Administrative/Environmental Order



# **AE Order Number Banner**

**Report Description** 

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App Number: pGRL0905759486

1RP - 2080

CROWNQUEST OPERATING, LLC

2/12/2016

# State of New Mexico Energy Minerals and Natural Resources

Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505 Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

# **Release Notification and Corrective Action**

						OPE	RATOR		nitial Repo	rt	Final Report
Name of C	ompany	CrownQue	st Operat	ing, LLC	Co	ntact K	Pat / 10	64182			
	PO Box 53	310 Midland	l, Texas	79710	Te	lephone 1	No. 432 - 5.	6+122			
Facility Na	me Hahi	1 State Well	#1		Fa	cility Typ	e Well Site Re	eserve Pit	-		
Surface Ow	vner Sta	te of New M	lexico	Mineral C	Owner			Lease	No.		
				LOCA	ATION	OF RE	LEASE				
Unit Letter P	Section 15	Township 14S	Range 33E	Feet from the	North/So	uth Line	Feet from the	East/West Line	County Lea		
		1	Latitu	de 33 05' 56.25'	" North		Longitude 10	1 )3 35' 39.25"We	st		
				NAT	URE O			13 14			
Type of Rele	ease Produc	ced Water				Volume of	Release Unknow	wn Volume	Recovered	Non	e
Source of Re	elease Rese	rve Pit				Date and H Unknown	lour of Occurrent	ce Date and	Hour of Di	scovery	
Was Immedi	ate Notice (		'es 🗌 1	No 🖾 Not Requ	1	If YES, To	Whom?	1 10/2	4/08 C	10.0	0
By Whom?				a an	1	Date and H	lour				1. Sec. 1.
Was a Water	course Read		Yes [	No No	1	If YES, Ve	olume Impacting	the Watercourse.			
If a Waterco	urse was Im	pacted, Descr	ibe Fully.3	*	I						
				tion Taken: At us ved facility for dis		ne a bree	ch in the liner o	f the reserve pit	occurred. In	pacted	soil is being
Describe Are	ea Affected	and Cleanup	Action Tal	ken. Release impa	acted an are	ea measuri	ng approximately	100 feet by 150 f	eet.		
regulations a public health should their or the enviro	operations h on the environment. In	are required ironment. Th have failed to	to report accepta adequatel	and/or file certain nce of a C-141 re y investigate and	n release n port by the remediate	otification NMOCE contamina	s and perform co marked as "Fina tion that pose a t elieve the operato	nd understand that prrective actions fi al Report" does no hreat to ground w or of responsibilit	or releases, of relieve the ater, surface y for compli	which m e operate water, h iance wi	ay endanger or of liability numan health
Signature:	lent 1	had	/				OIL CON	SERVATION	DIVISIO	<u>NC</u>	
		+ 610.		e	Ap	proved by	District Supervis	sor:			
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Date: 7-/	10-09		Phone:	432-558-04	170				1-40	- 0	2000

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# **Basin Environmental Service Technologies, LLC**

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es **Effective Solutions** 

# **REMEDIATION SUMMARY**

# AND SITE

# **CLOSURE REQUEST**

# RECEIVED

MAR 2 2 2011 HOBBSOCD

# CROWNQUEST OPERATING, LLC Hahn State Well #1 Lea County, New Mexico UNIT LTR "P" (SESE), Section 15, Township 14 South, Range 33 East Latitude 33° 05' 56.25" North, Longitude 103° 35' 39.25" West NMOCD Reference # 1RP-2080

Prepared For:

CrownQuest Operating, LLC 303 Veterans Airpark Lane Suite 5100 Midland, Texas 79710

Prepared By: Basin Environmental Service Technologies, LLC 3100 Plains Highway Lovington, New Mexico 88260

March 2011

Ben J. Arguijo

Project Manager

Closure Request is approved Leaffrey L Env: Engineer NMOCD-HOBBS 03122111

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

## **1.0 INTRODUCTION AND BACKGROUND INFORMATION**

Basin Environmental Service Technologies, LLC ("Basin"), on behalf of CrownQuest Operating, LLC ("CrownQuest"), has prepared this *Remediation Summary and Site Closure Request* for the release site known as Hahn State Well #1. The legal description of the release site is Unit Letter "P" (SESE), Section 15, Township 14 South, Range 33 East, in Lea County, New Mexico. The property affected by the release is owned by The State of New Mexico and is administered by the New Mexico State Land Office ("NMSLO", ROE-1775). The release site GPS coordinates are 33° 05' 56.25" North latitude and 103° 35' 39.25" West longitude. Please reference Figure 1 for a "Site Location Map" and Figure 2 for a "Site and Sample Location Map". New Mexico Oil Conservation Division ("NMOCD") forms "Pit, Closed-Loop System, Below-Grade Tank, or Proposed Alternative Method Permit or Closure Plan Application" ("C-144") and "Release Notification and Corrective Action" ("C-141") are provided as Appendix D and Appendix E, respectively.

On October 20, 2008, CrownQuest submitted a C-144 to the NMOCD Hobbs District Office, to begin closure activities associated with a temporary drilling pit at the Hahn State Well #1 Site. On December 1 and 2, 2008, a previous consultant collected soil samples (Mud-Pit @ 9', Mud-Pit @ 9' w/wall mix, Center Area, W #1, W #2, E #1, E #2, SW Corner, SE Corner, S Center, NW Center, and NE Center) from the soil beneath and adjacent to the temporary pit liner. Background soil samples (Background Sample North, Background Sample South, Background Sample East, and Background Sample West) were also collected and submitted to the laboratory. Selected soil samples were submitted to the laboratory and analyzed for concentrations of benzene, toluene, ethyl-benzene, and xylenes ("BTEX") using method EPA 8021b, total petroleum hydrocarbons ("TPH") using method SW8015, and chlorides, using method EPA SM 4500-CL B or E 300. Laboratory analytical results indicated chloride concentrations exceeded NMOCD regulatory standards, suggesting that a release of produced water had occurred, while BTEX and TPH concentrations were less than NMOCD regulatory standards.

On December 16, 2008, CrownQuest requested Basin assume oversight activities at the site.

On February 10, 2009, a Form C-141 was submitted to the NMOCD Hobbs District Office. The C-141 indicated a release of an unknown volume of produced water had occurred at the site. General photographs of the site are provided as Appendix C.

# 2.0 NMOCD SITE CLASSIFICATION

A search of the New Mexico Office of the State Engineer ("NMOSE") database did not identify the average depth to groundwater information for Section 15, Township 14 South, Range 33 East. A reference map utilized by the NMOCD indicated depth to groundwater at the release site is approximately 100 feet below ground surface ("bgs"). Based on the NMOCD ranking system, ten (10) points were assigned to the site as a result of this criterion.

The water well database, maintained by the NMOSE, indicated there are no water wells within 1,000 feet from the release. Based on the NMOCD ranking system, zero (0) points were assigned to the site as a result of this criterion.

There are no surface water bodies located within 1,000 feet of the site. Based on the NMOCD ranking system, zero (0) points were assigned to the site as a result of this criterion. NMOCD guidelines indicate the Hahn State Well #1 release site has a ranking score of ten (10) points. Soil remediation levels for a site with a ranking score of ten (10) points are as follows:

- Benzene 10 mg/Kg (ppm)
- BTEX 50 mg/Kg (ppm)
- TPH 1,000 mg/Kg (ppm)

The New Mexico Administrative Code ("NMAC") does not currently specify a remediation level for chloride concentrations in soil. Chloride remediation levels are set by the NMOCD on a site-specific basis.

# 3.0 DISTRIBUTION OF CONTAMINANTS IN THE UNSATURATED ZONE

#### 3.1 Summary of Soil Remediation Activities

In October 2008, a previous consultant began excavation activities at the site. The excavated soil was stockpiled adjacent to the former temporary pit pending transportation to Gandy-Marley, Inc. (NMOCD Permit # DP-1041), for disposal. The resulting excavation measured approximately one hundred fifty (150) feet in length by one hundred (100) feet in width.

On December 16, 2008, Basin assumed oversight of the Hahn State Well #1 release site.

On December 23, 2008, three (3) delineation trenches (Trench 1, Trench 2, and Trench 3) were excavated in the northern, central, and southern portions of the excavation to determine the vertical extent of contamination. Trench 1 was excavated in the northern portion of the excavation to a total depth of approximately fourteen (14) feet bgs. Trench 2 was excavated in the central portion of the excavation to a total depth of approximately seventeen (17) feet bgs. Trench 3 was excavated in the southern portion of the excavation to a total depth of approximately twenty (20) feet bgs. Soil samples were collected at selected intervals for field-screening and/or laboratory analysis of chloride concentrations. The delineation trenches were backfilled following sample collection.

Soil samples collected from Trench 1 (T-1 @ 12' bgs and T-1 @ 14' bgs), Trench 2 (T-2 @ 14' bgs and T-2 @ 17' bgs), and Trench 3 (T-3 @ 20' bgs) were submitted to TraceAnalysis, Inc., in Midland, Texas, for analysis of chloride concentrations using EPA Method SM 4500-Cl B. Laboratory analytical results indicated chloride concentrations ranged from less than the laboratory method detection limit ("MDL") for soil samples T-1 @ 14' bgs and T-2 @ 17' bgs to 14,400 mg/Kg for soil sample T-2 @ 14' bgs. A summary of the analytical results are included in Table 1, "Concentrations of BTEX, TPH & Chlorides in Soil". Analytical reports are provided as Appendix A.

Ten (10) soil samples were also collected from the floor (SE Floor and SW Floor) and sidewalls (NSW-2, NSW-1, WSW-1, WSW-2, WSW-3, SSW-1, SSW-2, and SCSW-1) of the excavation at depths ranging from approximately eight (8) to twelve (12) feet bgs. The soil samples were submitted to the laboratory and analyzed for chloride concentrations. Laboratory analytical

results indicated chloride concentrations ranged from less than the MDL for soil samples NSW-1, WSW-1, WSW-2, SSW-1, SSW-2, and SW Floor to 2,280 mg/Kg for soil sample SE Floor. On January 2, 2009, delineation Trench 3 was deepened to determine the vertical extent of contamination in the southern portion of the excavation. The trench was excavated to a total depth of approximately twenty-four (24) feet bgs. Soil samples (T-3 @ 22' bgs and T-3 @ 24' bgs) were collected from the trench and submitted to the laboratory for analysis. The trench was backfilled following sample collection. Soil samples (ESW-1, ESW-2, and ESW-3) were also collected from the east sidewall of the excavation at approximately eight (8) feet bgs and submitted to the laboratory for analysis. Laboratory analytical results indicated the chloride concentrations were above NMOCD regulatory standards for all of the submitted soil samples. Chloride concentrations ranged from 3,140 mg/Kg for soil sample E-SW3 to 6,760 mg/Kg for soil sample T-3 @ 24' bgs.

On January 13, 2009, three (3) delineation trenches (East Trench #1, East Trench #2, and East Trench #3) were excavated east of the excavation to determine the horizontal extent of contamination. The trenches were excavated to a depth of approximately six (6) feet bgs. Soil samples (East Trench #1 @ 6', East Trench #2 @ 6', and East Trench #3 @ 6') were collected and submitted to the laboratory for analysis. Laboratory analytical results indicated chloride concentrations ranged from less than the MDL for soil samples East Trench #1 @ 6' and East Trench #3 @ 6' to 513 mg/Kg for soil sample East Trench #2 @ 6'. The delineation trenches were backfilled following sample collection.

Based on laboratory analytical results of the soil samples collected from the excavation, additional excavation activities were conducted on the floor of the excavation. The final dimensions of the excavation were approximately one hundred fifty (150) feet in length by one hundred (100) feet in width, and ranging in depth from approximately 6 feet bgs (northern portion of the excavation) to 17 feet bgs (southern portion of the excavation). Approximately 7,326 cubic yards (cy) of impacted soil was transported to Gandy-Marley, Inc., for disposal. Approximately 3,000 cy of segregated rock was stockpiled on-site pending final disposition.

On January 22, 2009, a soil boring (SB-1) was advanced in the southeast corner of the excavation to determine the vertical extent of contamination at the site. The soil boring was advanced to a total drilling depth of approximately sixty (60) feet. No groundwater was encountered during the advancement of the soil boring. Soil samples were collected at five (5) foot drilling intervals and submitted to the laboratory for analysis of chloride concentrations. Laboratory analytical results indicated chloride concentrations ranged from 427 mg/Kg for soil sample SB-1 @ 60' to 3,200 mg/Kg for soil sample SB-1 @ 5'. Soil boring and monitor well logs are provided as Appendix B.

At the request of the NMOCD Hobbs District Office, three (3) monitor wells were installed to evaluate the status of the groundwater at the location. A "Water Monitoring Easement" was applied for and subsequently approved by the NMSLO (WM-203).

On March 31 and April 1, 2009, three (3) soil borings/monitor wells (MW-1 through MW-3) were installed at the Hahn State Well #1 release site.

Monitor well MW-1 was installed in the southeast corner of the excavation, to a total depth of approximately ninety-five (95) feet. Soil samples were collected at five (5) foot drilling intervals.

Soil samples were submitted to the laboratory from the ten (10), twenty (20), thirty (30), forty (40), fifty (50), sixty (60), seventy (70), and seventy-five (75) foot drilling intervals. Laboratory analytical results indicated chloride concentrations ranged from 15.3 mg/Kg for the soil sample collected at seventy-five (75) feet bgs to 560 mg/Kg for the soil sample collected at ten (10) feet.

Monitor well MW-2 was installed in the southwest corner of the excavation, to a total depth of approximately ninety (90) feet. Soil samples were collected at five (5) foot drilling intervals. Soil samples were submitted to the laboratory from the ten (10), twenty (20), thirty (30), forty (40), fifty (50), sixty (60), seventy (70), and seventy-six (76) foot drilling intervals. Laboratory analytical results indicated chloride concentrations were less than the NMOCD regulatory standard for all of the submitted soil samples. Chloride concentrations ranged from 8.27 mg/Kg for the soil sample collected at seventy (70) feet to 201 mg/Kg for the soil sample collected at ten (10) feet.

Monitor well MW-3 was installed to the southeast of the excavation, to a total depth of approximately one hundred ten (110) feet bgs. Soil samples were collected at five (5) foot drilling intervals. Soil samples were submitted to the laboratory from the surface, ten (10), twenty (20), thirty (30), forty (40), fifty (50), sixty (60), seventy (70), eighty (80), ninety (90), and ninety-six (96) foot drilling intervals. The analytical results indicated chloride concentrations were less than the NMOCD regulatory standard for all the submitted soil samples. Chloride concentrations ranged from 6.16 mg/Kg for the soil sample collected at ninety-six (96) feet to 33.5 mg/Kg for the soil sample collected at the surface.

On April 29, 2009, the NMOCD Hobbs District Office granted verbal approval to perform riskbased soil closure activities at the Hahn State Well #1 release site. Basin submitted the NMOCD approved closure plan to the NMSLO. On June 11, 2009, the NMSLO granted verbal approval of the plan.

On May 26, 2009, the approved soil closure activities began at the Hahn State Well #1 release site. The two (2) monitor wells located inside the excavation (MW-1 and MW-2) were extended to the surface. To ensure the integrity of the monitor wells a six (6) inch PVC riser was installed on the floor of the excavation and extended to the surface around the two (2) inch monitor wells. Approximately two (2) bags of concrete was placed around the base of the six (6) inch PVC riser to secure the PVC riser to the floor of the excavation.

On May 27, 2009, a twenty (20) mil polyurethane liner was installed in the southern portion of the excavation. Approximately six (6) inches of pad sand was placed beneath and above the liner. A forty (40) mil boot was installed at the base of monitor wells MW-1 and MW-2 and chemically welded to the liner. The segregated rock was placed in the excavation, and the remaining portion of the excavation was backfilled with non-impacted soil purchased from an off-site source. Subsequent to backfilling, the surface was contoured to fit the surrounding topography and seeded with an NMSLO-approved seeding mixture. Supplemental seeding occurred on November 2, 2010.

Soil remediation activities were completed at the Hahn State Well #1 release site on July 2, 2009. A *Remediation Summary and Soil Closure Request* was submitted to the NMOCD Hobbs District Office in August 2009.

On November 9, 2009, a representative of the NMOCD Hobbs District Office granted conditional closure status to the Hahn State Well #1 drilling pit, pending completion of remediation activities and NMOCD approval of the Form C-141.

# 4.0 DISTRIBUTION OF CONTAMINANTS IN THE SATURATED ZONE

## 4.1 Summary of Groundwater Remediation Activities

From July 2009 to July 2010, Basin conducted semi-weekly recovery of chloride-impacted groundwater from MW-1. Approximately 10,500 gallons of chloride-impacted groundwater was recovered from the well and disposed of at an NMOCD-approved salt water disposal facility near Monument, NM.

From July to November 2010, Basin conducted semi-weekly recovery of chloride-impacted groundwater from MW-2. Approximately 6,500 gallons of chloride-impacted groundwater was recovered from the well and disposed of at an NMOCD-approved salt water disposal facility near Monument, NM.

The on-site monitoring wells were gauged and sampled on April 6, July 9, and October 22, 2009, and March 25, June 1, September 10, and November 18, 2010. Groundwater samples collected from monitoring wells MW-1 through MW-3 during the quarterly monitoring events were delivered to TraceAnalysis, Inc., in Midland, Texas, for determination of chloride concentrations by EPA Method SM 4500-CL B or EPA Method 300.0 and/or Total Dissolved Solids (TDS) concentrations by EPA Method SM 2540C. A summary of the analytical results is included in Table 2, "Concentrations of Chlorides & TDS in Groundwater". Locations of the groundwater monitoring wells are depicted in Figure 2, "Site & Sample Location Map."

Laboratory analytical results of the April 6, 2009, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard in monitor wells MW-2 and MW-3, while chloride concentrations were above the NMOCD regulatory standard in monitor well MW-1. Chloride concentrations ranged from 59.7 mg/L for monitor well MW-3 to 502 mg/L for monitor well MW-1. TDS concentrations ranged from 446 mg/L for monitor well MW-3 to 1,160 mg/L for monitor well MW-1.

Laboratory analytical results of the July 9, 2009, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard in monitor wells MW-2 and MW-3, while chloride concentrations were above the NMOCD regulatory standard in monitor well MW-1. Chloride concentrations ranged from 55.3 mg/L for monitor well MW-3 to 1,310 mg/L for monitor well MW-1.

Laboratory analytical results of the October 22, 2009, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard in monitor wells MW-2 and MW-3, while chloride concentrations were above the NMOCD regulatory standard in monitor well MW-1. Chloride concentrations ranged from 69.3 mg/L for monitor well MW-3 to 497 mg/L for monitor well MW-1.

Laboratory analytical results of the March 25, 2010, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard for all samples

submitted. Chloride concentrations ranged from 80.9 mg/L for monitor well MW-3 to 184 mg/L for monitor well MW-1.

Laboratory analytical results of the June 1, 2010, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard for all samples submitted. Chloride concentrations ranged from 84.6 mg/L for monitor well MW-3 to 234 mg/L for monitor well MW-2.

Laboratory analytical results of the September 10, 2010, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard for all samples submitted. Chloride concentrations ranged from less than the laboratory MDL for monitor well MW-2 to 217 mg/L for monitor well MW-1.

Laboratory analytical results of the November 18, 2010, groundwater sampling event indicated chloride concentrations were less than the NMOCD regulatory standard for all samples submitted. Chloride concentrations ranged from 67 mg/L for monitor well MW-1 to 205 mg/L for monitor well MW-2.

# 4.2 Groundwater Closure Request

Based on laboratory analytical results of groundwater monitoring samples, Basin recommends that CrownQuest request approval to cease groundwater monitoring at the Hahn State Well #1 release site and plug and abandon monitor wells MW-1, MW-2, and MW-3. The monitor wells will be plugged and abandoned according to NMOSE guidelines by a state-certified water well drilling company. CrownQuest will provide the NMOCD with plugging reports documenting the plugging procedures.

# 5.0 SITE CLOSURE REQUEST

Remediation activities conducted at the Hahn State Well #1 release site met the objectives set forth in the *Remediation Proposal* dated May 6, 2009. Basin recommends that CrownQuest provide the NMOCD Hobbs District Office and the NMSLO a copy of this *Remediation Summary and Site Closure Request* and request the NMOCD grant site closure to the Hahn State Well #1 release site. Basin further recommends that CrownQuest request permanent closure status for the Hahn State Well #1 drilling pit.

## 6.0 QA/QC PROCEDURES

# 6.1 Soil Sampling

Soil Samples were delivered to TraceAnalysis, Inc., of Midland, Texas, for BTEX and/or TPH analyses using the methods described below. Soil samples were analyzed for BTEX and/or TPH concentrations within fourteen (14) days following the collection date.

The soil samples were analyzed as follows:

- BTEX concentrations in accordance with EPA Method 8021B, 5030
- TPH concentrations in accordance with modified EPA Method 8015M GRO/DRO

# 6.2 Groundwater Sampling

The groundwater monitor wells were developed utilizing the Environmental Protection Agency (EPA) protocol of nine (9) well volumes of groundwater or until the monitoring wells are dry using an electrical Grundfos Pump. Within forty-eight hours of development, and during subsequent quarterly groundwater sampling events, the monitor wells were measured and purged of approximately three (3) well volumes utilizing an electrical Grundfos Pump. Groundwater samples were collected using a disposable Teflon sampler, stored in clean, glass containers provided by the laboratory, and placed on ice in the field. Purge water was collected in a polystyrene tank and disposed of at a NMOCD-approved disposal facility.

Groundwater samples were delivered to TraceAnalysis, Inc., of Midland, Texas, for analysis of chloride and/or TDS concentrations using the methods described below. All samples were analyzed within approved holding times following the collection date.

- Chloride concentrations in accordance with EPA Method 300.0 or EPA Method SM 4500-CL B
- TDS in accordance with Method SM2540C

# 6.3 Decontamination of Equipment

Cleaning of the sampling equipment was the responsibility of the environmental technician. Prior to use, and between each sample, the sampling equipment was cleaned with Liqui-Nox® detergent and rinsed with distilled water.

## 6.4 Laboratory Protocol

The laboratory was responsible for proper QA/QC procedures after signing the chain-of-custody form(s). These procedures were either transmitted with the laboratory reports or are on file at the laboratory.

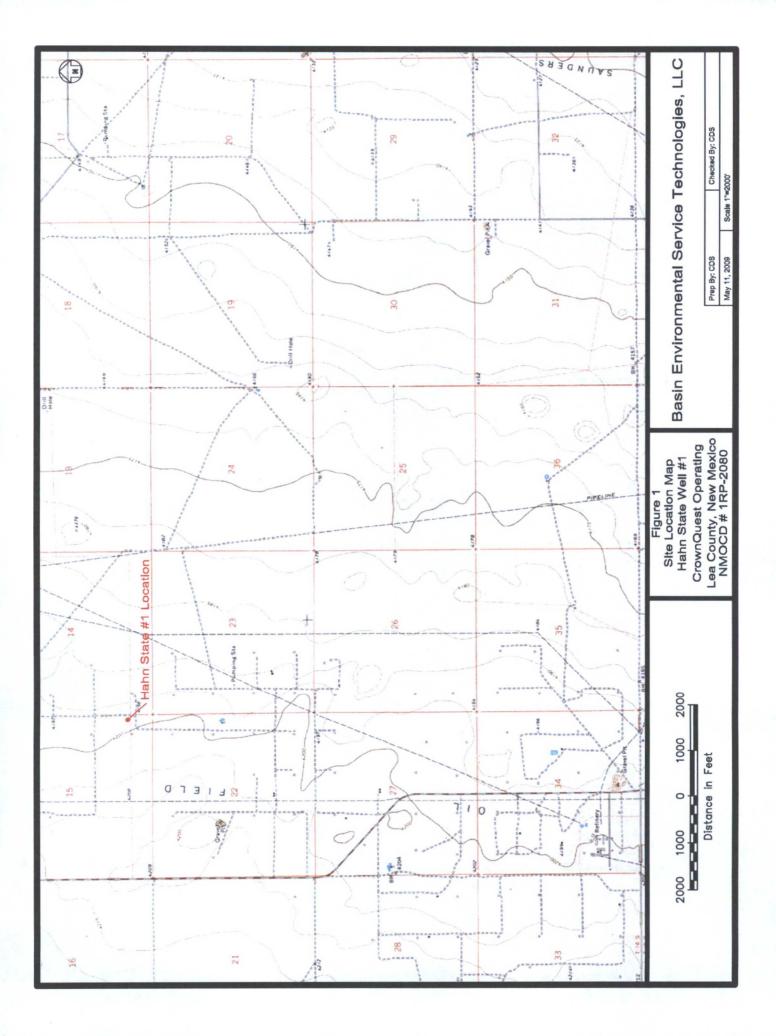
# 7.0 LIMITATIONS

Basin Environmental Service Technologies, LLC, has prepared this *Remediation Summary and Site Closure Request* to the best of its ability. No other warranty, expressed or implied, is made or intended. Basin has examined and relied upon documents referenced in the report and on oral statements made by certain individuals. Basin has not conducted an independent examination of the facts contained in referenced materials and statements. Basin has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Basin has prepared this report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin 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 Service Technologies, LLC, and/or CrownQuest Operating, LLC.

# **8.0 DISTRIBUTION:**

- Copy 1: Geoff Leking New Mexico Energy, Minerals and Natural Resources Department Oil Conservation Division (District 1) 1625 French Drive Hobbs, New Mexico 88240
- Copy 2: Thaddeus Kostrubala New Mexico State Land Office 310 Old Santa Fe Trail P.O. Box 1148 Santa Fe, New Mexico 87504
- Copy 3: Don Rogers CrownQuest Operating, LLC P. O. Box 53310 Midland, Texas 79710 drogers@crownquest.com
- Copy 4: Basin Environmental Service Technologies, LLC P.O. Box 301 Lovington, New Mexico 88260 bjarguijo@basinenv.com



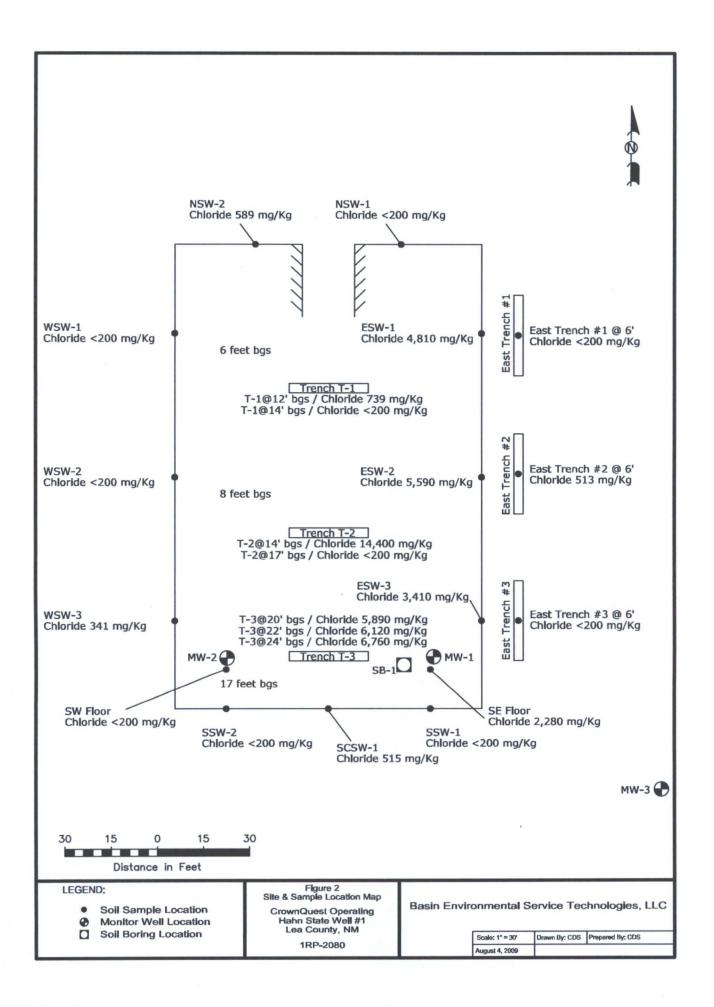


Table 1

# CONCENTRATIONS OF BTEX, TPH & CHLORIDES IN SOIL CROWNQUEST OPERATING, LLC HAHN STATE WELL #1 LEA COUNTY, NEW MEXICO NMOCD REF# 1RP-2080

		-																																	
EPA 4500 / E 300	Chloride (mg/Kg)	55.2	45.7	68.5	89.4	8,790	12,200		6,030	2,780	6,500	4,680	8,700	677	1,120	14,300	1,740	1,300	East and a second second	589	<200	<200	<200	341	<200	<200	739	<200	14,400	5,890	2,280	<200	<200	515	Contraction of the second
6-8015	TOTAL TPH (mg/Kg)	<50	<50	<50	<50	<50	85.03	「「「「「「」」	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50										,							
EPA SW 846-8015	DRO (mg/Kg)	<50	<50	<50	<50	<50	81.1		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	The second						•		•			•	•				
	GRO (mg/Kg)	1	4	<1 ۲>	<1	5.16	3.93		<1	<1	<1	<1	<1	<1	<1	<1	1	<1	S.M. March	•		•		•	•	•									The second
	BTEX (mg/Kg)	<0.01	<0.01	<0.01	<0.01	0.022	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01																	
	TOTAL XYLENE (mg/Kg)	<0.01	<0.01	<0.01	<0.01	0.022	<0.01		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	The second second			-								,	,				A REAL PROPERTY AND
021B, 5030	o-XYLENE (mg/Kg)	<0.01	<0.01	<0.01	<0.01	0.022	<0.01	a state of the second second	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	DESID THE										-					,	
Methods: EPA SW 846-8021B, 5030	m,p- XYLENE (mg/Kg)	Ş	Ş	Ŷ	Ş	0.0	Ş		Ŷ	Ŷ	Ŷ	Ŷ	Ŷ	Ş	Ŷ	Ŷ	Ş	° ⊳	Street and										•						
Methods: E	ETHYL- BENZENE (mg/Kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	中国の市	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Section and the	•															
	TOLUENE mg/Kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	A then we have	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Same and the second						,										A CONTRACTOR OF A CONTRACT
	BENZENE (mg/Kg)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	Constant of the	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	And the second																And the second se
	SOIL	In-Situ	In-Situ	In-Situ	In-Situ	Excavated	Excavated		Excavated					Excavated	Excavated	Excavated	Excavated	Excavated	All Second	In-Situ	In-Situ	In-Situ	In-Situ	Excavated	Excavated	In-Situ	Excavated								
	SAMPLE					9 Feet	9 Feet				•									8 Feet	12 Feet	12 Feet	16 Feet	20 Feet	20 Feet	28 Feet	12 Feet	12 Feet	23 Feet	12 Feet					
	SAMPLE LOCATION	Backaround Sample North	Background Sample South	Background Sample East	Background Sample West	Mud-Pit @ 9'	Mud-Pit @ 9' w/ wall mix		Center Area	W#1	W #2	E#1	E #2	SW Corner	SE Corner	S Center	NW Center	NE Center		NSW-2	NSW-1	WSW-1	WSW-2	WSW-3	SSW-1	SSW-2	T-1 @ 12' bgs	T-1 @ 14' bgs	T-2 @ 14' bgs	T-3 @ 20' bgs	SE Floor	SW Floor	T-2 @ 17' bgs	SCSW-1	
	SAMPLE DATE	12/01/08	12/01/08	12/01/08	12/01/08			632	12/02/08	12/02/08	12/02/08	12/02/08	12/02/08	12/02/08	12/02/08	12/02/08	12/02/08	12/02/08		12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	12/23/08	

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Table 1

# CONCENTRATIONS OF BTEX, TPH & CHLORIDES IN SOIL CROWNQUEST OPERATING, LLC HAHN STATE WELL #1 LEA COUNTY, NEW MEXICO NMOCD REF# 1RP-2080

0		Г	Г	Г	Г			Г																						Γ	Г
EPA 4500 / E 300	Chloride (mg/Kg)	4,810	5,590	3,410	6,120	6,760		<200	513	<200	Contraction of the second	3,200	2,310	1,380	1,630	849	581	990	957	516	868	582	427	560	363	267	315	219	128	46.9	45.0
6-8015	TOTAL TPH (mg/Kg)										St. Stands																		•		
EPA SW 846-8015	DRO (mg/Kg)					•					- Aller																				
	GRO (mg/Kg)										and the second					•															
	BTEX (mg/Kg)							-			ないないというない																				
	TOTAL XYLENE (mg/Kg)							-			Contraction of the second													-							
21B, 5030	o-XYLENE (mg/Kg)										and the second																				
Methods: EPA SW 846-8021B, 5030	m,p- XYLENE (mg/Kg)										Street, State																				
Methods: EP	ETHYL- BENZENE (mg/Kg)																														
	TOLUENE mg/Kg)									•	Sector Sector																				
	BENZENE (mg/Kg)						3 0 0 0 0 0 0 0 0				A STATE OF STATE																				
Γ	STATUS	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ		In-Situ	In-Situ	In-Situ		In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In-Situ	In City
	SAMPLE DEPTH	8 Feet	8 Feet	8 Feet	30 Feet	32 Feet		6 Feet	6 Feet	6 Feet		22 Feet	27 Feet	32 Feet	37 Feet	42 Feet	47 Feet	52 Feet	57 Feet	62 Feet	67 Feet	72 Feet	77 Feet	27 Feet	37 Feet	47 Feet	57 Feet	67 Feet	77 Feet	87 Feet	00 Enot
	SAMPLE LOCATION	ESW-1	ESW-2	ESW-3	T-3 @ 22' bgs	T-3 @ 24' bgs		East Trench #1 @ 6	East Trench #2 @ 6	East Trench #3 @ 6		SB-1 @5'	SB-1 @10'	SB-1 @15'	SB-1 @20'	SB-1 @25'	SB-1 @30'	SB-1 @35'	SB-1 @40'	SB-1 @45'	SB-1 @50'	SB-1 @55'	SB-1 @60'	SB-2 / MW-1 @ 10'	SB-2 / MW-1 @ 20'	SB-2 / MW-1 @ 30'	SB-2 / MW-1 @ 40'	SB-2 / MW-1 @ 50'	SB-2 / MW-1 @ 60'	SB-2 / MW-1 @ 70'	CD 2 / MM/ 1 @ 75
	SAMPLE DATE	01/02/09	01/02/09			01/02/09		01/13/09		01/13/09	The second second	01/22/09	01/22/09	01/22/09		01/22/09			01/22/09				01/22/09	03/31/09	03/31/09	03/31/09	03/31/09	03/31/09	03/31/09	03/31/09	00124100

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# CONCENTRATIONS OF BTEX, TPH & CHLORIDES IN SOIL CROWNQUEST OPERATING, LLC HAHN STATE WELL #1 LEA COUNTY, NEW MEXICO NMOCD REF# 1RP-2080

						Methods: EF	Methods: EPA SW 846-8021B, 5030	21B, 5030				EPA SW 846-8015	6-8015	EPA 4500 / E 300
SAMPLE	SAMPLE LOCATION	SAMPLE	SOIL	BENZENE	TOLUENE	ETHYL- BENZENE	m,p- XYLENE	o-XYLENE	TOTAL	втех	GRO	DRO	TOTAL TPH	Chloride
				(mg/Kg)	mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg) (mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
03/31/09	SB-3 / MW-2 @ 10'	27 Feet	In-Situ											201
03/31/09	SB-3 / MW-2 @ 20'	37 Feet	In-Situ											40.2
03/31/09	SB-3 / MW-2 @ 30'	47 Feet	In-Situ											15.1
03/31/09	SB-3 / MW-2 @ 40'	57 Feet	In-Situ					•						17.4
03/31/09	SB-3 / MW-2 @ 50'	67 Feet	In-Situ											10.3
03/31/09	SB-3 / MW-2 @ 60'	77 Feet	In-Situ											8.78
03/31/09	SB-3 / MW-2 @ 70'	87 Feet	In-Situ											8.27
03/31/09	SB-3 / MW-2 @ 76	93 Feet	In-Situ											9.08
04/01/09	SB-4 / MW-3 @ Surface	Surface	In-Situ											33.5
04/01/09	SB-4 / MW-3 @ 10'	10'	In-Situ											14.2
04/01/09	SB-4 / MW-3 @ 20'	20'	In-Situ											8.89
04/01/09	SB-4 / MW-3 @ 30'	30'	In-Situ											8.72
04/01/09	SB-4 / MW-3 @ 40'	40'	In-Situ											9.3
04/01/09	SB-4 / MW-3 @ 50'	50'	In-Situ											9.54
04/01/09	SB-4 / MW-3 @ 60'	60'	In-Situ											12.1
04/01/09	SB-4 / MW-3 @ 70'	70'	In-Situ											10.6
04/01/09	SB-4 / MW-3 @ 80'	80'	In-Situ											9.92
04/01/09	SB-4 / MW-3 @ 90'	90'	In-Situ											9.08
04/01/09	SB-4 / MW-3 @ 96	96'	In-Situ								•			6.16
OMN	NMOCD CLEAN-UP LEVEL			10						50			1,000	250
	and the second		and the second second		and the second									and the second se
<b>BOLD</b> indica	BOLD indicates concentration exceeding NMOCD regulatory standarc	NMOCD redu	latory stand	arc										

Table 1

# TABLE 2

### CONCENTRATIONS OF CHLORIDES & TDS IN GROUNDWATER CROWNQUEST OPERATING, LLC HAHN STATE WELL #1 LEA COUNTY, NEW MEXICO NMOCD REF # 1PR-2080

		METHOD: 4500/E 300	SM 2540C
SAMPLE	SAMPLE DATE	CHLORIDE (mg/L)	TOTAL DISSOLVED SOILDS (mg/L)
MW-1	04/06/09	502	1,160
	07/09/09	1,310	-
	10/22/09	497	-
	03/25/10	184	-
	06/01/10	69	-
	09/10/10	217	-
	11/18/10	67	-
MW-2	04/06/09	69.9	473
	07/09/09	88.3	-
	10/22/09	125	-
	03/25/10	173	-
	06/01/10	234	
	09/10/10	<125	-
	11/18/10	205	-
	NEW STREET		With Display to Links
MW-3	04/06/09	59.7	446
	07/09/09	55.3	-
	10/22/09	69.3	-
	03/25/10	80.9	-
	06/01/10	84.6	-
	09/10/10	130	-
	11/18/10	110	-
in the second	and the second second	A Constant of the	
NMOCD CRITER	RIA	250	10,000



# Analytical and Quality Control Report

Doug Vaughan Crownquest Operating, LLC 303 Veterans Airpark Lane, Ste. 5100 P.O. Box 53310 Midland, TX, 79710

Report Date: December 5, 2008

Work Order: 8120315

Project Location:Hahn State No. 1 Mid PitProject Name:Hahn State No. 1Project Number:Hahn State No. 1

Kansas E-10317

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
181053	Background Sample North	soil	2008-12-01	13:30	2008-12-03
181054	Background Sample South	soil	2008-12-01	13:35	2008-12-03
181055	Background Sample East	soil	2008-12-01	13:20	2008-12-03
181056	Background Sample West	soil	2008-12-01	13:25	2008-12-03
181057	Mid-Pit @ 9'	soil	2008-12-01	11:40	2008-12-03
181058	Mid-Pit @ 9' w/wall mix	soil	2008-12-01	11:50	2008-12-03

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 19 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director

Standard Flags

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

# Case Narrative

Samples for project Hahn State No. 1 were received by TraceAnalysis, Inc. on 2008-12-03 and assigned to work order 8120315. Samples for work order 8120315 were received intact at a temperature of 4.4 deg. C.

