216 54809	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	$\overline{AR}$
		$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		4610	mg/Kg	100	1.00

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		······································

# Sample: 211521 - MW-1 @ 55'

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	64216	Date Analyzed:	2009-10-06	Analyzed By:	$\mathbf{AR}$
Prep Batch:	54809	Sample Preparation:	2009-10-06	Prepared By:	$\mathbf{AR}$
		$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	RL
Chloride		4250	mg/Kg	500	1.00

## Sample: 211522 - MW-1 @ 65'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64218 54810	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	AR
		$\operatorname{RL}$			
Parameter	$\mathbf{Flag}$	$\mathbf{Result}$	Units	Dilution	$\operatorname{RL}$
Chloride		4670	mg/Kg	500	1.00

# Sample: 211523 - MW-1 @ 75'

Chloride		5100	mg/Kg	100	1.00
Parameter	Flag	Result	Units	Dilution	RL
		RL			
Prep Batch:	54810	Sample Preparation:	2009-10-06	Prepared By:	$\mathbf{AR}$
QC Batch:	64218	Date Analyzed:	2009-10-06	Analyzed By:	$\mathbf{AR}$
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
Laboratory:	Midland				

## Sample: 211524 - MW-1 @ 85'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64218 54810	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	$\overline{AR}$
		$\operatorname{RL}$			
Parameter	$\mathbf{Flag}$	$\mathbf{Result}$	Units	Dilution	RL
Chloride		667	mg/Kg	10	1.00

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## Sample: 211525 - MW-1 @ 95'

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	64218	Date Analyzed:	2009-10-06	Analyzed By:	$\mathbf{AR}$
Prep Batch:	54810	Sample Preparation:	2009-10-06	Prepared By:	$\mathbf{AR}$
		$\operatorname{RL}$			
Parameter	$\operatorname{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		422	mg/Kg	10	1.00

## Sample: 211526 - MW-1 @ 105'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64218 54810	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	$\overline{\mathbf{AR}}$
		$\mathbf{RL}$			
Parameter	$\operatorname{Flag}$	$\mathbf{Result}$	Units	Dilution	$\operatorname{RL}$
Chloride		200	mg/Kg	5	1.00

## Sample: 211527 - MW-1 @ 115'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64218 54810	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	$\overline{AR}$
		$\mathbf{RL}$			
Parameter	$\mathbf{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		46.6	mg/Kg	5	1.00

## Sample: 211528 - MW-1 @ 120'

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (IC) 64218	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-06 2009-10-06	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
Chloride		255	mg/Kg	5	1.00

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Sample: 21	<b>1529 -</b> ]	MW-1 @	<b>125</b> '						
Laboratory:	Midlan								
Analysis:	Chloric	le (IC)		•	ical Method				Method: N/A
QC Batch:	64219				nalyzed:	2009-10			zed By: AR
Prep Batch:	54811			Sample	Preparatio	on: 2009-10	-06	Prepa	red By: AR
_				RL					-
Parameter		Fla	g	Result		Units		Dilution	R
Chloride				287	<u></u>	mg/Kg		5	1.0
QC Batch: Prep Batch:	64164 54798			Date Ar QC Prej	•/	2009-10-05 2009-10-05			lyzed By: kg bared By: kg
Parameter			171.		MDL			•,	D
DRO			Flag		Result <5.86			nits	<u>R</u> 1 50
					< 3.60		ng	/Kg	
							Spike	Percent	Recovery
Surrogate		Flag	Result	Units		ution	Amount	Recovery	Limits
n-Triacontan	e		64.1	mg/Kį	5	1	100	64	13 - 178.
Method Bla QC Batch: Prep Batch: Parameter	64189	QC	Batch: 64189 Flag	Date An QC Prep	paration: 2 Ml Res <0.004	10	m	Prepa Inits g/Kg	yzed By: AG ared By: AG RI 0.0
Benzene					< 0.003			g/Kg	0.0
Toluene					~^ ^ ^ ^	240			
Toluene Ethylbenzene	è				< 0.002			g/Kg	
Toluene	2				<0.002 <0.000			g/Kg	
Toluene Ethylbenzene Xylene	2		Flag	Rogult	<0.000	350	mı Spike	g/Kg Percent	0.0 Recovery
Toluene Ethylbenzene Xylene Surrogate		<b>D</b> ,)	Flag	Result	<0.006	550 Dilution	mi Spike Amount	g/Kg Percent Recovery	0.0 Recovery Limits
Toluene Ethylbenzene Xylene	ene (TF			Result 1.80 1.57	<0.000	350	mı Spike	g/Kg Percent	0. Recover

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Method Blank (1)	QC Batch: 64190							
QC Batch: 64190 Prep Batch: 54819		Date Analyz QC Prepara		009-10-05 009-10-05		Analyz Prepar		AG AG
			MDL	1				
Parameter	Flag		Result		Units			RL
GRO			<0.396	6	mg/Kį	z		1
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery		overy nits
Trifluorotoluene (TFT)			mg/Kg	1	2.00	102		- 125
4-Bromofluorobenzene	(4-BFB)		mg/Kg	1	2.00	83	62 -	120.5
Method Blank (1)	QC Batch: 64216							
QC Batch: 64216 Prep Batch: 54809		Date Analyz QC Prepara		009-10-06 009-10-06		Analyz Prepar	•/	$\begin{array}{c} \mathbf{AR} \\ \mathbf{AR} \end{array}$
			MDL					
Parameter	Flag		Result		Units			$\mathbf{RL}$
Chloride			0.905		mg/Kg	r 5		1
Method Blank (1)	QC Batch: 64218							
QC Batch: 64218		Date Analyz	zed: 2	009-10-06		Analyz	ed By:	$\mathbf{AR}$
Prep Batch: 54810		QC Prepara	tion: 2	009-10-06		Prepar	ed By:	AR
			MDI					
Parameter	Flag		Resul		Units			RL
Chloride			< 0.043	0	mg/K	g		
Method Blank (1)	QC Batch: 64219							
QC Batch: 64219		Date Analyz	ed: 2	009-10-07		Analyz	ed By:	AR
Prep Batch: 54811		QC Prepara		009-10-06		Prepar		AR
			MDL					
Parameter	Flag		Result		Units			RL
Chloride			0.890		mg/Kg	3		1

.

## Laboratory Control Spike (LCS-1)

QC Batch: 64164 Prep Batch: 54798			Date Ar QC Prej	•					alyzed B epared B	
		LCS				Spike	Mat		-	Rec.
Param		Resul		nits	Dil.	Amount	Resi			Limit
DRO	. <u></u>	172		g/Kg	1	250	<5.		57.4	- 133.4
Percent recovery is bas	ed on the sp	ike result.	RPD is b	ased of	n the spike	and spike o	luplicate	result.		
		LCSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\operatorname{Limit}$
DRO		180	mg/Kg	1	250	< 5.86	72	57.4 - 133.4	4	20
Percent recovery is bas	ed on the sp	ike result.	RPD is b	ased of	n the spike	and spike d	luplicate	result.		
	LCS	LCSD				Spike	LCS	LCSD	1	Rec.
Surrogate	Result	Result	Un	its	Dil.	Amount	Rec.			Limit
n-Triacontane	63.6	85.9	mg/		1	100	64	86		- 146.7
LaboratoryControlQC Batch:64189Prep Batch:54819	Spike (LCS	,	Date Ana QC Prep	•.					lyzed By pared By	
Param		LCS Result	t Ur	iits	Dil.	Spike Amount	Matr Resu			Rec. .imit
Benzene		1.85		/Kg	1	2.00	< 0.004			- 115.7
Toluene		1.82		/Kg	1	2.00	< 0.00			
		1.02	8	0						- 113.6
Ethylbenzene		1.74		/Kg	1	2.00	< 0.00			- 113.0 - 114.2