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

Test	Method
BTEX	S 8021B
Chloride (Titration)	SM 4500-Cl B
TPH DRO	Mod. 8015B
TPH GRO	S 8015B

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 8120315 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.

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Report Date: December 5, 2008 Hahn State No. 1 Work Order: 8120315 Hahn State No. 1

# **Analytical Report**

# Sample: 181053 - Background Sample North

Laboratory: Lubbock Analysis: BTEX QC Batch: 54808 Prep Batch: 46847			Analytical Date Analy Sample Pre	yzed:	S 8021B 2008-12-03 2008-12-03		Prep Mer Analyzed Prepared	By: ER	35
			RI	,					
Parameter	Flag		Result	t	Units	1	Dilution	R	٢L
Benzene			< 0.0100	)	mg/Kg		1	0.010	00
Toluene			<().()1()(	)	mg/Kg		1	0.010	00
Ethylbenzene			< 0.0100	)	mg/Kg		1	0.010	00
Xylene			< 0.0100	)	mg/Kg		1	0.010	00
						Spike	Percent	Recovery	у
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotoluene (TFT)			0.938	mg/Kg	1	1.00	94	59 - 136.	1
4-Bromofluorobenzene (			1.28	mg/Kg	1	1.00	128	54.4 - 176	5.2

#### Sample: 181053 - Background Sample North

Chloride		55.2	mg/Kg	10	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54831 46871	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-04 2008-12-03	Prep Method: Analyzed By: Prepared By:	RG

# Sample: 181053 - Background Sample North

DRO		<50.0	mg/Kg	1	50.0
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54825 46867	Analytical Method: Date Analyzed: Sample Preparation:	Mod. 8015B 2008-12-03 2008-12-03	Prep Method: Analyzed By: Prepared By:	MN

Report Date: De Hahn State No.	,	08		Order: 8120315 in State No. 1		0	umber: 5 of 19 No. 1 Mid Pit
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		102	mg/Kg	1	100	102	57.5 - 139

# Sample: 181053 - Background Sample North

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54809 46847		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-12-03 2008-12-03		Prep Me Analyze Preparec	d By: ER
			RL					
Parameter	Flag		Result		Units		Dilution	RL
GRO			<1.00		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue	ene (TFT)		0.875	mg/Kg	1	1.00	88	55.3 - 161.9
4-Bromofluor	obenzene (4-BFB)		1.16	mg/Kg	1	1.00	116	45.6 - 214.7

# Sample: 181054 - Background Sample South

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54808 46847			Analytical Date Anal Sample Pr	yzed:	S 8021B 2008-12-03 2008-12-03		Prep Mer Analyzed Prepared	By:	S 5035 ER ER
Trep Daten.	10011					2000-12-05		Trepared	Dy.	DIC
Parameter		Flag		RI Resul	-	Units	1	Dilution		RL
Benzene		0		< 0.010		mg/Kg		1		0.0100
Toluene				< 0.010	0	mg/Kg		1		0.0100
Ethylbenzene				< 0.010	0	mg/Kg		1		0.0100
Xylene				< 0.010	0	mg/Kg		1		0.0100
							Spike	Percent	Re	covery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery		imits
Trifluorotolue	ene (TFT)			1.03	mg/Kg	1	1.00	103	59	- 136.1
	obenzene (4-Bl	FB)		1.34	mg/Kg	1	1.00	134	54.4	- 176.2

Report Date: December 5, 2008	Work Order: 8120315	Page Number: 6 of 19
Hahn State No. 1	Hahn State No. 1	Hahn State No. 1 Mid Pit

#### Sample: 181054 - Background Sample South

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54831	Date Analyzed:	2008-12-04	Analyzed By:	RG
Prep Batch:	46871	Sample Preparation:	2008-12-03	Prepared By:	RG
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		45.7 1	ng/Kg	10	3.25

# Sample: 181054 - Background Sample South

	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
DRO			<50.0	mg/I	Kg	1	50.0
Parameter	Fla	5	RL Result	Uni		Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54825 46867		Analytical Me Date Analyze Sample Prepa	d: 2008-1	2-03	Analyz	fethod: N/A ed By: MN ed By: MN

# Sample: 181054 - Background Sample South

Lubbock TPH GRO 54809 46847		Date Ana	lyzed:	S 8015B 2008-12-03 2008-12-03		Analyze	d By: ER
		RL					
Flag		Result		Units		Dilution	RL
		<1.00		mg/Kg		1	1.00
				5.1	Spike	Percent	Recovery
	Flag	Result	Units	Dilution	Amount	Recovery	Limits
ene (TFT)		0.976	mg/Kg	1	1.00	98	55.3 - 161.9
obenzene (4-BFB)		1.24	mg/Kg	1	1.00	124	45.6 - 214.7
	TPH GRO 54809 46847	TPH GRO 54809 46847 Flag Flag ene (TFT)	TPH GROAnalytica54809Date Ana46847Sample PRLResultFlagResult<1.00	TPH GRO     Analytical Method:       54809     Date Analyzed:       46847     Sample Preparation:       RL     Result        <1.00	TPH GROAnalytical Method:S 8015B54809Date Analyzed:2008-12-0346847Sample Preparation:2008-12-03RLRLUnitsFlagResultUnits<1.00	TPH GRO       Analytical Method:       S 8015B         54809       Date Analyzed:       2008-12-03         46847       Sample Preparation:       2008-12-03         RL       RL       Sample Preparation:       Spike         Flag       Result       Units       Spike         Flag       Result       Units       Spike         Flag       Result       Units       Dilution       Amount         ene (TFT)       0.976       mg/Kg       1       1.00	TPH GROAnalytical Method:S 8015BPrep Method:54809Date Analyzed:2008-12-03Analyzed:46847Sample Preparation:2008-12-03PreparedRLRLDilutionDilution<1.00

Report Date: December 5, 2008	Work Order: 8120315	Page Number: 7 of 19
Hahn State No. 1	Hahn State No. 1	Hahn State No. 1 Mid Pit

# Sample: 181055 - Background Sample East

	ubbock								
Analysis: E	BTEX		Analytical	Method:	S 8021B		Prep Me	ethod:	S 5035
QC Batch: 5	4808		Date Anal	yzed:	2008-12-03		Analyze	d By:	ER
Prep Batch: 4	6847		Sample Pr	eparation:	2008-12-03		Prepare	d By:	ER
			RI	5					
Parameter	Flag		Resul	t	Units	1	Dilution		RL
Benzene			< 0.010	0	mg/Kg		1		0.0100
Toluene			< 0.010	0	mg/Kg		1		0.0100
Ethylbenzene			< 0.010	D	mg/Kg		1		0.0100
Xylene			< 0.010	0	mg/Kg		1		0.0100
						Spike	Percent	Re	covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	L	imits
Trifluorotoluene	e (TFT)		1.05	mg/Kg	1	1.00	105	59	- 136.1
4-Bromofluorob	ocnzene (4-BFB)		1.13	mg/Kg	1	1.00	113	54.4	- 176.2

#### Sample: 181055 - Background Sample East

Chloride		68.5	mg/Kg	10	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54831 46871	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-04 2008-12-03	Prep Method: Analyzed By: Prepared By:	RG

#### Sample: 181055 - Background Sample East

n-Triacontane	9	113	mg/Kg	1	100	113	57.5 - 139
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
DRO	· · · · · · · · · · · · · · · · · · ·		<50.0	mg/	Kg	1	50.0
Parameter	F	lag	RL Result	Un	its	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54825 46867		Analytical Me Date Analyze Sample Prepa	ed: 2008-1		Analyz	Method: N/A zed By: MN zed By: MN

Report Date: December 5, 2008	Work Order: 8120315	Page Number: 8 of 19
Hahn State No. 1	Hahn State No. 1	Hahn State No. 1 Mid Pit

# Sample: 181055 - Background Sample East

Laboratory:	Lubbock							
Analysis: TPH GRO QC Batch: 54809			Analytical Method: Date Analyzed:		S 8015B		Prep Me	ethod: S 5035
					2008-12-03		Analyzed	d By: ER
Prep Batch:	46847		Sample P	Sample Preparation:			Preparec	By: ER
			RL					
Parameter	Flag		Result		Units		Dilution	RL
GRO			<1.00		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		0.991	mg/Kg	1	1.00	99	55.3 - 161.9
4-Bromofluor	obenzene (4-BFB)		1.06	mg/Kg	1	1.00	106	45.6 - 214.7

# Sample: 181056 - Background Sample West

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54808 46847			Analytical Date Analy Sample Pre	zed:	S 8021B 2008-12-03 2008-12-03		Prep Me Analyzed Prepared	By: ER	
				RI						
Parameter		Flag		Result	t	Units	1	Dilution		RL
Benzene				< 0.0100	)	mg/Kg		1	0.0	100
Toluene				< 0.0100	)	mg/Kg		1	0.0	100
Ethylbenzene	2			< 0.0100	)	mg/Kg		1	0.0	100
Xylene				< 0.0100	)	mg/Kg		1	0.0	100
							Spike	Percent	Recover	ry
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	Limits	s
Trifluorotolu	ene (TFT)			1.01	mg/Kg	1	1.00	101	59 - 136	5.1
4-Bromofluor	robenzene (4-B	FB)		1.19	mg/Kg	1	1.00	119	54.4 - 17	6.2

# Sample: 181056 - Background Sample West

Chloride		89.4 1	ng/Kg	10	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	46871	Sample Preparation:	2008-12-03	Prepared By:	RG
QC Batch:	54831	Date Analyzed:	2008-12-04	Analyzed By:	RG
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Lubbock				

Report Date: December 5, 2008	Work Order: 8120315	Page Number: 9 of 19
Hahn State No. 1	Hahn State No. 1	Hahn State No. 1 Mid Pit

#### Sample: 181056 - Background Sample West

n-Triacontane	e	133	mg/Kg	1	100	133	57.5 - 139
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
DRO			<50.0	mg/!	Kg	1	50.0
Parameter	Flag	5	RL Result	Un	its	Dilution	RL
QC Batch: Prep Batch:	54825 46867		Date Analyze Sample Prepa	d: 2008-1	2-03	Analyz	ed By: MN ed By: MN
Laboratory: Analysis:	Lubbock TPH DRO		Analytical Me	ethod: Mod.	8015B	Prep M	fethod: N/A

# Sample: 181056 - Background Sample West

Laboratory:	Lubbock								
Analysis:	TPH GRO		Analytica	l Method:	S 8015B		Prep Me	thod: S 5035	
QC Batch:	54809		Date Ana	lyzed:	2008-12-03		Analyze		
Prep Batch:	46847		Sample P	reparation:	2008-12-03		Prepareo	By: ER	
			RL						
Parameter	Flag		Result		Units		Dilution	RL	
GRO			<1.00		mg/Kg		1	1.00	
						Spike	Percent	Recovery	
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotolue	ene (TFT)		0.942	mg/Kg	1	1.00	94	55.3 - 161.9	
4-Bromofluor	-Bromofluorobenzene (4-BFB)			mg/Kg	1	1.00	110	45.6 - 214.7	

# Sample: 181057 - Mid-Pit @ 9'

Laboratory:	Lubbock					
Analysis:	BTEX		Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	54808		Date Analyzed:	2008-12-03	Analyzed By:	ER
Prep Batch:	46847		Sample Preparation:	2008-12-03	Prepared By:	ER
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Benzene			< 0.0100	mg/Kg	1	0.0100
Toluene			< 0.0100	mg/Kg	1	0.0100
Ethylbenzene	9		< 0.0100	mg/Kg	1	0.0100
Xylene			0.0220	mg/Kg	1	0.0100

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery		overy	
Trifluorotolu	ene (TFT)		0.952	mg/Kg	1	1.00	95	59 -	136.1
4-Bromofluor	obenzene (4-BFB)		1.05	mg/Kg	1	1.00	105	54.4 -	176.2
G 1 10									
Sample: 18 Laboratory: Analysis: QC Batch: Prep Batch:	1057 - Mid-Pit @ 9 Lubbock Chloride (Titration) 54831 46871	3	Date Samp	rtical Method: Analyzed: le Preparation	2008-12-	-04	Analy	Method: zed By: red By:	N/A RG RG
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54831 46871	,	Date Samp RL	Analyzed:	2008-12- 1: 2008-12-	-04	Analy Prepa	zed By:	RG RG
Laboratory: Analysis: QC Batch:	Lubbock Chloride (Titration) 54831	,	Date Samp	Analyzed:	2008-12-	-04	Analy	zed By:	RG

# Sample: 181057 - Mid-Pit @ 9'

n-Triacontane	3	119	mg/Kg	1	100	119	57.5 - 139
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
					Spike	Percent	Recovery
DRO			<50.0	mg/I	Kg	1	50.0
Parameter	Fla	g	RL Result	Un	its	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54825 46867		Analytical Me Date Analyze Sample Prepa	d: 2008-1	2-03	Analyz	fethod: N/A ed By: MN ed By: MN

#### Sample: 181057 - Mid-Pit @ 9'

GRO	I tag	5.16	mg/Kg	1	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54809 46847	Analytical Method: Date Analyzed: Sample Preparation:	S 8015B 2008-12-03 2008-12-03	Prep Method: Analyzed By: Prepared By:	

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		0.861	mg/Kg	1	1.00	86	55.3 - 161.9
4-Bromofluorobenzene (4-BFB)		0.955	mg/Kg	1	1.00	96	45.6 - 214.7

#### Sample: 181058 - Mid-Pit @ 9' w/wall mix

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54808 46847			Analytical Date Anal Sample Pr		S 8021B 2008-12-03 2008-12-03		Prep Metho Analyzed B Prepared B		S 5035 ER ER
				RI	L					
Parameter		Flag		Resul	t	Units	I	Dilution		RL
Benzene				< 0.010	0	mg/Kg		1		0.0100
Toluene				< 0.010	0	mg/Kg		1		0.0100
Ethylbenzene				< 0.010	0	mg/Kg		1		0.0100
Xylene				< 0.010	0	mg/Kg		1		0.0100
							Spike	Percent	Rec	covery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	Li	mits
Trifluorotolue	ne (TFT)			0.933	mg/Kg	1	1.00	93	59 -	136.1
4-Bromofluor	obenzene (4-	BFB)		1.02	mg/Kg	1	1.00	102	54.4	- 176.2

# Sample: 181058 - Mid-Pit @ 9' w/wall mix

Chloride		12200	mg/Kg	100	3.25
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54831 46871	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-04 2008-12-03	Prep Method: Analyzed By: Prepared By:	RG

# Sample: 181058 - Mid-Pit @ 9' w/wall mix

Laboratory: Analysis:	Lubbock TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54825	Date Analyzed:	2008-12-03	Analyzed By:	
Prep Batch:	46867	Sample Preparation:	2008-12-03	Prepared By:	

Report Date: December 5, 2008 Hahn State No. 1				Order: 8120315 in State No. 1	Page Number: 12 of 1 Hahn State No. 1 Mid Pi		
Parameter	Fla	g	RL Result	Uni	ts	Dilution	RL
DRO		0	81.1	mg/H	Кg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		126	mg/Kg	1	100	126	57.5 - 139

# Sample: 181058 - Mid-Pit @ 9' w/wall mix

Laboratory: Analysis: QC Batch:	Lubbock TPH GRO 54809		Date Ana	5	S 8015B 2008-12-03		Prep Me Analyze	d By: ER
Prep Batch:	46847		Sample P	reparation:	2008-12-03		Preparec	By: ER
			RL					
Parameter	Flag		Result		Units		Dilution	RL
GRO			3.93		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		0.866	mg/Kg	1	1.00	87	55.3 - 161.9
4-Bromofluor	robenzene (4-BFB)		0.951	mg/Kg	1	1.00	95	45.6 - 214.7

# Method Blank (1) QC Batch: 54808

QC Batch: 54808 Prep Batch: 46847		Date An QC Prep	5	2008-12-03 2008-12-03			yzed By: ared By:	ER ER
			N	IDL				
Parameter	Flag		Re	sult	Un	its		RL
Benzene			< 0.00	)347	mg	/Kg		0.01
Toluene			< 0.00	)525	mg	/Kg		0.01
Ethylbenzene			< 0.00	607	mg	/Kg		0.01
Xylene			< 0.00	0724	mg	/Kg		0.01
					Spike	Percent	Reco	very
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Lim	its
Trifluorotoluene (TFT)		0.853	mg/Kg	1	1.00	85	69.3 -	110.2
4-Bromofluorobenzene (4-BFB)		0.924	mg/Kg	1	1.00	92	24.4 -	114.6

Report Date: December Hahn State No. 1	5, 2008		ork Order: 8 Hahn State N			Page Number: 13 o Hahn State No. 1 Mid		
Method Blank (1)	QC Batch: 54809							
QC Batch: 54809		Date Ana	*	08-12-03			yzed By:	
Prep Batch: 46847		QC Prepa	aration: 200	08-12-03		Prep	ared By:	ER
			MDL					
Parameter	Flag		Result		Un			RL
GRO			< 0.144		mg/	/Kg		1
Surrogate	Flag	Result	Units	Dilution	Spike	Percent Recovery		overy
Trifluorotoluene (TFT)		0.892	mg/Kg	1	1.00	89		108.5
4-Bromofluorobenzene (4	-BFB)	0.872	mg/Kg	1	1.00	87		105.8
QC Batch: 54825		Date Ana		8-12-03			zed By:	MN
QC Batch: 54825 Prep Batch: 46867 Parameter	Flag	Date Ana QC Prepa		8-12-03 8-12-03	Uni mg/	Prepa	vzed By: ared By:	MN MN RL 50
Prep Batch: 46867	Flag		MDL Result			Prepa	ared By:	MN RL
QC Batch: 54825 Prep Batch: 46867 Parameter DRO Surrogate Fla	g Result	QC Prepa	MDL Result <14.5 Dilut	8-12-03	mg/ Spike Amount	Prepa its Kg Percent Recovery	Rec	MN RL 50 overy mits
QC Batch: 54825 Prep Batch: 46867 Parameter DRO Surrogate Fla	g Result 103	QC Prepa	MDL Result <14.5 Dilut	8-12-03	mg/ Spike	Prepa its Kg Percent	Rec	MN RL 50 overy mits
QC Batch: 54825 Prep Batch: 46867 Parameter DRO	g Result	QC Prepa	MDL Result <14.5 Dilut	8-12-03	mg/ Spike Amount	Prepa its Kg Percent Recovery	Rec	MN RL 50 overy
QC Batch: 54825 Prep Batch: 46867 Parameter DRO Surrogate Fla n-Triacontane Method Blank (1) QC Batch: 54831	g Result 103	QC Prepa Units mg/Kg Date Ana	Iration: 200 MDL Result <14.5 Dilut 1	8-12-03 ion 8-12-04	mg/ Spike Amount	Prepa its Kg Percent Recovery 103 Analy	Rec Lin 72.4 yzed By:	MN RL 50 overy mits
QC Batch: 54825 Prep Batch: 46867 Parameter DRO Surrogate Fla n-Triacontane Method Blank (1) QC Batch: 54831	g Result 103	QC Prepa Units mg/Kg	Iration: 200 MDL Result <14.5 Dilut 1	8-12-03 ion	mg/ Spike Amount	Prepa its Kg Percent Recovery 103 Analy	Rec Lin 72.4	MN RL 50 overy mits - 150
QC Batch: 54825 Prep Batch: 46867 Parameter DRO Surrogate Fla n-Triacontane Method Blank (1) QC Batch: 54831	g Result 103	QC Prepa Units mg/Kg Date Ana	Iration: 200 MDL Result <14.5 Dilut 1	8-12-03 ion 8-12-04	mg/ Spike Amount	Prepa its Kg Percent Recovery 103 Analy Prepa	Rec Lin 72.4 yzed By:	MN RL 50 overy mits - 150 RG

# Laboratory Control Spike (LCS-1)

QC Batch:	54808	Date Analyzed:	2008-12-03	Analyzed By:	ER
Prep Batch:	46847	QC Preparation:	2008-12-03	Prepared By:	ER

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	LCS				Spil	ke N	latrix		F	lec.
Param	Resu	lt T	Units	Dil.	Amo	unt I	Result	Rec.	L	imit
Benzene	0.910	6 m	ng/Kg	1	1.0	0 <0	0.00347	92	80.5	- 115.5
Toluene	0.980	0 m	ng/Kg	1	1.0	0 <0	0.00525	98	80 -	114.7
Ethylbenzene	1.03	m	ng/Kg	1	1.0	0 <0	0.00607	103	77.1	- 114.2
Xylene	3.20	m	ng/Kg	1	3.0	0 <0	0.00724	107	77.6	- 114.5
Percent recovery is based on the s	pike result.	RPD is	based	on the spik	e and s	pike duplie	cate resul	t.		
	LCSD			Spike		trix		Rec.		RPD
Param	Result	Units	Dil.	Amount		sult Re		imit	RPD	Limit
Benzene		mg/Kg	1	1.00		00347 9		- 115.5	3	20
Toluene		mg/Kg	1	1.00		00525 10		- 114.7	3	20
Ethylbenzene		mg/Kg	1	1.00		00607 10		- 114.2	4	20
Xylene	3.31	mg/Kg	1	3.00	<0.0	00724 11	.0 77.6	- 114.5	3	20
Percent recovery is based on the s	pike result.	RPD is	based	on the spik	e and s	spike duplie	cate resul	t.		
	LCS	LC	CSD			Spike	LCS	LCSD	F	lec.
Surrogate	Resu		sult	Units	Dil.	Amount	Rec.	Rec.		imit
Trifluorotoluene (TFT)	0.93		.00	mg/Kg	1	1.00	94	100	74.2	- 114.7
4-Bromofluorobenzene (4-BFB)	1.03	1.	.07	mg/Kg	1	1.00	103	107	69.7	- 118.7
Laboratory Control Spike (LO QC Batch: 54809 Prep Batch: 46847	CS-1)		nalyzeo eparatio						yzed By ared By	
									т	lec.
	LC	S			Sp	oike	Matrix		ſ	uec.
	Resu	ilt	Units	Dil.	Am	ount	Result	Rec.	L	imit
		ilt	Units mg/Kg	Dil.	Am	ount		Rec. 92	L	imit
GRO	Resu 9.1	ilt 7 r	mg/Kg	1	Am 10	ount 0.0	Result <0.144	92	L	imit
Param GRO Percent recovery is based on the s	Resu 9.1 spike result. LCSD	ılt 7 r RPD is	mg/Kg based	1 on the spik Spike	Am 10 e and s Ma	ount 0.0 spike duplie atrix	Result <0.144 cate resul	92 t. Rec.	L 73.1	imit - 114.7 RPD
GRO Percent recovery is based on the s Param	Resu 9.1 spike result. LCSD Result	ılt 7 r RPD is Units	mg/Kg based Dil.	1 on the spik Spike Amount	Am 10 e and s Ma t Re	ount 0.0 spike duplie atrix sult Ree	Result <0.144 cate resul E. L	92 t. Rec. imit	L 73.1 RPD	imit - 114.7 RPD Limit
GRO Percent recovery is based on the s Param GRO	Resu 9.1 spike result. LCSD Result 10.1	ılt 7 r RPD is Units mg/Kg	mg/Kg based Dil.	1 on the spik Spike Amount 10.0	Am 10 e and s Ma t Re <0	ount 0.0 spike duplie atrix sult Ree .144 10	Result           <0.144	92 t. Rec. imit - 114.7	L 73.1	imit - 114.7 RPD
GRO Percent recovery is based on the s Param	Resu 9.1 spike result. LCSD Result 10.1	ılt 7 r RPD is Units mg/Kg	mg/Kg based Dil.	1 on the spik Spike Amount 10.0	Am 10 e and s Ma t Re <0	ount 0.0 spike duplie atrix sult Ree .144 10	Result           <0.144	92 t. Rec. imit - 114.7	L 73.1 RPD	imit - 114.7 RPD Limit
GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s	Resu 9.1 spike result. LCSD Result 10.1 spike result. LCS	llt 7 r RPD is Units mg/Kg RPD is 5 LC	mg/Kg based Dil. 5 1 based CSD	1 on the spik Spike Amount 10.0 on the spik	$ \begin{array}{c} \text{Am} \\ 10 \\ \text{e and s} \\ \text{Ma} \\ \text{t} \\ \text{Re} \\ <0 \\ \text{e and s} \\ \end{array} $	ount 0.0 spike duplic atrix sult Rec .144 10 spike duplic Spike	Result <0.144 cate resul c. L 1 73.1 cate resul LCS	92 t. Rec. imit - 114.7 t. LCSD	L 73.1 RPD 10	r 114.7 RPD Limit 20
GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s Surrogate	Resu 9.1 spike result. LCSD Result 10.1 spike result. LCS Resu	llt RPD is Units mg/Kg RPD is G LC lt Re	Dil. based based cSD sult	1 on the spike Amount 10.0 on the spik Units	$\begin{array}{c} \text{Am} \\ 10 \\ \text{e and s} \\ \text{Ma} \\ \text{t} \\ \text{Re} \\ <0 \\ \text{e and s} \\ \text{Dil.} \end{array}$	ount 0.0 spike duplic sult Rec .144 10 spike duplic Spike Amount	Result <0.144 cate resul c. L 1 73.1 cate resul LCS Rec.	92 t. Rec. - 114.7 t. LCSD Rec.	L 73.1 RPD 10 F L	r PD Limit 20 Rec. imit
GRO Percent recovery is based on the s Param GRO	Resu 9.1 spike result. LCSD Result 10.1 spike result. LCS	Ilt RPD is Units mg/Kg RPD is S LC It Re 2 0.9	mg/Kg based Dil. 5 1 based CSD	1 on the spik Spike Amount 10.0 on the spik	$ \begin{array}{c} \text{Am} \\ 10 \\ \text{e and s} \\ \text{Ma} \\ \text{t} \\ \text{Re} \\ <0 \\ \text{e and s} \\ \end{array} $	ount 0.0 spike duplic atrix sult Rec .144 10 spike duplic Spike	Result <0.144 cate resul c. L 1 73.1 cate resul LCS	92 t. Rec. imit - 114.7 t. LCSD	L 73.1 RPD 10 F L 77.4	RPD Limit 20 Rec.

#### Laboratory Control Spike (LCS-1)

QC Batch:	54825	Date Analyzed:	2008-12-03	Analyzed By:	MN
Prep Batch:	46867	QC Preparation:	2008-12-03	Prepared By:	MN

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		LCS				Spike	Mat	rix		Rec.
Param		Resul	t I	Units	Dil.	Amount	Res	ult Rec.		Limit
DRO		306	m	ng/Kg	1	250	<14	4.5 122	73	.4 - 123
Percent recovery is base	d on the spi	ke result. I	RPD is b	based on	the spike	and spike d	uplicate	result.		
		LCSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO		304	mg/Kg	1	250	<14.5	122	73.4 - 123	1	20
Percent recovery is base	d on the spi	ke result. I	RPD is b	ased on	the spike	and spike d	uplicate i	result.		
	LCS	LCSD				Spike	LCS	LCSD		Rec.
Surrogate	Result	Result	U	nits	Dil.	Amount	Rec			Limit
n-Triacontane	103	107		Kg/Kg	1	100	103			.5 - 139
Param		LCS Result	: II	nits	Dil.	Spike Amount	Matri Resu			Rec. imit
Chloride		99.5		g/Kg	1	100	<1.8			- 104.4
Percent recovery is base Param	d on the spi	ke result. I LCSD Result			the spike Spike Amount	and spike du Matrix Result	iplicate i Rec.	result. Rec. Limit	RPD	RPD Limit
Chloride			ng/Kg	1	100	<1.80		96.5 - 104.4	2	20
Percent recovery is base Matrix Spike (MS-1) QC Batch: 54808 Prep Batch: 46847		Sample: 181		alyzed:	2008-12-	-03	iplicate i	Ana	yzed By ared By	
Param		MS Result	Un	iits	Dil.	Spike Amount	Matrix Result			lec. imit
Benzene		1.13		/Kg	1	1.00	< 0.003			- 130.7
Toluene		1.19		/Kg	1	1.00	< 0.005		46.9	- 135.4
Ethylbenzene		1.26		/Kg	1	1.00	< 0.006	07 126		- 149.3
Xylene		3.93		/Kg	1	3.00	< 0.007	24 131	48.8	- 150.9
Percent recovery is base continued		ke result. F	PD is b	ased on	the spike a	and spike du	iplicate r	result.		

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matrix spikes continued											
Danam	MSD Result	Units	Dil.	Spike Amount	Mat Res		Rec.		lec. imit	RPD	RPD Limit
Param	nesuit	Units	DII.	Amount	nes	un	nec.	L		ILF D	Linnt
	MSD			Spike	Mat	trix		F	lec.		RPD
Param	Result	Units	Dil.	Amount	Res	ult	Rec.	Li	imit	RPD	Limit
Benzene	1.04	mg/Kg	1	1.00	< 0.00	0347	104	42.9	- 130.7	8	20
Toluene	1.09	mg/Kg	1	1.00	< 0.00		109	46.9	- 135.4	9	20
Ethylbenzene	1.14	mg/Kg	1	1.00	< 0.00		114		- 149.3	10	20
Xylene	3.55	mg/Kg	1	3.00	< 0.0	0724	118	48.8	- 150.9	10	20
Percent recovery is based on the s	pike result	. RPD is	based	on the spike	e and sp	pike d	uplicat	e result			
	M	S N	1SD			Sp	ike	MS	MSD	I	Rec.
Surrogate	Res	ult R	esult	Units	Dil.	Am	ount	Rec.	Rec.	L	imit
Trifluorotoluene (TFT)	1.0	)5 ]	.06	mg/Kg	1		1	105	106	63.2	- 128.3
4-Bromofluorobenzene (4-BFB)	1.3	30 1	.15	mg/Kg	1		1	130	115	61.5	- 161.2
QC Batch: 54809 Prep Batch: 46847			Analyzed							yzed By ared By	
Prep Batch: 46847	М	QC Pr	eparatio	on: 2008-1	2-03 Spi			trix	Prep	ared By	ER ER
Prep Batch: 46847 Param	Res	QC Pr S ult	eparatio Units	Dil.	2-03 Spi Amo	ount	Re	sult	Prep Rec.	ared By I L	: ER Rec. .imit
Prep Batch: 46847 Param		QC Pr S ult	eparatio	on: 2008-1	2-03 Spi	ount	Re		Prep	ared By I L	ER ER
Prep Batch: 46847	Res 11	QC Pr S ult .6	Units mg/Kg	Dil.	2-03 Spi Amo 10	ount	Re <0	sult .144	Prep Rec. 116	ared By I L	: ER Rec. .imit
Prep Batch: 46847 Param GRO	Res 11	QC Pr S ult .6	Units mg/Kg	Dil.	2-03 Spi Amo 10	ount .0 pike d	Re <0	sult .144 e result	Prep Rec. 116	ared By I L	: ER Rec. .imit
Prep Batch: 46847 Param GRO	Res 11 pike result	QC Pr S ult .6	Units mg/Kg	Dil. 1 on the spike	2-03 Spi Amo 10 e and sp Mat	ount .0 pike d trix	Re <0	sult .144 e result R	Prep Rec. 116	ared By I L	: ER Rec. .imit - 155.8
Prep Batch: 46847 Param GRO Percent recovery is based on the s	Res 11 pike result MSD	QC Pr S ult . RPD is	Units mg/Kg based Dil.	Dil. Dil. 1 on the spike	2-03 Spi Amo 10 e and sp Mat	ount 0.0 pike d trix sult	Re <0 luplicat	sult .144 e result R Li	Prep Rec. 116 	ared By I L 48.9	: ER Rec. .imit - 155.8 RPD
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param	Res 11 pike result MSD Result 13.8	QC Pr S ult .6 . RPD is Units mg/Kg	Units mg/Kg based Dil. g 1	Dil. Dil. 1 on the spike Amount 10.0	2-03 Spi Amo 10 e and sp Res <0.	pike d trix sult 144	Re <0 luplicat Rec. 138	sult .144 e result R Li 48.9 -	Prep <u>Rec.</u> <u>116</u>  ec. mit - 155.8	ared By I L 48.9 RPD	Rec. imit - 155.8 RPD Limit
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param GRO	Res 11 pike result MSD Result 13.8	QC Pr S ult .6 . RPD is <u>Units</u> mg/Kg . RPD is	Units mg/Kg based Dil. g 1	Dil. Dil. 1 on the spike Amount 10.0	2-03 Spi Amo 10 e and sp Res <0.	ount 0.0 pike d trix sult 144 pike d	Rec. 138 uplicat	sult .144 e result R Li 48.9 -	Prep <u>Rec.</u> <u>116</u>  ec. mit - 155.8	I L 48.9 RPD 17	: ER Rec. .imit - 155.8 RPD Limit 20
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s	Res 11 pike result MSD Result 13.8 pike result	QC Pr S ult .6 . RPD is mg/Kg . RPD is S M	Units mg/Kg based Dil. g 1 based	Dil. Dil. 1 on the spike Amount 10.0	2-03 Spi Amo 10 e and sp Res <0.	ount 0.0 pike d trix sult 144 pike d Sp	Re <0 luplicat Rec. 138	sult .144 e result R Li 48.9 e result	Prep Rec. 116  ec. mit - 155.8 	I L 48.9 RPD 17	Rec. imit - 155.8 RPD Limit
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT)	Res 11 pike result MSD Result 13.8 pike result M	QC Pr S ult .6 . RPD is <u>mg/Kg</u> . RPD is S M ult R	Units mg/Kg based Dil. g 1 based fSD	Dil. 1 on the spike Amount 10.0 on the spike	2-03 Spi Amo 10 e and sp Mat Res <0. e and sp	pike d trix sult 144 pike d Sp Ame	Re <0 uplicat Rec. 138 uplicat	sult .144 e result R Li 48.9 e result MS	Prep <u>Rec.</u> <u>116</u>  ec. mit - 155.8  MSD	I L 48.9 RPD 17 I L	: ER Rec. .imit - 155.8 RPD Limit 20 Rec.
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT)	Res 11 pike result MSD Result 13.8 pike result M: Res	QC Pr S ult .6 . RPD is <u>mg/Kg</u> . RPD is S M ult R 94	Units mg/Kg based Dil. g 1 based fSD esult	Dil. Dil. 1 on the spike Amount 10.0 on the spike Units	2-03 Spi Amo 10 e and sp Mat Res <0. e and sp Dil.	punt 0.0 pike d trix sult 144 pike d Sp Amo	Re <0 luplicat 138 luplicat ike ount	sult .144 e result R Li 48.9 e result MS Rec.	Prep Rec. 116  ec. mit - 155.8  MSD Rec.	RPD 17 17 17 148.9	: ER Rec. .imit - 155.8 RPD Limit 20 Rec. .imit
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Matrix Spike (MS-1) Spiked	Res 11 pike result MSD Result 13.8 pike result MSD Result 0.99	QC Pr S ult .6 . RPD is <u>mg/Kg</u> . RPD is S M ult R 94 1 .1 1 .1	Units mg/Kg based Dil. g 1 based fSD esult .14 .26	Dil. 1 on the spike Amount 10.0 on the spike Units mg/Kg mg/Kg	2-03 Spi Amo 10 e and sp Mat Res <0. e and sp Dil. 1 1	punt 0.0 pike d trix sult 144 pike d Sp Amo	Re <0 luplicat 138 luplicat ike ount 1	sult .144 e result R Li 48.9 - e result MS Rec. 99	Prep Rec. 116  ec. mit - 155.8  MSD Rec. 114 126	RPD 17 17 11 141.8 50.3	: ER Rec. imit - 155.8 RPD Limit 20 Rec. imit - 145.4 - 197.8
Prep Batch: 46847 Param GRO Percent recovery is based on the s Param GRO Percent recovery is based on the s Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	Res 11 pike result MSD Result 13.8 pike result MSD Result 13.8 13.8 13.8 13.8 13.8 14.8	QC Pr S ult .6 . RPD is <u>mg/Kg</u> . RPD is S M ult R 94 1 .1 1 .1 .1 1 .1 .1 1 .1 .1 1 .1 .1 1 .1 .1 .1 1 .1 .1 .1 1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1 .1	Units mg/Kg based Dil. g 1 based fSD esult 14	Dil. Dil. 1 on the spike Amount 10.0 on the spike Units mg/Kg mg/Kg mg/Kg	2-03 Spi Amo 10 e and sp Mat Res <0. e and sp Dil. 1 1 2-03	punt 0.0 pike d trix sult 144 pike d Sp Amo	Re <0 luplicat 138 luplicat ike ount 1	sult .144 e result R Li 48.9 - e result MS Rec. 99	Prep Rec. 116  ec. mit - 155.8  MSD Rec. 114 126 Analy	RPD 17 17 17 148.9	: ER Rec. imit - 155.8 RPD Limit 20 Rec. imit - 145.4 - 197.8

continued ...

Report Date: December 5, 2008 Hahn State No. 1				Work Ore Hahn S		Page Number: 17 of 1 Hahn State No. 1 Mid P					
matrix spikes conti	inued					<b>a</b> 11					
Danam			MS	Tuite	Dil	Spike		atrix	Dee		Rec.
Param		R	esult	Units	Dil.	Amoun	t R	esult	Rec.	1	Limit
			MS			Spike	М	atrix			Rec.
Param			esult	Units	Dil.	Amoun		esult	Rec.		imit
DRO			266	mg/Kg	1	250	1	17.1	100	0	- 197
Percent recovery is	based on t	he spike resul	t. RPD is	s based on	the spike a	nd spike di	uplicate r	result.			
		MSD			Spike	Matrix		Rec			RPD
Param		Result	Unit	s Dil.	Amount		Rec.	Limi			Limit
DRO		266	mg/H		250	17.1	100	0 - 19			20
Percent recovery is	based on t										20
		IS MS					MS		ISD	D	
Surrogate		sult Res		Units	Dil.	Spike Amount	Rec		Rec.		ec. mit
n-Triacontane		01 10		mg/Kg	1	100	101		103		- 139
QC Batch: 5483		-		Analyzed: reparation:	2008-12-0 2008-12-0				Analyze Preparec	-	RG RG
QC Batch: 5483 Prep Batch: 4687	1		QC Pr IS	reparation:	2008-12-0	)3 Spike	Matri	x	Prepareo	l By: Re	RG c.
QC Batch: 5483 Prep Batch: 4687 Param	1	Re	QC Pr IS sult	units	2008-12-0 Dil.	03 Spike Amount	Resul	x t R	Prepareo	l By: Re Lin	RG c. nit
QC Batch: 5483 Prep Batch: 4687 Param Chloride	1	Re 12	QC Pr IS sult 600	Units mg/Kg	2008-12-0 Dil. 100	93 Spike Amount 500	Resul 12200	x lt R D 8	Prepareo	l By: Re	RG c. nit
QC Batch: 5483 Prep Batch: 4687 Param Chloride	1	Re 12 he spike resul	QC Pr IS sult 600	Units mg/Kg	2008-12-0 Dil. 100 the spike an	93 Spike Amount 500 nd spike du	Resul 12200	x 1t R 0 8 vesult.	Prepareo	l By: Re Lim 74.7 -	RG c. hit 123.2
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is	1	Re 12 he spike resul MSD	QC Pr IS sult 600 t. RPD is	Units mg/Kg s based on	2008-12-0 Dil. 100 the spike an Spike	Spike Amount 500 nd spike du Matrix	Resul 12200 uplicate r	x <u>t R</u> 0 8 result. Rec.	Preparec ec. 80	l By: Re Lim 74.7 -	RG c. hit 123.2 RPD
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param	1	Re 12 he spike resul MSD Result	QC Pr IS sult 600 t. RPD is Units	Units mg/Kg s based on Dil.	2008-12-0 Dil. 100 the spike an Spike Amount	Spike Amount 500 nd spike du Matrix Result	Resul 12200 Iplicate r Rec.	x t R o 8 result. Rec. Limit	Prepared ec. 80 RI	l By: Re <u>Lim</u> 74.7 -	RG c. hit 123.2 RPD Limit
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride	1 1 based on t	Re 12 he spike resul MSD Result 12700	QC Pr IS sult 600 t. RPD is Units mg/Kg	Units mg/Kg s based on Dil. g 100	2008-12-0 Dil. 100 the spike an Spike Amount 500	Spike Amount 500 nd spike du Matrix Result 12200	Resul 12200 iplicate r Rec. 100 7	x 1t R 0 8 result. Rec. Limit 74.7 - 123	Prepared ec. 80 RI	l By: Re <u>Lim</u> 74.7 -	RG c. hit 123.2 RPD
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride Percent recovery is	1 based on t based on t	Re 12 he spike resul MSD Result 12700	QC Pr IS sult 600 t. RPD is Units mg/Kg	Units mg/Kg s based on Dil. g 100	2008-12-0 Dil. 100 the spike an Spike Amount 500	Spike Amount 500 nd spike du Matrix Result 12200	Resul 12200 iplicate r Rec. 100 7	x 1t R 0 8 result. Rec. Limit 74.7 - 123	Prepared ec. 80 RI	l By: Re <u>Lim</u> 74.7 -	RG c. hit 123.2 RPD Limit
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride Percent recovery is Standard (CCV-	1 based on t based on t 1)	Re 12 he spike resul MSD Result 12700	QC Pr IS sult 600 t. RPD is Units mg/Kg t. RPD is	Units mg/Kg s based on Dil. g 100	2008-12-0 Dil. 100 the spike an Spike Amount 500	Spike Amount 500 nd spike du Matrix Result 12200 nd spike du	Resul 12200 iplicate r Rec. 100 7	x t R 0 8 result. Rec. Limit 74.7 - 123 result.	Prepared ec. 80 RI	I By: Re Lim 74.7 -	RG iit 123.2 RPD Limit 20
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride Percent recovery is Standard (CCV-	1 based on t based on t 1)	Re 12 he spike resul MSD Result 12700	QC Pr IS sult 600 t. RPD is Units mg/Kg t. RPD is Date A CC	Units mg/Kg s based on Dil. g 100 s based on Analyzed: Vs	2008-12-0 Dil. 100 the spike an Spike Amount 500 the spike an 2008-12-03 CCVs	Spike Amount 500 nd spike du Matrix Result 12200 nd spike du	Resul 12200 Iplicate r Rec. 100 7 Iplicate r	x t R 0 8 result. Rec. Limit 74.7 - 123 result.	Prepared ec. 80 RI 3.2 Analyzed	I By: Re Lim 74.7 -	RG iit 123.2 RPD Limit 20 ER
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride Percent recovery is Standard (CCV- QC Batch: 54808	1 based on t based on t 1)	Re 12 he spike resul MSD Result 12700 he spike resul	QC Pr IS sult 600 t. RPD is Units mg/Kg t. RPD is Date A CC <sup>V</sup> Tru	Units mg/Kg s based on Dil. g 100 s based on Analyzed: Vs	2008-12-0 Dil. 100 the spike an Spike Amount 500 the spike an 2008-12-03 CCVs Found	Spike Amount 500 nd spike du Matrix Result 12200 nd spike du CCVs Percent	Resul 12200 Iplicate r Rec. 100 7 Iplicate r	x t R result. Rec. Limit 74.7 - 123 result. Percent Recovery	Prepared ec. 30 RI 3.2 Analyzed	I By: Re Lim 74.7 - PD I	RG c. iit 123.2 RPD Limit 20 ER te
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QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride Percent recovery is Standard (CCV- QC Batch: 54808 Param Benzene	1 based on t based on t 1)	Re 12 he spike resul MSD Result 12700 he spike resul Units mg/Kg	QC Pr IS sult 600 t. RPD is Units mg/Kg t. RPD is Date A CC <sup>V</sup> Tru Con 0.10	Units mg/Kg s based on Dil. g 100 s based on Analyzed: Vs te tc. 00	2008-12-0 Dil. 100 the spike an Spike Amount 500 the spike an 2008-12-03 CCVs Found Conc. 0.0903	Spike Amount 500 nd spike du Matrix Result 12200 nd spike du CCVs Percent Recover 90	Resul 12200 Iplicate r Rec. 100 7 Iplicate r	x t R result. Rec. Limit 74.7 - 123 result. Percent Recovery Limits 80 - 120	Prepared ec. 30 RI 3.2 Analyzed y	I By: Re Lim 74.7 - PD I By: Da Anal 2008-	RG c. <u>iii</u> 123.2 RPD Limit 20 ER ER te yzed 12-03
QC Batch: 5483 Prep Batch: 4687 Param Chloride Percent recovery is Param Chloride Percent recovery is Standard (CCV- QC Batch: 54808 Param Benzene Foluene	1 based on t based on t 1)	Re 12 he spike resul MSD Result 12700 he spike resul Units mg/Kg mg/Kg	QC Pr IS sult 600 t. RPD is Units mg/Kg t. RPD is Date A CC <sup>V</sup> Tru Con 0.10 0.10	Units mg/Kg s based on Dil. g 100 s based on Analyzed: Vs te tc. 00 00	2008-12-0 Dil. 100 the spike an Spike Amount 500 the spike an 2008-12-03 CCVs Found Conc. 0.0903 0.0910	Spike Amount 500 nd spike du Matrix Result 12200 nd spike du CCVs Percent Recover 90 91	Resul 12200 Iplicate r Rec. 100 7 Iplicate r	x t R result. Rec. Limit 74.7 - 123 result. Percent Recovery Limits 80 - 120 80 - 120	Prepared ec. 30 RI 3.2 Analyzed y	Re Lim 74.7 - PD 1 By: Da Anal 2008- 2008-	RG c. iit 123.2 RPD Limit 20 ER te yzed 12-03 12-03
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Report Dat Hahn State	te: December 5, e No. 1	2008		rk Order: 8120 ahn State No.			umber: 18 of 19 e No. 1 Mid Pi
Standard	(CCV-2)						
QC Batch:	54808		Date Anal	yzed: 2008-12-	-03	Anal	yzed By: ER
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0891	89	80 - 120	2008-12-03
Toluene		mg/Kg	0.100	0.0898	90	80 - 120	2008-12-03
Ethylbenze	ne	mg/Kg	0.100	0.0888	89	80 - 120	2008-12-03
Xylene		mg/Kg	0.300	0.271	90	80 - 120	2008-12-03
Standard	(CCV-1)						
QC Batch:	54809		Date Analy	yzed: 2008-12-	-03	Anal	yzed By: ER
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.969	97	80 - 120	2008-12-03
Standard	(CCV-2)						
QC Batch:	54809		Date Analy	yzed: 2008-12-	-03	Anal	yzed By: ER
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.890	89	80 - 120	2008-12-03
Standard	(CCV-1)						
000.0	54825		Date Analy	zed: 2008-12-	-03	Analy	vzed By: MN
QC Batch:			CCVs	CCVs	CCVs	Percent	
QC Batch:							
QC Batch:			True	Found	Percent	Recovery	Date
QC Batch: Param	Flag	Units		Found Conc.	Percent Recovery	Recovery Limits	Date Analyzed

QC Batch: 54825

Date Analyzed: 2008-12-03

Analyzed By: MN

Report Dat Hahn State	e: December No. 1	5, 2008		ork Order: 812 Hahn State No.		0	umber: 19 of 19 e No. 1 Mid Pit
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		mg/Kg	250	275	110	85 - 115	2008-12-03
Standard (	(ICV-1)						
QC Batch:	54831		Date Ana	lyzed: 2008-12	2-04	Anal	yzed By: RG
			ICVs	ICVs	ICVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	102	102	85 - 115	2008-12-04
Standard (	(CCV-1)						
QC Batch:	54831		Date Ana	lyzed: 2008-12	2-04	Anal	yzed By: RG
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
		mg/Kg	100	98.4	98	85 - 115	2008-12-04

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	-	Company Name:	5	Invoice to: (If different from above)	Project #:	Project Location (including state):		LAB USE ONLY	Bkan	81053 NG	3	SS Eas	56 WE	en operation	SIOS MI	SS Mid	A CONTRACT	Relinquished by A	Relinquished by:	Relinquished by:	Submittal of samples constitutes agreement to Terms and Constituents listed on reverse side of



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

Doug Vaughan Crownquest Operating, LLC 303 Veterans Airpark Lane, Ste. 5100 P.O. Box 53310 Midland, TX, 79710

Report Date: December 5, 2008

Work Order: 8120424 

Project Name: Hahn State #1 Project Number: Pit Bottom @ 10 ft.

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
181228	Center Area	soil	2008-12-02	12:10	2008-12-04
181229	W #1	soil	2008-12-02	12:25	2008-12-04
181230	W #2	soil	2008-12-02	12:40	2008-12-04
181231	E #1	soil	2008-12-02	12:55	2008-12-04
181232	E #2	soil	2008-12-02	13:10	2008-12-04
181233	SW Corner	soil	2008-12-02	13:25	2008-12-04
181234	SE Corner	soil	2008-12-02	13:45	2008-12-04
181235	S Center	soil	2008-12-02	14:05	2008-12-04
181236	NW Corner	soil	2008-12-02	14:25	2008-12-04
181237	NE Corner	soil	2008-12-02	14:40	2008-12-04

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 24 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director

#### **Standard Flags**

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

# Case Narrative

Samples for project Hahn State #1 were received by TraceAnalysis, Inc. on 2008-12-04 and assigned to work order 8120424. Samples for work order 8120424 were received intact at a temperature of 3.8 deg. C.

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

Test	Method
BTEX	S 8021B
Chloride (Titration)	SM 4500-Cl B
TPH DRO	Mod. 8015B
TPH GRO	S 8015B

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 8120424 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.

Page 3 of 24

Report Date: December 5, 2008 Pit Bottom @ 10 ft.

#### Work Order: 8120424 Hahn State #1

Page Number: 4 of 24

# Analytical Report

Sample: 181228 - Center Area

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54841 46881		Analytical Date Analy Sample Pre	zed:	S 8021B 2008-12-04 2008-12-04		Prep Me Analyzed Prepared	l By:	S 5035 ER ER
			RI						
Parameter	Flag		Result	5	Units	I	Dilution		RL
Benzene			< 0.0100	)	mg/Kg		1		0.0100
Toluene			< 0.0100	)	mg/Kg		1		0.0100
Ethylbenzene			< 0.0100	)	mg/Kg		1		0.0100
Xylene			< 0.0100	)	mg/Kg		1		0.0100
						Spike	Percent	Re	covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	L	imits
Trifluorotolue	ene (TFT)		1.05	mg/Kg	1	1.00	105	59	- 136.1
	obenzene (4-BFB)		1.10	mg/Kg	1	1.00	110	54.4	- 176.2

#### Sample: 181228 - Center Area

Chloride		6030	mg/Kg	100	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54857 46897	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-05 2008-12-04	Prep Method: Analyzed By: Prepared By:	RG

#### Sample: 181228 - Center Area

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54856 46896	Analytical Method: Date Analyzed: Sample Preparation:	Mod. 8015B 2008-12-04 2008-12-04	Prep Method: Analyzed By: Prepared By:	MN
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
DRO		<50.0	mg/Kg	1	50.0

Report Date: De Pit Bottom @ 10		08		rk Order: 81204 Hahn State #1	Page Number: 5 of 24		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane	1	142	mg/Kg	1	100	142	57.5 - 139

#### Sample: 181228 - Center Area

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54843 46881	Date Ana	l Method: lyzed: reparation:	S 8015B 2008-12-04 2008-12-04		Prep Me Analyze Prepared	d By: ER	
Trep Daten.	10001			reparation.	2000 12 01		1 Topulo	<i>Dj</i> . <i>Di</i>
			RL					
Parameter	Flag		Result		Units		Dilution	RL
GRO			<1.00		mg/Kg		1	1.00
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)		1.26	mg/Kg	1	1.00	126	55.3 - 161.9
	obenzene (4-BFB)		1.22	mg/Kg	1	1.00	122	45.6 - 214.7

### Sample: 181229 - W #1

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54841 46881			Analytical Date Analy Sample Pr	yzed:	S 8021B 2008-12-04 2008-12-04		Prep Me Analyzed Prepared	By: ER
				RI	5				
Parameter	F	lag		Resul	t	Units	I	Dilution	RL
Benzene				< 0.0100	)	mg/Kg		1	0.0100
Toluene				< 0.0100	)	mg/Kg		1	0.0100
Ethylbenzene				< 0.0100	)	mg/Kg		1	0.0100
Xylene				< 0.010	)	mg/Kg		1	0.0100
							Spike	Percent	Recovery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolue	ene (TFT)			1.09	mg/Kg	1	1.00	109	59 - 136.1
	obenzene (4-BFI	3)		1.16	mg/Kg	1	1.00	116	54.4 - 176.2

### Sample: 181229 - W #1

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54857	Date Analyzed:	2008-12-05	Analyzed By:	RG
Prep Batch:	46897	Sample Preparation:	2008-12-04	Prepared By:	RG

<sup>1</sup>High surrogate recovery. Sample non-detect, result bias high.

Report Date: 1 Pit Bottom @	December 5, 200 10 ft.	18		rk Order: 8120 Hahn State #1	Page Number: 6 of 2			
Parameter	Flag		RL Result	U	nits	Dilution		$\mathbf{RL}$
Chloride	loride		2780 mg/Kg			100		3.25
Sample: 1812	229 - W #1							
Analysis:	Lubbock FPH DRO 54856		Analytical Me Date Analyze		8015B -12-04		Method: zed By:	N/A MN
Prep Batch: 4	6896		Sample Prepa	ration: 2008-	12-04	Prepar	red By:	MN
Parameter	Flag	5	RL Result		nits	Dilution		RL
DRO			<50.0	mg	/Kg	1		50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery		covery mits
n-Triacontane		130	mg/Kg	1	100	130	57.5	5 - 139

# Sample: 181229 - W #1

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54843 46881		Analytical Method: Date Analyzed: Sample Preparation:		S 8015B 2008-12-04 2008-12-04		Prep Me Analyze Preparec	d By: ER
			RL					
Parameter	Flag		Result		Units		Dilution	RL
GRO			<1.00		mg/Kg		1	1.00
G			Dereit	TT. 1.		Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotolu	ene (TFT)		1.31	mg/Kg	1	1.00	131	55.3 - 161.9
4-Bromofluor	obenzene (4-BFB)		1.26	mg/Kg	1	1.00	126	45.6 - 214.7

# Sample: 181230 - W #2

Laboratory: Analysis:	Lubbock BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	54841	Date Analyzed:	2008-12-04	Analyzed By:	ER
Prep Batch:	46881	Sample Preparation:	2008-12-04	Prepared By:	

Report Date: December 5, 2008 Pit Bottom @ 10 ft.			Work Order: 8120424 Hahn State #1			Page Number: 7 of 2		
2			RI					DI
Parameter	Flag		Resul	t	Units	1	Dilution	RL
Benzene			< 0.010	D	mg/Kg		1	0.0100
Toluene			< 0.010	D	mg/Kg		1	0.0100
Ethylbenzene			< 0.0100	C	mg/Kg		1	0.0100
Xylene			< 0.0100	0	mg/Kg		1	0.0100
						Spike	Percent	Recovery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TI	FT)		0.964	mg/Kg	1	1.00	96	59 - 136.1
4-Bromofluorobenze	ene (4-BFB)		1.02	mg/Kg	1	1.00	102	54.4 - 176.2

### Sample: 181230 - W #2

Prep Batch:	46897	Sample Preparation: RL		Prepared By:	
Laboratory: Analysis: QC Batch:	Lubbock Chloride (Titration) 54857	Analytical Method: Date Analyzed:	SM 4500-Cl B 2008-12-05	Prep Method: Analyzed By:	,

### Sample: 181230 - W #2

n-Triacontane	9	122	mg/Kg	1	100	122	57.5 - 139
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
					Spike	Percent	Recovery
DRO			<50.0	m	g/Kg	1	50.0
Parameter	Fla	ıg	RL Result	1	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54856 46896		Analytical Me Date Analyze Sample Prepa	d: 200	d. 8015B 8-12-04 8-12-04		fethod: N/A ed By: MN ed By: MN

### Sample: 181230 - W #2

Laboratory: Analysis:	Lubbock TPH GRO	Analytical Method:	S 8015B	Prep Method:	S 5035
QC Batch: Prep Batch:	54843 46881	Date Analyzed: Sample Preparation:	2008-12-04 2008-12-04	Analyzed By: Prepared By:	

Report Date: December 5, 2008 Pit Bottom @ 10 ft.				Work Orden Hahn St		Page Number: 8 of 24			
Parameter	Flag		RL Result		Units		Dilution	RL	
GRO			<1.00		mg/Kg		1	1.00	
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (7 4-Bromofluorobenz			1.11 1.13	mg/Kg mg/Kg	1 1	1.00 1.00	111 113	55.3 - 161.9 45.6 - 214.7	

### Sample: 181231 - E #1

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54841 46881			Analytical Date Anal Sample Pr	yzed:	S 8021B 2008-12-04 2008-12-04		Prep Me Analyzed Prepared	d By:	S 5035 ER ER
				RI						
Parameter		Flag		Resul	t	Units	1	Dilution		$\mathbf{RL}$
Benzene				< 0.010	0	mg/Kg		1		0.0100
Toluene				< 0.010	D	mg/Kg		1		0.0100
Ethylbenzene				< 0.010	0	mg/Kg		1		0.0100
Xylene				< 0.010	0	mg/Kg		1		0.0100
							Spike	Percent	Re	covery
Surrogate			Flag	Result	Units	Dilution	Amount	Recovery	L	imits
Trifluorotolue	ene (TFT)			0.990	mg/Kg	1	1.00	99	59	- 136.1
	obenzene (4-B	FB)		1.08	mg/Kg	1	1.00	108	54.4	- 176.2

### Sample: 181231 - E #1

Chloride		4680	mg/Kg	100	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54857 46897	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-05 2008-12-04	Prep Method: Analyzed By: Prepared By:	/

Report Date: Pit Bottom	: December 5, 2008 @ 10 ft.			Work Order Hahn St			Page N	Number:	9 of 2
Sample: 18	1231 - E #1								
Laboratory:	Lubbock								
Analysis:	TPH DRO		Analytica	l Method:	Mod. 8015	бB	Prep 1	Method:	N/A
QC Batch:	54856		Date Ana	lyzed:	2008-12-04	1	Analy	zed By:	MN
Prep Batch:	46896		Sample P	reparation:	2008-12-04	ł	Prepa	red By:	MN
			RL						
Parameter	Flag		Result		Units		Dilution		RI
DRO	0		<50.0		mg/Kg		1		50.0
						0.11		D	
		D		D:1		Spike	Percent		covery
Surrogate n-Triacontane	Flag	Result 121	Units mg/Kg		ution 1	Amount 100	Recovery 121		imits 5 - 139
Sample: 181	1231 - E #1								
	Lubbock								
Laboratory:	LUDDOCK								
			Applation	Mathada	C 2015D		Drop Me	thode	C 502
Analysis:	TPH GRO		Analytical Data Ana		S 8015B		Prep Me		
Analysis: QC Batch:	TPH GRO 54843		Date Ana	lyzed:	2008-12-04		Analyze	d By:	ER
Analysis: QC Batch:	TPH GRO		Date Ana					d By:	
Analysis: QC Batch: Prep Batch:	TPH GRO 54843		Date Ana	lyzed:	2008-12-04		Analyze	d By:	ER
Analysis: QC Batch: Prep Batch:	TPH GRO 54843		Date Ana Sample Pr	lyzed:	2008-12-04		Analyze	d By:	
Analysis: QC Batch: Prep Batch: Parameter	TPH GRO 54843 46881		Date Ana Sample Pr RL	lyzed:	2008-12-04 2008-12-04		Analyze Prepare	d By:	ER ER
Analysis: QC Batch:	TPH GRO 54843 46881		Date Ana Sample Pr RL Result	lyzed:	2008-12-04 2008-12-04 Units		Analyze Prepared Dilution	d By: d By:	ER ER RI
Analysis: QC Batch: Prep Batch: Parameter GRO	TPH GRO 54843 46881	Flag	Date Ana Sample Pr RL Result	lyzed:	2008-12-04 2008-12-04 Units		Analyze Prepared Dilution 1	d By: d By: Rec	ER ER RI 1.00
Analysis: QC Batch: Prep Batch: Parameter GRO Surrogate Trifluorotolue	TPH GRO 54843 46881 Flag	Flag	Date Ana Sample Pr RL Result <1.00	lyzed: reparation:	2008-12-04 2008-12-04 Units mg/Kg	Spike	Analyze Prepared Dilution 1 Percent	d By: d By: Rec Lii	ER ER RI 1.00

### Sample: 181232 - E #2

Laboratory: Analysis: QC Batch:	Lubbock BTEX 54841		Analytical Method: Date Analyzed:	S 8021B 2008-12-04	Prep Method: Analyzed By:	S 5035 ER
Prep Batch:	46881		Sample Preparation:	2008-12-04	Prepared By:	ER
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Benzene			< 0.0100	mg/Kg	1	0.0100
Toluene			< 0.0100	mg/Kg	1	0.0100
Ethylbenzene	9		< 0.0100	mg/Kg	1	0.0100
Xylene			< 0.0100	mg/Kg	1	0.0100

Report Date: December 5, 2008 Pit Bottom @ 10 ft.		Work Order: 8120424 Hahn State #1					Page Number: 10 of 24		
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits		
Trifluorotoluene (TFT)		0.983	mg/Kg	1	1.00	98	59 - 136.1		
4-Bromofluorobenzene (4-BFB)		1.05	mg/Kg	1	1.00	105	54.4 - 176.2		

### Sample: 181232 - E #2

Chloride		8700	mg/Kg	100	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54857 46897	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-05 2008-12-04	Prep Method: Analyzed By: Prepared By:	RG

# Sample: 181232 - E #2

n-Triacontane	9	135	mg/Kg	1	100	135	57.5 - 139
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
DRO			<50.0	mg/l		1	50.0
Parameter	Fla	<b>J</b>	RL Result	Un		Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54856 46896		Analytical Me Date Analyze Sample Prepa	d: 2008-1	2-04		fethod: N/A ed By: MN ed By: MN

# Sample: 181232 - E #2

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54843 46881	Analytical Method: Date Analyzed: Sample Preparation:	S 8015B 2008-12-04 2008-12-04	Prep Method: Analyzed By: Prepared By:	ER
Parameter	Flag	RL Result	Units	Dilution	RL
GRO	0	<1.00	mg/Kg	1	1.00

Report Date: December 5, 200 Pit Bottom @ 10 ft.	08	Work Order: 8120424 Hahn State #1			Page Number: 11 of 24		
C	Disc	Denult	11	Dilution	Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery 122	Limits 55.3 - 161.9
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB	)	1.22 1.16	mg/Kg mg/Kg	1	1.00 1.00	122	45.6 - 214.7
Sample: 181233 - SW Corr	ner						
Laboratory: Lubbock Analysis: BTEX QC Batch: 54841 Prep Batch: 46881		Analytical Date Anal Sample Pr		S 8021B 2008-12-04 2008-12-04		Prep Me Analyzee Preparec	d By: ER
		R	L				
Parameter Fl	ag	Resul	t	Units	I	Dilution	RL
Benzene		< 0.010	0	mg/Kg		1	0.0100
Toluene		< 0.010	0	mg/Kg		1	0.0100
Ethylbenzene		< 0.010	0	mg/Kg		1	0.0100
Xylene		< 0.010	0	mg/Kg		1	0.0100
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
	'0	0.005	/17/		1.00	0.1	FO 100 1

mg/Kg	1.02	4-Bromofluorobenzene (4-BFB)
01 0		

# Sample: 181233 - SW Corner

Trifluorotoluene (TFT)

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54857 46897	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-05 2008-12-04	Prep Method: Analyzed By: Prepared By:	RG
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		677	mg/Kg	100	3.25

mg/Kg

1

1

1.00

1.00

94

102

59 - 136.1

54.4 - 176.2

0.935

#### Sample: 181233 - SW Corner

Laboratory: Analysis:	Lubbock TPH DRO	Analytical Method:	Mod. 8015B	Prep Method:	N/A
QC Batch:	54856	Date Analyzed:	2008-12-04	Analyzed By:	
Prep Batch:	46896	Sample Preparation:	2008-12-04	Prepared By:	

Report Date: December 5, 2008 Pit Bottom @ 10 ft.		8		Work Order: 8120424 Hahn State #1			Page Number: 12 of 24		
	_		RL						
Parameter	Flag		Result		Units		Dilution	RI	
DRO			<50.0		mg/Kg		1	50.0	
						Spike	Percent	Recovery	
Surrogate	Flag	Result	Units	Dil	ution	Amount	Recovery	Limits	
n-Triacontane		133	mg/Kg	5	1	100	133	57.5 - 139	
Sample: 181	233 - SW Corn	ier							
	Lubbock				CONTER			0.500	
	TPH GRO			l Method:	S 8015B 2008-12-04		Prep Me		
	54843		Date Ana Sample P	reparation:			Analyzed Prepared	-	
Prep Batch:	46881		Sample P	reparation:	2000-12-04		Flepared	by. En	
			RL						
Parameter	Flag		Result		Units		Dilution	RI	
GRO			<1.00		mg/Kg		1	1.00	
						Spike	Percent	Recovery	
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery	Limits	
Trifluorotolue	ne (TFT)	0	1.14	mg/Kg	1	1.00	114	55.3 - 161.9	
	obenzene (4-BFB)	)	1.10	mg/Kg	1	1.00	110	45.6 - 214.	
Laboratory: Analysis: QC Batch:	234 - SE Corne Lubbock BTEX 54841 46881	er	Analytical Date Anal Sample Pr	yzed:	S 8021B 2008-12-04 2008-12-04		Prep Me Analyzed Prepared	By: ER	
			RI	L					
Parameter	Fla	ag	Resul		Units		Dilution	RI	
Benzene			< 0.010	<b>T</b>	mg/Kg		1	0.010	
Toluene			< 0.010		mg/Kg		1	0.010	
Ethylbenzene			< 0.010		mg/Kg		1	0.010	
Xylene			< 0.010	0	mg/Kg		1	0.010	