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

Param	$\begin{array}{c} \mathbf{LCSD} \\ \mathbf{Result} \end{array}$	Units	Dil.	Spike Amount	${f Matrix} {f Result}$	Rec.	Rec. Limit	RPD	f RPD
Benzene	1.87	mg/Kg	1	2.00	< 0.00410	94	75.4 - 115.7	1	20
Toluene	1.83	mg/Kg	1	2.00	< 0.00310	92	78.4 - 113.6	0	<b>20</b>
Ethylbenzene	1.75	mg/Kg	1	2.00	< 0.00240	88	76 - 114.2	1	<b>20</b>
Xylene	5.33	mg/Kg	1	6.00	< 0.00650	89	76.9 - 113.6	2	20

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

Surrogate	LCS Result	$\begin{array}{c} { m LCSD} \\ { m Result} \end{array}$	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.78	1.80	mg/Kg	1	2.00	89	90	65 - 122.9
4-Bromofluorobenzene (4-BFB)	1.80	1.80	mg/Kg	1	2.00	90	90	43.8 - 124.9

## Laboratory Control Spike (LCS-1)

ParamResultUnitsDil.AmountResultRec.LinGRO17.1mg/Kg120.0<0.3968652.5 -Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.LCSDSpikeMatrixRec.ParamResultUnitsDil.AmountResultGRO17.6mg/Kg120.0<0.3968852.5 - 114.33Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.SurrogateResultResultUnitsDil.AmountRec.LCSSurrogateResultResultUnitsDil.AmountRec.LinTrifluorotoluene (TFT)2.022.03mg/Kg12.0010110266.2 -4Bromofluorobenzene (4-BFB)1.831.81mg/Kg12.00929064.1 -Laboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:54809QC Preparation:2009-10-06Prepared By:ParamResultUnitsDil.AmountResultRec.LChloride25.3mg/Kg125.0<0.043010190Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.90	QC Batch: 64190		Date Analyze							yzed By	
ParamResultUnitsDil.AmountResultRec.LinGRO17.1mg/Kg120.0<0.3968652.5-Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.LCSDSpikeMatrixRec.ParamResultUnitsDil.AmountResultRec.LimitRPDGRO17.6mg/Kg120.0<0.3968852.5 - 114.33Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result.LCSLCSDResultSurrogateResultResultUnitsDil.AmountRec.LCSSurrogateResultResultUnitsDil.AmountRec.LimitsTrifluorotoluene (TFT)2.022.03mg/Kg12.0010110266.2 - 24-Bromofluorobenzene (4-BFB)1.831.81mg/Kg12.00929064.1 - 200Laboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Prepared By:Pere Batch:54809QC Preparation:2009-10-06Prepared By:Prepared By:ParamResultUnitsDil.AmountResultRec.LChloride25.3mg/Kg125.0<0.043010190Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.9090 <th>Prep Batch: 54819</th> <th>(</th> <th>QC Preparat</th> <th>ion: 2009-</th> <th>10-05</th> <th></th> <th></th> <th></th> <th>Prep</th> <th>ared By</th> <th>: AG</th>	Prep Batch: 54819	(	QC Preparat	ion: 2009-	10-05				Prep	ared By	: AG
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		LCS			Sp	oike	M	atrix		]	Rec.
Group of the spike result. RPD is based on the spike and spike duplicate result.LCSDSpikeMatrixRec.ParamResultUnitsDil. AmountResultRec.LCSDSpikeMatrixRec.LINGMatrixRec.LINGMatrixRec.LINGSpikeMatrixRec.LINGSpikeLCSLCSLCSLCSLCSLCSSpikeMatrixILaboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:64216Date Analyzed:2009-10-06Prepared By:ParamLCSSpikeMatrixIColspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2"Colspan="2	Param				Am	ount					$\operatorname{limit}$
LCSD BaramSpike ResultMatrix MatrixRec. LimitRPDGRO17.6 mg/Kg120.0<0.396	GRO	17.1	mg/Kg	g 1	20	0.0	<(	).396	86	52.5	- 114.3
ParamResultUnitsDil.AmountResultRec.LimitRPDGRO17.6 $mg/Kg$ 120.0<0.396	Percent recovery is based on the s	spike result. R	PD is based	on the spil	ke and s	spike dı	uplica	te result			
$\overline{GRO}$ 17.6 $mg/Kg$ 120.0<0.3968852.5 - 114.33Percent recovery is based on the spike result.LCSLCSDSpikeLCSLCSDResultSurrogateResultResultUnitsDil.AmountRec.Rec.LinTrifluorotoluene (TFT)2.022.03 $mg/Kg$ 12.0010110266.2 -4-Bromofluorobenzene (4-BFB)1.831.81 $mg/Kg$ 12.00929064.1 -Laboratory Control Spike (LCS-1)Date Analyzed:2009-10-06Analyzed By:QC Batch:64216Date Analyzed:2009-10-06Prepared By:Prep Batch:54809QC Preparation:2009-10-06Prepared By:LCSSpikeMatrixIParamResultUnitsDil.AmountResultRec.Chloride25.3 $mg/Kg$ 125.0<0.0430				-							RPD
Or 0Or 0Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.LCS LCSDSpikeLCS LCSDResultSurrogateResult Result UnitsDil. Amount Rec. Rec. LinTrifluorotoluene (TFT)2.022.03mg/Kg 12.0010110266.2 -4-Bromofluorobenzene (4-BFB)1.831.81mg/Kg 12.00929064.1 -Laboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:54809QC Preparation:2009-10-06Prepared By:ParamResultUnitsDil.AmountResultUCSSpikeMatrixIBate Analyzed:2009-10-06Prepared By:Prepared By:ParamResultUCSSpikeMatrixIColspan="6">Colspan="6">SpikeMatrixIDil.Amount </td <td></td> <td>Limit</td>											Limit
LCS LCSDSpikeLCSLCSLCSResultSurrogateResultResultUnitsDil.AmountRec.Rec.LinTrifluorotoluene (TFT)2.022.03mg/Kg12.0010110266.24-Bromofluorobenzene (4-BFB)1.831.81mg/Kg12.00929064.1Laboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:54809QC Preparation:2009-10-06Prepared By:ParamLCSSpikeMatrixIChloride25.3mg/Kg125.0<0.0430	GRO	17.6 n	ng/Kg 1	20.0	<0	.396	88	52.5	- 114.3	3	20
SurrogateResultResultUnitsDil.AmountRec.Rec.LinTrifluorotoluene (TFT)2.022.03mg/Kg12.0010110266.24-Bromofluorobenzene (4-BFB)1.831.81mg/Kg12.00929064.1Laboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:54809QC Preparation:2009-10-06Prepared By:ParamResultUnitsDil.AmountResultRec.LChloride25.3mg/Kg125.0<0.0430	Percent recovery is based on the s	spike result. R	PD is based	on the spil	ke and s	spike di	uplica	te result			
Trifluorotoluene (TFT) $2.02$ $2.03$ $mg/Kg$ $1$ $2.00$ $101$ $102$ $66.2$ 4-Bromofluorobenzene (4-BFB) $1.83$ $1.81$ $mg/Kg$ $1$ $2.00$ $92$ $90$ $64.1$ Laboratory Control Spike (LCS-1)QC Batch: $64216$ Date Analyzed: $2009-10-06$ Analyzed By:Prep Batch: $54809$ QC Preparation: $2009-10-06$ Prepared By:LCSSpikeMatrixIParamLCSSpikeMatrixIChloride $25.3$ $mg/Kg$ $1$ $25.0$ $<0.0430$ $101$ $90$ Percent recovery is based on the spike result.RPD is based on the spike and spike duplicate result. $101$ $90$		LCS	LCSD			Spil	ke	LCS	LCSD	]	Rec.
4-Bromofluorobenzene (4-BFB)1.831.81 $mg/Kg$ 12.00929064.1 -Laboratory Control Spike (LCS-1)QC Batch:64216Date Analyzed:2009-10-06Analyzed By:Prep Batch:54809QC Preparation:2009-10-06Prepared By:ParamLCSSpikeMatrixIParamResultUnitsDil.AmountResultRec.LChloride25.3mg/Kg125.0<0.0430		Result	Result	Units	Dil.	Amo	unt	Rec.	Rec.		limit
Laboratory Control Spike (LCS-1)         QC Batch:       64216       Date Analyzed:       2009-10-06       Analyzed By:         Prep Batch:       54809       QC Preparation:       2009-10-06       Prepared By:         LCS       Spike       Matrix       I         Param       Result       Units       Dil.       Amount       Result       Rec.       L         Chloride       25.3       mg/Kg       1       25.0       <0.0430	Trifluorotoluene (TFT)	2.02	2.03	mg/Kg	1	2.0	0	101	102	66.2	- 128.7
QC Batch: $64216$ Prep Batch:Date Analyzed: QC Preparation: $2009-10-06$ Analyzed By: Prepared By:LCS ParamLCS ResultSpike UnitsMatrix Dil.I AmountI ResultParam Chloride25.3 mg/Kgng/Kg1 25.025.0<0.0430	4-Bromofluorobenzene (4-BFB)	1.83	1.81	mg/Kg	1	2.0	0	92	90	64.1	- 127.4
Prep Batch:       54809       QC Preparation:       2009-10-06       Prepared By:         LCS       Spike       Matrix       I         Param       Result       Units       Dil.       Amount       Result       Rec.       L         Chloride       25.3       mg/Kg       1       25.0       <0.0430	Laboratory Control Spike (L	CS-1)									
Prep Batch:       54809       QC Preparation:       2009-10-06       Prepared By:         LCS       Spike       Matrix       I         Param       Result       Units       Dil.       Amount       Result       Rec.       L         Chloride       25.3       mg/Kg       1       25.0       <0.0430	QC Batch: 64216	Γ	Date Analyze	ed: 2009-	10-06				Anal	vzed By	r: AR
ParamResultUnitsDil.AmountResultRec.LChloride25.3mg/Kg125.0<0.0430	-	Ģ	C Preparat	ion: 2009-	10-06						
ParamResultUnitsDil.AmountResultRec.LChloride25.3mg/Kg125.0<0.0430		LCS			S	Spike		Matrix			Rec.
Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.	Param	Result	: Units	s Dil.		-		Result	$\operatorname{Rec}$	с.	Limit
	Chloride	25.3	mg/K	g 1		25.0		<0.0430	10	1 9	90 - 110
LCSD Spike Matrix Rec.	Percent recovery is based on the s	spike result. R	PD is based	on the spil	ke and s	spike dı	uplica	te result	- J•		
		LCSD		$\mathbf{S}\mathbf{p}\mathbf{i}\mathbf{k}$	e N	Matrix			Rec.		RPD