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.09	mg/Kg	1	1.00	109	59 - 136.1
4-Bromofluorobenzene (4-BFB)		1.15	mg/Kg	1	1.00	115	54.4 - 176.2

Report Date: December 5, 2008 Pit Bottom @ 10 ft.		Work Order: 81 Hahn State	Page Number: 13 of 2		
Sample: 18	1234 - SE Corner				
Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	54857	Date Analyzed:	2008-12-05	Analyzed By:	RG
Prep Batch:	46897	Sample Preparation:	2008-12-04	Prepared By:	RG
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		1120 1	mg/Kg	100	3.25

# Sample: 181234 - SE Corner

n-Triacontane	9	125	mg/Kg	1	100	125	57.5 - 139
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
DRO			<50.0	mg/I	Kg	1	50.0
Parameter	F	lag	RL Result	Uni	its	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH DRO 54856 46896		Analytical M Date Analyze Sample Prepa	ed: 2008-1	2-04	Analyz	Method: N/A zed By: MN zed By: MN

# Sample: 181234 - SE Corner

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54843 46881		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-12-04 2008-12-04		Prep Me Analyze Prepared	d By: ER
Parameter	Flag		RL Result		Units		Dilution	RL
GRO			<1.00		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolue 4-Bromofluor	ene (TFT) obenzene (4-BFB)		$\begin{array}{c} 1.32 \\ 1.27 \end{array}$	mg/Kg mg/Kg	1 1	1.00 1.00	132 127	55.3 - 161.9 45.6 - 214.7

Report Date: December 5, 2008	Work Order: 8120424	Page Number: 14 of 24
Pit Bottom @ 10 ft.	Hahn State #1	

# Sample: 181235 - S Center

Laboratory:	Lubbock								
Analysis:	BTEX		Analytical	Method:	S 8021B		Prep Me	thod:	S 5035
QC Batch:	54841		Date Anal	yzed:	2008-12-04		Analyzed	1 By:	$\mathbf{ER}$
Prep Batch:	46881		Sample Pr	eparation:	2008-12-04		Prepared	By:	ER
			RI	L					
Parameter	Flag		Resul	t	Units	I	Dilution		RL
Benzene			< 0.010	0	mg/Kg		1		0.0100
Toluene			< 0.010	0	mg/Kg		1		0.0100
Ethylbenzene	•		< 0.010	0	mg/Kg		1		0.0100
Xylene			< 0.010	0	mg/Kg		1		0.0100
						Spike	Percent	Re	covery
Surrogate		Flag	Result	Units	Dilution	Amount	Recovery		imits
Trifluorotolue	ene (TFT)		1.03	mg/Kg	1	1.00	103	59	- 136.1
	obenzene (4-BFB)		1.11	mg/Kg	1	1.00	111	54.4	- 176.2

# Sample: 181235 - S Center

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 54857 46897	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-05 2008-12-04	Prep Method: Analyzed By: Prepared By:	RG
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		14300	mg/Kg	100	3.25

# Sample: 181235 - S Center

Parameter DRO	Flag		RL Result <50.0	Units mg/Kg		Dilution 1	RL 50.0	
					Spike	Percent	Recovery	
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits	

Report Date: December 5, 200 Pit Bottom @ 10 ft.	)8		Work Orde Hahn St	er: 8120424 tate #1		Page Nu	mber:	15 of 24
Sample: 181235 - S Center								
Laboratory: Lubbock								
Analysis: TPH GRO		Analytica	l Method:	S 8015B		Prep Me	thod:	S 5035
QC Batch: 54843		Date Ana	lyzed:	2008-12-04		Analyzed	l By:	ER
Prep Batch: 46881		Sample P	reparation:	2008-12-04		Preparec	By:	ER
		RL						
Parameter Flag	,	Result		Units		Dilution		RL
GRO	)	<1.00		mg/Kg		1		1.00
				0/-0				
					Spike	Percent	Re	ecovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	I	imits
Trifluorotoluene (TFT)		1.24	mg/Kg	1	1.00	124	55.3	3 - 161.9
4-Bromofluorobenzene (4-BFB)	)	1.20	mg/Kg	1	1.00	120	45.6	5 - 214.7
Sample: 181236 - NW Cor Laboratory: Lubbock Analysis: BTEX QC Batch: 54841 Prep Batch: 46881	ner	Analytical Date Anal Sample Pr	yzed:	S 8021B 2008-12-04 2008-12-04		Prep Me Analyzed Prepared	l By:	S 5035 ER ER
		RI				- 6		
Parameter Fla	ag	Resul		Units		Dilution		RL
Benzene		< 0.010		mg/Kg		1		0.0100
Toluene		< 0.010		mg/Kg		1		0.0100
Ethylbenzene		< 0.010		mg/Kg		1		0.0100
Xylene		< 0.010	0	mg/Kg		1		0.0100
Surrogate	Flag	Result	Units	Dilution	Spike	Percent		covery

Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.937	mg/Kg	1	1.00	94	59 - 136.1
4-Bromofluorobenzene (4-BFB)		1.03	mg/Kg	1	1.00	103	54.4 - 176.2

# Sample: 181236 - NW Corner

Chloride		1740	mg/Kg	100	3.25
Parameter	Flag	RL Result	Units	Dilution	RL
Analysis: QC Batch: Prep Batch:	Chloride (Titration) 54857 46897	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-05 2008-12-04	Prep Method: Analyzed By: Prepared By:	RG
Laboratory:	Lubbock				

Report Date: December 5, 2008 Pit Bottom @ 10 ft.	Work Order: 8120424 Hahn State #1	Page Number: 16 of 24
Sample: 181236 - NW Corner		

#### Sample: 181236 - NW Corner

Laboratory:	Lubbock							
Analysis:	TPH DRO		Analytical Me				fethod: N/A	
QC Batch:	54856		Date Analyze	d: 2008-1	2-04	Analyz	ed By: MN	1
Prep Batch:	46896		Sample Prepa	aration: 2008-1	2-04	Prepar	ed By: MN	1
			RL					
Parameter	Flag	5	Result	Un	its	Dilution	R	L
DRO			<50.0	mg/	Kg	1	50.	.0
					Spike	Percent	Recovery	y
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits	
n-Triacontane	e	120	mg/Kg	1	100	120	57.5 - 13	9

# Sample: 181236 - NW Corner

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54843 46881		Date Ana	l Method: lyzed: reparation:	S 8015B 2008-12-04 2008-12-04		Prep Me Analyze Preparec	d By: ER
			RL					
Parameter	Flag		Result		Units		Dilution	RL
GRO			<1.00		mg/Kg		1	1.00
Surrogate		Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotolu	ene (TFT)	0	1.18	mg/Kg	1	1.00	118	55.3 - 161.9
	obenzene (4-BFB)		1.11	mg/Kg	1	1.00	111	45.6 - 214.7

# Sample: 181237 - NE Corner

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock BTEX 54841 46881		Analytical Method: Date Analyzed: Sample Preparation:	S 8021B 2008-12-04 2008-12-04	Prep Method: Analyzed By: Prepared By:	S 5035 ER ER
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Benzene			< 0.0100	mg/Kg	1	0.0100
Toluene			< 0.0100	mg/Kg	1	0.0100
Ethylbenzene	2		< 0.0100	mg/Kg	1	0.0100
Xylene			< 0.0100	mg/Kg	1	0.0100

Report Date: December 5, 2008 Pit Bottom @ 10 ft.				Work Order Hahn St	Page Number: 17 of 24				
Surrogate		Flag	Result	ult Units	Dilution	Spike Amount	Percent Recovery		overy nits
Trifluorotolu			1.04	mg/Kg	1	1.00	104	59 -	136.1
4-Bromofluorobenzene (4-BFB)			1.14	mg/Kg	1	1.00	114	54.4	176.2
Sample: 18	1237 - NE Corner								
Laboratory:	Lubbock								
Analysis:	Chloride (Titration)		Analytical Method: SM 4500-Cl B				Prep M		N/A
QC Batch:	54857			Analyzed:	2008-12-		Analyze	-	RG
Prep Batch: 46897			Sample Preparation: 2008-12-04				Prepare	ed By:	RG
			RL						
Parameter	Flag		Result		Units		Dilution		RL
Chloride			1300		mg/Kg		100		3.25
Sample: 18 Laboratory: Analysis:	1237 - NE Corner Lubbock TPH DRO		Analytics	l Method:	Mod. 8015B	1	Prep M	ethod.	N/A
QC Batch:	54856		Date Ana		2008-12-04		Analyze		MN
Prep Batch:	46896			reparation:	2008-12-04		Prepare		MN
			RL						
Parameter	Flag		Result		Units		Dilution		RL
DRO			<50.0		mg/Kg		1		50.0

DRO			<50.0	mg/H	Kg	1	50.0
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Triacontane		133	mg/Kg	1	100	133	57.5 - 139

### Sample: 181237 - NE Corner

GRO		<1.00	mg/Kg	1	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock TPH GRO 54843 46881	Analytical Method: Date Analyzed: Sample Preparation:	S 8015B 2008-12-04 2008-12-04	Prep Method: Analyzed By: Prepared By:	S 5035 ER ER

Report Date: December 5, 2008 Pit Bottom @ 10 ft.			Work Order Hahn Sta			Page Nu	mber: 18 of 24
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	Tiag	1.28	mg/Kg	1	1.00	128	55.3 - 161.9
4-Bromofluorobenzene (4-BFB)		1.24	mg/Kg	1	1.00	123	45.6 - 214.7
Method Blank (1) QC Ba	atch: 54841						
QC Batch: 54841		Date An	alyzed: 20	008-12-04		Analy	yzed By: ER
Prep Batch: 46881			paration: 20	008-12-04			ared By: ER
			ME				
Parameter	Flag		Resu	lt	Un	its	RL
Benzene			< 0.003	47	mg/	Kg	0.01
Foluene			< 0.005	25	mg	Kg	0.01
Ethylbenzene			< 0.006	07	mg	Kg	0.01
Xylene			< 0.007	24	mg	Kg	0.01
					Spike	Percent	Recovery
Surrogate	Flag	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)		0.796	mg/Kg	1	1.00	80	69.3 - 110.2
-Bromofluorobenzene (4-BFB)		0.853	mg/Kg	1	1.00	85	24.4 - 114.6
Method Blank (1) QC Ba QC Batch: 54843 Prep Batch: 46881	atch: 54843	Date An QC Prep		008-12-04 008-12-04			yzed By: ER ared By: ER
			MDL				DI
Parameter GRO	Flag		Result <0.144	······································	Uni mg/		RL 1
311.0			<b>CO.144</b>			цъв	1
Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
		0.986	mg/Kg	1	1.00	99	83.3 - 108.5
Trifluorotoluene (TFT)							

# Method Blank (1) QC Batch: 54856

QC Batch:	54856	Date Analyzed:	2008-12-04	Analyzed By:	MN
Prep Batch:	46896	QC Preparation:	2008-12-04	Prepared By:	MN

Report Date: Dec Pit Bottom @ 10		008		Work Or Hahn	rder: 812 State #			Page I	Number: 1	9 of 24
					DL					
Parameter		Flag		Res			Uni			RL
DRO				<1	4.5		mg/	Kg		50
						Spil	æ	Percent	Red	covery
Surrogate	Flag	Result	Units	5	Dilution	Amo		Recovery		mits
n-Triacontane		113	mg/K	g	1	100	)	113	72.4	- 150
Method Blank ( QC Batch: 5483 Prep Batch: 4689	57	Batch: 54857	Date An QC Pre	nalyzed: paration:	2008-12 2008-12				dyzed By: pared By:	RG SS
				MI	DL					
Parameter		Flag		Res			Unit			RL
Chloride				<1.	.80		mg/H	Кg		3.25
LaboratoryConQC Batch:5484Prep Batch:4688	41	(LCS-1)	Date Ar QC Pre	nalyzed: paration:	2008-12 2008-12				alyzed By: pared By:	
		LCS				Spike	Matri	x	R	ec.
Param		Resul		nits	Dil.	Amount	Result			nit
Benzene		0.888	2 m			1.00	< 0.003	47 89	80.5 -	
				g/Kg	1					115.5
Toluene		0.883	3 mg	g/Kg	1	1.00	< 0.005	25 88	80 -	115.5 114.7
Toluene Ethylbenzene		0.883 0.848	3 mg	g/Kg g/Kg	1 1	1.00 1.00	<0.005 <0.006	25 88 07 85	80 - 77.1 -	115.5 114.7 114.2
Toluene Ethylbenzene Xylene		0.883 0.844 2.68	3 mg 3 mg mg	g/Kg g/Kg g/Kg	1 1 1	1.00 1.00 3.00	<0.005 <0.006 <0.007	25     88       07     85       24     89	80 - 77.1 -	115.5 114.7
Toluene Ethylbenzene Xylene	s based on t	0.883 0.844 2.68 he spike result.	3 mg 3 mg mg	g/Kg g/Kg g/Kg	1 1 1 the spike	1.00 1.00 3.00 and spike d	<0.005 <0.006 <0.007	25         88           07         85           24         89           result.	80 - 77.1 -	$115.5 \\ 114.7 \\ 114.2 \\ 114.5$
Toluene Ethylbenzene Xylene Percent recovery is	s based on t	0.883 0.844 2.68 he spike result. LCSD	3 mg 3 mg RPD is	g/Kg g/Kg g/Kg based on	1 1 the spike Spike	1.00 1.00 3.00 and spike d Matrix	<0.005 <0.006 <0.007 uplicate r	25 88 07 85 24 89 result. Rec.	80 - 77.1 - 77.6 -	115.5 114.7 114.2 114.5 RPD
Toluene Ethylbenzene Xylene Percent recovery is Param	s based on t	0.883 0.844 2.68 he spike result. LCSD Result	3 mi 3 mi 8 mi Mi RPD is Units	g/Kg g/Kg based on Dil. A	1 1 the spike Spike	1.00 1.00 3.00 and spike d Matrix Result	<0.005 <0.006 <0.007 uplicate r Rec.	25 88 07 85 24 89 result. Rec. Limit	80 - 77.1 - 77.6 - RPD	115.5 114.7 114.2 114.5 RPD Limit
Toluene Ethylbenzene Xylene Percent recovery is Param Benzene	s based on t	0.883 0.844 2.68 he spike result. LCSD Result 0.904	3 mg 3 mg RPD is Units mg/Kg	g/Kg g/Kg g/Kg based on Dil. A 1	1 1 the spike Spike 1.00	1.00 1.00 3.00 • and spike d Matrix Result <0.00347	<0.005 <0.006 <0.007 uplicate r Rec. 90	25 88 07 85 24 89 result. Rec. Limit 80.5 - 115.5	80 - 77.1 - 77.6 - <u>RPD</u> 2	115.5 114.7 114.2 114.2 114.5 RPD Limit 20
Toluene Ethylbenzene Xylenc Percent recovery is Param Benzene Toluene Ethylbenzene	s based on t	0.885 0.845 2.68 he spike result. LCSD Result 0.904 0.908	3 mi 3 mi 8 mi Mi RPD is Units	g/Kg g/Kg based on Dil. A	1 1 the spike Spike	1.00 1.00 3.00 and spike d Matrix Result	<0.005 <0.006 <0.007 uplicate r Rec. 90 91	25 88 07 85 24 89 result. Rec. Limit	80 - 77.1 - 77.6 - RPD	115.5 114.7 114.2 114.5 RPD Limit

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

2.78

Xylene

	LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)	0.807	0.755	mg/Kg	1	1.00	81	76	74.2 - 114.7
4-Bromofluorobenzene (4-BFB)	0.853	0.852	mg/Kg	1	1.00	85	85	69.7 - 118.7

3.00

< 0.00724

93

77.6 - 114.5

4

20

1

Pit Bottom @ 10 ft.	3		Work Or Hahn	State #			I	age IV	umber:	20
Laboratory Control Spike ()	LCS-1)									
QC Batch: 54843		Date An	alyzed:	2008-12	2-04			Anal	yzed By	1:
Prep Batch: 46881		QC Prep		2008-12	2-04				ared By	
	LCS	5			Spike	Matr	ix		1	Re
Param	Resu		nits	Dil.	Amount	Resu		Rec.		in
GRO	9.60		g/Kg	1	10.0	< 0.1		97	73.1	-
Percent recovery is based on the	e spike result.	RPD is b	ased on t	he spike	and spike d	luplicate	result.			
	LCSD			Spike	Matrix		Rec			
Param	Result	Units		Amount	Result	Rec.	Lim		RPD	
GRO	9.63	mg/Kg	1	10.0	<0.144	96	73.1 - 1	114.7	0	
Percent recovery is based on the	e spike result.	RPD is b	ased on t	he spike	and spike d	luplicate	result.			
	LCS	LCS	D		Spi	ike L	.CS	LCSD	1	Re
Surrogate	Resul						lec.	Rec.		in
Trifluorotoluene (TFT)	1.08		0	/Kg			108	111	77.4	
4-Bromofluorobenzene (4-BFB)	0.97	0.95	9 mg	/Kg	1 1.0	00	98	96	70.3	-
Laboratory Control Spike (1 QC Batch: 54856 Prep Batch: 46896		Date Ana QC Prep	~	2008-12 2008-12					yzed By ared By:	
QC Batch: 54856		QC Prep	~		2-04	Mat	trix			
QC Batch: 54856	LC Resi	QC Prep	~			Mat Res			ared By	R
QC Batch: 54856 Prep Batch: 46896	LC	QC Prep S ilt U	aration:	2008-12	2-04 Spike	100	ult	Prepa	ared By	R
QC Batch: 54856 Prep Batch: 46896 Param	LC Rest	QC Prep S ilt U ) m	Units g/Kg	2008-12 Dil. 1	Spike Amount 250	Res <1	ult 4.5	Prepa	ared By	R
QC Batch: 54856 Prep Batch: 46896 Param DRO Percent recovery is based on the	LC Rest 300 e spike result. LCSD	QC Prep S ilt U RPD is b	units g/Kg ased on t	2008-12 Dil. 1 he spike Spike	Spike Amount 250 and spike d Matrix	Res <1	ult 4.5 result. Ree	Prepa Rec. 120	ared By	Ro Lin .4
QC Batch: 54856 Prep Batch: 46896 Param DRO Percent recovery is based on the Param	LC Resu 300 e spike result. LCSD Result	QC Prep S ilt U RPD is b Units	Units g/Kg ased on t Dil.	2008-12 Dil. 1 .he spike Spike Amount	Spike Amount 250 and spike d Matrix : Result	Res <1 luplicate Rec.	ult 4.5 result. Red Lim	Prepa Rec. 120 c. nit	Ared By 73 RPD	Ro Lin .4
QC Batch: 54856 Prep Batch: 46896 Param DRO Percent recovery is based on the Param DRO	LC Resu 300 e spike result. LCSD Result 304	QC Prep S ilt U RPD is b Units mg/Kg	Units g/Kg ased on t Dil. 1	2008-12 Dil. 1 he spike Spike Amount 250	Spike Amount 250 and spike d Matrix Result <14.5	Res <1 luplicate Rec. 122	ult 4.5 result. Ree Lim 73.4 -	Prepa Rec. 120 c. nit	ared By	Ra Lin .4
QC Batch: 54856 Prep Batch: 46896 Param DRO Percent recovery is based on the Param DRO Percent recovery is based on the	LC Resu 300 e spike result. LCSD Result 304 e spike result.	QC Prep S Ilt U RPD is b Units mg/Kg RPD is b	Units g/Kg ased on t Dil. 1	2008-12 Dil. 1 he spike Spike Amount 250	Spike Amount 250 and spike d Matrix Result <14.5 and spike d	Res <1 luplicate Rec. 122	ult 4.5 result. Ree Lim 73.4 -	Prepa Rec. 120 c. nit	Ared By 73 RPD	Ro Lin .4
QC Batch: 54856 Prep Batch: 46896 Param DRO Percent recovery is based on the Param DRO Percent recovery is based on the LCS	LC Resu 300 e spike result. LCSD Result 304 e spike result. LCSD	QC Prep S ilt U RPD is b Units mg/Kg RPD is b	Units g/Kg ased on t Dil. 1 ased on t	2008-12 Dil. 1 Che spike Amount 250 che spike	Spike Amount 250 and spike d Matrix Result <14.5 and spike d Spike	Res <1 luplicate Rec. 122 luplicate LCS	ult 4.5 result. Red Lim 73.4 - result.	Prepa Rec. 120 c. nit 123 LCSD	ared By 73 RPD 1	Re Lin .4
QC Batch: 54856 Prep Batch: 46896 Param DRO Percent recovery is based on the Param DRO Percent recovery is based on the	LC Resu 300 e spike result. LCSD Result 304 e spike result. LCSD t Result	QC Prep S Ilt U PD is b Units mg/Kg RPD is b	Units g/Kg ased on t Dil. 1	2008-12 Dil. 1 he spike Spike Amount 250	Spike Amount 250 and spike d Matrix Result <14.5 and spike d	Res <1 luplicate Rec. 122 luplicate	ult 4.5 result. Red Lim 73.4 - result.	Prepa Rec. 120 c. hit 123	ared By 73 RPD 1	Re Lin .4

Laboratory	Control Spike (LCS-1)				
QC Batch:	54857	Date Analyzed:	2008-12-05	Analyzed By:	
Prep Batch:	46897	QC Preparation:	2008-12-04	Prepared By:	

Report Date: December 5, 2008 Pit Bottom @ 10 ft.				Order: 81 ahn State 7					Page N	umber:	21 of 2
	L	CS			Spike		Matı	ix		1	Rec.
Param		sult	Units	Dil.	Amour		Resu		Rec.		imit
Chloride	1.0.1.0	7.7	mg/Kg	1	100		<1.8		98		- 104.4
Percent recovery is based on the s						e dupli				00.0	101.1
	LCSD			Spike	Matri	x		R	ec.		RPD
Param	Result	Unit	s Dil.	Amount	t Resul	t Re	ec.	Li	mit	RPD	Limit
Chloride	99.0	mg/H	Kg 1	100	<1.80	) 9	9	96.5 -	104.4	1	20
Percent recovery is based on the s			is based	on the spik	e and spik	e dupli	icate	result			
	l Sample:										
QC Batch: 54841			Analyzed							yzed By	
Prep Batch: 46881		QC I	Preparatio	on: 2008-1	12-04				Prep	ared By	: ER
	M	S			Spike	2	Matri	x		1	Rec.
Param	Res		Units	Dil.	Amount		Resul	t	Rec.		imit
Benzene	1.0	2	mg/Kg	1	1.00	<	0.003	47	102	42.9	- 130.7
Toluene	1.1	0	mg/Kg	1	1.00	<	0.005	25	110	46.9	- 135.4
Ethylbenzene	1.1		mg/Kg	1	1.00	<	0.006	607	111	48.3	- 149.3
Xylene	3.5	4	mg/Kg	1	3.00	<	0.007	24	118	48.8	- 150.9
Percent recovery is based on the s	pike result	. RPD	is based of	on the spik	e and spik	e dupli	cate	result			
	MSD			Spike	Matrix	c		R	.ec.		RPD
Param	Result	Units	Dil.	Amount	Result	R	ec.	Li	mit	RPD	Limit
Benzene	1.03	mg/K	g 1	1.00	< 0.0034		03		- 130.7	1	20
Toluene	1.10	mg/K		1.00	< 0.0052	25 1	10	46.9 -	- 135.4	0	20
Ethylbenzene	1.16	mg/K		1.00	< 0.0060		16		- 149.3	4	20
Xylene	3.57	mg/K		3.00	< 0.0072		19	48.8 -	150.9	1	20
Percent recovery is based on the s	pike result			on the spike	e and spik	e dupli	cate				
	M		MSD			Spike		MS	MSD		Rec.
Surrogate	Res		Result	Units		mount		Rec.	Rec.		imit
Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	1.0		1.06 1.16	mg/Kg	1	1		108 119	$\frac{106}{116}$		- 128.3
	Sample:		1.10	mg/Kg	1	1		119	110	01.3	- 161.2
QC Batch: 54843		Date	Analyzed	l: 2008-1	2-04				Anal	yzed By	: ER
Prep Batch: 46881			reparatio							ared By	
	М				Spike		Matri				Rec.
Param	Res		Units	Dil.	Amoun		Resu		Rec.		imit
GRO	10	-	mg/Kg	1	10.0		< 0.14	14	105	18 0	- 155.8

Pit Bottom @ 10 ft.			Ha	hn State #1	L				
Percent recovery is based of	on the spike result	. RPD is l	based o	n the spike	and spike of	duplicat	e result.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
GRO	11.9	mg/Kg	1	10.0	<0.144	119	48.9 - 155.8	12	20
Demonst recovery is based	on the enile requilt	DDD in 1	and a	n the eniles	and miles	duplicat	a maguilt		

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.09	1.32	mg/Kg	1	1	109	132	41.8 - 145.4
4-Bromofluorobenzene (4-BFB)	1.24	1.27	mg/Kg	1	1	124	127	50.3 - 197.8

#### Matrix Spike (MS-1) Spiked Sample: 181229

Report Date: December 5, 2008

QC Batch:	54856	Date Analyzed:	2008-12-04	Analyzed By:	MN
Prep Batch:	46896	QC Preparation:	2008-12-04	Prepared By:	MN

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
DRO	329	mg/Kg	1	250	<14.5	132	0 - 197

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

	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
DRO	346	mg/Kg	1	250	<14.5	138	0 - 197	õ	20

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

	MS	MSD			Spike	MS	MSD	Rec.
Surrogate	Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
n-Triacontane	118	128	mg/Kg	1	100	118	128	57.5 - 139

#### Matrix Spike (MS-1) Spiked Sample: 181237

QC Batch:	54857	Date Analyzed:	2008-12-05	Analyzed By:	RG
Prep Batch:	46897	QC Preparation:	2008-12-04	Prepared By:	SS

	MS			Spike	Matrix		Rec.
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit
Chloride	1680	mg/Kg	100	500	1295.94	77	74.7 - 123.2

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

D	MSD	TT	D.1	Spike	Matrix	D	Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	1780	mg/Kg	100	500	1295.94	97	74.7 - 123.2	6	20

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

Report Date Pit Bottom	e: December 5, @ 10 ft.	2008	W	ork Order: 812 Hahn State #	Page N	umber: 23 of 2	
Standard (	CCV-1)						
QC Batch:	54841		Date Analy	yzed: 2008-12	-04	Anal	lyzed By: ER
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		mg/Kg	0.100	0.0878	88	80 - 120	2008-12-04
Toluene		mg/Kg	0.100	0.0870	87	80 - 120	2008-12-04
Ethylbenzen	e	mg/Kg	0.100	0.0847	85	80 - 120	2008-12-04
Xylene		mg/Kg	0.300	0.268	89	80 - 120	2008-12-04
Standard (	CCV-2)						
QC Batch:	54841		Date Analy	yzed: 2008-12-	-04	Anal	yzed By: ER
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene	0	mg/Kg	0.100	0.0878	88	80 - 120	2008-12-04
Toluene		mg/Kg	0.100	0.0893	89	80 - 120	2008-12-04
Ethylbenzen	e	mg/Kg	0.100	0.0847	85	80 - 120	2008-12-04
Xylene		mg/Kg	0.300	0.267	89	80 - 120	2008-12-04
Standard (	CCV-1)						
QC Batch:	54843		Date Analy	zed: 2008-12-	-04	Anal	yzed By: ER
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		mg/Kg	1.00	0.938	94	80 - 120	2008-12-04
Standard (	CCV-2)						
QC Batch:			Date Analy	yzed: 2008-12-	-04	Anal	yzed By: ER
			-				
			CCVs	CCVs	CCVs	Percent	Dete
		Units	True Conc.	Found Conc.	Percent Recovery	Recovery Limits	Date Analyzed
Param	Flag		LODC	LODC.	necoverv	LIMIUS	Analyzed

# Standard (CCV-1)

QC Batch: 54856

Date Analyzed: 2008-12-04

Analyzed By: MN

Report Da Pit Botton	te: December n @ 10 ft.	5, 2008		Work Order: 81 Hahn State ;		Page N	umber: 24 of 24
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	261	104	85 - 115	2008-12-04
Standard	(CCV-2)						
QC Batch:	54856		Date Ana	lyzed: 2008-12	2-04	Anal	yzed By: MN
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
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Standard QC Batch:			Date Ana	lyzed: 2008-12	2-05	Anal	yzed By: RG
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Chloride		mg/Kg	100	103	103	85 - 115	2008-12-05
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Worth, Texas 7616         Tel (a05)       781 (305) <td>TraceAnalysis, Inc.     6701 Aberdeen Avenue Suite 9     5002 Basin Street, Suite A1     200 East Street, Suite A1     200 East Street Aute Bud West: Suite A1       Image: Figure Suite A1     B006 Suite A1     EPaso, Texas 79703     Texas 79703     Texas 79703       Image: Figure Suite A1     B00 East Street, Suite A1     S002 Basin Street, Suite A1     S002 East Street, Suite A1     S00 East Street, Suite A1     S00 East Street, Suite A1       Image: Figure Suite A1     EFaso, Texas 79703     Texas 79703     Texas 79703     Texas 79703       Image: Figure Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     S00 East Street, Suite A1     S00 East Street, Suite A1       Image: Figure Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Texas 79703     Texas 79703       Image: Figure Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     S00 East Street, Suite A1       Image: Figure Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street Suite A1       Image: Figure Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street, Suite A1       Image: Figure Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street, Suite A1     Erast Street, Suite A1       Image: Figure Suite A1     Erast Street, Suite A1     Erast Stree</td> <td>TraceAnalysis.com     STOI Aberdeen Avenue Suite 9     Stot Basin Street, Suite A     Stot Aberdeen Avenue Suite B     Stot Basin Street, Suite A     Stot B</td> <td>TraceAnalysis, Inc.     6701 Abordeen Avenue Suite 9     5002 Basti Striet Suite A     8008 Camp Bowe Bird Wess. 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For the formation of the | TraceAnalysis, Inc.     For the second state and | TraceAnalysis, Inc.     End Caree Boundary State     State State     State State     State State     State State       mail lab@itseenalysis.com     mail lab@itseenalysis.com     mail lab@itseenalysis.com     To Ban State     State <td>TraceAnalysis, Inc.     TraceAnalysis, I</td> <td>TraceAnalysis, Inc.         Ontower and the provided in the pr</td> <td>TraceAnalysis, Inc.         Off American State         Off Am</td> <td>TraceAnalysis, Inc.         Orthogeneration and the state of the</td> <td>TraceAnalysis, Inc.     TraceAnalysis, Inc.     Travent Rate Structure Rate Structure Rate Structure Rate Structure Rate Rate Rate Rate Rate Rate Rate Rat</td> <td>TraceAnalysis, Inc.         Солмания водати подати по</td> <td>TraceAnalysis, Inc.         Totes         Totes<td>TraceAnalysis, Inc.         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 FAX 915 • 585 • 4944

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 FAX 432 • 689 • 6313

 913 • 5760
 FAX 432 • 689 • 6313

**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

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

Report Date: January 5, 2009

Work Order: 8123002

Project Location:NE of Lovington, NMProject Name:Hahn State #1Project Number:Crownquest

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
183685	NSW-2	soil	2008-12-23	08:30	2008-12-30
183686	NSW-1	soil	2008-12-23	08:40	2008-12-30
183687	WSW-1	soil	2008-12-23	08:50	2008-12-30
183688	WSW-2	soil	2008-12-23	09:00	2008-12-30
183689	WSW-3	soil	2008-12-23	09:10	2008-12-30
183690	SSW-1	soil	2008-12-23	09:20	2008-12-30
183691	SSW-2	soil	2008-12-23	09:30	2008-12-30
183692	T-1 @ 12' bgs	soil	2008-12-23	10:15	2008-12-30
183693	T-1 @ 14' bgs	soil	2008-12-23	10:30	2008-12-30

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
183694	T-2 @ 14' bgs	soil	2008-12-23	11:20	2008-12-30
183695	T-3 @ 20' bgs	soil	2008-12-23	13:00	2008-12-30
183696	SE Floor	soil	2008-12-23	13:50	2008-12-30
183697	SW Floor	soil	2008-12-23	14:00	2008-12-30
183698	T-2 @ 17' bgs	soil	2008-12-23	11:25	2008-12-30
183699	SCSW-1	soil	2008-12-23	09:25	2008-12-30

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 10 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blain Lepturch

Dr. Blair Leftwich, Director

#### Standard Flags

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

# **Case Narrative**

Samples for project Hahn State #1 were received by TraceAnalysis, Inc. on 2008-12-30 and assigned to work order 8123002. Samples for work order 8123002 were received intact at a temperature of 3.3 deg. C.

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

TestMethodChloride (Titration)SM 4500-Cl B

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 8123002 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: 183685 - NSW-2

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55670	Date Analyzed:	2008-12-31	Analyzed By:	AR
Prep Batch:	47536	Sample Preparation:	2008-12-30	Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		589	mg/Kg	50	4.00

#### Sample: 183686 - NSW-1

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55670 47536	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-31 2008-12-30	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride	riag		mg/Kg	50	4.00

### Sample: 183687 - WSW-1

Chloride		<200	m mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55670 47536	Analytical Method: Date Analyzed: Sample Preparation	2008-12-31	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 183688 - WSW-2

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55670	Date Analyzed:	2008-12-31	Analyzed By:	AR
Prep Batch:	47536	Sample Preparation	n: 2008-12-30	Prepared By:	AR

continued ...