	LUSD			Spike	Matrix		Kec.		RPD
Param	Result	Units	Dil.	$\operatorname{Amount}$	Result	Rec.	$\mathbf{Limit}$	RPD	$\operatorname{Limit}$
Chloride	25.4	mg/Kg	1	25.0	< 0.0430	102	90 - 110	0	

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

## Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	64218 54810		Analyzed: Preparation:	2009-10 2009-10				l By: AR l By: AR
Param		f LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		25.5	mg/Kg	1	25.0	< 0.0430	102	90 - 110

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

Crownquest/New Mex	r 9, 2009 xico State 20	#5	Crow		Order: 91 New Mexic		#5		Vumber: Lea Cou	
		LCSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		25.4	mg/Kg	1	25.0	<0.0430		90 - 110	$\frac{101 D}{0}$	
Percent recovery is bas	sed on the sp			ased on						
Laboratory Control	l Spike (LC	S-1)								
QC Batch: 64219			Date Ana	alvzed:	2009-10-0	)7		Ana	alyzed By	: AR
Prep Batch: 54811			QC Prep	•					pared By	
			•							
		LC				Spike	Mat	rix		Rec.
Param		Resu		Jnits	Dil.	Amount	Resi		ec	Limit
Chloride		23.5	2 m	.g/Kg	1	25.0	< 0.0	430 9	)3	90 - 11
Percent recovery is bas	sed on the sp	ike result.	RPD is b	ased on	the spike a	nd spike d	uplicate re	sult.		
		LCSD			Spike	Matrix		Rec.		RPI
		LCSD			opine	INTCOLLEX				
		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limi
Chloride	sed on the sp	Result 23.2	mg/Kg	1	Amount 25.0	Result <0.0430	93	Limit 90 - 110	RPD 0	Limi
Chloride Percent recovery is bas <b>Matrix Spike (MS</b> - QC Batch: 64164	-	Result 23.2	mg/Kg RPD is bi	1 ased on alyzed:	Amount 25.0 the spike a 2009-10-	Result <0.0430 nd spike d	93	Limit 90 - 110 sult. Ar		y: kg
•	-	Result 23.2 ike result. Sample: 21	mg/Kg RPD is b 1516 Date An	1 ased on alyzed:	Amount 25.0 the spike a 2009-10-	Result <0.0430 nd spike d 05 05	93 uplicate re	Limit 90 - 110 sult. Ar Pr	0 nalyzed E epared B	y: kg y: kg
Chloride Percent recovery is bas <b>Matrix Spike (MS</b> - QC Batch: 64164 Prep Batch: 54798	-	Result 23.2 ike result. Sample: 21 MS	mg/Kg RPD is bi 1516 Date An QC Prep	1 ased on alyzed: paration:	Amount 25.0 the spike a 2009-10- 2009-10-	Result <0.0430 nd spike d 05 05 Spike	93 uplicate re Matrix	Limit 90 - 110 sult. Ar Pr	0 nalyzed E epared B	y: kg Rec.
Chloride Percent recovery is bas <b>Matrix Spike (MS</b> - QC Batch: 64164 Prep Batch: 54798 Param	-	Result 23.2 ike result. Sample: 21 MS Resul	mg/Kg RPD is b 1516 Date An QC Prep t U	1 ased on alyzed: paration: nits	Amount 25.0 the spike a 2009-10- 2009-10- Dil.	Result <0.0430 nd spike d 05 05 Spike Amount	93 uplicate re Matrix Result	Limit 90 - 110 sult. Ar Pr Rec.	0 nalyzed E epared B I	y: kg y: kg Rec. .imit
Chloride Percent recovery is bas <b>Matrix Spike (MS</b> - QC Batch: 64164 Prep Batch: 54798	1) Spiked	Result 23.2 ike result. Sample: 21 MS Resul 195	mg/Kg RPD is bi 1516 Date An QC Prep t Ui mg	1 ased on alyzed: paration nits _/Kg	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1	Result <0.0430 nd spike d 05 05 Spike Amount 250	93 uplicate re Matrix Result <5.86	Limit 90 - 110 sult. Ar Pr Rec. 78	0 nalyzed E epared B I	y: kg y: kg Rec. .imit
Chloride Percent recovery is bas <b>Matrix Spike (MS</b> - QC Batch: 64164 Prep Batch: 54798 Param DRO	1) Spiked	Result 23.2 ike result. Sample: 21 MS Resul 195 ike result.	mg/Kg RPD is bi 1516 Date An QC Prep t Ui mg	1 ased on alyzed: paration nits _/Kg	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1 the spike a	Result <0.0430 nd spike d 05 05 Spike Amount 250 nd spike d	93 uplicate re Matrix Result <5.86	Limit 90 - 110 sult. Ar Pr Rec. 78 sult.	0 nalyzed E epared B I	y: kg y: kg Rec. .imit - 167.
Chloride Percent recovery is bas Matrix Spike (MS- QC Batch: 64164 Prep Batch: 54798 Param DRO Percent recovery is bas	1) Spiked	Result 23.2 ike result. Sample: 21 MS Resul 195 ike result. MSD	mg/Kg RPD is bi 1516 Date An QC Prep t Ui mg RPD is bi	1 ased on alyzed: paration: <u>hits</u> <u>/Kg</u> ased on	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1 the spike a Spike	Result <0.0430 nd spike d 05 05 Spike Amount 250 nd spike d Matrix	93 uplicate re Matrix Result <5.86 uplicate re	Limit 90 - 110 sult. Ar Pr Rec. 78 sult. Rec.	0 nalyzed E epared B I 35.2	y: kg y: kg Aec. .imit - 167. RPI
Chloride Percent recovery is bas Matrix Spike (MS- QC Batch: 64164 Prep Batch: 54798 Param DRO Percent recovery is bas Param	1) Spiked	Result 23.2 ike result. Sample: 21 MS Result ike result. MSD Result	mg/Kg RPD is bi 1516 Date An QC Prep t Ui mg	1 ased on alyzed: paration nits _/Kg	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1 the spike a	Result <0.0430 nd spike d 05 05 Spike Amount 250 nd spike d	93 uplicate re Matrix Result <5.86 uplicate re Rec.	Limit 90 - 110 sult. Ar Pr Rec. 78 sult.	0 nalyzed E epared B I	y: kg y: kg .imit - 167. RPI
Chloride Percent recovery is bas Matrix Spike (MS- QC Batch: 64164 Prep Batch: 54798 Param DRO Percent recovery is bas Param DRO	1) Spiked	Result 23.2 ike result. Sample: 21 MS Result 195 ike result. MSD Result 201	mg/Kg RPD is bi 1516 Date An QC Prep t Uri RPD is bi Units mg/Kg	1         ased on         alyzed:         paration:         nits         /Kg         ased on         Dil.         1	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1 the spike a Spike Amount 250	Result <0.0430 nd spike d 05 05 Spike Amount 250 nd spike d Matrix Result <5.86	93 uplicate re Matrix Result <5.86 uplicate re Rec. 80 35	Limit 90 - 110 sult. Ar Pr Rec. 78 sult. Rec. Limit 5.2 - 167.1	0 nalyzed E epared B I 35.2 RPD	y: kg y: kg .imit - 167. RPI Limi
Chloride Percent recovery is bas <b>Matrix Spike (MS</b> - QC Batch: 64164 Prep Batch: 54798 Param DRO	1) Spiked sed on the sp sed on the sp	Result 23.2 ike result. Sample: 21 MS Result 195 ike result. MSD Result 201 ike result.	mg/Kg RPD is bi 1516 Date An QC Prep t Uri RPD is bi Units mg/Kg	1         ased on         alyzed:         paration:         nits         /Kg         ased on         Dil.         1	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1 the spike a Spike Amount 250	Result <0.0430 nd spike d 05 05 Spike Amount 250 nd spike d Matrix Result <5.86 nd spike d	93 uplicate re Matrix Result <5.86 uplicate re <u>Rec.</u> 80 33 uplicate re	Limit 90 - 110 sult. Ar Pr Rec. 78 sult. Rec. Limit 5.2 - 167.1 sult.	0 nalyzed E epared B I 35.2 RPD 3	y: kg y: kg imit - 167. RPI Limi 20
Chloride Percent recovery is bas Matrix Spike (MS- QC Batch: 64164 Prep Batch: 54798 Param DRO Percent recovery is bas Param DRO	1) Spiked	Result 23.2 ike result. Sample: 21 MS Result 195 ike result. MSD Result 201	mg/Kg RPD is bi 1516 Date An QC Prep t Uri RPD is bi Units mg/Kg	1         ased on         alyzed:         paration:         nits         /Kg         ased on         Dil.         1         ased on	Amount 25.0 the spike a 2009-10- 2009-10- Dil. 1 the spike a Spike Amount 250	Result <0.0430 nd spike d 05 05 Spike Amount 250 nd spike d Matrix Result <5.86	93 uplicate re Matrix Result <5.86 uplicate re Rec. 80 35	Limit 90 - 110 sult. Ar Pr Rec. 78 sult. Rec. Limit 5.2 - 167.1	0 nalyzed E epared B I 35.2 RPD 3	y: kg y: kg .imit - 167. RPI Limi

# Matrix Spike (MS-1) Spiked Sample: 211517

QC Batch:	64189	Date Analyzed:	2009-10-05	Analyzed By:	AG
Prep Batch:	54819	QC Preparation:	2009-10-05	Prepared By:	

Crownquest/New Mexico State 20	U #0										
	M	s			Spike		Mat	rix		]	Rec.
Param	Res		Units	Dil.	Amoun		Res	ılt	Rec.	L	$\operatorname{imit}$
Benzene	1.9	0	mg/Kg	1	2.00		< 0.00	410	95	57.7	- 140.7
Toluene	1.8	37	mg/Kg	1	2.00		< 0.00	0310	94	53.4	- 146.
Ethylbenzene	1.8	34	mg/Kg	1	2.00		< 0.00	0240	92	62.1	- 141.
Xylene	5.6	64	mg/Kg	1	6.00		< 0.00	650	94	61.2	- 142.
Percent recovery is based on the s	pike result	t. RPI	D is based	on the spike	e and spi	ike du	plicate	e result.			
	MSD			Spike	Matr	ix		R	.ec.		RPE
Param	Result	Uni	ts Dil.	Amount	Resu	lt	Rec.	Li	$\operatorname{mit}$	RPD	Limi
Benzene	2.01	mg/i	Kg 1	2.00	< 0.004	410	100	57.7 -	- 140.7	6	20
Toluene	1.99	mg/		2.00	<0.00	310	100	53.4 -	- 146.6	6	<b>20</b>
Ethylbenzene	1.97	mg/	-	2.00	< 0.00	240	98	62.1 -	- 141.6	7	20
<b>Kylene</b>	5.99	mg/		6.00	<0.00	650	100	61.2 -	-142.7	6	20
ercent recovery is based on the s	pike result	t. RPI	) is based	on the spike	e and spi	ike du	plicate	e result.			
						~		MO	MOD	1	Rec.
	M		MSD			Spil		MS	MSD		
	Res	ult	Result	Units	Dil.	Amo		Rec.	Rec.	Ι	imit
Trifluorotoluene (TFT) I-Bromofluorobenzene (4-BFB)	Res 1.8 1.9	sult 80 96	Result 1.83 1.96	Units mg/Kg mg/Kg	Dil. 1 1	-				E 162.7	
Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190 Prep Batch: 54819	Res	sult 80 96 21151' Dat	Result 1.83 1.96	mg/Kg mg/Kg d: 2009-1	1 1 0-05	Amor 2		Rec. 90	Rec. 92 98 Anal	E 162.7	vimit - 119. - 136. - AG
Trifluorotoluene (TFT) I-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190	Res 1.8 1.9 I Sample:	sult 80 96 21151' Dat	Result 1.83 1.96 7 e Analyze	mg/Kg mg/Kg d: 2009-1	1 1 0-05	Amot 2 2	<u>unt</u>	Rec. 90	Rec. 92 98 Anal	1 62.7 49.6 yzed By	- 119. - 136. - 136.
Trifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190 Prep Batch: 54819	Res 1.5 1 Sample: M	sult 80 96 21151 Dat QC	Result 1.83 1.96 7 e Analyze	mg/Kg mg/Kg d: 2009-1 ion: 2009-1	1 1 0-05 0-05	Amot 2 2	unt	Rec. 90 98	Rec. 92 98 Anal	I 62.7 49.6 yzed By	.imit - 119. - 136. - AG : AG
Trifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190 Prep Batch: 54819 Param	Res 1.8 1 Sample: M Re	sult 30 96 21151' Dat QC 4S	Result 1.83 1.96 7 e Analyze Preparati	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil.	1 1 0-05 0-05 Spi	Amou 2 2	unt M Re	Rec. 90 98	Rec. 92 98 Anal Prep	I 62.7 49.6 yzed By ared By	imit - 119. - 136. - AG : AG Rec.
Trifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190 Prep Batch: 54819 Param GRO	Res 1.8 1.9 d Sample: M Re 17	sult 30 96 21151' Dat QC 4S sult 7.6	Result 1.83 1.96 7 e Analyze Preparati Units mg/Ka	mg/Kg mg/Kg ed: 2009-1 ion: 2009-1 Dil.	1 1 0-05 0-05 Spi Amo 20	Amot 2 2 ike bunt 0.0	unt M Ra	Rec. 90 98 atrix esult 1.6	Rec. 92 98 Anal Prepa Rec. 80	I 62.7 49.6 yzed By ared By	.imit - 119. - 136.' : AG : AG Rec. Limit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190	Res 1.8 1.9 d Sample: M Re 17	sult 30 96 21151' Dat QC 4S sult 7.6	Result 1.83 1.96 7 e Analyze Preparati Units mg/Ka	mg/Kg mg/Kg ed: 2009-1 ion: 2009-1 Dil.	1 1 0-05 0-05 Spi Amo 20	Amou 2 2 ike punt 0.0 ike du	unt M Ra	Rec. 90 98 98 extrix esult 1.6 e result.	Rec. 92 98 Anal Prepa Rec. 80	I 62.7 49.6 yzed By ared By	.imit - 119. - 136.' : AG : AG Rec. Limit
Trifluorotoluene (TFT)         -Bromofluorobenzene (4-BFB)         Matrix Spike (MS-1)       Spiked         QC Batch:       64190         Prep Batch:       54819         Param       GRO         Percent recovery is based on the s         Param	Res 1.8 1.9 1.8 1.9 1.8 1.8 N Re 17 pike result MSD Result	sult 30 96 21151' Dat QC 1S sult 7.6 t. RPI Un	Result 1.83 1.96 7 e Analyze Preparati Units mg/Ki D is based hits Di	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil. <u>3</u> 1 on the spike l. Amoun	1 1 0-05 0-05 Amo 20 e and spi Mat t Res	Amou 2 2 ike ount 0.0 ike du trix sult	M Ra plicate Rec.	Rec. 90 98 atrix esult 1.6 e result. R Li	Rec. 92 98 Anal Prep Rec. 80	I 62.7 49.6 yzed By ared By	.imit - 119. - 136. - 136. - AG : AG Rec. Limit - 198.