Report Date: January 5, 2009 Crownquest		Work Order: 8123002 Hahn State #1		Page Number: 5 of 10 NE of Lovington, NM	
sample 183688 con	atinued				
		RL			
Parameter	Flag	Result	Units	Dilution	RL
		DI			

		RL			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
Chloride		<200	m mg/Kg	50	4.00

# Sample: 183689 - WSW-3

Chloride		341	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55670 47536	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-31 2008-12-30	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 183690 - SSW-1

Parameter Chloride	Flag	Result	Units mg/Kg	Dilution 50	RL 4.00
Prep Batch:		Sample Preparation: RL		Prepared By:	
Laboratory: Analysis: QC Batch:	Midland Chloride (Titration) 55670	Analytical Method: Date Analyzed:	SM 4500-Cl B 2008-12-31	Prep Method: Analyzed By:	

### Sample: 183691 - SSW-2

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55670 47536	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-31 2008-12-30	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		<200	mg/Kg	50	4.00

Report Date: January 5, 2009	Work Order: 8123002	Page Number: 6 of 10
Crownquest	Hahn State #1	NE of Lovington, NM
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# Sample: 183692 - T-1 @ 12' bgs

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55670	Date Analyzed:	2008-12-31	Analyzed By:	AR
Prep Batch:	47536	Sample Preparation:	2008-12-30	Prepared By:	$\mathbf{AR}$
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		739	mg/Kg	50	4.00

# Sample: 183693 - T-1 @ 14' bgs

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55670 47536	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-31 2008-12-30	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

# Sample: 183694 - T-2 @ 14' bgs

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55670	Date Analyzed:	2008-12-31	Analyzed By:	AR
Prep Batch:	47536	Sample Preparation:	2008-12-30	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		14400	mg/Kg	50	4.00

# Sample: 183695 - T-3 @ 20' bgs

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Metho	d: SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55671	Date Analyzed:	2008-12-31	Analyzed By:	AR
Prep Batch:	47537	Sample Preparati	on: 2008-12-31	Prepared By:	$\mathbf{AR}$
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		5890	mg/Kg	50	4.00

Report Date: January 5, 2009 Crownquest		Work Order: 81 Hahn State	Page Number: 7 of 10 NE of Lovington, NM		
Sample: 18	3696 - SE Floor				
Laboratory: Analysis:	Midland Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch: Prep Batch:	55671 47537	Date Analyzed: Sample Preparation:	2008-12-31 2008-12-31	Analyzed By: Prepared By:	AR AR
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride	Flag			50	4.00
Chioride		2280	mg/Kg	90	4.00
	3697 - SW Floor				
Laboratory: Analysis:	Midland Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55671	Date Analyzed:	2008-12-31	Analyzed By:	AR
Prep Batch:	47537	Sample Preparation:	2008-12-31	Prepared By:	AR
Trep Daten.	41001	Sample i reparation.	2000-12-51	r repared by.	AIU
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00
Sample: 18 Laboratory: Analysis: QC Batch: Prep Batch:	<b>3698 - T-2 @ 17' bgs</b> Midland Chloride (Titration) 55671 47537	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-31 2008-12-31	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Descenter	<b>D</b> lass	RL	TT-: t-	Dilution	DI
Parameter Chloride	Flag	Result <200	Units	Dilution 50	RL 4.00
Chloride		<200	mg/Kg	50	4.00
Sample: 18	3699 - SCSW-1				
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55671 47537	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2008-12-31 2008-12-31	Prep Method: Analyzed By: Prepared By:	N/A AR AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		515	mg/Kg	50	4.00

Report Date: January 5, 2009 Crownquest			Work Order: 8123002 Hahn State #1					Page Number: 8 of 10 NE of Lovington, NM		
Method Bla	ank (1)	QC Batch: 55670								
QC Batch: Prep Batch:	55670 47536		Date Ar QC Pre	nalyzed: paration:	2008-12-31 2008-12-30				lyzed By pared By	
				MI	DL					
Parameter		Flag		Res			Units			RL
Chloride				<2	.01		mg/Kg			4
Method Bla	ank (1)	QC Batch: 55671								
QC Batch:	55671		Date A	nalyzed:	2008-12-31	L		Ana	alyzed By	: AR
Prep Batch:	47537			paration:	2008-12-30				pared By	
				MI	DL					
Parameter		Flag		Res			Units			RL
Chloride				<2	.01		mg/Kg			4
QC Batch: Prep Batch:	55670 47536		QC Pre	nalyzed: paration:	2008-12-31 2008-12-30	)		Pre	alyzed By pared By	: AR
Param		LC Res		Units	Dil.	Spike Amount	Matri Resul		ec.	Rec. Limit
Chloride		99		mg/Kg	1	100	<2.0			35 - 115
Percent recov	very is base	ed on the spike result.			the spike an	d spike duj	plicate resu	ılt.		
		LCSD			Spike	Matrix		Rec.		RPD
Param		Result			Amount	Result	Rec.	Limit	RPD	Limit
Chloride		101	mg/Kg		100	<2.01		85 - 115	2	20
		ed on the spike result. Spike (LCS-1)	RPD is	based on t	the spike an	d spike duj	plicate resu	ılt.		
			Data A.	a alward.	9009 19 91			A	1	AD
QC Batch: Prep Batch:	$55671 \\ 47537$			nalyzed: paration:	2008-12-31 2008-12-30				alyzed By pared By	
		LC	CS			Spike	Matri	x		Rec.
Param		Res		Units	Dil.	Amount	Resul		ec.	Limit
Chloride		10	)2	mg/Kg	1	100	<2.0			85 - 115

Report Date: January 5, 2009 Crownquest				der: 812300 State #1	2				r: 9 of 10 gton, NM
Percent recovery is based on the	e spike result.	RPD is	based on t	the spike an	id spike du	plicate 1	result.		
Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride	99.7	mg/Kg	; 1	100	<2.01	100	85 - 115	2	20
Percent recovery is based on the	e spike result.	RPD is	based on t	the spike an	d spike du	plicate 1	esult.		
Matrix Spike (MS-1) Spik	ed Sample: 1	83694							
QC Batch: 55670		Date Ar	alvzed:	2008-12-3	1		А	nalyzed H	By: AR
Prep Batch: 47536			paration:	2008-12-3				repared E	
	М	S			Spike	Ma	atrix		Rec.
Param	Res		Units	Dil.	Amount			Rec.	Limit
Chloride	196		mg/Kg	50	5000			104	85 - 115
Percent recovery is based on the	spike result.	RPD is l	based on t	the spike an	d spike du	plicate r	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	19700	mg/Kg		5000	14400	106	85 - 115		20
Percent recovery is based on the									
	ed Sample: 1				u opnie uuj				
O Datah 55071		D. t. A	1 1	0000 10 0	1			1 1 7	
QC Batch: 55671 Prep Batch: 47537		Date An	paration:	2008-12-3 2008-12-3				nalyzed E repared E	
Tep Daten. 41551		QU I Iej	paration.	2000-12-3	5		1.	repared L	y. An
	М	S			Spike	Ma	atrix		Rec.
Param	Res	ult	Units	Dil.	Amount	Re	sult	Rec.	Limit
Chloride	509	1 00	mg/Kg	50	5000	<	100	102	85 - 115
Percent recovery is based on the	spike result.	RPD is l	based on t	he spike an	d spike du	olicate r	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit

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

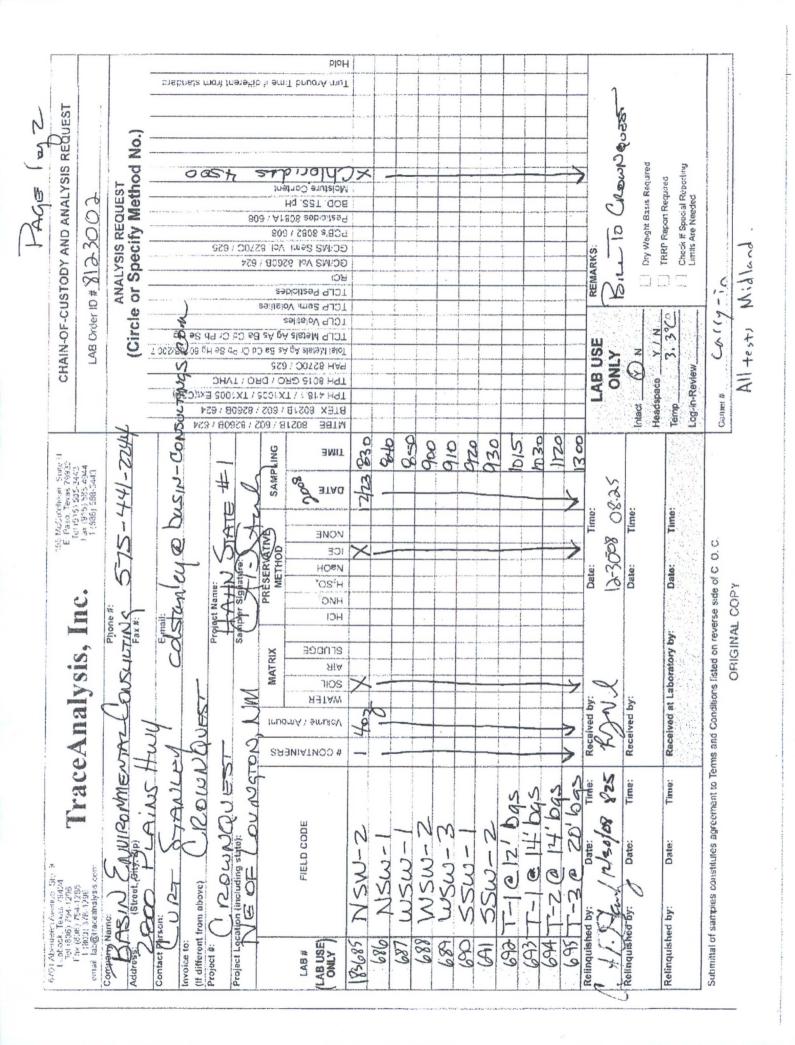
### Standard (ICV-1)

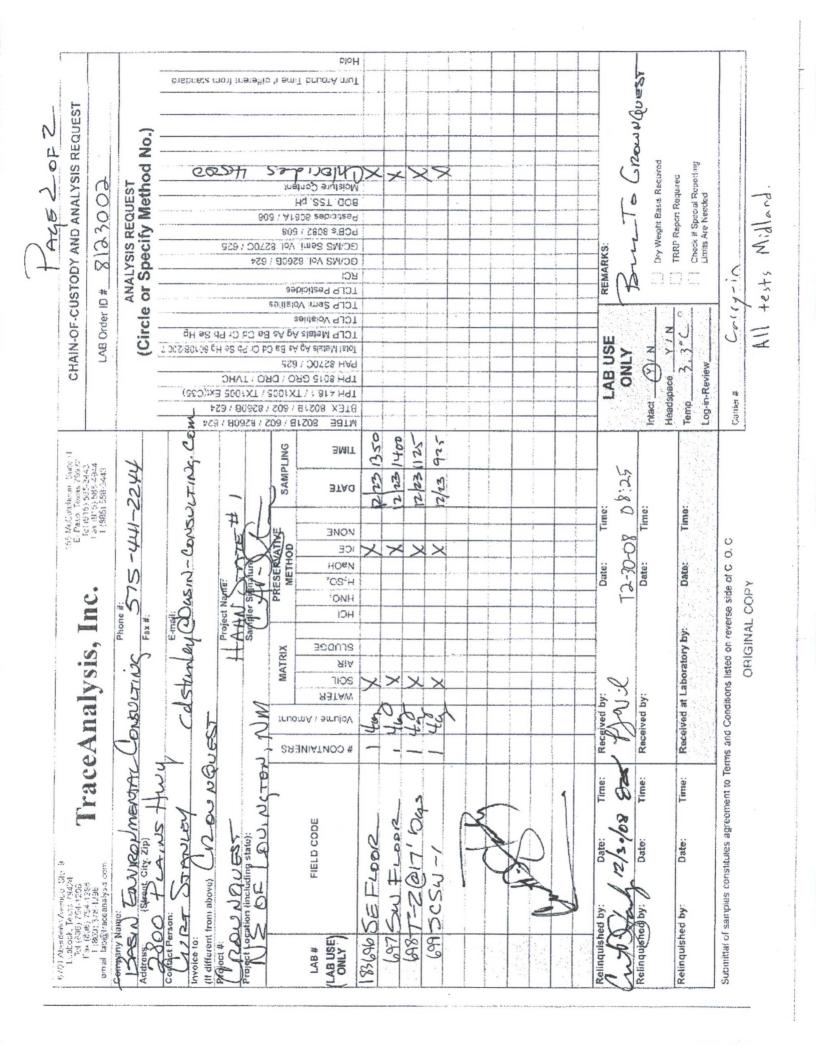
QC Batch: 55670

Date Analyzed: 2008-12-31

Analyzed By: AR

Report Date: January 5, 2009 Crownquest		W	ork Order: 812 Hahn State #	Page Number: 10 of 1 NE of Lovington, NI			
Param	Flag	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride	0	mg/Kg	100	99.9	100	85 - 115	2008-12-31
Standard (	CCV-1)						
QC Batch:	55670		Date Anal	yzed: 2008-12	-31	Anal	yzed By: AR
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		$\mathrm{mg/Kg}$	100	100	100	85 - 115	2008-12-31
Standard (	10 v-1)						
QC Batch:	55671		Date Anal	yzed: 2008-12	-31	Anal	yzed By: AR
QC Batch:	55671		Date Anal ICVs	yzed: 2008-12 ICVs	-31 ICVs	Anal Percent	yzed By: AR
QC Batch:	55671						yzed By: AR Date
Param	55671 Flag	Units	ICVs	ICVs	ICVs	Percent	
Param		Units mg/Kg	ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
QC Batch: Param Chloride Standard (	Flag		ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Param Chloride Standard (	Flag CCV-1)		ICVs True Conc. 100	ICVs Found Conc.	ICVs Percent Recovery 98	Percent Recovery Limits 85 - 115	Date Analyzed
Param Chloride Standard (	Flag CCV-1)		ICVs True Conc. 100	ICVs Found Conc. 97.9	ICVs Percent Recovery 98	Percent Recovery Limits 85 - 115	Date Analyzed 2008-12-31
Param Chloride Standard ( QC Batch:	Flag CCV-1) 55671	mg/Kg	ICVs True Conc. 100 Date Anal CCVs True	ICVs Found Conc. 97.9 yzed: 2008-12 CCVs Found	ICVs Percent Recovery 98 -31 CCVs Percent	Percent Recovery Limits 85 - 115 Anal Percent Recovery	Date Analyzed 2008-12-31 yzed By: AR Date
Param Chloride Standard (	Flag CCV-1)		ICVs True Conc. 100 Date Anal CCVs	ICVs Found Conc. 97.9 yzed: 2008-12 CCVs	ICVs Percent Recovery 98 -31 CCVs	Percent Recovery Limits 85 - 115 Anal Percent	Date Analyzed 2008-12-31 yzed By: AR





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 FAX 432 • 689 • 6313

 917 • 201 • 5250
 FAX 432 • 689 • 6313

**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

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

Report Date: January 7, 2009

Work Order: 9010604

Project Location:NW of Lovington, NMProject Name:CrownquestProject Number:Hahn State #1

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
184012	ESW-1	soil	2009-01-02	12:00	2009-01-06
184013	ESW-2	soil	2009-01-02	12:10	2009-01-06
184014	ESW-3	soil	2009-01-02	12:20	2009-01-06
184015	T-3 @ 22' bgs	soil	2009-01-02	13:00	2009-01-06
184016	T-3 @ 24' bgs	soil	2009-01-02	13:10	2009-01-06

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

**Standard Flags** 

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

Page 2 of 6

# **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2009-01-06 and assigned to work order 9010604. Samples for work order 9010604 were received intact at a temperature of 3.7 deg. C.

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

.

Test		Method			
Chloride	(Titration)	SM 4500-Cl B			

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 9010604 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: 184012 - ESW-1

Chloride		4810	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 55755	Analytical Method: Date Analyzed: Sample Preparation	2009-01-06	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 184013 - ESW-2

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 55755 47655	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-06 2009-01-06	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		5590	mg/Kg	50	4.00

### Sample: 184014 - ESW-3

Chloride	Trag		mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
QC Batch: Prep Batch:	55755 47655	Date Analyzed: Sample Preparation:	2009-01-06 2009-01-06	Analyzed By: Prepared By:	
Laboratory: Analysis:	Midland Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	/

### Sample: 184015 - T-3 @ 22' bgs

Laboratory: Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	55755	Date Analyzed:	2009-01-06	Analyzed By:	,
Prep Batch:	47655	Sample Preparation:	2009-01-06	Prepared By:	AR

continued ...

Report Date: January 7, 2009 Hahn State #1		Work Order: 90 Crownque		Page Number: 5 of NW of Lovington, NM		
sample 184015 c	ontinued					
		RL				
Parameter	Flag	Result	Units	Dilution	RL	
		RL				
Parameter	Flag	Result	Units	Dilution	RL	
Chloride	0	6120	mg/Kg	50	4.00	
Prep Batch: 470	755 655	Date Analyzed: Sample Preparation: RL		Analyzed By: Prepared By:	AR AR	
Parameter	Flag	Result	Units	Dilution	RL	
Chloride		6760	mg/Kg	50	4.00	
Method Blank	(1) QC Batch: 55753	)				
QC Batch: 557	755	Date Analyzed: 2009	-01-06	Analyzed By:	AR	
Prep Batch: 470	655	QC Preparation: 2009	-01-06	Prepared By:	AR	

		MDL		
Parameter	Flag	Result	Units	$\mathbf{RL}$
Chloride		<2.01	mg/Kg	4

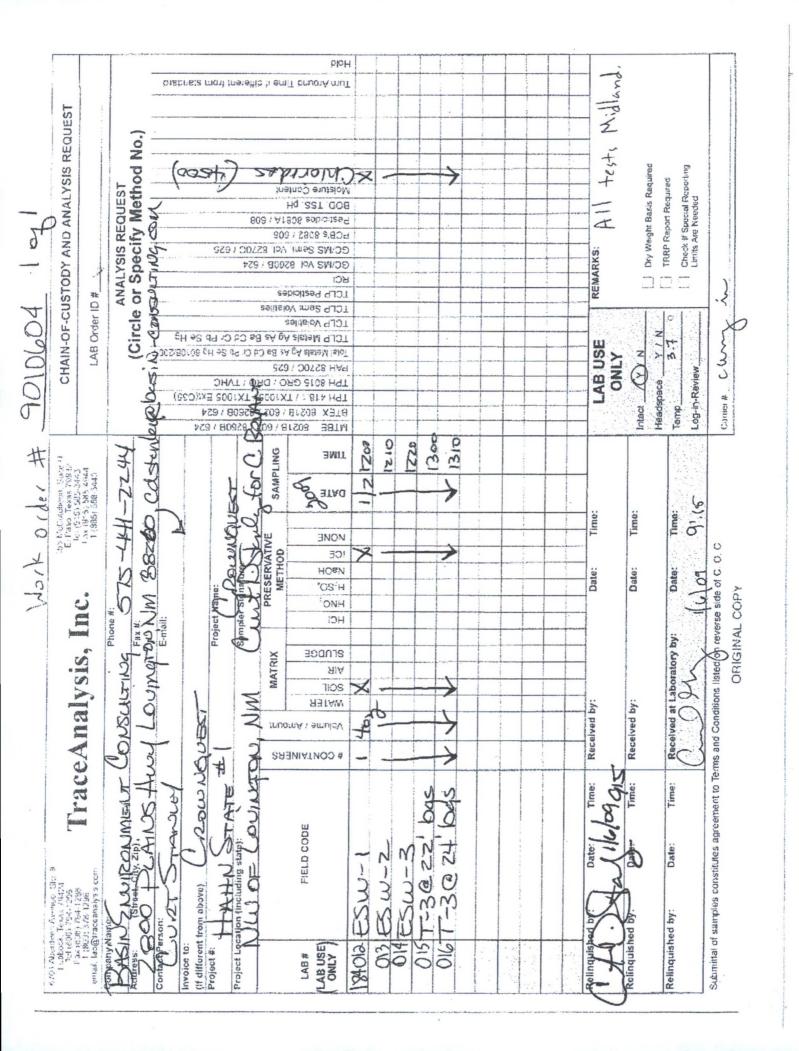
### Laboratory Control Spike (LCS-1)

QC Batch: Prep Batch:	55755 47655			nalyzed: paration:	2009-01-00 2009-01-00				alyzed E epared E	
Param		LC Res		Units	Dil.	Spike Amount		trix sult F	Rec.	Rec.
Chloride		97		mg/Kg	1	100			97	85 - 115
Percent recov	ery is based on the	e spike result.	RPD is	based on t	the spike an	d spike du	plicate r	esult.		
		LCSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		98.2	mg/Kg	g 1	100	<2.01	98	85 - 115	1	20

Report Date: January 7, 2009	Work Order: 9010604	Page Number: 6 of 6
Hahn State #1	Crownquest	NW of Lovington, NM

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

Matrix Sp	oike (MS-1)	Spiked Sample: 1	.84054							
QC Batch:	55755		Date A	nalyzed:	2009-01-0	6		A	nalyzed B	y: AR
Prep Batch				eparation:	2009-01-0				repared B	0
										0
		Μ	IS			Spike	Ma	trix		Rec.
Param		Res	sult	Units	Dil.	Amount	Re	sult	Rec.	Limit
Chloride		51	40	mg/Kg	50	5000	<	100	101	85 - 115
Percent rec	overy is based	on the spike result.	RPD is	based on t	the spike ar	nd spike du	plicate r	esult.		
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		5090	mg/Kg	g 50	5000	<100	100	85 - 115	1	20
Percent rec	overy is based	on the spike result.	RPD is	based on t	the spike ar	nd spike du	olicate r	esult.		
Standard QC Batch:			Date A	nalyzed:	2009-01-06			А	nalyzed B	y: AR
			ICVs	IC	Vs	ICVs		Percent		
			True	For	ind	Percent		Recovery		Date
Param	Flag	Units	Conc.	Co	nc.	Recovery		Limits		nalyzed
Chloride		m mg/Kg	100	96	5.1	96		85 - 115	20	09-01-06
Standard										
QC Batch:	55755		Date A	nalyzed:	2009-01-06			А	nalyzed B	y: AR
			CCVs	CC	CVs	CCVs		Percent		
			True		und	Percent		Recovery		Date
Param	Flag	Units	Conc.		onc.	Recovery		Limits		nalyzed
Chloride		mg/Kg	100	10	04	104		85 - 115	20	09-01-06





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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: January 21, 2009

Work Order: 9011612

Project Location:NW of Lovington, NMProject Name:CrownquestProject Number:Hahn State #1

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
185037	East Trench #1 @ 6'	soil	2009-01-13	13:00	2009-01-16
185038	East Trench #2 @ 6'	soil	2009-01-13	13:30	2009-01-16
185039	East Trench #3 @ 6'	soil	2009-01-13	14:00	2009-01-16

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.

Blain Leptinich

Dr. Blair Leftwich, Director

### Standard Flags

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

# **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2009-01-16 and assigned to work order 9011612. Samples for work order 9011612 were received intact at a temperature of 3.6 deg. C.

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

Test		Method
Chloride	(Titration)	SM 4500-Cl B

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 9011612 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: January 21, 2009 Hahn State#1 Work Order: 9011612 Crownquest Page Number: 4 of 6 NW of Lovington, NM

# **Analytical Report**

### Sample: 185037 - East Trench #1 @ 6'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56205 47989	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-21 2009-01-20	Prep Method: Analyzed By: Prepared By:	AR
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride	1108		mg/Kg	50	4.00

### Sample: 185038 - East Trench #2 @ 6'

Chloride	1 100		mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56205 47989	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-21 2009-01-20	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 185039 - East Trench #3 @ 6'

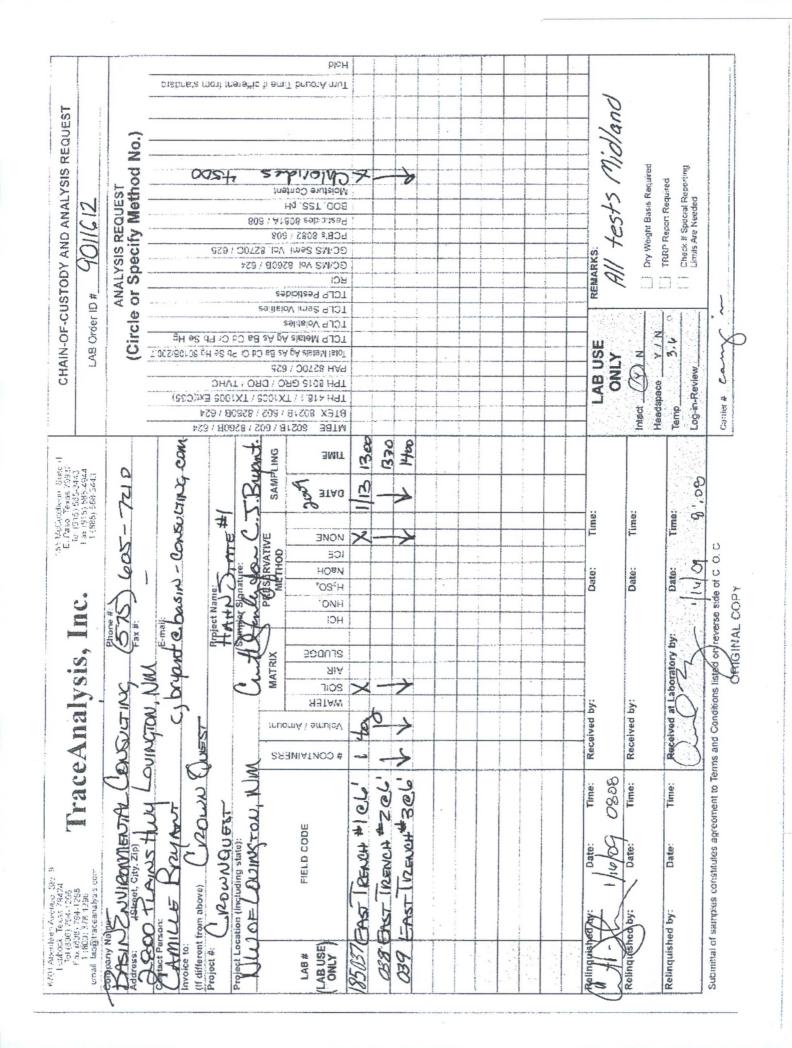
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56205 47989	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-21 2009-01-20	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		<200	mg/Kg	50	4.00

### Method Blank (1) QC Batch: 56205

QC Batch: Prep Batch:	56205 47989		Date Analyzed: QC Preparation:			Analyzed By: Prepared By:	
			M				
-		-					
Parameter		Flag	Res	ult	Units		RL
Chloride			<2	.01	mg/Kg		4

Report Date: January 21, 2009 Hahn State #1				der: 90116 wnquest	12			ge Numbe of Loving	
Laboratory Control Spike (LC	CS-1)								
QC Batch: 56205		Date A	nalyzed:	2009-01-2	1		Ar	alyzed B	y: AR
Prep Batch: 47989		QC Pr	eparation:	2009-01-2	0			epared B	
	LO	CS			Spike	Ma	trix		Rec.
Param		sult	Units	Dil.	Amount			Rec.	Limit
Chloride		).3	mg/Kg	1	100			99	85 - 115
Percent recovery is based on the s	pike result.	RPD is	based on	the spike ar	nd spike dup	olicate r	esult.		
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
Chloride	101	mg/K	-	100	<2.01	101	85 - 115	2	20
Percent recovery is based on the s	pike result.	RPD is	based on	the spike ar	ıd spike duj	olicate re	esult.		
Matrix Spike (MS-1) Spiked	l Sample: 1	85087							
QC Batch: 56205		Date A	nalyzed:	2009-01-2	1		Δ	alyzed B	v: AR
Prep Batch: 47989			eparation:	2009-01-2				epared By	
			openetron		0			opurou 2,	
	М	S			Spike	Ma	trix		Rec.
Param	Res		Units	Dil.	Amount			lec.	Limit
Chloride	53		mg/Kg	50	5000			.00	85 - 115
Percent recovery is based on the s	pike result.	RPD is	based on t	the spike an	ıd spike duş	olicate re	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units		Amount	Result	Rec.	Limit	RPD	Limit
Chloride	5360	mg/K		5000	342	100	85 - 115	0	20
Percent recovery is based on the s	pike result.	RPD is	based on t	the spike an	id spike dup	olicate re	esult.		
Standard (ICV-1)									
Standard (ICV-1) QC Batch: 56205		Date A	.nalyzed:	2009-01-21			An	alyzed B	y: AR
		Date A ICVs		2009-01-21 Vs	ICVs		An Percent	alyzed B	y: AR
QC Batch: 56205		ICVs True	IC		Percent		Percent Recovery		Date
QC Batch: 56205 Param Flag Un		ICVs True Conc.	IC For Co	Vs ind nc.	Percent Recovery	H	Percent Recovery Limits	A	Date nalyzed
QC Batch: 56205		ICVs True	IC For Co	Vs 1nd	Percent	H	Percent Recovery	A	Date
QC Batch: 56205 Param Flag Un		ICVs True Conc.	IC For Co	Vs ind nc.	Percent Recovery	H	Percent Recovery Limits	A	Date nalyzed
QC Batch: 56205 Param Flag Un Chloride mg,		ICVs True Conc. 100	IC For Co	Vs ind nc.	Percent Recovery	H	Percent Recovery Limits 85 - 115	A	Date nalyzed 09-01-21

Report Date: January 21, 2009 Hahn State #1		Work Order: 9011612 Crownquest			Page Number: 6 of 6 NW of Lovington, NM		
			CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/Kg	100	97.9	98	85 - 115	2009-01-21







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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

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

Report Date: January 26, 2009

Work Order: 9012301

Project Location: NW of Lovington, NM Project Name: Crownquest Project Number: Hahn State #1

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
185642	SB-1 @ 5'	soil	2009-01-22	10:00	2009-01-23
185643	SB-1 @ 10'	soil	2009-01-22	10:20	2009-01-23
185644	SB-1 @ 15'	soil	2009-01-22	10:40	2009-01-23
185645	SB-1 @ 20'	soil	2009-01-22	11:00	2009-01-23
185646	SB-1 @ 25'	soil	2009-01-22	11:20	2009-01-23
185647	SB-1 @ 30'	soil	2009-01-22	11:40	2009-01-23
185648	SB-1 @ 35'	soil	2009-01-22	12:00	2009-01-23
185649	SB-1 @ 40'	soil	2009-01-22	12:20	2009-01-23
185650	SB-1 @ 45'	soil	2009-01-22	12:40	2009-01-23

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
185651	SB-1 @ 50'	soil	2009-01-22	13:00	2009-01-23
185652	SB-1 @ 55'	soil	2009-01-22	13:20	2009-01-23
185653	SB-1 @ 60'	soil	2009-01-22	13:40	2009-01-23

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 9 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director

#### Standard Flags

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

# **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2009-01-23 and assigned to work order 9012301. Samples for work order 9012301 were received intact at a temperature of 20.4 deg. C.

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

TestMethodChloride (Titration)SM 4500-Cl B

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 9012301 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: 185642 - SB-1 @ 5'

Chloride		3200	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	$\mathbf{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56291 48078	Analytical Method: Date Analyzed: Sample Preparation	2009-01-23	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 185643 - SB-1 @ 10'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56291 48078	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-23 2009-01-23	Prep Method: Analyzed By: Prepared By:	AR
_	_	RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		2310	mg/Kg	50	4.00

### Sample: 185644 - SB-1 @ 15'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56291	Date Analyzed:	2009-01-23	Analyzed By:	AR
Prep Batch:	48078	Sample Preparation:	2009-01-23	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		1380	mg/Kg	50	4.00

### Sample: 185645 - SB-1 @ 20'

Prep Batch:	48078	Sample Preparation	: 2009-01-23	Prepared By:	AR
QC Batch:	56291	Date Analyzed:	2009-01-23	Analyzed By:	AR
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Midland				

continued ...