Trifluorotoluene (TFT)         -Bromofluorobenzene (4-BFB)         Matrix Spike (MS-1)       Spiked         QC Batch:       64190         Prep Batch:       54819         Param       GRO         Percent recovery is based on the s         Param	Res 1.8 1.9 1.8 1.9 1.8 N M Re 17 pike result MSD	sult 30 96 21151' Dat QC 1S sult 7.6 t. RPI Un	Result 1.83 1.96 7 e Analyze Preparati Units mg/Ki D is based	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil. 3 1 on the spike l. Amoun	1 1 0-05 0-05 Amo 20 e and spi Mat	Amou 2 2 ike ount 0.0 ike du trix sult	M Ra plicate	Rec. 90 98 atrix esult 1.6 e result. R Li	Rec.         92         98           98         Anal         Prepared           Rec.         80	[ 62.7 49.6 yzed By ared By 10	.imit - 119. - 136. - 136. - AG : AG Rec. Limit - 198. RPI
Param         Browner         Param         BRO	Res 1.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	sult 30 96 211151' Dat QC 4S sult 7.6 t. RPI Ur mg	Result 1.83 1.96 7 e Analyze Preparati Units mg/Kg D is based hits Di /Kg 1	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil. <u>3</u> on the spike l. Amoun 20.0	1 1 0-05 0-05 Amc 20 e and spi t Res 1.	Amou 2 2 ike ount ike du trix sult 6	M R plicate Rec. 83	Rec. 90 98 extrix esult 1.6 e result. R Li: 10 -	Rec.           92           98           Anal           Prepare           Rec.           80           .           mit           198.3	[ 62.7 49.6 yzed By ared By 10 RPD	.imit - 119. - 136. - 136. - AG Rec. Limit - 198. RPE Limi
Trifluorotoluene (TFT)         -Bromofluorobenzene (4-BFB)         Matrix Spike (MS-1)         Spike         QC Batch:       64190         Prep Batch:       54819         Param         GRO         Percent recovery is based on the s         Param         GRO         Percent recovery is based on the s	Res 1.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	sult 30 96 211151' Dat QC 4S sult 7.6 t. RPI Ur mg 5. RPI IS	Result 1.83 1.96 7 e Analyze Preparati Units mg/K <sub>1</sub> D is based hits Di /Kg 1 D is based MSD	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil. <u>5</u> 1 on the spike <u>1. Amoun</u> 20.0 on the spike	$\begin{array}{c} 1\\ 1\\ 0-05\\ 0-05\\ \end{array}$ Spi Amc 20 e and spi t Res 1. e and spi	Amou 2 2 ike ount ike du trix sult 6 ike du	M R plicate Rec. 83	Rec. 90 98 98 etrix esult 1.6 e result. R Li: 10 - e result. MS	Rec. 92 98 Anal Prepa Rec. 80	I           62.7           49.6           yzed By           ared By           10           RPD           3	imit - 119. - 136. - 136. - 136. - AG Rec. Limit - 198. RPE Limi 20 Rec.
Trifluorotoluene (TFT)         -Bromofluorobenzene (4-BFB)         Matrix Spike (MS-1)         Spike         QC Batch:       64190         Prep Batch:       54819         Param         FRO         Percent recovery is based on the s         Param         GRO         Percent recovery is based on the s         Param         GRO         Percent recovery is based on the s	Res 1.8 1.9 1.8 1.9 1.8 1.9 1.9 1.9 1.9 1.9 1.9 1.9 1.9	sult 30 96 211151' Dat QC 4S sult 7.6 t. RPI mg 5. RPI IS sult	Result 1.83 1.96 7 e Analyze Preparati Units mg/Kg D is based hits Di /Kg 1 D is based MSD Result	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil. <u>3</u> on the spike <u>1</u> Amoun 20.0 on the spike Units	1 1 0-05 0-05 Amc 20 e and spi t Res 1.	Amou 2 2 ike punt 0 ike du trix sult 6 ike du Sp	M R plicate Rec. 83 plicate	Rec. 90 98 98 atrix esult 1.6 e result. R Li: 10 - e result. MS Rec.	Rec. 92 98 Anal Prepa Rec. 80 ec. mit 198.3 MSI Rec	I 62.7 49.6 yzed By ared By 10 10 <u>RPD</u> 3	imit - 119. - 136. - 136. - 136. - AG Rec. Limit - 198. RPE Limi 20
Trifluorotoluene (TFT) -Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked QC Batch: 64190 Prep Batch: 54819 Param GRO	Res 1.8 1.9 1.8 1.9 1.8 1.8 1.8 1.8 1.8 1.8 1.8 1.8	sult 30 96 211151' Dat QC 4S sult 7.6 t. RPI Ur mg 5. RPI IS	Result 1.83 1.96 7 e Analyze Preparati Units mg/K <sub>1</sub> D is based hits Di /Kg 1 D is based MSD	mg/Kg mg/Kg d: 2009-1 ion: 2009-1 Dil. <u>5</u> 1 on the spike <u>1. Amoun</u> 20.0 on the spike	$\begin{array}{c} 1\\ 1\\ 0-05\\ 0-05\\ \end{array}$ Spi Amc 20 e and spi t Res 1. e and spi	Amou 2 2 ike punt 0 ike du trix sult 6 ike du Sp Amo	M. Ra plicate Rec. 83 plicate ike	Rec. 90 98 98 etrix esult 1.6 e result. R Li: 10 - e result. MS	Rec. 92 98 Anal Prepa Rec. 80	I 62.7 49.6 yzed By ared By 10 10 <u>RPD</u> 3	imit - 119. - 136. - 136. - 136. - AG Rec. Limit - 198. RPI Limi 20 Rec.