Report Date: January 26, 2009 Hahn State #1			Work Order: 9012301 Crownquest		umber: 5 of 9 wington, NM
sample 185645 con	ntinued				
		RL			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
		RL			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
Chloride		1630	m mg/Kg	50	4.00

### Sample: 185646 - SB-1 @ 25'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56316 48103	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-26 2009-01-23	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		849	mg/Kg	50	4.00

### Sample: 185647 - SB-1 @ 30'

Chloride		581	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	$\operatorname{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56316 48103	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-26 2009-01-23	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 185648 - SB-1 @ 35'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56316	Date Analyzed:	2009-01-26	Analyzed By:	AR
Prep Batch:	48103	Sample Preparation	1: 2009-01-23	Prepared By:	$\mathbf{AR}$
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		990	mg/Kg	50	4.00

Report Date: January 26, 2009 Hahn State #1	Work Order: 9012301 Crownquest		Page Number: 6 of 9 NW of Lovington, NM	
Sample: 185649 - SB-1 @ 40'				
Laboratory: Midland		CM 4500 CLD		NT / A
Analysis: Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	'
QC Batch: 56316	Date Analyzed:	2009-01-26	Analyzed By:	AR
Prep Batch: 48103	Sample Preparation:	2009-01-23	Prepared By:	AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		957	mg/Kg	50	4.00

### Sample: 185650 - SB-1 @ 45'

Chloride		516	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 56316 48103	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-01-26 2009-01-23	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 185651 - SB-1 @ 50'

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	56316	Date Analyzed:	2009-01-26	Analyzed By:	AR
Prep Batch:	48103	Sample Preparation:	2009-01-23	Prepared By:	AR
		$\mathbf{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		868	mg/Kg	50	4.00

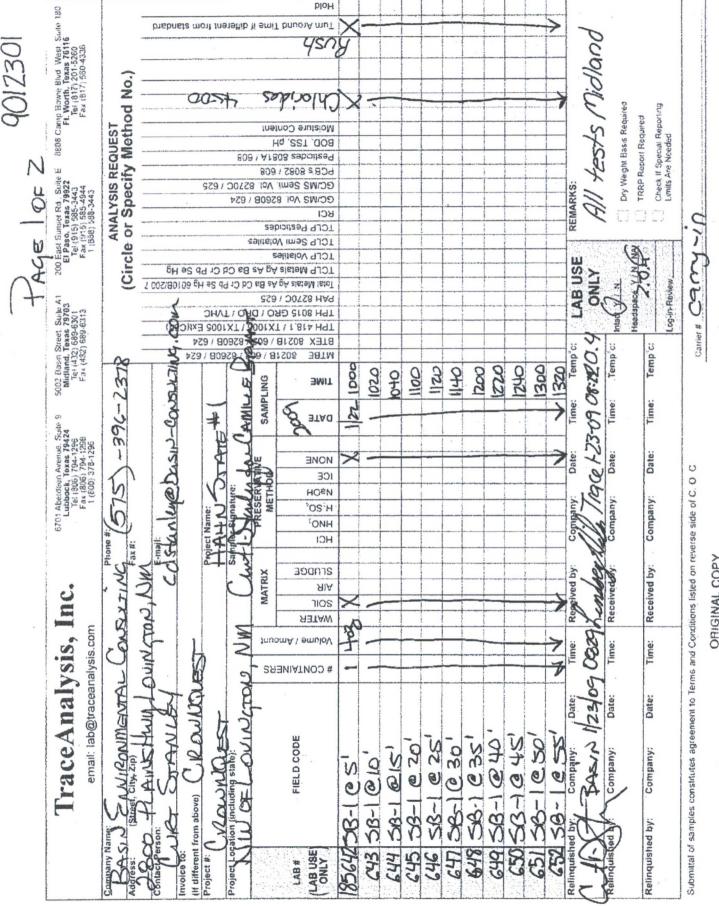
### Sample: 185652 - SB-1 @ 55'

Chloride		582	mg/Kg	50	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (Titration) 56316	Analytical Meth Date Analyzed: Sample Prepara	2009-01-26	Prep Method: Analyzed By: Prepared By:	AR

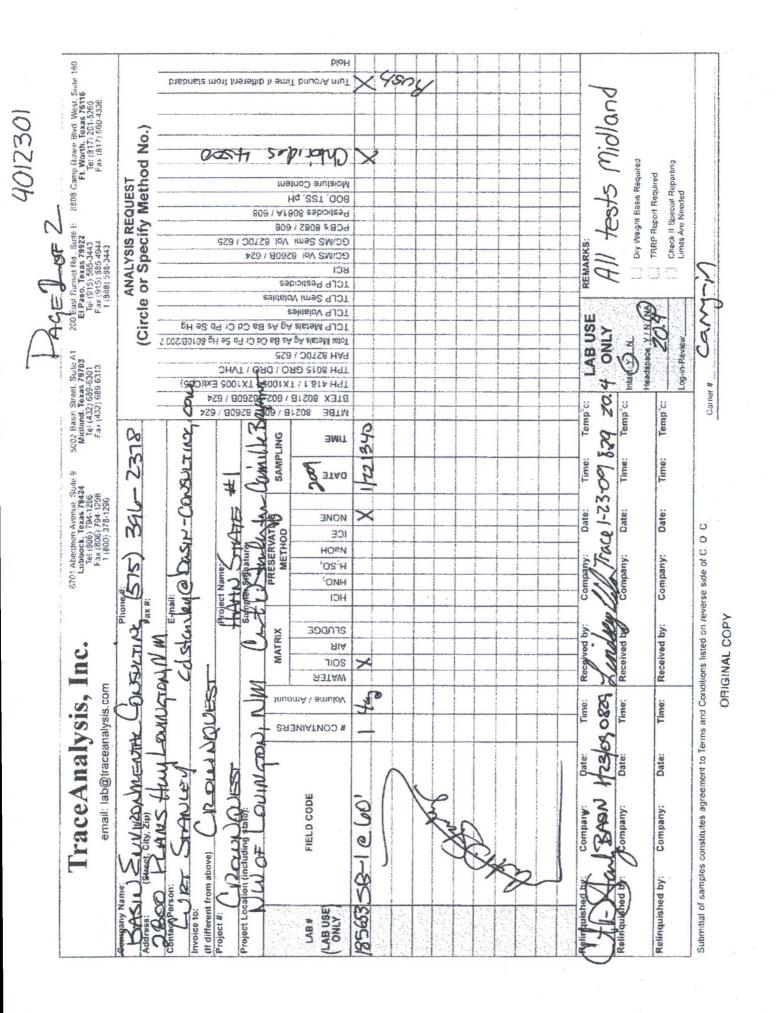
Report Date: January 26, 2009 Hahn State #1				Work Or Cro	der: 90 wnques			Page Number: 7 of NW of Lovington, N		
Sample: 18	5653 - SI	B-1 @ 60'								
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride 56316 48103	e (Titration)	D	analytical Me Date Analyzeo ample Prepa	1:	SM 4500-Cl 2009-01-26 2009-01-23	В	Prep Meth Analyzed I Prepared F	By:	N/A AR AR
Parameter		Flag	Res			Units	Dilu			RL
Chloride			4	27	1	ng/Kg		50		4.00
Method Bla QC Batch: Prep Batch:	ank (1) 56291 48078	QC Batch: 565	Date	e Analyzed: Preparation:	2009- 2009-			Analyzed Prepared		AR AR
				M	DL					
Parameter		Flag		Res	ult	8	Units			$\mathbf{RL}$
Chloride				<2	.01		mg/Kg			4
Method Bla QC Batch: Prep Batch:	ank (1) 56316 48103	QC Batch: 563	Date	e Analyzed: Preparation:	2009- 2009-			Analyzed Prepared		AR AR
				M	DL					
Parameter		Flag		Res			Units			$\mathbf{RL}$
Chloride				<2	.01		mg/Kg			4
Laboratory QC Batch: Prep Batch:	<b>Control</b> 56291 48078	Spike (LCS-1)		Analyzed: Preparation:	2009- 2009-			Analyzed Prepared		AR AR
D			LCS		D	Spike	Matrix			lec.
Param Chloride			Result 98.2	Units mg/Kg	Dil.	Amount 100	Result <2.01	Rec. 98		mit - 115
	verv is bas	ed on the spike re							00	110
	continue									

Report Date: January 26, 2009 Hahn State #1				der: 9012301 wnquest	L				er: 8 of 9 ton, NM
control spikes continued				<i>a</i> . <i>a</i>					
Danam	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	$\begin{array}{c} \operatorname{RPD} \\ \operatorname{Limit} \end{array}$
Param	nesun	Units	DII.	Amount	nesun	nec.	LIIIII	RF D	LIIIII
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	99.7	mg/Kg	1	100	<2.01	100	85 - 115	2	20
Percent recovery is based on the sp	pike result.	RPD is ba	ased on t	he spike and	l spike dup	olicate re	esult.		
Laboratory Control Spike (LC	CS-1)								
QC Batch: 56316		Date Ana	lyzed:	2009-01-26			An	alyzed B	y: AR
Prep Batch: 48103		QC Prepa	aration:	2009-01-23				epared B	
	LO	CS			Spike	Ma	trix		Rec.
Param	Res		Units	Dil.	Amount			ec.	Limit
Chloride	99	.7 m	ng/Kg	1	100	<2	.01 1	00	85 - 115
Percent recovery is based on the sp	pike result.	RPD is ba	ased on t	he spike and	l spike dup	olicate r	esult.		
	LCSD			Spike	Matrix		Rec.		RPD
Param		Units	Dil.	-		Rec.		RPD	
Param Chloride	Result 101	Units mg/Kg	Dil.	Amount 100	Result <2.01	Rec.	Limit 85 - 115	RPD 2	Limit 20
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291	Result 101	mg/Kg RPD is ba	1 ased on t	Amount 100	Result <2.01 I spike dup	101	Limit 85 - 115 esult. An		Limit 20 y: AR
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291	Result 101 pike result.	mg/Kg RPD is ba 85645 Date Ana	1 ased on t	Amount 100 he spike and 2009-01-23	Result <2.01 I spike dup	101	Limit 85 - 115 esult. An	2 alyzed B	Limit 20 y: AR
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291	Result 101 pike result. Sample: 1	mg/Kg RPD is ba 85645 Date Ana QC Prepa S	1 ased on t dyzed: aration:	Amount 100 he spike and 2009-01-23 2009-01-23	Result <2.01 d spike dup Spike	101 olicate re Ma	Limit 85 - 115 esult. An. Pre	2 alyzed B epared B	Limit 20 y: AR y: AR y: AR Rec.
Chloride Percent recovery is based on the sp <b>Matrix Spike (MS-1)</b> Spiked QC Batch: 56291 Prep Batch: 48078 Param	Result 101 pike result. Sample: 1 M Res	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U	1 ased on t dyzed: aration: Units	Amount 100 he spike and 2009-01-23 2009-01-23 Dil.	Result <2.01 I spike dup Spike Amount	101 olicate re Ma Res	Limit 85 - 115 esult. An. Pre trix sult R	2 alyzed B epared B ec.	Limit 20 y: AR y: AR Rec. Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride	Result 101 pike result. Sample: 1 M Res 66	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U 90 m	1 ased on t alyzed: aration: Jnits ug/Kg	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50	Result <2.01 I spike dup Spike Amount 5000	101 blicate re Ma Res 16	Limit 85 - 115 esult. An Pre- trix sult R 30 1	2 alyzed B epared B ec.	Limit 20 y: AR y: AR Rec. Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride	Result 101 pike result. Sample: 1 M Res 669 pike result.	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U 90 m	1 ased on t alyzed: aration: Jnits ug/Kg	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50 he spike and	Result <2.01 I spike dup Spike Amount 5000 I spike dup	101 blicate re Ma Res 16	Limit 85 - 115 esult. An Pre- trix sult R 30 1	2 alyzed B epared B ec.	Limit 20 y: AR y: AR y: AR Rec. Limit 85 - 115
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride Percent recovery is based on the sp	Result 101 pike result. Sample: 1 MRes 66 pike result. MSD	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U 90 m RPD is ba	1 ased on t alyzed: aration: <u>Jnits</u> <u>g/Kg</u> ased on t	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50 he spike and Spike	Result <2.01 I spike dup Spike Amount 5000 I spike dup Matrix	101 olicate re Ma Res 16 olicate re	Limit 85 - 115 esult. And Pre- trix sult R 30 1 esult. Rec.	2 alyzed B epared B ec. 01	Limit 20 y: AR y: AR kec. Limit 85 - 115 RPD
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride Percent recovery is based on the sp Param	Result 101 pike result. Sample: 1 Sample: 1 MSD Result	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U RPD is ba Units	1 ased on t dyzed: aration: <u>Jnits</u> <u>g/Kg</u> ased on t Dil.	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50 he spike and Spike Amount	Result <2.01 d spike dup Spike Amount 5000 d spike dup Matrix Result	101 olicate re Ma Res 16 olicate re Rec.	Limit 85 - 115 esult. An Pre- trix sult R 30 1 esult. Rec. Limit	2 alyzed B epared B ec. 01 RPD	Limit 20 y: AR y: AR kec. Limit 85 - 115 RPD Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride Percent recovery is based on the sp Param Chloride	Result 101 pike result. Sample: 1 Sample: 1 MSD Result 6610	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U PO m RPD is ba Units mg/Kg	1 ased on t alyzed: aration: Units ug/Kg ased on t Dil. 50	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50 he spike and Spike Amount 5000	Result <2.01 d spike dup Spike Amount 5000 d spike dup Matrix Result 1630	101 olicate re Ma Res 16 olicate re Rec. 100	Limit 85 - 115 esult. An. Pre- trix sult R 30 1 esult. Rec. Limit 85 - 115	2 alyzed B epared B ec. 01	Limit 20 y: AR y: AR kec. Limit 85 - 115 RPD
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp	Result 101 pike result. Sample: 1 Sample: 1 MSD Result 6610	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U 90 m RPD is ba Mg/Kg RPD is ba	1 ased on t alyzed: aration: Units ug/Kg ased on t Dil. 50	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50 he spike and Spike Amount 5000	Result <2.01 d spike dup Spike Amount 5000 d spike dup Matrix Result 1630	101 olicate re Ma Res 16 olicate re Rec. 100	Limit 85 - 115 esult. An. Pre- trix sult R 30 1 esult. Rec. Limit 85 - 115	2 alyzed B epared B ec. 01 RPD	Limit 20 y: AR y: AR kec. Limit 85 - 115 RPD Limit
Chloride Percent recovery is based on the sp Matrix Spike (MS-1) Spiked QC Batch: 56291 Prep Batch: 48078 Param Chloride Percent recovery is based on the sp Param Chloride Percent recovery is based on the sp	Result 101 pike result. Sample: 1 MRes pike result. MSD Result 6610 pike result.	mg/Kg RPD is ba 85645 Date Ana QC Prepa S ult U 90 m RPD is ba Mg/Kg RPD is ba	1 ased on t alyzed: aration: Units ag/Kg ased on t Dil. 50 ased on t	Amount 100 he spike and 2009-01-23 2009-01-23 Dil. 50 he spike and Spike Amount 5000	Result <2.01 d spike dup Spike Amount 5000 d spike dup Matrix Result 1630 d spike dup	101 olicate re Ma Res 16 olicate re Rec. 100	Limit 85 - 115 esult. An. Pre- trix sult R 30 1 esult. Rec. Limit 85 - 115 esult.	2 alyzed B epared B ec. 01 RPD	Limit 20 y: AR y: AR kec. Limit 85 - 115 RPD Limit 20

Report Da Hahn Stat	e #1	, 2009	1		er: 901230 nquest	)1			age Numb of Lovin	
Param			IS sult U	T	D'I	Spike		atrix	D	Rec.
Chloride				Jnits g/Kg	Dil. 50	Amount 5000		esult 27	Rec. 97	Limit 85 - 115
	orour to be and								31	00 - 110
Fercent rec	covery is based	on the spike result	. RPD is da	ised on th	ie spike ar	ia spike auj	plicate i	esult.		
		MSD			Spike	Matrix		Rec.		RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		5180	mg/Kg	50	5000	427	95	85 - 115	2	20
Percent rec	covery is based	on the spike result	RPD is ba	used on th	ie spike ar	id spike du	plicate 1	esult.		
Standard	(ICV-1)									
OC Batah	56201		Data Ana	lumed. 0	000 01 02				1 1 1 1	AD.
QC Batch:	50291		Date Ana	lyzed: 2	009-01-23			A	nalyzed E	By: AR
			ICVs	ICV	s	ICVs		Percent		
			True	Four	nd	Percent		Recovery		Date
Param	Flag	Units	Conc.	Con		Recovery		Limits		nalyzed
Chloride		m mg/Kg	100	101	L	101		85 - 115	20	09-01-23
QC Batch: Param Chloride	Flag	Units mg/Kg	Date Ana CCVs True Conc. 100	CCV Four On 98.	Vs nd c.	CCVs Percent Recovery 99		A Percent Recovery Limits 85 - 115		by: AR Date nalyzed 09-01-23
Standard	(ICV-1)									
QC Batch:	56316		Date Ana	lyzed: 2	009-01-26			A	nalyzed E	y: AR
			ICVs	ICV	's	ICVs		Percent		
			True	Four		Percent		Recovery		Date
			Irue	roui						
Param	Flag	Units	Conc.	Con		Recovery		Limits	A	nalyzed
Param Chloride	Flag	Units mg/Kg			с.					-
	(CCV-1)		Conc.	Con 101	с.	Recovery		Limits 85 - 115		09-01-26
Chloride Standard	(CCV-1)		Conc. 100 Date Anal	Con 101 lyzed: 2	c.	Recovery 101		Limits 85 - 115 An	20	09-01-26
Chloride Standard	(CCV-1)		Conc. 100 Date Anal CCVs	Con 101 lyzed: 2 CCV	c. 1 009-01-26 Vs	Recovery 101 CCVs		Limits 85 - 115 An Percent	20	09-01-26 y: AR
Chloride Standard	(CCV-1)		Conc. 100 Date Anal	Con 101 lyzed: 2	c. 1 009-01-26 7s 1d	Recovery 101		Limits 85 - 115 An	20 nalyzed E	09-01-26



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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: April 20, 2009

Work Order: 9040232

Project Location: NW of Lovington, NM Project Name: Crownquest Project Number: Hahn State #1

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
192035	SB-2 @ 10'	soil	2009-03-31	10:00	2009-04-02
192036	SB-2 @ 20'	soil	2009-03-31	10:10	2009-04-02
192037	SB-2 @ 30'	soil	2009-03-31	10:20	2009-04-02
192038	SB-2 @ 40'	soil	2009-03-31	10:35	2009-04-02
192039	SB-2 @ 50'	soil	2009-03-31	10:50	2009-04-02
192040	SB-2 @ 60'	soil	2009-03-31	11:05	2009-04-02
192041	SB-2 @ 70'	soil	2009-03-31	11:25	2009-04-02
192042	SB-2 @ 75'	soil	2009-03-31	11:40	2009-04-02
192043	SB-3 @ 10'	soil	2009-03-31	14:00	2009-04-02

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
192044	SB-3 @ 20'	soil	2009-03-31	14:10	2009-04-02
192045	SB-3 @ 30'	soil	2009-03-31	14:20	2009-04-02
192046	SB-3 @ 40'	soil	2009-03-31	14:30	2009-04-02
192047	SB-3 @ 50'	soil	2009-03-31	14:45	2009-04-02
192048	SB-3 @ 60'	soil	2009-03-31	15:00	2009-04-02
192049	SB-3 @ 70'	soil	2009-03-31	15:20	2009-04-02
192050	SB-3 @ 76'	soil	2009-03-31	15:40	2009-04-02
192051	SB-4 @ Surface	soil	2009-04-01	08:30	2009-04-02
192052	SB-4 @ 10'	soil	2009-04-01	08:40	2009-04-02
192053	SB-4 @ 20'	soil	2009-04-01	08:50	2009-04-02
192054	SB-4 @ 30'	soil	2009-04-01	09:00	2009-04-02
192055	SB-4 @ 40'	soil	2009-04-01	09:10	2009-04-02
192056	SB-4 @ 50'	soil	2009-04-01	09:25	2009-04-02
192057	SB-4 @ 60'	soil	2009-04-01	09:40	2009-04-02
192058	SB-4 @ 70'	soil	2009-04-01	09:55	2009-04-02
192059	SB-4 @ 80'	soil	2009-04-01	10:15	2009-04-02
192060	SB-4 @ 90'	soil	2009-04-01	10:40	2009-04-02
192061	SB-4 @ 96'	soil	2009-04-01	11:05	2009-04-02

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 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Michael abel

Dr. Blair Leftwich, Director

Standard Flags

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

# Case Narrative

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2009-04-02 and assigned to work order 9040232. Samples for work order 9040232 were received intact at a temperature of 4.0 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	49769	2009-04-03 at 10:20	58385	2009-04-06 at 18:52
Chloride (IC)	E 300.0	49770	2009-04-03 at $10:21$	58634	2009-04-16 at 15:31
Chloride (IC)	E 300.0	49771	2009-04-03 at $10:21$	58635	2009-04-16 at $15:32$

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 9040232 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: 192035 - SB-2 @ 10'

Chloride		560	mg/Kg	50	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (IC) 58385	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-06 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 192036 - SB-2 @ 20'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58385 49769	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-06 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		363	mg/Kg	10	1.00

### Sample: 192037 - SB-2 @ 30'

QC Batch: Prep Batch:	58385 49769	Date Analyzed: Sample Preparation: RL	2009-04-06 2009-04-06	Analyzed By: Prepared By:	
Parameter	Flag	Result 267	Units mg/Kg	Dilution	RL 1.00

### Sample: 192038 - SB-2 @ 40'

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	58385	Date Analyzed:	2009-04-06	Analyzed By:	AR
Prep Batch:	49769	Sample Preparation:	2009-04-06	Prepared By:	AR

continued ...

Report Date: Apr Hahn State #1	ril 20, 2009		Work Order: 9040232 Crownquest		ber: 5 of 15 vington, NM
sample 192038 con	ntinued				
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$

	0				
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		315	m mg/Kg	10	1.00

### Sample: 192039 - SB-2 @ 50'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58385 49769	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-06 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		RL	<b>TT</b>		DI
Parameter	Flag	Result	Units	Dilution	RL
Chloride		219	mg/Kg	5	1.00

### Sample: 192040 - SB-2 @ 60'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58385 49769	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-06 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		128	mg/Kg	5	1.00

## Sample: 192041 - SB-2 @ 70'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58385 49769	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-06 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		46.9	mg/Kg	5	1.00

Report Date Hahn State	Date: April 20, 2009Work Order: 9040232tate #1Crownquest		Page Number: 6 of 15 NW of Lovington, NM					
Sample: 192042 - SB-2 @ 75'								
Laboratory:	Midland							
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A			
QC Batch:	58385	Date Analyzed:	2009-04-06	Analyzed By:	AR			
Prep Batch:	49769	Sample Preparation:	2009-04-06	Prepared By:	AR			
		RL						
Parameter	Flag	Result	Units	Dilution	RL			
Chloride		15.3	mg/Kg	5	1.00			
Sample: 19	2043 - SB-3 @ 10'							
Laboratory:	Midland							
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A			

Chloride		201	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
QC Batch: Prep Batch:	58385 49769	Date Analyzed: Sample Preparation:	2009-04-06 2009-04-06	Analyzed By: Prepared By:	AR

### Sample: 192044 - SB-3 @ 20'

Chloride		40.2	mg/Kg	5	1.00
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
		RL			
Prep Batch:		Sample Preparation:		Prepared By:	
Analysis: QC Batch:	Chloride (IC) 58385	Analytical Method: Date Analyzed:	E 300.0 2009-04-06	Prep Method: Analyzed By:	,
Laboratory:	Midland				

# Sample: 192045 - SB-3 @ 30'

Chloride		15.1	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

Report Date: April 20, 2009 Hahn State #1		Work Order: 9040232 Crownquest		Page Number: 7 of 15 NW of Lovington, NM		
Sample: 192	2046 - SB-3 @ 40'					
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	1	
-		RL				
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$	
Chloride		17.4	mg/Kg	5	1.00	

# Sample: 192047 - SB-3 @ 50'

Chloride		10.3	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	$\operatorname{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

## Sample: 192048 - SB-3 @ 60'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		8.78	mg/Kg	5	1.00

# Sample: 192049 - SB-3 @ 70'

Chloride		8.27	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (IC) 58634	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

Report Date Hahn State	: April 20, 2009 #1	Work Order: 90 Crownques		Page Number: 8 NW of Lovingto	
Sample: 19	2050 - SB-3 @ 76'				
Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	58634	Date Analyzed:	2009-04-16	Analyzed By:	AR
Prep Batch:	49770	Sample Preparation:	2009-04-06	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		9.08	mg/Kg	5	1.00
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation: RL	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	Result	Units	Dilution	RL
Chloride	0	33.5	mg/Kg	5	1.00
Sample: 19	2052 - SB-4 @ 10'				
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	N/A AR AR

		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		14.2	mg/Kg	5	1.00

### Sample: 192053 - SB-4 @ 20'

Chloride		8.89	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

Report Date Hahn State	e: April 20, 2009 #1	Work Order: 90 Crownques		Page Number: NW of Lovingto	
Sample: 19	2054 - SB-4 @ 30'				
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58634 49770	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	N/A AR AR
Parameter	Flag	RL Result	Units	Dilution	RL
Chloride		8.72	mg/Kg	5	1.00
Sample: 19	2055 - SB-4 @ 40'				
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58635 49771	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	N/A AR AR

Chloride		9.30	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Prep Batch:	49771	Sample Preparation	1: 2009-04-06	Prepared E	5

### Sample: 192056 - SB-4 @ 50'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58635 49771	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		9.54	mg/Kg	5	1.00

# Sample: 192057 - SB-4 @ 60'

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58635 49771	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR
		$\operatorname{RL}$			
Parameter	Flag	Result	Units	Dilution	$\mathbf{RL}$
Chloride		12.1	mg/Kg	5	1.00

Report Date Hahn State	e: April 20, 2009 #1	Work Order: 90 Crownques		Page Number: 10 NW of Lovingto	
Sample: 19	2058 - SB-4 @ 70'				
Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method:	N/A
QC Batch:	58635	Date Analyzed:	2009-04-16	Analyzed By:	AR
Prep Batch:	49771	Sample Preparation:	2009-04-06	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride	0	10.6	mg/Kg	5	1.00
Sample: 19	2059 - SB-4 @ 80'				
	Midland				
Laboratory:		Appletical Methods	E 300.0	Prov Mathad	NI / A
Analysis:	Chloride (IC) 58635	Analytical Method: Date Analyzed:	2009-04-16	Prep Method:	N/A AR
QC Batch:				Analyzed By:	
Prep Batch:	49771	Sample Preparation:	2009-04-06	Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		9.92	mg/Kg	5	1.00

# Sample: 192060 - SB-4 @ 90'

Chloride		9.08	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58635 49771	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

# Sample: 192061 - SB-4 @ 96'

Chloride		6.16	mg/Kg	5	1.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 58635 49771	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-04-16 2009-04-06	Prep Method: Analyzed By: Prepared By:	AR

Hahn State #1	pril 20, 2009		Work Orde Crow	er: 9040232 nquest	2			e Number: V of Loving	
Matrix Blank	(1) QC Batch:	58385							
QC Batch: 58	385		Date Analyzed:	2009-04-0	)6		۵	Analyzed By	: AR
	769		QC Preparation:	2009-04-0				Prepared By	
				1DL					
Parameter	Fla	ag		esult		Unit			RL
Chloride			<0.0	0430		mg/k	g		1
Matrix Blank	(1) QC Batch:	58634							
QC Batch: 58	634		Date Analyzed:	2009-04-1	6		Δ	analyzed By	: AR
•	770		QC Preparation:	2009-04-0				Prepared By	
				DL					
Parameter Chloride	Fl	ag	Res	sult 22		Units mg/k			RL 1
		F0005			2				
QC Batch: 58	<ul> <li>(1) QC Batch:</li> <li>635</li> <li>771</li> </ul>	58635	Date Analyzed: QC Preparation:	2009-04-1 2009-04-0				Analyzed By Prepared By	
QC Batch: 58	635	58635	QC Preparation:						
QC Batch: 58 Prep Batch: 49 Parameter	635		QC Preparation:	2009-04-0 DL		Units	F		
•	635 771		QC Preparation: M Res	2009-04-0 DL		Units mg/k	F		r: AR
QC Batch: 58 Prep Batch: 49 Parameter Chloride Laboratory Co QC Batch: 58	635 771	ag	QC Preparation: M Res	2009-04-0 DL sult	03	0	F gA		r: AR RL 1
QC Batch: 58 Prep Batch: 49 Parameter Chloride Laboratory Co QC Batch: 58 Prep Batch: 49	635 771 Fla ontrol Spike (LCS 385	ag 5-1) LC	QC Preparation: M Res 1 Date Analyzed: QC Preparation: S	2009-04-0 DL .24 2009-04-0 2009-04-0	93 96 93 Spike	mg/k Matr	g A F	Prepared By Analyzed By Prepared By	r: AR RL 1 7: AR r: AR Rec.
QC Batch: 58 Prep Batch: 49 Parameter Chloride Laboratory Co QC Batch: 58 Prep Batch: 49 Param	635 771 Fla ontrol Spike (LCS 385	ag 3-1) LC Rest	QC Preparation: M Res 1 Date Analyzed: QC Preparation: S ult Units	2009-04-0 DL sult .24 2009-04-0 2009-04-0 Dil.	)3 )6 )3 Spike Amount	mg/k Matu Resu	g A P tix	Prepared By Analyzed By Prepared By Rec.	r: AR RL 1 7: AR 7: AR 7: AR 8: AR Limit
QC Batch: 58 Prep Batch: 49 Parameter Chloride Laboratory Co QC Batch: 58 Prep Batch: 49 Param Chloride	635 771 Fla ontrol Spike (LCS 385 769	ag 5-1) LC Rest	QC Preparation: M Res 1 Date Analyzed: QC Preparation: S ult Units 1 mg/Kg	2009-04-0 DL sult .24 2009-04-0 2009-04-0 Dil. 1	93 96 93 Spike Amount 12.5	mg/k Matr Resu <0.04	g A P tix t 430	Prepared By Analyzed By Prepared By Rec.	r: AR RL 1 7: AR r: AR Rec.
QC Batch: 58 Prep Batch: 49 Parameter Chloride Laboratory Co QC Batch: 58 Prep Batch: 49 Param Chloride	635 771 Fla ontrol Spike (LCS 385	ag 5-1) LC Rest 12. ke result.	QC Preparation: M Res 1 Date Analyzed: QC Preparation: S ult Units 1 mg/Kg	2009-04-0 DL sult .24 2009-04-0 2009-04-0 Dil. 1 the spike an	93 96 93 Spike Amount 12.5 nd spike dup	mg/k Matr Resu <0.04	F g A F cix llt 430 sult.	Prepared By Analyzed By Prepared By Rec.	r: AR RL 1 r: AR r: AR Rec. Limit 90 - 110
QC Batch: 58 Prep Batch: 49 Parameter Chloride Laboratory Co QC Batch: 58 Prep Batch: 49 Param Chloride	635 771 Fla ontrol Spike (LCS 385 769	ag 5-1) LC Rest	QC Preparation: M Res 1 Date Analyzed: QC Preparation: S ult Units 1 mg/Kg	2009-04-0 DL sult .24 2009-04-0 2009-04-0 Dil. 1	93 96 93 Spike Amount 12.5	mg/k Matr Resu <0.04	g A P tix t 430	Analyzed By Prepared By Prepared By Rec. 97	r: AR RL 1 7: AR 7: AR 7: AR 8: AR Limit

Hahn State #	±1			Crowi	nquest			NW of Lov			gton, NN
Percent recove	ery is based on the	e spike result.	RPD is	based on t	the spike a	nd spike dup	olicate re	esult.			
Laboratory	Control Spike (l	LCS-1)									
QC Batch:	58634		Date A	nalyzed:	2009-04-1	.6			Ana	lyzed B	By: AR
	49770			eparation:	2009-04-0					bared B	
		LCS				Spike	Mat				Rec.
Param		Resu		Units	Dil.	Amount	Res		Re		Limit
Chloride		12.3		mg/Kg	1	12.5	<0.0		9	5	90 - 110
'ercent recove	ery is based on the	e spike result.	RPD is	based on t	the spike a	nd spike dup	olicate re	esult.			
-		LCSD		Dil	Spike	Matrix	D	Re		DDD	RPD
Param Chloride		Result 12.3	Units		Amount 12.5	Result <0.0430	Rec. 98		mit 110	RPD 0	Limi
	ery is based on the		mg/Kg						110	0	
	Control Spike (1 58635	LCS-1)	Date A	nalvzed:	2009-04-1	16			Ana	lvzed E	3v: AR
QC Batch:	Control Spike (1 58635 49771	LCS-1)		nalyzed: eparation:	2009-04-1 2009-04-0					lyzed E pared B	
QC Batch:	58635		QC Pre			)3	Mat	trix			By: AR
QC Batch: Prep Batch:	58635	LCS-1) LCS Resu	QC Pre				Mat Res			pared B	
QC Batch: Prep Batch: Param	58635	LC	QC Pre S ılt	eparation:	2009-04-0	03 Spike		ult	Prep	pared E	By: AR Rec. Limit
QC Batch: Prep Batch: Param Chloride	58635	LC: Resu 11.	QC Pre S ilt 5	Units mg/Kg	2009-04-0 Dil.	)3 Spike Amount 12.5	Res <0.0	sult 04 <b>3</b> 0	Prep Re	pared E	By: AR Rec. Limit
QC Batch: Prep Batch: Param Chloride Percent recove	58635 49771	LC: Resu 11.	QC Pre S ilt 5	Units mg/Kg based on t	2009-04-0 Dil.	)3 Spike Amount 12.5	Res <0.0	oult 0430 esult.	Prep Re	ec.	By: AR Rec. Limit 90 - 110 RPE
QC Batch: Prep Batch: Param Chloride Percent recove Param	58635 49771	LCS Resu 11. e spike result. LCSD Result	QC Pre S ilt 5 RPD is Units	Units mg/Kg based on t	2009-04-0 Dil. 1 the spike a Spike Amount	)3 Spike Amount 12.5 nd spike dup Matrix Result	Res <0.0 olicate re Rec.	esult 0430 esult. Re Lir	Prep Re 9 ec. mit	ec. 2 RPD	By: AR Rec. Limit 90 - 110 RPD
QC Batch: Prep Batch: Param Chloride Percent recover Param Chloride	58635 49771 ery is based on the	LC: Resu 11.4 e spike result. LCSD Result 11.3	QC Press Sult 5 RPD is Units mg/Ka	Units mg/Kg based on t Dil. g 1	2009-04-0 Dil. 1 the spike a Spike Amount 12.5	Spike Amount 12.5 nd spike dup Matrix Result <0.0430	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lir 90 -	Prep Re 9	ec.	By: AR Rec. Limit 90 - 11 RPI
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride	58635 49771	LC: Resu 11.4 e spike result. LCSD Result 11.3	QC Press Sult 5 RPD is Units mg/Ka	Units mg/Kg based on t Dil. g 1	2009-04-0 Dil. 1 the spike a Spike Amount 12.5	Spike Amount 12.5 nd spike dup Matrix Result <0.0430	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lir 90 -	Prep Re 9 ec. mit	ec. 2 RPD	By: AR Rec. Limit 90 - 110 RPE
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride Percent recove	58635 49771 ery is based on the ery is based on the	LC3 Resu 11. e spike result. LCSD Result 11.3 e spike result.	QC Press Salt 5 RPD is Units mg/Kg RPD is	Units mg/Kg based on t Dil. g 1	2009-04-0 Dil. 1 the spike a Spike Amount 12.5	Spike Amount 12.5 nd spike dup Matrix Result <0.0430	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lir 90 -	Prep Re 9 ec. mit	ec. 2 RPD	By: AR Rec. Limit 90 - 110 RPE
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride Percent recove Matrix Spik	58635 49771 ery is based on the ery is based on the se ( <b>MS-1</b> ) Spik	LC3 Resu 11. e spike result. LCSD Result 11.3 e spike result.	QC Press sult 5 RPD is Units mg/Kg RPD is 02044	Units mg/Kg based on t Dil. g 1 based on t	2009-04-0 Dil. 1 the spike a Spike Amount 12.5 the spike a	Spike Amount 12.5 nd spike dup Matrix Result <0.0430 nd spike dup	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lir 90 -	Prep Re 9 ec. mit 110	xc. 2 RPD 1	By: AR Rec. Limit 90 - 110 RPI Limi
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride Percent recove Matrix Spik QC Batch:	58635 49771 ery is based on the ery is based on the se ( <b>MS-1</b> ) Spik 58385	LC3 Resu 11. e spike result. LCSD Result 11.3 e spike result.	QC Press silt 5 RPD is Units mg/Kg RPD is 02044 Date A	Units mg/Kg based on t Dil. g 1 based on t nalyzed:	2009-04-0 Dil. 1 the spike a Spike Amount 12.5 the spike a 2009-04-0	Spike Amount 12.5 nd spike dup Matrix Result <0.0430 nd spike dup	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lir 90 -	Prep Re 9 ec. mit 110	RPD 1	By: AR Rec. Limit 90 - 110 RPD Limit
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride Percent recove Matrix Spik QC Batch:	58635 49771 ery is based on the ery is based on the se ( <b>MS-1</b> ) Spik	LC3 Resu 11. e spike result. LCSD Result 11.3 e spike result.	QC Press silt 5 RPD is Units mg/Kg RPD is 02044 Date A	Units mg/Kg based on t Dil. g 1 based on t	2009-04-0 Dil. 1 the spike a Spike Amount 12.5 the spike a	Spike Amount 12.5 nd spike dup Matrix Result <0.0430 nd spike dup	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lir 90 -	Prep Re 9 ec. mit 110	xc. 2 RPD 1	By: AR Rec. Limit 90 - 110 RPI Limi
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride Percent recove	58635 49771 ery is based on the ery is based on the se ( <b>MS-1</b> ) Spik 58385	LC3 Resu 11. e spike result. LCSD Result 11.3 e spike result.	QC Press Salt 5 RPD is Units mg/Kg RPD is 02044 Date A QC Press	Units mg/Kg based on t Dil. g 1 based on t nalyzed:	2009-04-0 Dil. 1 the spike a Spike Amount 12.5 the spike a 2009-04-0	Spike Amount 12.5 nd spike dup Matrix Result <0.0430 nd spike dup 06	Res <0.0 Dicate re Rec. 91	sult 0430 esult. Re Lin 90 - esult.	Prep Re 9 ec. mit 110	RPD 1	By: AR Rec. Limit 90 - 110 RPC Limi By: AR By: AR
QC Batch: Prep Batch: Param Chloride Percent recove Param Chloride Percent recove Matrix Spik QC Batch:	58635 49771 ery is based on the ery is based on the se ( <b>MS-1</b> ) Spik 58385	LC3 Result e spike result. LCSD Result 11.3 e spike result. ted Sample: 19	QC Press Sult 5 RPD is Units mg/Kg RPD is 02044 Date A QC Press S	Units mg/Kg based on t Dil. g 1 based on t nalyzed:	2009-04-0 Dil. 1 the spike a Spike Amount 12.5 the spike a 2009-04-0	Spike Amount 12.5 nd spike dup Matrix Result <0.0430 nd spike dup	Res <0.0 Dicate re Rec. 91 Dicate re	ult 0430 esult. Re Lin 90 - esult.	Prep Re 9 ec. mit 110	RPD 1 lyzed E pared E	By: AR Rec. Limit 90 - 110 RPC Limi