QC Batch:	64216	Date Analyzed:	2009-10-06	Analyzed By:	$\mathbf{AR}$			
Prep Batch:	54809	QC Preparation:	2009-10-06	Prepared By:	AR			
Report Date: October 9, Crownquest/New Mexico			Work Order: 91 lest/New Mexic		±5			: 19 of 22 unty, NM
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,	2	1S		Spike	Mat			Rec.
Param	-	sult Uni	ts Dil.	Amount	Res		ec.	Limit
Chloride		$\frac{6410}{550}$ mg/l		1380	425		74	90 - 110
Percent recovery is based								
·	MSD		Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil. Amount		Rec.	Limit	RPD	Limit
Chloride	4 6650		50 1380	4250	174	90 - 110	0	
Percent recovery is based Matrix Spike (MS-1)	Spiked Sample: 2		a on the spike a	and spike du		Suit.		
QC Batch: 64218		Date Analyz	ed: 2009-10-	06		Ana	alyzed E	By: AR
Prep Batch: 54810		QC Prepara	tion: 2009-10-	06		Pre	pared B	y: AR
Param Chloride	Re	1S sult Uni 24 mg/l		Spike Amount 27.5	Mat Rest 25	ult R	ec	Rec. Limit 90 - 110
Percent recovery is based	on the spike result	. RPD is base	d on the spike a	und spike du	plicate re	sult.		
	MSD		Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil. Amount	Result	Rec.	$\operatorname{Limit}$	RPD	$\operatorname{Limit}$
Chloride	<sup>6</sup> 425	mg/Kg	5 27.5	255	618	90 - 110	0	
Percent recovery is based <b>Matrix Spike (MS-1)</b> QC Batch: 64219	on the spike result Spiked Sample: 2		ed: 2009-10-	07	plicate re	Ana	alyzed E pared B	•
Prep Batch: 54811								
-		IS sult Uni	ts Dil	Spike Amount	Mat Resi		ee	Rec. Limit
Param	Re	sult Uni		Amount	Res	ult R	ec	Limit
Param Chloride	Re 7 3	sult Uni 98 mg/l	Kg 5	Amount 138	Rest 28	ult R 7 8	ec. 31	
Param Chloride	Re 7 3 on the spike result	sult Uni 98 mg/l	Kg 5 1 on the spike a	Amount 138 and spike du	Rest 28	ult R 7 8 sult.		Limit 90 - 110
Param	Re 7 3	sult Uni 98 mg/l . RPD is based	Kg 5	Amount 138 and spike du Matrix	Rest 28	ult R 7 8		Limit

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

<sup>3</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>5</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>6</sup>MSD analyte out of range. MS/MSD has a RPD within limits. Therfore, MS shows extraction occured properly.

<sup>7</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

<sup>8</sup>MSD analyte out of range. MS/MSD has a RPD within limits. Therfore, MS shows extraction occured properly.

<sup>&</sup>lt;sup>4</sup>MSD analyte out of range. MS/MSD has a RPD within limits. Therfore, MS shows extraction occured properly.

*	: October 9, 2 New Mexico S		Crowne	Work Order: 9 juest/New Mex	9100503 tico State 20 #5	0	umber: 20 of 22 lea County, NM
Standard (C	CCV-2)						
QC Batch: 6	64164		Date Anal	yzed: 2009-10	-05	Ana	lyzed By: kg
			CCVs	CCVs	$\mathbf{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	214	86	80 - 120	2009-10-05
Standard (C	CCV-3)						
QC Batch: 6	64164		Date Anal	yzed: 2009-10	-05	Ana	lyzed By: kg
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
A COLOURA			250	224	90	80 - 120	2009-10-05
DRO Standard (C	CCV-1)	mg/Kg	200				
DRO		ing/ Kg	Date Analy		-05	Anal	yzed By: AG
DRO Standard (C		mg/ Kg			-05 CCVs	Anal Percent	yzed By: AG
DRO Standard (C		mg/ Kg	Date Analy	vzed: 2009-10-			yzed By: AG Date
DRO Standard (C		Units	Date Analy CCVs	/zed: 2009-10- CCVs	CCVs	Percent	
DRO Standard (C QC Batch: 6	64189		Date Analy CCVs True	zed: 2009-10- CCVs Found	CCVs Percent	Percent Recovery Limits 80 - 120	Date Analyzed 2009-10-05
DRO Standard (C QC Batch: 6 Param Benzene Toluene	64189 Flag	Units mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100	zed: 2009-10- CCVs Found Conc. 0.0938 0.0926	CCVs Percent Recovery	Percent Recovery Limits 80 - 120 80 - 120	Date Analyzed 2009-10-05 2009-10-05
DRO Standard (C QC Batch: C Param Benzene Toluene Ethylbenzene	64189 Flag	Units mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100	zed: 2009-10- CCVs Found Conc. 0.0938 0.0926 0.0896	CCVs Percent Recovery 94 93 90	Percent Recovery Limits 80 - 120 80 - 120 80 - 120	Date Analyzed 2009-10-05 2009-10-05 2009-10-05
DRO Standard (C QC Batch: 6 Param Benzene Toluene	64189 Flag	Units mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100	zed: 2009-10- CCVs Found Conc. 0.0938 0.0926	CCVs Percent Recovery 94 93	Percent Recovery Limits 80 - 120 80 - 120	Date Analyzed 2009-10-05 2009-10-05
DRO Standard (C QC Batch: C Param Benzene Toluene Ethylbenzene	64189 <u>Flag</u>	Units mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100	zed: 2009-10- CCVs Found Conc. 0.0938 0.0926 0.0896	CCVs Percent Recovery 94 93 90	Percent Recovery Limits 80 - 120 80 - 120 80 - 120	Date Analyzed 2009-10-05 2009-10-05 2009-10-05
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene	64189 Flag	Units mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300	zed: 2009-10- CCVs Found Conc. 0.0938 0.0926 0.0896	CCVs Percent Recovery 94 93 90 91	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120	Date Analyzed 2009-10-05 2009-10-05 2009-10-05
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene Standard (C	64189 Flag	Units mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analy	vzed: 2009-10- CCVs Found Conc. 0.0938 0.0926 0.0896 0.273 vzed: 2009-10-	CCVs Percent Recovery 94 93 90 91	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120 80 - 120	Date Analyzed 2009-10-05 2009-10-05 2009-10-05 2009-10-05
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene Standard (C	64189 Flag	Units mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analy CCVs	<ul> <li>zed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> <li>0.0938</li> <li>0.0926</li> <li>0.0896</li> <li>0.273</li> <li>zzed: 2009-10-</li> <li>CCVs</li> </ul>	CCVs Percent Recovery 94 93 90 91 90 91	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120 Anal Percent	Date Analyzed 2009-10-05 2009-10-05 2009-10-05 2009-10-05
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene Standard (C QC Batch: 6	64189 Flag CCV-2) 64189	Units mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analy CCVs True	vzed: 2009-10- CCVs Found Conc. 0.0938 0.0926 0.0896 0.273 vzed: 2009-10- CCVs Found	CCVs Percent Recovery 94 93 90 91 91 -05 -05 CCVs Percent	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120 Anal Percent Recovery	Date Analyzed 2009-10-05 2009-10-05 2009-10-05 2009-10-05 yzed By: AG Date
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene Standard (C	64189 Flag	Units mg/Kg mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analy CCVs True Conc.	<ul> <li>zed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> <li>0.0938</li> <li>0.0926</li> <li>0.0896</li> <li>0.273</li> <li>zzed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> </ul>	CCVs Percent Recovery 94 93 90 91 91 •05 •05 •CCVs Percent Recovery	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120 Anal Percent Recovery Limits	Date Analyzed 2009-10-05 2009-10-05 2009-10-05 2009-10-05 yzed By: AG Date Analyzed
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene Standard (C QC Batch: 6 Param	64189 Flag CCV-2) 64189	Units mg/Kg mg/Kg mg/Kg 	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analy CCVs True Conc. 0.100	<ul> <li>zed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> <li>0.0938</li> <li>0.0926</li> <li>0.0896</li> <li>0.273</li> <li>zzed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> <li>0.0892</li> </ul>	CCVs Percent <u>Recovery</u> 94 93 90 91 91 -05 -05 -05 -CCVs Percent <u>Recovery</u> 89	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120 Anal Percent Recovery Limits 80 - 120	Date Analyzed 2009-10-05 2009-10-05 2009-10-05 2009-10-05 yzed By: AG Date
DRO Standard (C QC Batch: 6 Param Benzene Toluene Ethylbenzene Xylene Standard (C QC Batch: 6 Param Benzene	64189 Flag CCV-2) 64189 Flag	Units mg/Kg mg/Kg mg/Kg mg/Kg	Date Analy CCVs True Conc. 0.100 0.100 0.100 0.300 Date Analy CCVs True Conc.	<ul> <li>zed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> <li>0.0938</li> <li>0.0926</li> <li>0.0896</li> <li>0.273</li> <li>zzed: 2009-10-</li> <li>CCVs</li> <li>Found</li> <li>Conc.</li> </ul>	CCVs Percent Recovery 94 93 90 91 91 •05 •05 •CCVs Percent Recovery	Percent Recovery Limits 80 - 120 80 - 120 80 - 120 80 - 120 Anal Percent Recovery Limits	Date Analyzed 2009-10-05 2009-10-05 2009-10-05 2009-10-05 yzed By: AG Date Analyzed 2009-10-05

### Standard (CCV-1)

QC Batch: 64190

Date Analyzed: 2009-10-05

Analyzed By: AG

	te: October 9, t/New Mexico		Crowi	Work Order: nquest/New Me	9100503 exico State 20 #5	Ų	umber: 21 of 22 Lea County, NM
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO	1 148	mg/Kg	1.00	1.10	110	80 - 120	2009-10-05
Standard	(CCV-2)						
QC Batch:	64190		Date Ana	lyzed: 2009-10	)-05	Anal	yzed By: AG
			$\mathbf{CCVs}$	CCVs	$\mathbf{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	1.02	102	80 - 120	2009-10-05
Standard	(ICV-1)						
QC Batch:	64216		Date Ana	lyzed: 2009-10	0-06	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	$\mathbf{Flag}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	25.0	24.0	96	90 - 110	2009-10-06
Standard	(CCV-1)						
QC Batch:	64216		Date Ana	lyzed: 2009-10	0-06	Anal	yzed By: AR
			CCVs	$\operatorname{CCVs}$	$\mathbf{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	$\mathbf{Flag}$	$\mathbf{Units}$	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	25.0	24.7	99	90 - 110	2009-10-06
Standard	(ICV-1)						
QC Batch:	64218		Date Ana	lyzed: 2009-10	)-06	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	25.0	24.7	99	90 - 110	2009-10-06
Standard (	(CCV-1)						
QC Batch:	64218		Date Ana	lyzed: 2009-10	)-06	Anal	yzed By: AR

	e: October 9, /New Mexico		Crown	Work Order: quest/New Me	Page Number: 22 of 22 Lea County, NM		
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	25.0	23.4	94	90 - 110	2009-10-06
Standard (	(ICV-1)						
QC Batch:	64219		Date Anal	yzed: 2009-10	)-07	Anal	yzed By: AR
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	$\mathbf{Flag}$	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	25.0	23.4	94	90 - 110	2009-10-07
Standard (	CCV-1)						
QC Batch:	64219		Date Anal	yzed: 2009-10	-07	Anal	yzed By: AR
			$\mathbf{CCVs}$	$\mathbf{CCVs}$	$\mathbf{CCVs}$	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	25.0	23.3	93	90 - 110	2009-10-07

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		LAB Order ID #	1100503		Page of
TraceAnalysis, I email: lab@traceanalysis.com	nc. <sup>67</sup>	101 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 Tel (806) 794-1295 Fax (806) 794-1298 1 (800) 378-1296	5002 Basin Street, Suite A1 20 Midland, Texas <b>79703</b> Tel (432) 689-6301 Fax (432) 689-6313	00 East Sunset Rd , Suite E El Paso, Texas 79922 Tei (915) 585-3443 Fax (915) 585-4944 1 (888) 588-3443	8808 Camp Bowie Blvd West, Suite 180 Ft. Worth, Texas 76116 Tel (817) 201-5260 Fax (817) 560-4336
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6701 Abertieen Avenue, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 3015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132

888+588+3443 El Paso, Texas 79922 Midland Texas 79703 E-Mail: lab@t/aceanalysis.com

806 • 794 • 1296 FAX 806 • 794 • 1298 915+585+3443 432+689+6301 817 • 201 • 5260

FAX 915+585+4944 FAX 432+689+6313

WBENC: 237019 HUB: 1752439743100-86536 **NCTRCA** WFWB38444Y0909

Certifications

**DBE:** VN 20657

### **NELAP** Certifications

Lubbock: T104704219-08-TX LELAP-02003 Kansas E-10317

El Paso: T104704221-08-TX LELAP-02002

Midland: T104704392-08-TX

## **Analytical and Quality Control Report**

**Curt Stanley Basin Environmental Consulting** 2800 Plains Hwy. P. O. Box 381 Lovington, NM, 88260

Report Date: October 12, 2009

Work Order: 9100610 

Project Location: Lea County, NM **Project Name:** Crownquest/New Mexico State 20 #5 **Project Number:** Crownquest/New Mexico State 20 #5

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

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
211645	MW-1	water	2009-10-05	09:00	2009-10-06

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

This report consists of a total of 6 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael april

Dr. Blair Leftwich, Director Dr. Michael Abel, Project Manager

## **Case Narrative**

Samples for project Crownquest/New Mexico State 20 #5 were received by TraceAnalysis, Inc. on 2009-10-06 and assigned to work order 9100610. Samples for work order 9100610 were received intact at a temperature of 5.6 deg. C.

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

		Prep	Prep	$\mathbf{QC}$	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (IC)	E 300.0	54904	2009-10-08 at 12:42	64320	2009-10-09 at 13:54
TDS	SM 2540C	54822	2009-10-06 at $12:03$	64293	2009-10-08  at  14:33

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

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 9100610 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

# **Analytical Report**

#### Sample: 211645 - MW-1

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	64320	Date Analyzed:	2009-10-09	Analyzed By:	AR
Prep Batch:	54904	Sample Preparation:	2009-10-08	Prepared By:	AR.
		$\mathbf{RL}$			
Parameter	$\mathbf{Flag}$	Result	Units	Dilution	$\mathbf{RL}$
Chloride		109	mg/L	5	0.500

#### Sample: 211645 - MW-1

Laboratory:MidlandAnalysis:TDSQC Batch:64293Prep Batch:54822	]	Analytical Method Date Analyzed: Sample Preparatio	2009-10-08	Prep Method: Analyzed By: Prepared By:	N/A AR AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Total Dissolved Solids		756	m mg/L	2	10.0
Method Blank (1)	OC Batch: 64293				
Method Blank (1) QC Batch: 64293 Prep Batch: 54822	QC Batch: 64293	Date Analyzed: QC Preparation:	2009-10-08 2009-10-06	Analyzed By: Prepared By:	AR AR
QC Batch: 64293	QC Batch: 64293 Flag	QC Preparation:			

#### Method Blank (1) QC Batch: 64320

QC Batch: Prep Batch:		Date Analyzed: QC Preparation:			Analyzed By: Prepared By:	
		Ν	<b>1DL</b>			
Parameter	Flag	Re	sult	Units		$\mathbf{RL}$
Chloride		<0	.475	. mg/L		0.5