Work Order: 9040232

Report Date: April 20, 2009

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Report Date: April 20, 2009 Hahn State #1		V		er: 9040232 nquest				Number: of Loving	
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	99.2	mg/Kg	5	62.5	40.2	94	90 - 110	1	
Percent recovery is based on the	spike result.	RPD is l	based on t	the spike an	id spike du	plicate r	esult.		
Matrix Spike (MS-1) Spik	ed Sample: 1	92054							
QC Batch: 58634		Date An	alvzed:	2009-04-10	6		A	nalyzed B	v: AR
Prep Batch: 49770			paration:	2009-04-03	-			epared B	-
					-				J
	Μ				Spike	Ma	trix		Rec.
Param	Res		Units	Dil.	Amount			Rec.	Limit
Chloride	65	.1 1	ng/Kg	5	62.5	8.	72	90	90 - 110
Percent recovery is based on the	spike result.	RPD is l	based on t	the spike an	d spike du	plicate r	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	1 63.5	mg/Kg	5	62.5	8.72	88	90 - 110	2	
Percent recovery is based on the Matrix Spike (MS-1) Spike	spike result. ed Sample: 1		based on t	the spike an	d spike duj	plicate r	esult.		
QC Batch: 58635		Date An	alwood	2009-04-16	S		۸.	alyzed B	v: AR
Prep Batch: 49771			paration:	2009-04-03				epared B	
Tep Daten. 43111		QU I IC	arauon.	2005-04-06	5		11	epared D	y. An
	М	S			Spike	Ma	trix		Rec.
Param	Res	ult	Units	Dil.	Amount	Re	sult I	Rec.	Limit
Chloride	$^{2}$ 64	.9 1	ng/Kg	5	62.5	9.	08	89	90 - 110
Percent recovery is based on the	spike result.	RPD is l	based on t	the spike an	d spike du	olicate r	esult.		
				Spike	Matrix		Rec.		RPD
	MSD			opino	TATCOUT THE				IUI L
Param	MSD Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Param Chloride		Units mg/Kg		Amount 62.5	Result 9.08	Rec.	Limit 90 - 110	RPD 12	Limit

QC Batch: 58385

Date Analyzed: 2009-04-06

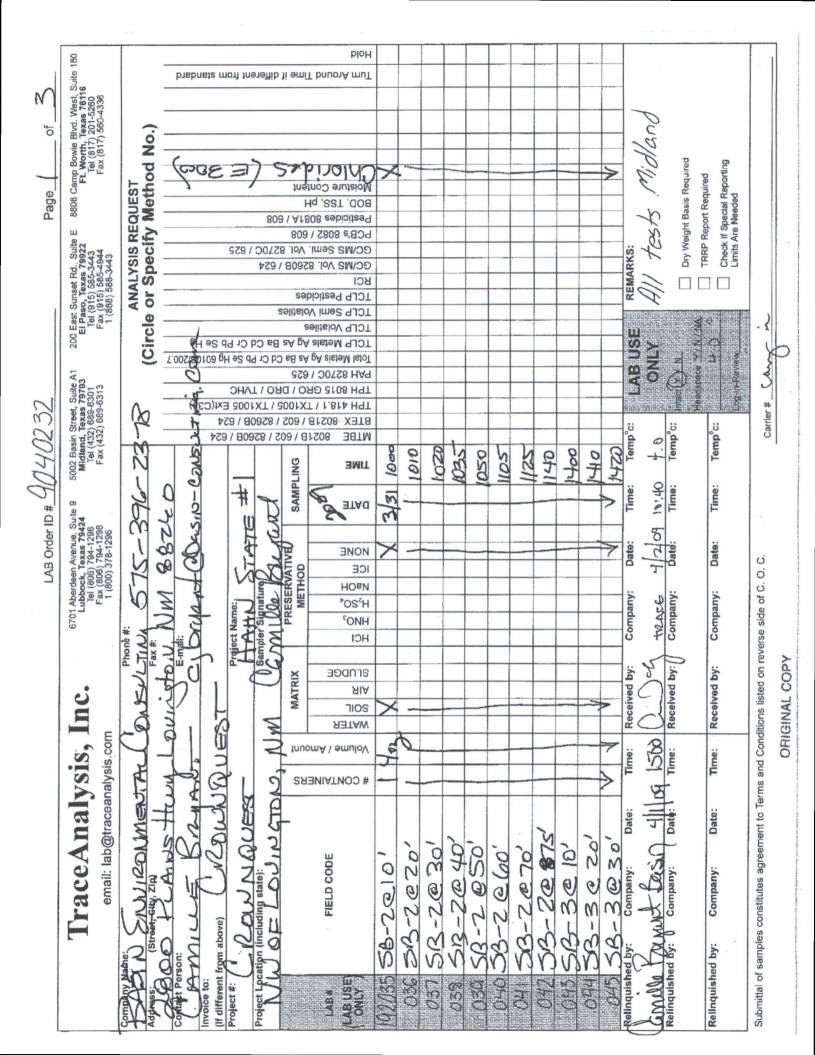
Analyzed By: AR

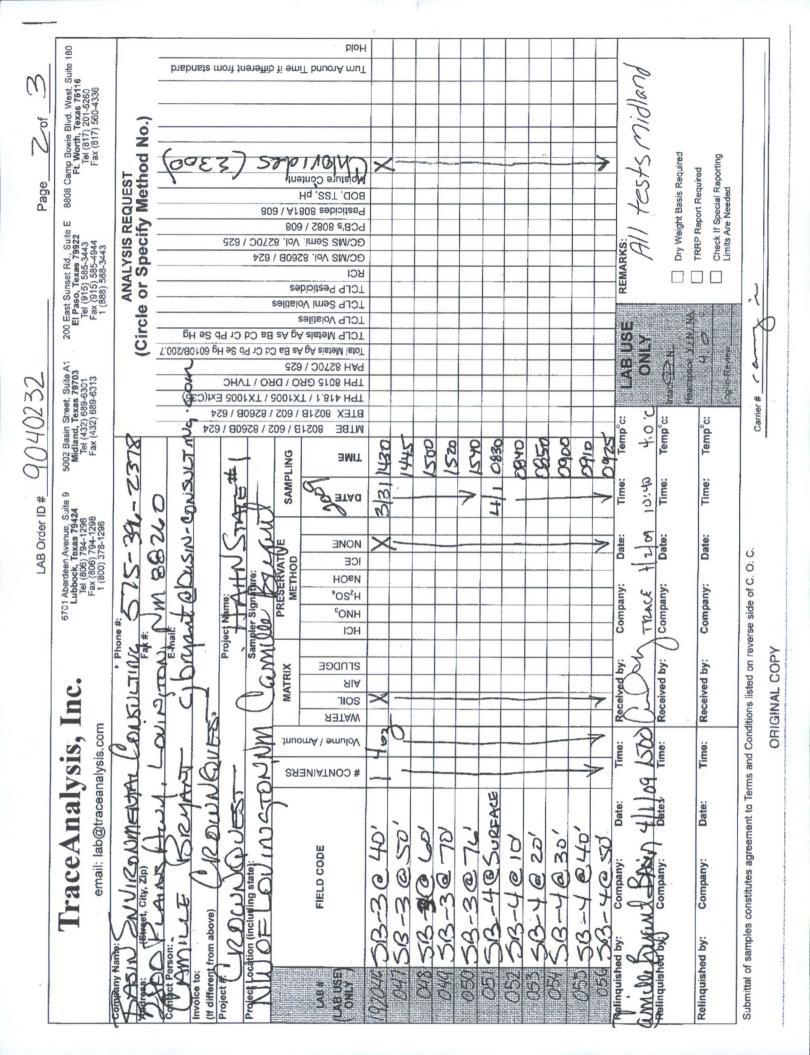
<sup>&</sup>lt;sup>1</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

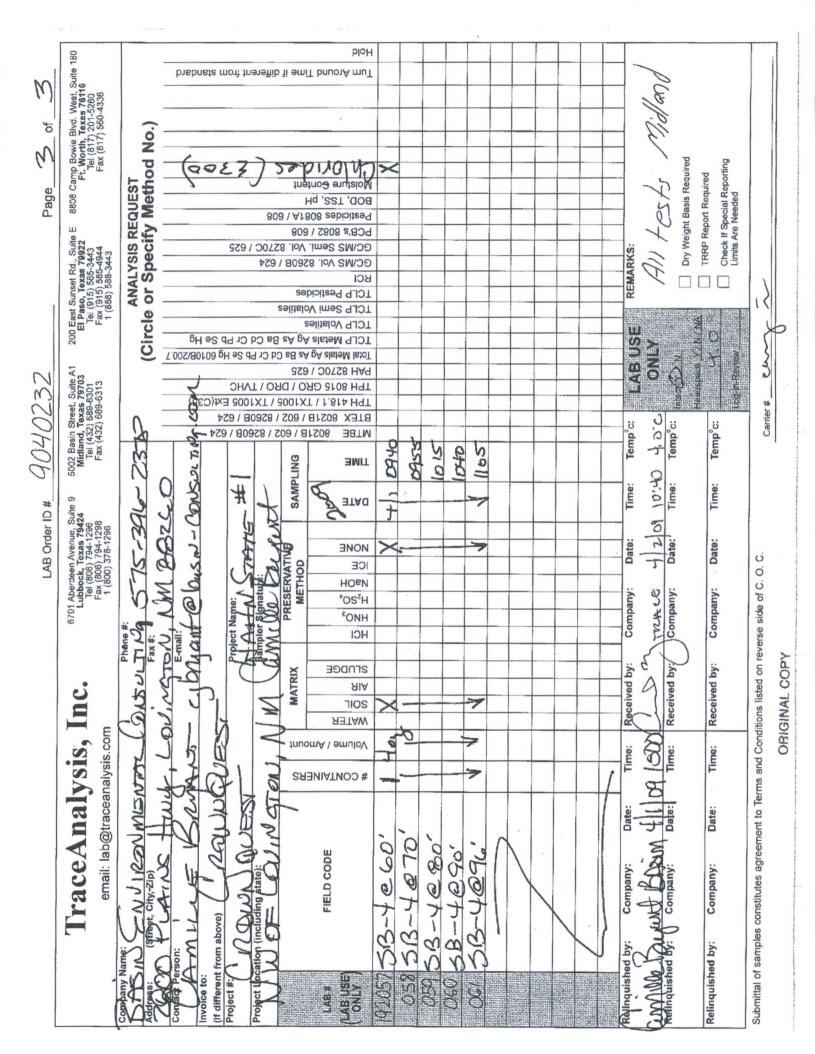
 $<sup>^{2}</sup>$ Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.  $^{3}$ Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: April 20, 2009 Hahn State #1		)09	Wo	Work Order: 9040232 Crownquest			Page Number: 14 of NW of Lovington, N		
			ICVs	ICVs	ICVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyz		
Chloride	1 1000	mg/Kg	12.5	11.7	94	90 - 110	2009-04		
		0, 0							
Standard (C	CCV-1)								
QC Batch: 58385			Date Anal	lyzed: 2009-04	-06	Anal	yzed By: A		
			CCVs	CCVs	CCVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyz		
Chloride	9	m mg/Kg	12.5	12.2	98	90 - 110	2009-04		
QC Batch: 5	58634		Date Anal ICVs	lyzed: 2009-04 ICVs	ICVs	Anal Percent	lyzed By:		
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyz		
Chloride		mg/Kg	12.5	11.4	91	90 - 110	2009-04		
Standard (C QC Batch: 3	,		Date Ana	lyzed: 2009-04	L-16	Anal	lyzed By: A		
			CCVs	CCVs	CCVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyz		
Chloride		mg/Kg	12.5	12.3	98	90 - 110	2009-04		
Standard (I QC Batch: 3	,		Date Ana	lyzed: 2009-04	l-16	Anal	lyzed By: A		
			ICVs	ICVs	ICVs	Percent			
			True	Found	Percent	Recovery	Date		
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyz		
Chloride		mg/Kg	12.5	12.3	98	90 - 110	2009-04		

Report Date Hahn State	e: April 20, 20 #1	009	Work Order: 9040232 Crownquest			Page Number: 15 of 15 NW of Lovington, NM	
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		mg/Kg	12.5	11.3	90	90 - 110	2009-04-16







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 915 • 585 • 3443

 432 • 689 • 6301

 817 • 201 • 5260

FAX 806 • 794 • 1298 FAX 915 • 585 • 4944 FAX 432 • 689 • 6313

**WBENC:** 237019 **H** 

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

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

Report Date: April 16, 2009

Work Order: 9040702

Project Location: NW of Lovington, NM Project Name: Crownquest Project Number: Hahn State #1

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
192312	MW-1	water	2009-04-06	11:50	2009-04-07
192313	MW-2	water	2009-04-06	14:00	2009-04-07
192314	MW-3	water	2009-04-06	16:00	2009-04-07

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 7 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Blain Leptinich

Dr. Blair Leftwich, Director

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# **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2009-04-07 and assigned to work order 9040702. Samples for work order 9040702 were received intact at a temperature of 4.0 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 (Titration)	SM 4500-Cl B	49851	2009-04-08 at 10:45	58372	2009-04-08 at 13:46
TDS	SM 2540C	49850	2009-04-08 at $10:44$	58535	2009-04-14 at $13:43$

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 9040702 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: 192312 - MW-1 Laboratory: Midland Prep Method: N/A Analysis: Chloride (Titration) Analytical Method: SM 4500-Cl B QC Batch: 58372 Date Analyzed: 2009-04-08 Analyzed By: AR Prep Batch: 49851 Sample Preparation: 2009-04-08 Prepared By: AR RL Result Units Dilution RL Parameter Flag mg/L 10 4.00 Chloride 502 Sample: 192312 - MW-1 Laboratory: Midland Prep Method: N/A TDS Analytical Method: SM 2540C Analysis:

QC Batch: Prep Batch:	58535 49850		Date Analyzed: Sample Preparation:	2009-04-14 2009-04-08	Analyzed By: Prepared By:	
			RL			
Parameter		Flag	Result	Units	Dilution	RL
Total Dissolve	ed Solids		1160	$\mathrm{mg/L}$	2	10.0

#### Sample: 192313 - MW-2

Chloride		69.9	mg/L	2	4.00
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 58372 49851	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-04-08 2009-04-08	Prep Method: Analyzed By: Prepared By:	AR

#### Sample: 192313 - MW-2

Analysis: TDS Analytical Method: SM 2540C Prep Met	
Analysis. 1D5 Analysical Method. SM 25400 11ep Met	thod: N/A
QC Batch: 58535 Date Analyzed: 2009-04-14 Analyzed	By: AR
Prep Batch: 49850 Sample Preparation: 2009-04-08 Prepared	By: AR

continued ...

Page Number: 4 of 7 NW of Lovington, NM

Hahn State #1

Work Order: 9040702 Crownquest

# Report Date: April 16, 2009

Report Date: April 16, 2009 Hahn State $\#1$	Work Order: 9 Crownque	0 - 0 - 0 -	Page Number: 5 of 7 NW of Lovington, NM		
sample 192313 continued					
		RL			
Parameter	Flag	Result	Units	Dilution	RL
		RL			
Parameter	Flag	Result	Units	Dilution	$\operatorname{RL}$
Total Dissolved Solids		473	mg/L	1	10.0

### Sample: 192314 - MW-3

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (Titration) 58372 49851	Analytical Method: Date Analyzed: Sample Preparation:	SM 4500-Cl B 2009-04-08 2009-04-08	Prep Method: Analyzed By: Prepared By:	AR
		RL	,		
Parameter	Flag	Result	Units	Dilution	RL
Chloride		59.7	mg/L	1	4.00

# Sample: 192314 - MW-3

Laboratory: Analysis: QC Batch: Prep Batch:	Midland TDS 58535 49850		Analytical Method: Date Analyzed: Sample Preparation:	SM 2540C 2009-04-14 2009-04-08	Prep Method: Analyzed By: Prepared By:	AR
			$\operatorname{RL}$			
Parameter		Flag	Result	Units	Dilution	$\mathbf{RL}$
Total Dissolv	red Solids		446	mg/L	1	10.0

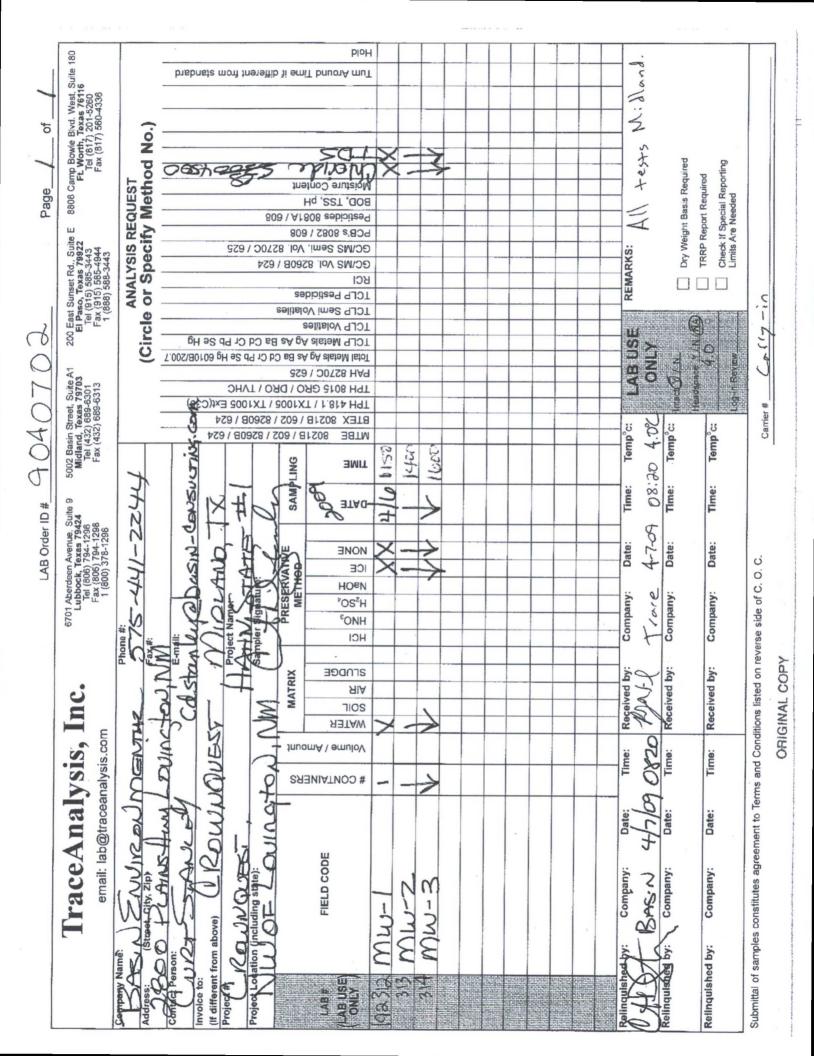
# Method Blank (1) QC Batch: 58372

QC Batch: Prep Batch:	58372 49851		Date Analyzed: 2 QC Preparation: 2	2009-04-08 2009-04-08		Analyzed By: Prepared By:	
_		_	MD				
Parameter		$\operatorname{Flag}$	Resu	ılt	Units		$\mathbf{RL}$
Chloride			<1.8	32	mg/L		4

Report Date: April 16, 2009 Hahn State #1		Work Orde Crow	er: 9040702 nquest		Page Num NW of Lovir		
Method Blank (1) QC Ba	tch: 58535						
QC Batch: 58535 Prep Batch: 49850		Analyzed: eparation:	2009-04-1 2009-04-0			Analyzed Prepared	
			MDL				
Parameter	Flag		Result		Units		RL
Total Dissolved Solids			<9.75		mg/L	i	10
Duplicates (1) Duplicated S QC Batch: 58535 Prep Batch: 49850		Analyzed: reparation:	2009-04-1 2009-04-0			Analyzed Prepared	
Param	Duplicate Result	Sample Result		nits	Dilution	RPD	RPD Limit
Total Dissolved Solids	484	446		ng/L	1	8	20
		Analyzed	2000 04 0	16		Applyand	Du: AD
QC Batch: 58372 Prep Batch: 49851	Date A QC Pr	Analyzed: reparation:	2009-04-0 2009-04-0	)8 Spike	Matrix	Analyzed Prepared	By: AR Rec.
QC Batch: 58372 Prep Batch: 49851 Param	Date A QC Pr LCS Result	reparation: Units	2009-04-0 Dil.	08 Spike Amount	Result	Prepared Rec.	By: AR Rec. Limit
QC Batch: 58372 Prep Batch: 49851 Param Chloride	Date A QC Pr LCS Result 102	Units mg/L	2009-04-0 Dil. 1	Spike Amount 100	Result <1.82	Prepared Rec. 102	By: AR Rec. Limit
	Date A QC Pr LCS Result 102 spike result. RPD is	Units mg/L	2009-04-0 Dil. 1	Spike Amount 100	Result <1.82	Prepared Rec. 102	By: AR Rec.
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the	Date A QC Pr LCS Result 102 spike result. RPD is LCSD	Units mg/L s based on t	2009-04-0 Dil. 1 the spike a Spike	98 Spike Amount 100 nd spike du Matrix	Result <1.82 plicate result	Prepared Rec. 102 Rec.	By: AR Rec. Limit 85 - 115 RPD
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the Param	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit	Units mg/L s based on t s Dil.	2009-04-0 Dil. 1 the spike a Spike Amount	)8 Spike Amount 100 nd spike du Matrix Result	Result <1.82 plicate result Rec. L	Prepared Rec. 102 Rec. imit RPE	By: AR Rec. Limit 85 - 115 RPD Limit
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit 99.5 mg/l	Units mg/L s based on t s Dil. L 1	2009-04-0 Dil. 1 the spike a Spike Amount 100	Spike Amount 100 nd spike du Matrix Result <1.82	Result       <1.82	Prepared Rec. 102 Rec. imit RPE - 115 2	By: AR Rec. Limit 85 - 115 RPD
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit 99.5 mg/l	Units mg/L s based on t s Dil. L 1	2009-04-0 Dil. 1 the spike a Spike Amount 100	Spike Amount 100 nd spike du Matrix Result <1.82	Result       <1.82	Prepared Rec. 102 Rec. imit RPE - 115 2	By: AR Rec. Limit 85 - 115 RPD Limit
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit 99.5 mg/l spike result. RPD is ed Sample: 192314	Units mg/L s based on t s Dil. L 1	2009-04-0 Dil. 1 the spike a Spike Amount 100	Spike Amount 100 nd spike du Matrix Result <1.82 nd spike du	Result       <1.82	Prepared Rec. 102 Rec. imit RPE - 115 2	By: AR Rec. Limit 85 - 115 RPD Limit 20
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit 99.5 mg/l spike result. RPD is ed Sample: 192314 Date A	Units mg/L s based on t s Dil. L 1 s based on t	2009-04-0 Dil. 1 the spike a Spike Amount 100 the spike a	Spike Amount 100 nd spike du Matrix Result <1.82 nd spike du	Result       <1.82	Prepared Rec. 102 Rec. imit RPE - 115 2	By: AR Rec. Limit 85 - 115 RPD Limit 20 By: AR
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 58372	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit 99.5 mg/l spike result. RPD is ed Sample: 192314 Date A	The paration is the paration is the paration is the paration is the paratic paratement of the paratem	2009-04-0 Dil. 1 the spike a Spike Amount 100 the spike a 2009-04-0	Spike Amount 100 nd spike du Matrix Result <1.82 nd spike du	Result       <1.82	Prepared Rec. 102 Rec. imit RPE - 115 2 Analyzed	By: AR Rec. Limit 85 - 115 RPD Limit 20 By: AR
QC Batch: 58372 Prep Batch: 49851 Param Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Matrix Spike (MS-1) Spike QC Batch: 58372	Date A QC Pr LCS Result 102 spike result. RPD is LCSD Result Unit 99.5 mg/1 spike result. RPD is ed Sample: 192314 Date A QC Pr	The paration is the paration is the paration is the paration is the paratic paratement of the paratem	2009-04-0 Dil. 1 the spike a Spike Amount 100 the spike a 2009-04-0	Spike Amount 100 nd spike du Matrix Result <1.82 nd spike du	Result <1.82 plicate result <u>Rec. L</u> 100 85 plicate result	Prepared Rec. 102 Rec. imit RPE - 115 2 Analyzed	By: AR Rec. Limit 85 - 115 RPD Limit 20 By: AR By: AR

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

Report Date: April 16, 26 Hahn State #1	009			Page Number: 7 of 7 NW of Lovington, NM					
	MS	SD		Spike	Matrix		Rec.		RPD
Param	Res		Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	14	.9 mg/L	1	100	59.7	89	70 - 130	2	20
Percent recovery is based	on the spike res	sult. RPD is	based on	the spike a	nd spike dup	olicate	result.		
Standard (ICV-1)									
QC Batch: 58372		Date An	nalyzed:	2009-04-08	3		Ana	alyzed By	: AR
		ICVs	IC	CVs	ICVs		Percent		
		True	Fo	und	Percent		Recovery		Date
Param Flag	Units	Conc.		onc.	Recovery		Limits		alyzed
Chloride	$\mathrm{mg/L}$	100	1	00	100		85 - 115	200	9-04-08
Standard (CCV-1)									
QC Batch: 58372		Date An	nalyzed:	2009-04-08	3		Ana	alyzed By	: AR
		CCVs	C	CVs	CCVs		Percent		
		True	Fo	und	Percent		Recovery		Date
Param Flag	Units	Conc.		onc.	Recovery		Limits		alyzed
Chloride	$\mathrm{mg/L}$	12.5	9	9.7	798		85 - 115	200	9-04-08
Standard (ICV-1)									
QC Batch: 58535		Date Ar	nalyzed:	2009-04-14	1		Ana	ulyzed By	: AR
		I	CVs	ICVs	ICVs		Percent		
		,	True	Found	Percen	t	Recovery	1	Date
Param	0		Conc.	Conc.	Recover	ry	Limits		alyzed
Total Dissolved Solids	I	mg/L	1000	1020	102		90 - 110	200	9-04-14
Standard (CCV-1)									
QC Batch: 58535		Date Ar	nalyzed:	2009-04-14	1		Ana	lyzed By	: AR
		(	CCVs	CCVs	CCVs		Percent		
			True	Found	Percen		Recovery		Date
Param	0		Conc.	Conc.	Recover	ry	Limits		alyzed
Total Dissolved Solids		ng/L	1000	989	99		90 - 110	200	





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HUB:

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**DBE:** VN 20657

**NELAP** Certifications

Certifications

**NCTRCA** WFWB38444Y0909

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

**WBENC:** 237019

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: July 22, 2009

Work Order: 9071004

Project Location:NW of Lovington, NMProject Name:CrownquestProject Number:Hahn State #1

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
201816	MW-2	water	2009-07-09	09:50	2009-07-10
201817	MW-3	water	2009-07-09	10:10	2009-07-10
201818	MW-1	water	2009-07-09	10:30	2009-07-10

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 7 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

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

# **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2009-07-10 and assigned to work order 9071004. Samples for work order 9071004 were received intact at a temperature of 3.2 deg C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (IC)	E 300.0	52327	2009-07-13 at 08:23	61416	2009-07-14 at 11:22
Chloride (IC)	E 300.0	52621	2009-07-21 at $12:42$	61696	2009-07-21 at 19:19

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 9071004 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: July 22, 2009Work Order: 9071004Page Number: 4 of 7Hahn State #1CrownquestNW of Lovington, NM

# **Analytical Report**

## Sample: 201816 - MW-2

Chloride		88.3	mg/L	5	0.500
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 61416 52327	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-07-14 2009-07-13	Prep Method: Analyzed By: Prepared By:	AR

### Sample: 201817 - MW-3

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 61416 52327	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-07-14 2009-07-13	Prep Method: Analyzed By: Prepared By:	AR
Parameter Chloride	Flag	RL Result 55.3	Units mg/L	Dilution 5	RL 0.500

#### Sample: 201818 - MW-1

Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (IC) 61696	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-07-21 2009-07-21	Prep Method: Analyzed By: Prepared By:	SS
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		1310	mg/L	100	2.50

### Method Blank (1) QC Batch: 61416

QC Batch:	61416		Date Analyzed:	2009-07-14		Analyzed By:	AR
Prep Batch:	52327		QC Preparation:	2009-07-13		Prepared By:	AR
			Ν	ÍDL			
Parameter		Flag	Re	sult	Units		RL
Chloride			<0	.475	$\mathrm{mg/L}$		0.5

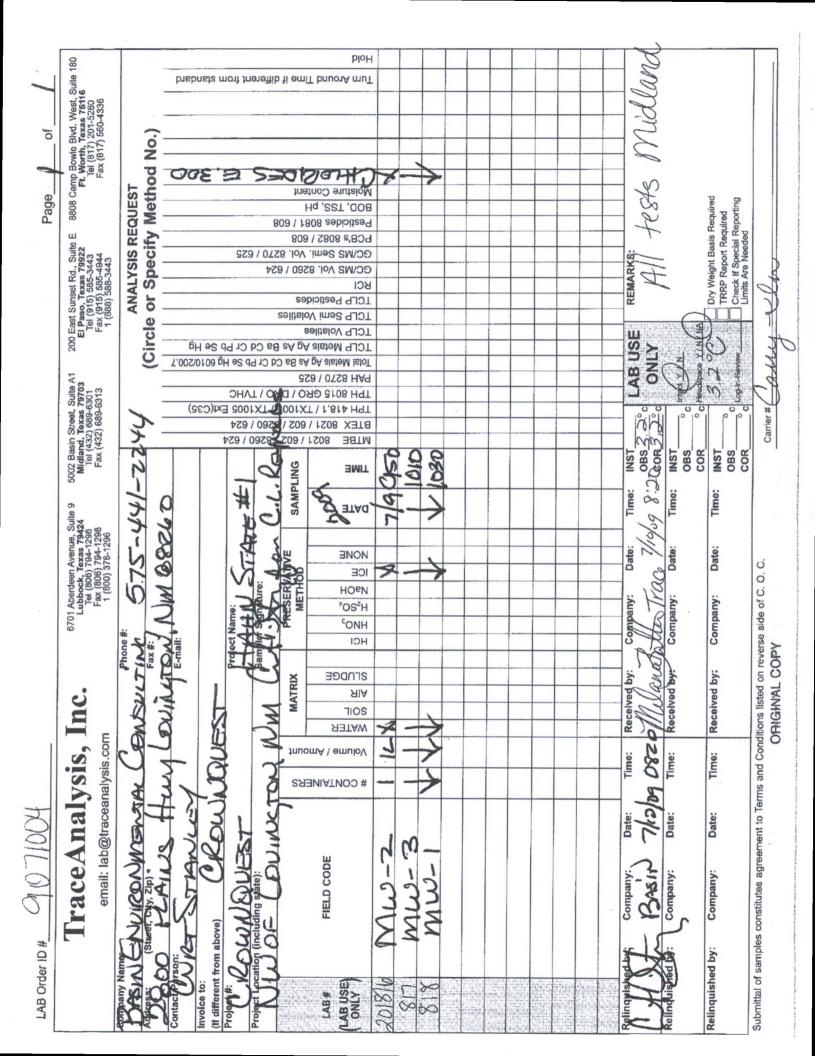
Hahn State #1	July 22, 2009 1		Work Order: 9071004 Crownquest						Page Number: 5 of 7 NW of Lovington, NM		
Method Blan	lk (1) QC Bat	ch: 61696									
•	51696 52621			nalyzed: eparation:	2009-07-2 2009-07-2				Analyze Preparec		SS SS
				М	DL						
Parameter		Flag			sult		Uni				RL
Chloride				<0.	157		mg/	L			2.5
Laboratory C	Control Spike (LO	CS-1)									
QC Batch: 6	61416		Date A	nalvzed:	2009-07-14	4			Analyzed	By:	AR
•	52327			paration:	2009-07-1				Prepared		AR
										U	
		Т	20			G 11	16.			D	
Param		LO	sult	Units	Dil	Spike Amount	Mat Res		Pag		ec. mit
Chloride			4.6	mg/L	Dil. 1	25.0	<0.4		Rec. 98		- 110
	. 1 . 1 . (1								90	90	- 110
Percent recover	ry is based on the s	pike result.	RPD is	based on t	he spike an	d spike du	plicate re	esult.			
		LCSD			Spike	Matrix		Rec		]	RPD
Param		Result	Units	Dil.	Amount	Result	Rec.	Lim	it RPI	DI	Limit
		24.4	mg/L	1	25.0	< 0.475	98	90 - 1	110 1	_	
Percent recover Laboratory C QC Batch: 6	ry is based on the s Control Spike (LC 51696 52621	pike result.	RPD is Date A			d spike du 1			Analyzee Preparec		SS SS
Percent recover Laboratory C QC Batch: 6	Control Spike (LO	pike result.	RPD is Date A	based on t nalyzed:	he spike an 2009-07-2	d spike du 1			Analyzee		
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5	Control Spike (LO	pike result. C <b>S-1</b> ) L(	RPD is Date A QC Pre	based on t nalyzed: eparation:	he spike an 2009-07-2 2009-07-2	d spike du 1 Spike	plicate re Mat	esult.	Analyzeo Prepareo	l By: R	SS .ec.
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param	Control Spike (LO	pike result. C <b>S-1)</b> L( Res	RPD is Date A QC Pre	based on t nalyzed: eparation: Units	he spike an 2009-07-2 2009-07-2 Dil.	d spike du 1 Spike Amount	plicate re Mat Res	esult.	Analyzea Preparea Rec.	l By: R Li	SS ec. mit
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride	Control Spike (L0 51696 52621	pike result. C <b>S-1</b> ) LO Res 23	RPD is Date A QC Pre	based on t nalyzed: eparation: Units mg/L	he spike an 2009-07-2 2009-07-2 Dil. 1	d spike du 1 1 Spike Amount 25.0	Mat Res <0.1	esult. crix ult 157	Analyzeo Prepareo	l By: R Li	SS .ec.
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride	Control Spike (LO	pike result. C <b>S-1</b> ) LO Res 23	RPD is Date A QC Pre	based on t nalyzed: eparation: Units mg/L	he spike an 2009-07-2 2009-07-2 Dil. 1	d spike du 1 1 Spike Amount 25.0	Mat Res <0.1	esult. crix ult 157	Analyzea Preparea Rec.	l By: R Li	SS ec. mit
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride	Control Spike (L0 51696 52621	pike result. CS-1) LO Res 23 pike result.	RPD is Date A QC Pre	based on t nalyzed: eparation: Units mg/L	he spike an 2009-07-2 2009-07-2 Dil. 1 he spike an	d spike du 1 1 Spike <u>Amount</u> 25.0 d spike du	Mat Res <0.1	esult. arix ult 157 esult.	Analyzeo Prepareo Rec. 95	By: R Li 90	SS ec. mit - 110
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride Percent recover	Control Spike (L0 51696 52621	pike result. CS-1) LC Res 23 pike result. LCSD	RPD is Date A QC Pre CS sult 3.7 RPD is	based on t nalyzed: eparation: Units mg/L based on t	he spike an 2009-07-2 2009-07-2 Dil. 1 he spike an Spike	d spike du 1 1 25.0 d spike du Matrix	Mat Res <0.1 plicate re	esult. crix ult 157 esult. Rec	Analyzeo Prepareo Rec. 95	l By: R Li 90	SS ec. mit - 110 RPD
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride Percent recover Param	Control Spike (L0 51696 52621	pike result. CS-1) LO Res 23 pike result.	RPD is Date A QC Pre CS sult 3.7 RPD is Units	based on t nalyzed: eparation: Units mg/L	he spike an 2009-07-2 2009-07-2 Dil. 1 he spike an	d spike du 1 1 Spike <u>Amount</u> 25.0 d spike du	Mat Res <0.1	esult. arix ult 157 esult.	Analyzeo Prepareo Rec. 95  it RPI	l By: R Li 90	SS ec. mit - 110 RPD Limit
Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride Percent recover Param Chloride	Control Spike (L0 51696 52621	pike result. CS-1) LC Res 23 pike result. LCSD Result 23.6	RPD is Date A QC Pre CS sult 3.7 RPD is Units mg/L	based on t nalyzed: eparation: Units mg/L based on t Dil. 1	he spike an 2009-07-2 2009-07-2 Dil. 1 he spike an Spike Amount 25.0	d spike du 1 1 Spike Amount 25.0 d spike du Matrix Result <0.157	Mat Res <0. plicate re Rec. 94	esult. rix ult 157 esult. Rec Lim 90 - 1	Analyzeo Prepareo Rec. 95  it RPI	l By: R Li 90	SS ec. mit - 110 RPD
Percent recover Laboratory C QC Batch: 6 Prep Batch: 5 Param Chloride Percent recover Param Chloride	Control Spike (LO 51696 52621 Ty is based on the s	pike result. CS-1) LC Res 23 pike result. LCSD Result 23.6	RPD is Date A QC Pre CS sult 3.7 RPD is Mg/L RPD is	based on t nalyzed: eparation: Units mg/L based on t Dil. 1	he spike an 2009-07-2 2009-07-2 Dil. 1 he spike an Spike Amount 25.0	d spike du 1 1 Spike Amount 25.0 d spike du Matrix Result <0.157	Mat Res <0. plicate re Rec. 94	esult. rix ult 157 esult. Rec Lim 90 - 1	Analyzeo Prepareo Rec. 95  it RPI	l By: R Li 90	SS ec. mit - 110 RPD Limit