Report Date: October 12, 2009 Crownquest/New Mexico State 20	) #5	Cr		x Order: 9 New Mexi	100610 co State 20	#5	Paş		er: 5 of 6 1nty, NM
Duplicates (1) Duplicated Sa	mple: 211592	!							
QC Batch: 64293 Prep Batch: 54822			nalyzed: paration:	2009-10-0 2009-10-0				alyzed B epared B	
	_								
	Duplica		Sample		· •+	Dilutio	л	חח	RPD
Param Total Dissolved Solids	Result 2280		Result 2140		nits ig/L	Dilution 5		PD 6	Limit 10
Laboratory Control Spike (LC	2 <b>S</b> -1)								
QC Batch: 64293	Ι	Date A	nalyzed:	2009-10-0	)8		An	alyzed B	y: AR
Prep Batch: 54822			paration:	2009-10-0				epared B	•/
-		-	-						
	LCS	5			Spike	Mat	rix		Rec.
Param	Resul		Units	Dil.	Amount	Resi		lec.	Limit
Total Dissolved Solids	986		mg/L	1	1000	<9.		99	90 - 110
Percent recovery is based on the sp	oike result. R	PD is		he spike a	nd spike du	plicate re	sult.		
· A	LCSD			Spike	Matrix	-	Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Total Dissolved Solids	1000	mg/L	1	1000	<9.75	100	<u>90 - 110</u>	1	<u> </u>
Percent recovery is based on the sp			based on t			plicate re	sult.		
Laboratory Control Spike (LC	<b>2S-1</b> )								
QC Batch: 64320	т	Data Ar	nalyzed:	2009-10-0	10		Δn	alyzed B	v: AR
Prep Batch: 54904			paration:	2009-10-0				apared B	•/
			T	2000 10 0			1	-Product D	
	LCS	ł			Spike	Mat	riv		Rec.
Param	Resul		Units	Dil.	Amount	Resi		ec.	Limit
Chloride	24.7		mg/L	1	25.0	<0.4		99	90 - 110
Percent recovery is based on the sp	oike result. R	PD is		he spike a	nd spike du			· · ·	
				-	-	-			חחח
	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Ree	Rec.	RPD	RPD Limit
)aram	DESILL			25.0	<0.475	<u>Rec.</u> 99	Limit 90 - 110	$\frac{\mathbf{RPD}}{0}$	Limit
Param		$m\sigma/1$							
Chloride	24.8	mg/L	1	·· ·· ·				0	
	24.8			·· ·· ·					

QC Batch: Prep Batch:	64320 54904	Date Analyzed: QC Preparation:	Analyzed By: Prepared By:	

-	e: October 12, /New Mexico		Cr		er: 9100610 Mexico State 20	#5	Paş		er: 6 of 6 unty, NM
Param			${ m MS}$ Result	Units Dil	Spike . Amount	Mat. Rest		lec.	Rec. Limit
Chloride		1	857	mg/L 5	138	65		.48	90 - 110
Percent reco	overv is based o	on the spike re	sult. RPD is		ike and spike du	plicate re	sult.		., , , , , , ,
		-	SD	Spi	-	•	Rec.		R.P.D
Param		$\mathbf{Re}$	sult Units	Dil. Amo		Rec.	Limit	RPD	Limit
Chloride		2 8	60 mg/L	5 13	8 653	150	90 - 110	0	
Standard (	(ICV-1)								
Standard ( QC Batch:				nalyzed: 2009-			An	alyzed I	By: AR
			ICVs	ICVs	ICVs		Percent	alyzed I	
QC Batch:	64320	Unito	ICVs True	ICVs Found	ICVs Percent	R	Percent lecovery		Date
		Units mg/L	ICVs	ICVs	ICVs	R	Percent		
QC Batch: Param Chloride	64320 Flag		ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	R	Percent lecovery Limits		Date Analyzed
QC Batch: Param Chloride <b>Standard</b> (	64320 Flag (CCV-1)		ICVs True Conc. 25.0	ICVs Found Conc.	ICVs Percent Recovery 91	R	Percent Lecovery Limits 00 - 110		Date Analyzed 009-10-09
QC Batch: Param	64320 Flag (CCV-1)		ICVs True Conc. 25.0	ICVs Found Conc. 22.7	ICVs Percent Recovery 91	R 9	Percent Lecovery Limits 00 - 110	20	Date Analyzed 009-10-09
QC Batch: Param Chloride Standard ( QC Batch:	64320 Flag (CCV-1) 64320	mg/L	ICVs True Conc. 25.0 Date An CCVs True	ICVs Found Conc. 22.7 nalyzed: 2009- CCVs Found	ICVs Percent Recovery 91 10-09 CCVs Percent	R 9 1 R	Percent Recovery Limits 00 - 110 An Percent Recovery	A 20 nalyzed I	Date Analyzed 009-10-09 By: AR Date
QC Batch: Param Chloride Standard (	64320 Flag (CCV-1)		ICVs True Conc. 25.0 Date As CCVs	ICVs Found Conc. 22.7 nalyzed: 2009- CCVs	ICVs Percent Recovery 91 10-09 CCVs	R 9 I R	Percent Recovery Limits 00 - 110 An Percent	A 20 nalyzed H	Date Analyzed 009-10-09 By: AR

<sup>1</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control. <sup>2</sup>MSD analyte out of range. MS/MSD has a RPD within limits. Therfore, MS shows extraction occured properly.

LAB Order	10 # <u>9100 610</u>																												Pa	age	ə		/	_of				
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Appendix C Photographs



New Mexico State 20 #5 release site during initial activities



New Mexico State 20 #5 release site initial excavation



New Mexico State 20 #5 release site drilling soil boring SB-1



New Mexico State 20 #5 release site drilling monitor well MW-1

Appendix D Release Notification and Corrective Action (Form C-141)

<u>District 1</u> 1625 N. French Dr., Hobbs, NM 88240       En <u>District III</u> En         (301 W Grand Avenue, Artesia, NM 88210       District III         District III       1000 Rio Brazos Road, Aztec, NM 87410         District IV       3 S St. Francis Dr., Santa Fe, NM 87505         Release         Name of Company         CrownQuest Operating, LL		Form C-141 Revised October 10, 2003 Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form			
Address PO Box 53310 Midland, Texas 79710 Facility Name New Mexico State 20 #5			lo. 432-556-07 e Poly Flow lin		
	l				
Surface Owner Norman Hahn N	Mineral Owner		· · · · · · · · · · · · · · · · · · ·		se No.
	LOCATIO			E	
Unit Letter Section Township Range Feet f H 6 14S 33E	rom the North	1/South Line	Feet from the	East/West Li	ne County Lea
Latitude 3	3 08' 07" North	1	Longitude 103	3 <u>38' 45" W</u> e	s
	NATURE	OF RELI	TASE		
Type of Release Produced Water/Crude Oil	MATURE	Volume of 50 Barrels		Volu 25 Ba	ne Recovered
Source of Release Poly Flow line		Date and H 7/21/09 @0	our of Occurrenc	11	and Hour of Discovery 09 @ 0915
Was Immediate Notice Given?	lot Required	If YES, To Maxie Bro	Whom?	//21/	
By Whom? Eb Taylor			our 7/21/09@1		
Was a Watercourse Reached?		If YES, Vo	lume Impacting t	he Watercours	c
If a Watercourse was Impacted, Describe Fully.*		I,			
Describe Cause of Problem and Remedial Action Taker Describe Area Affected and Cleanup Action Taken. remediated as per NMOCD guidelines. I hereby certify that the information given above is tra- regulations all operators are required to report and/or public health or the environment. The acceptance of a should their operations have failed to adequately invest or the environment. In addition, NMOCD acceptance federal, state, or local taws and/or regulations.	Release impacto ic and complete file certain releas C-141 report by igate and remedi	to the best of se notifications the NMOCD ate contaminat	asuring approxin my knowledge ar and perform cor marked as "Fina ion that pose a th lieve the operato	nately 00 fee nd understand rrective action 1 Report" doe: nreat to ground or of responsit	t by 60 fect. Impacted soil will be that pursuant to NMOCD rules and s for releases, which may endanger s not relieve the operator of liability vater, surface water, human health i ity for compliance with any other
Signature: Kanula G. Snerif			ENN' ENNINE	R	ON DIVISION
Printed Name: Kent Crabtree Konal G Sne	ow JR.	Approved by	District-Supervise	Hore The	ut delam.
Title: Foreman		Approval Dat	0:08050	9 Expirat	ion Date: 10 05 09
E-mail Address: kcrabtree@crownquest.com Date: 7/30/09 Phone: 432-550	6-0770	Conditions of 41. SUBM	Approval: DELIN IT FINAL	JEATTE to clu (-141 B	IRP-08-8-2252
Date. //JU/U/ Pilone. 432-55	<u></u>			RECE	

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