QC Batch:61416Date Analyzed:2009-07-14Analyzed By:ARPrep Batch:52327QC Preparation:2009-07-13Prepared By:AR

Report Date: July 22, 2009 Hahn State #1				er: 9071004 nquest	ł		-		er: 6 of 7 gton, NM
	]	MS			Spike	Mat	rix		Rec.
Param	R	esult	Units	Dil.	Amount	Res	ult R	ec.	Limit
Chloride	1 5	980	mg/L	50	1380	49	80 7	73	90 - 110
Percent recovery is based on	the spike result	. RPD is	based on	the spike a	nd spike du	plicate re	esult.		
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	$^{2}$ 5980	mg/L	50	1380	4980	73	90 - 110	0	
Percent recovery is based on			based on	the spike a	nd spike du	plicate r	esult.		
Matrix Spike (MS-1) S QC Batch: 61696	Spiked Sample: 1		nalyzed:	2009-07-2	21		Aı	nalyzed	By: SS
Prep Batch: 52621		QC Pr	eparation:	2009-07-2	21		Pı	repared	By: SS
	ſ	MS			Spike	Mat			Rec.
Param		esult	Units	Dil.	Amount	Res		ec.	Limit
Chloride		199	mg/L	5	125	87		00	90 - 110
Percent recovery is based on									50 - 110
	MSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	205	mg/L	5	125	87.1	94	90 - 110	3	20
Percent recovery is based on Standard (ICV-1)	the spike result	t. RPD is	based on	the spike a	nd spike du	plicate r	esult.		
QC Batch: 61416		Date A	nalyzed:	2009-07-14	Į		An	alyzed I	By: AR
							D		
		ICVs	IC	Vs	ICVs		Percent		
		ICVs True	IC Fou		ICVs Percent		Percent Recovery		Date
Param Flag	Units			ind				A	Date Analyzed
Param Flag Chloride	Units mg/L	True	Fou	ind nc.	Percent	I	Recovery		
Chloride		True Conc.	For	ind nc.	Percent Recovery	I	Recovery Limits		analyzed
Chloride Standard (CCV-1)		True Conc. 25.0	For Co. 22	ind nc.	Percent Recovery 92	I	Recovery Limits 90 - 110	20	analyzed
		True Conc. 25.0	For Co. 22	und nc. 2009-07-14	Percent Recovery 92	I	Recovery Limits 90 - 110	20	Analyzed 009-07-14
Chloride Standard (CCV-1)	mg/L	True Conc. 25.0 Date A	Fou Co 22 nalyzed: CC Fou	und nc. 2009-07-14 2Vs md	Percent Recovery 92	I	Recovery Limits 90 - 110 An Percent Recovery	20	Analyzed 009-07-14
Chloride Standard (CCV-1)		True Conc. 25.0 Date A CCVs	Fou Co 22 nalyzed: CC Fou Co	und nc. 2009-07-14 2Vs md	Percent Recovery 92 CCVs	I	Recovery Limits 90 - 110 An Percent	20 alyzed I	Analyzed 009-07-14 By: AR

 $^{1}$ Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.  $^{2}$ Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: July 22, 2009 Hahn State #1			W	ork Order: 9071 Crownquest	Page Number: 7 of 7 NW of Lovington, NM		
Standard	(CCV-1)						
QC Batch:	61696		Date Ana	alyzed: 2009-0	7-21	Ana	alyzed By: SS
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		$\mathrm{mg/L}$	25.0	23.4	94	90 - 110	2009-07-21
Standard	(CCV-2)						
QC Batch:	61696		Date Ana	alyzed: 2009-0	7-21	Ana	alyzed By: SS
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/L	25.0	23.7	95	90 - 110	2009-07-21





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 6015 Harris Parkway, Suite 110
 Ft. Worth, Texas 76132

Lubbock, Texas 79424 800 • 378 • 1296 El Paso, Texas 79922 888 • 588 • 3443 Midland, Texas 79703 1. Worth, Texas 76132 E-Mail: lab@traceanalysis.com

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

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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 27, 2009

Work Order: 9102303

Project Location: Lea Co., NM Project Name: Hahn State #1 Project Number: CrownQuest

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
212960	MW-2	water	2009-10-22	10:15	2009-10-23
212961	MW-3	water	2009-10-22	10:30	2009-10-23
212962	MW-1	water	2009-10-22	10:45	2009-10-23

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 abel

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

#### Standard Flags

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

# **Case Narrative**

Samples for project Hahn State #1 were received by TraceAnalysis, Inc. on 2009-10-23 and assigned to work order 9102303. Samples for work order 9102303 were received intact at a temperature of 9.4 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	55242	2009-10-23 at 09:18	64710	2009-10-26 at 08:59

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 9102303 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: October 27, 2009 CrownQuest

# **Analytical Report**

#### Sample: 212960 - MW-2

Chloride		125	mg/L	10	0.500
Parameter	Flag	RL Result	Units	Dilution	RŁ
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64710 55242	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-26 2009-10-23	Prep Metho Analyzed B Prepared B	y: AR

### Sample: 212961 - MW-3

Chloride		69.8	mg/L	5	0.500
Parameter	Flag	RL Result	Units	Dilution	$\operatorname{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64710 55242	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-26 2009-10-23	Prep Method: Analyzed By: Prepared By:	AR

#### Sample: 212962 - MW-1

Chloride		497	mg/L	50	0.500
Parameter	Flag	RL Result	Units	Dilution	$\operatorname{RL}$
Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 64710 55242	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2009-10-26 2009-10-23	Prep Method: Analyzed By: Prepared By:	AR

### Method Blank (1) QC Batch: 64710

QC Batch: Prep Batch:	64710 55242		Date Analyzed: QC Preparation:	2009-10-26 2009-10-23		Analyzed By: Prepared By:	
				IDL		r S	
			IVI	IDL			
Parameter		Flag	Re	sult	Units		RL
Chloride			<0.	475	mg/L		0.5

Report Date: October 27, 2009 CrownQuest		Work Order: 9102303 Hahn State #1							er: 5 of 6 Co., NM
Laboratory Control Spike (	LCS-1)								
QC Batch: 64710		Date A	nalyzed:	2009-10-2	26		An	alyzed B	v: AR
Prep Batch: 55242			eparation:	2009-10-2				epared B	
	Ι	CS			Spike	Ma	trix		Rec.
Param		esult	Units	Dil.	Amount			ec.	Limit
Chloride	2	5.7	mg/L	1	25.0	<0.	.475 1	03	90 - 110
Percent recovery is based on the	e spike result	. RPD is	based on	the spike a	nd spike du	plicate r	esult.		
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride Percent recovery is based on the	26.1	mg/L		25.0	< 0.475	104	90 - 110	2	
<b>Aatrix Spike (MS-1)</b> Spik QC Batch: 64710 rep Batch: 55242	ced Sample:	Date A	nalyzed: eparation:	2009-10-2 2009-10-2				alyzed B epared B	
	1	MS			Spike	Ma	trix		Rec.
	R	esult	Units	Dil.	Spike Amount			ec.	Rec. Limit
	R		Units mg/L	Dil. 50		Res	sult R	ес. 11	Limit
Chloride	R 1 2	esult 020	mg/L	50	Amount 1380	Res 49	sult R 97 1		Limit
Chloride Percent recovery is based on the	R 1 2 e spike result MSD	esult 020 . RPD is	mg/L based on t	50 the spike a Spike	Amount 1380	Res 49	sult R 97 1 result. Rec.	11	Limit 90 - 110
Chloride Percent recovery is based on the Param	R 1 2 e spike result MSD Result	esult 020 . RPD is Units	mg/L based on t Dil.	50 the spike a Spike Amount	Amount 1380 nd spike du Matrix Result	Res 49 plicate r Rec.	sult R 97 1 result. Rec. Limit	11 RPD	Limit 90 - 110 RPD
hloride ercent recovery is based on the aram hloride	$\begin{array}{c c} & R \\ \hline 1 & 2 \\ \hline e \text{ spike result} \\ & \text{MSD} \\ \hline Result \\ & 2 \\ \hline 2030 \end{array}$	esult 020 . RPD is Units mg/L	mg/L based on t Dil. 50	50 the spike a Spike Amount 1380	Amount 1380 nd spike du Matrix Result 497	Res 49 plicate r Rec. 111	sult         R           97         1           result.         Rec.           Limit         90 - 110	11	Limit 90 - 11 RPI
Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the	$\begin{array}{c c} & R \\ \hline 1 & 2 \\ \hline e \text{ spike result} \\ & \text{MSD} \\ \hline Result \\ & 2 \\ \hline 2030 \end{array}$	esult 020 . RPD is Units mg/L	mg/L based on t Dil. 50	50 the spike a Spike Amount 1380	Amount 1380 nd spike du Matrix Result 497	Res 49 plicate r Rec. 111	sult         R           97         1           result.         Rec.           Limit         90 - 110	11 RPD	Limit 90 - 110 RPD
Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Standard (ICV-1)	$\begin{array}{c c} & R \\ \hline 1 & 2 \\ \hline e \text{ spike result} \\ & \text{MSD} \\ \hline Result \\ & 2 \\ \hline 2030 \end{array}$	esult 020 . RPD is Units mg/L . RPD is	mg/L based on t Dil. 50 based on t	50 the spike a Spike Amount 1380	Amount 1380 nd spike du Matrix Result 497 nd spike du	Res 49 plicate r Rec. 111	sult R 97 1 result. Rec. Limit 90 - 110 result.	11 RPD	Limit 90 - 110 RPD Limit
Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Standard (ICV-1)	$\begin{array}{c c} & R \\ \hline 1 & 2 \\ \hline e \text{ spike result} \\ & \text{MSD} \\ \hline Result \\ & 2 \\ \hline 2030 \end{array}$	esult 020 . RPD is Units mg/L . RPD is	mg/L based on t Dil. 50 based on t	50 the spike a Amount 1380 the spike a 2009-10-26	Amount 1380 nd spike du Matrix Result 497 nd spike du	Rec. Plicate r Rec. 111 plicate r	sult R 97 1 result. Rec. Limit 90 - 110 result.	11 RPD 0	Limit 90 - 110 RPD Limit
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Chloride n	R 1 2 e spike result MSD Result <sup>2</sup> 2030 e spike result	esult 020 . RPD is Units mg/L . RPD is Date An ICVs True	mg/L based on t 50 based on t nalyzed: IC Fou	50 the spike a Spike Amount 1380 the spike a 2009-10-26 Vs nd nc.	Amount 1380 nd spike du Matrix Result 497 nd spike du 3 ICVs Percent	Rec. Plicate r Rec. 111 plicate r	sult R 97 1 result. Rec. Limit 90 - 110 result. An Percent Recovery	11 RPD 0 alyzed B	Limit 90 - 110 RPD Limit y: AR
Chloride Percent recovery is based on the Param Chloride Percent recovery is based on the Standard (ICV-1) QC Batch: 64710 Param Flag	R 1 2 e spike result MSD Result <sup>2</sup> 2030 e spike result Juits	esult 020 . RPD is Units mg/L . RPD is Date A: ICVs True Conc. 25.0	mg/L based on t 50 based on t nalyzed: IC Fou Con 23	50 the spike a Spike Amount 1380 the spike a 2009-10-26 Vs nd nc.	Amount 1380 nd spike du Matrix Result 497 nd spike du 5 ICVs Percent Recovery 92	Rec. Plicate r Rec. 111 plicate r	sult R 97 1 result. Rec. Limit 90 - 110 result. An Percent Recovery Limits 90 - 110	11 RPD 0 alyzed B	Limit 90 - 110 RPD Limit y: AR Date nalyzed 09-10-20

Report Date: October 27, 2009 CrownQuest				Work Order: 9102303 Hahn State #1			Page Number: 6 of 6 Lea Co., NM		
Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed		
Chloride		mg/L	25.0	22.8	91	90 - 110	2009-10-26		



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FAX 806 • 794 • 1298 FAX 915 • 585 • 4944 FAX 432 • 689 • 6313

**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: March 31, 2010

Work Order: 10032914

Project Location:NW of Lovington, NMProject Name:CrownquestProject Number:Hahn State #1

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
226883	MW-1	water	2010-03-25	10:15	2010-03-29
226884	MW-2	water	2010-03-25	09:30	2010-03-29
226885	MW-3	water	2010-03-25	08:45	2010-03-29

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 abel

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

#### Standard Flags

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

# **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2010-03-29 and assigned to work order 10032914. Samples for work order 10032914 were received intact at a temperature of 1.6 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (IC)	E 300.0	58749	2010-03-29 at 10:30	68686	2010-03-29 at 15:34

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 10032914 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: March 31, 2010 Hahn State #1

# **Analytical Report**

#### Sample: 226883 - MW-1

Laboratory:	Midland				
Analysis:	Chloride (IC)	Analytical Method:	E 300.0	Prep Method	l: N/A
QC Batch:	68686	Date Analyzed:	2010-03-29	Analyzed By	: AR
Prep Batch:	58749	Sample Preparation:	2010-03-29	Prepared By	: AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		184	mg/L	10	0.500

#### Sample: 226884 - MW-2

Laboratory: Analysis: QC Batch: Prep Batch:	Midland Chloride (IC) 68686 58749	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2010-03-29 2010-03-29	Prep Method: Analyzed By: Prepared By:	AR
		RL			
Parameter	Flag	Result	Units	Dilution	RL
Chloride		173	mg/L	10	0.500

#### Sample: 226885 - MW-3

Chloride		80.9	mg/L	5	0.500
Parameter	Flag	RL Result	Units	Dilution	RL
Laboratory: Analysis: QC Batch: Prep Batch:	Chloride (IC) 68686	Analytical Method: Date Analyzed: Sample Preparation:	E 300.0 2010-03-29 2010-03-29	Prep Method: Analyzed By: Prepared By:	AR

#### Method Blank (1) QC Batch: 68686

QC Batch: Prep Batch:	$68686 \\ 58749$		Date Analyzed: QC Preparation:			Analyzed By: Prepared By:	
			Ν	ÍDL			
Parameter		Flag	Re	sult	Units		RL
Chloride			<0.	.475	mg/L		0.5

L <b>aboratory</b> QC Batch: Prep Batch:	Control Sp	$k_{0}$ (LCS <sub>-1</sub> )								
		INC (LCD-1)								
	68686 58749			analyzed: eparation:	2010-03-2 2010-03-2				nalyzed I repared E	
			LCS			Spike	Ma	trix		Rec.
Param		F	Result	Units	Dil.	Amount	Re	sult	Rec.	Limit
Chloride			26.4	mg/L	1	25.0	<0	.475	106	90 - 110
ercent recov	ery is based o	on the spike resu	lt. RPD is	based on t	the spike a	nd spike du	plicate i	result.		
		LCSI	)		Spike	Matrix		Rec.		RPD
Param		Resul		Dil.	Amount	Result	Rec.	Limit	RPD	Limi
Chloride		26.9	mg/L	1	25.0	< 0.475	108	90 - 110	2	
ercent recov	ery is based o	on the spike resu	lt. RPD is	based on t	the spike a	nd spike du	plicate i	result.		
Matrix Spik	(MS-1)	Spiked Sample:	226885							
QC Batch:	68686		Date A	nalyzed:	2010-03-2	20		Δ	nalyzed E	By: AR
Prep Batch:	58749			eparation:	2010-03-2				repared E	
rep Batem	00110		QC I I	spur anom.	2010 00 1				repared L	<i></i>
			MS			Spike	Ma	trix		Rec.
Param		F	lesult	Units	Dil.	Amount			Rec.	Limit
Chloride			204	mg/L	5	138	80	0.9	90	90 - 11
ercent recov	ery is based o	on the spike result	lt. RPD is	based on f	the spike a	nd spike du	plicate 1	result.		
		MSD	1		Spike	Matrix		Rec.		RPD
Param		Resul		Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		1 203	mg/L		138	80.9	89	90 - 110		Dim
'ercent recov	ery is based o	on the spike result			the spike a		plicate 1	result.		
Standard (I	CV-1)									
QC Batch: 6	68686		Date A	nalyzed:	2010-03-29	)		А	nalyzed E	By: AR
			ICVs	ICV	Vs	ICVs		Percent		
			True	Fou	nd	Percent		Recovery		Date
Param	Flag	Units	Conc.	Cor		Recovery		Limits		nalyzed
Chloride		mg/L	25.0	22	.6	90		90 - 110	20	)10-03-29
Standard (C	CCV-1)									
QC Batch: (	,		Date A	nalyzed:	2010-03-29	)		А	nalyzed E	By: AR
v Datun. (				-						

Report Date Hahn State	e: March 31, 2 #1	2010	W	ork Order: 100 Crownquest		0	Number: 6 of 6 Lovington, NM
			CCVs	CCVs	CCVs	Percent	
			True	Found	Percent	Recovery	Date
Param	Flag	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		mg/L	25.0	22.7	91	90 - 110	2010-03-29

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El Paso, Texas 79922 Midland, Texas 79703 E-Mail: lab@traceanalysis.com

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**WBENC:** 237019

HUB: 1752439743100-86536 NCTRCA WFWB38444Y0909

Certifications

**DBE:** VN 20657

#### **NELAP** Certifications

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

T104704221-08-TX El Paso: 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: June 11, 2010

Work Order: 10060717 

Project Location: NW of Lovington, NM **Project Name:** Crownquest **Project Number:** Hahn State #1

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
233879	MW-2	water	2010-06-01	09:45	2010-06-03
233880	MW-3	water	2010-06-01	09:00	2010-06-03
233881	MW-1	water	2010-06-01	10:30	2010-06-03

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 6 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

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

## **Case Narrative**

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2010-06-03 and assigned to work order 10060717. Samples for work order 10060717 were received intact at a temperature of 3.2 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (IC)	E 300.0	60652	2010-06-09 at 15:24	70818	2010-06-10 at 00:19

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 10060717 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Da Hahn State	te: June 11, 20 e #1	10		Work Orde Crow	er: 1006071 nquest	17			ge Numbe of Loving	
Laborator	ry Control Sp	ike (LCS-1)								
QC Batch:	70818		Date	Analyzed:	2010-06-	.10		Δ	nalyzed I	By: SS
Prep Batch				reparation:					repared B	
rop Daten	00002		QC I.	oparation.	2010 00	00			cparea i	y. 55
			LCR			0	M	1		D
Param			LCS Result	Units	Dil.	Spike Amount		trix sult R	ec.	Rec. Limit
Chloride			24.2	mg/L	1	25.0				90 - 11
	over is based	on the spile res							91	90 - 11
ercent rec	overy is based	on the spike res	uit. RPD is	based on	the spike a	and spike du	plicate	result.		
		LCS	D		Spike	Matrix		Rec.		RPI
Param		Resu		Dil.	Amount	Result	Rec.	Limit	RPD	Limi
Chloride		24.4	4 mg/L	1	25.0	< 0.0402	98	90 - 110	1	20
ercent rec	overy is based	on the spike res	ult. RPD is	based on	the spike a	and spike du	plicate	result.		
fatrix Sp	oike (MS-1)	Spiked Sample	e: 234092							
	70010		Dete	1 1	0010 00	10				0 00
QC Batch:	70818			Analyzed:	2010-06-				nalyzed I	
Prep Batch	: 60652		QC PI	reparation:	2010-06-	.09		PI	repared E	By: SS
			MS			Spike	Ma	trix		Rec.
Param			Result	Units	Dil.	Amount			ec.	Limit
Chloride		1	156	mg/L	5	125	<0	.201 1	25	90 - 11
ercent rec	overy is based of	on the spike res	ult. RPD is	based on	the spike a	and spike du	plicate 1	result.		
		MS	D		Spike	Matrix		Rec.		RPI
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Chloride		2 158			125	<0.201	126	90 - 110	1	20
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			CCVs	CC	Vs	CCVs		Percent		
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Param	Flag	Units	Conc.	Co		Recovery		Limits		nalyzec
Chloride		$\mathrm{mg/L}$	25.0	24	.4	98		90 - 110	20	10-06-1
standard	(CCV-2)									
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QC Batch:	70818		Date A	maryzeu.	2010-00-1	.0		A	itary zeta 1	J. DL

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MILLING TRACEANALYSIS, INC.

 6701 Aberdeen Avenue, Suite 9
 Lubbock, Texas 79424

 200 East Sunset Road, Suite E
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 5002 Basin Street, Suite A1
 Midland, Texas 79703

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Lubbock, Texas 79424 800 • 378 • 1296 El Paso, Texas 79922 888 • 588 • 3443 Midland, Texas 79703 t. Worth, Texas 76132 E-Mail: lab@traceanalysis.com

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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: September 27, 2010

Work Order: 10092010

Project Location:NW of Lovington, NMProject Name:CrownquestProject Number:Hahn State #1

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
245206	MW-3	water	2010-09-10	12:00	2010-09-17
245207	MW-2	water	2010-09-10	13:00	2010-09-17
245208	MW-1	water	2010-09-10	14:00	2010-09-17

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.

## Case Narrative

Samples for project Crownquest were received by TraceAnalysis, Inc. on 2010-09-17 and assigned to work order 10092010. Samples for work order 10092010 were received intact at a temperature of 1.7 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (IC)	E 300.0	63215	2010-09-20 at 15:06	73698	2010-09-20 at 21:29

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 10092010 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: September 27 Hahn State #1	, 2010			order: 1009 rownquest	02010			age Numb of Loving	
Laboratory Control Spik	e (LCS-1)								
QC Batch: 73698		Date A	Analyzed:	2010-09-	-20		1	Analyzed	By: SS
Prep Batch: 63215		QC Pr	reparation:	2010-09-	-20			Prepared I	
	I	LCS			Spike	Ma	trix		Rec.
Param		esult	Units	Dil.	Amount			Rec.	Limit
Chloride		22.8	mg/L	1	25.0	<0.	0350	91	90 - 110
Percent recovery is based on	the spike resul	t. RPD is	based on	the spike a	and spike du	plicate i	result.		
	LCSD			Spike	Matrix		Rec.		RPD
Param	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride	23.2	mg/L	1	25.0	< 0.0350	93	90 - 110	) 2	20
Percent recovery is based on	the spike result	t. RPD is	based on	the spike a	and spike du	plicate 1	result.		
Matrix Spike (MS-1)	Spiked Sample:	245208							
QC Batch: 73698		Data	analyzed:	2010-09-	20		,	Analyzed l	Bv: SS
Prep Batch: 63215			eparation:					Prepared I	
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		MS			Spike	Ma	trix		Rec.
aram		MS esult	Units	Dil.	Spike Amount			Rec.	Rec. Limit
	R		Units mg/L	Dil. 50	-	Re		Rec. 88	Limit
Chloride	R 1 1	esult .320	$\mathrm{mg/L}$	50	Amount 1250	Re 2	sult 17		Limit
Param Chloride Percent recovery is based on	R 1 1 the spike result	esult .320	$\mathrm{mg/L}$	50 the spike a	Amount 1250 and spike du	Re 2	sult 17 result.		Limit 90 - 110
Chloride Percent recovery is based on	R 1 1	esult .320 t. RPD is	mg/L based on	50	Amount 1250 and spike du Matrix	Re 2 plicate 1	sult 17	88	Limit 90 - 110 RPD
Chloride Percent recovery is based on Param	R 1 1 the spike result MSD	esult .320 t. RPD is	mg/L based on Dil.	50 the spike a Spike	Amount 1250 and spike du	Re 2	sult 17 result. Rec.	88 RPD	Limit 90 - 110 RPD
Chloride Percent recovery is based on Param Chloride Percent recovery is based on	$\begin{array}{c c} & R \\ \hline 1 & 1 \\ \hline 2 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ 1 \\$	esult .320 t. RPD is Units mg/L	mg/L based on Dil. 50	50 the spike a Spike Amount 1250	Amount 1250 and spike du Matrix Result 217	Re 2 plicate n Rec. 89	sult 17 result. Rec. Limit 90 - 110	88 RPD	Limit 90 - 110 RPD Limit
Chloride Percent recovery is based on Param Chloride Percent recovery is based on Standard (CCV-1)	$\begin{array}{c c} & R \\ \hline 1 & 1 \\ \hline 2 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ 1 \\$	esult 320 t. RPD is Units mg/L t. RPD is	mg/L based on Dil. 50 based on	50 the spike a Spike Amount 1250	Amount 1250 and spike du Matrix Result 217 and spike du	Re 2 plicate n Rec. 89	sult 17 result. Rec. Limit 90 - 110 result.	88 RPD	Limit 90 - 110 RPD Limit 20
Chloride	$\begin{array}{c c} & R \\ \hline 1 & 1 \\ \hline 2 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ 1 \\$	esult 320 t. RPD is Units mg/L t. RPD is Date A	mg/L based on Dil. 50 based on Analyzed:	50 the spike a Spike Amount 1250 the spike a 2010-09-2	Amount 1250 and spike du Matrix Result 217 and spike du	Re 2 plicate n Rec. 89	sult 17 result. Rec. Limit 90 - 110 result.	88 RPD 1	Limit 90 - 110 RPD Limit 20
Chloride Percent recovery is based on Param Chloride Percent recovery is based on Standard (CCV-1)	$\begin{array}{c c} & R \\ \hline 1 & 1 \\ \hline 2 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ 1 \\$	esult 320 t. RPD is Units mg/L t. RPD is	mg/L based on Dil. 50 based on	50 the spike a Spike Amount 1250 the spike a 2010-09-2	Amount 1250 and spike du Matrix Result 217 and spike du	Rec. 89 plicate n	sult 17 result. Rec. Limit 90 - 110 result. Percent	88 RPD 1	Limit 90 - 110 RPD Limit 20 By: SS
Chloride Percent recovery is based on Param Chloride Percent recovery is based on Standard (CCV-1)	$\begin{array}{c c} & R \\ \hline 1 & 1 \\ \hline 2 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ \hline 3 \\ \hline 1 \\ 1 \\$	esult 320 t. RPD is Units mg/L t. RPD is Date A CCVs	mg/L based on Dil. 50 based on Analyzed: CC	50 the spike a Spike Amount 1250 the spike a 2010-09-2 CVs ind	Amount 1250 and spike du Matrix Result 217 and spike du 00 CCVs	Rec. 89 plicate n	sult 17 result. Rec. Limit 90 - 110 result.	88 RPD 1	Limit 90 - 110 RPD Limit 20
Chloride Percent recovery is based on Param Chloride Percent recovery is based on Standard (CCV-1) QC Batch: 73698 Param Flag	R 1 1 the spike result MSD Result 2 1330 the spike result	esult 320 t. RPD is Units mg/L t. RPD is Date A CCVs True	mg/L based on Dil. 50 based on Analyzed: CC Fou Co	50 the spike a Spike Amount 1250 the spike a 2010-09-2 CVs ind	Amount 1250 and spike du Matrix Result 217 and spike du 0 CCVs Percent	Rec. 89 plicate n	sult 17 result. Rec. Limit 90 - 110 result. Percent Recovery	88 RPD 1 Analyzed I A	Limit 90 - 110 RPD Limit 20 By: SS Date nalyzed
Chloride Percent recovery is based on Param Chloride Percent recovery is based on Standard (CCV-1) QC Batch: 73698	R 1 1 the spike result MSD Result 2 1330 the spike result Units	esult 320 t. RPD is Units mg/L t. RPD is Date A CCVs True Conc. 25.0	mg/L based on Dil. 50 based on Analyzed: CC Fou Co	50 the spike a Spike Amount 1250 the spike a 2010-09-2 CVs ind nc.	Amount 1250 and spike du Matrix Result 217 and spike du 0 CCVs Percent Recovery 94	Rec. 89 plicate n	sult 17 result. Rec. Limit 90 - 110 result. Percent Recovery Limits 90 - 110	88 RPD 1 Analyzed I A	Limit 90 - 110 RPD Limit 20 By: SS Date nalyzed 10-09-20

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	D East Sunset Rd Suite E El Paso, Texas 79922 Tel (915) 585-3443 Fax (915) 585-4944 1 (888) 588-3443	ANALYSIS REQUEST or Specify Method		1510C \ 625 \ 624	sticides /ol. 8260B / 6emi. Vol. 8 82 / 608	PCB's 80 GC/MS 5 RCI TCLP Pe						REMARKS: X OLL	Dry Weight TRRP Repo	Check If Sp Limits Are N	J. C
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	10092010 <b>TraceAnalysis</b> , on email: lab@traceanalysis.con	DAS N ENVICIONMENTEL Address: Distreet, city, ZPD	CE .	Project #: Project Location (Acluding state)	FIELD CODE		NW-3	p.mu	1-mu				y: Company:		Submittal of samples constitutes agreement to Terms and Conditions listed on revers
	1009201	Address:	Cottact Person: Cottact Person: Invoice to: (If different from above)	Project #: Project Location	# 년 북 1	(LAB USE)	NT JOBER	301 7	dor			Relinquished by	Refindulshed by		Submittal of san

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800+378+1296 806+794+1296 FAX 806+794+1298

 6701 Aberdeen Avenue, Suite 9
 Lubbock, Texas 79424

 200 East Sunset Road, Suite E
 El Paso, Texas 79922

 5002 Basin Street, Suite A1
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 6015 Harris Parkway, Suite 110
 Ft. Worth, Texas 76132

El Paso, Texas 79922 Midland, Texas 79703 Worth, Texas 79703 Worth, Texas 76132 E-Mail: lab@traceanalysis.com

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**WBENC:** 237019

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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

Ben Arguijo Basin Environmental Consulting 2800 Plains Hwy. P. O. Box 381 Lovington, NM, 88260

Report Date: November 23, 2010

Work Order: 10112209

Project Location:NE of Lovington, NMProject Name:Hahn State #1Project Number:Crownquest

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
251073	MW-2	water	2010-11-18	09:00	2010-11-18
251074	MW-3	water	2010-11-18	10:00	2010-11-18
251075	MW-1	water	2010-11-18	11:00	2010-11-18

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.

# **Case Narrative**

Samples for project Hahn State #1 were received by TraceAnalysis, Inc. on 2010-11-18 and assigned to work order 10112209. Samples for work order 10112209 were received intact at a temperature of 3.9 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
Chloride (IC)	E 300.0	64854	2010-11-22 at 11:29	75606	2010-11-22 at 22:06

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 10112209 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

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

Report Date: November 23, 2010 Crownquest			Order: 1011 in State #				ge Numb of Loving	
Laboratory Control Spike (LCS	S-1)							
QC Batch: 75606 Prep Batch: 64854		Analyzed: Preparation:	2010-11- 2010-11-				nalyzed B repared B	
	LCS			Spike	Mat	trix		Rec.
Param	Result	Units	Dil.	Amount	Res		Rec.	Limit
Chloride	22.9	mg/L	1	25.0	<0.0	)350	92	90 - 110
Percent recovery is based on the spi	ike result. RPD	is based on	the spike a	and spike du	plicate r	esult.		
	LCSD		Spike	Matrix		Rec.		RPD
Param	Result Unit		Amount	Result	Rec.	Limit	RPD	Limit
Chloride	23.0 mg/	'L 1	25.0	< 0.0350	92	90 - 110	0	20
Percent recovery is based on the spi	ike result. RPD	is based on	the spike a	nd spike du	plicate r	esult.		
Prep Batch: 64854	QC F MS	Preparation:	2010-11-3	22 Spike	Ma		nalyzed B epared B	
Param	Result	Units	Dil.	Amount	Res	sult F	Rec.	Limit
Chloride	13300	mg/L	500	12500	19	40	91	90 - 110
Percent recovery is based on the spi	ike result. RPD	is based on	the spike a	nd spike du	plicate r	esult.		
	MSD		Spike	Matrix		Rec.		RPD
Param	Result Unit	ts Dil.	Amount	Dogult	Rec.	T · · ·	DDD	
			Amount	Result	nuc.	Limit	RPD	Limit
Chloride	13200 mg/		12500	1940	90	90 - 110	RPD 1	Limit 20
	13200 mg/	/L 500	12500	1940	90	90 - 110		
Chloride	13200 mg/	/L 500	12500	1940	90	90 - 110		
Chloride Percent recovery is based on the spi	13200 mg/ ike result. RPD	/L 500	12500 the spike a	1940 .nd spike du	90	90 - 110 esult.		20
Chloride Percent recovery is based on the spi Standard (CCV-1)	13200 mg/ ike result. RPD	/L 500 is based on Analyzed:	12500 the spike a 2010-11-2:	1940 .nd spike du	90 plicate r	90 - 110 esult.	1	20
Chloride Percent recovery is based on the spi Standard (CCV-1) QC Batch: 75606	13200 mg/ ike result. RPD Date CCVs True	/L 500 is based on Analyzed:	12500 the spike a 2010-11-22	1940 nd spike du 2	90 plicate r	90 - 110 esult. Ar	1	20
Chloride Percent recovery is based on the spi Standard (CCV-1) QC Batch: 75606 Param Flag Unit	13200 mg/ ike result. RPD Date CCVs True s Conc.	L 500 is based on Analyzed: CC Fou Co	12500 the spike a 2010-11-22 2Vs ind nc.	1940 nd spike du 2 CCVs Percent Recovery	90 plicate r	90 - 110 esult. Ar Percent Recovery Limits	1 nalyzed B A	20 y: PG Date nalyzed
Chloride Percent recovery is based on the spi Standard (CCV-1) QC Batch: 75606	13200 mg/ ike result. RPD Date CCVs True s Conc.	L 500 is based on Analyzed: CC Fou	12500 the spike a 2010-11-22 2Vs ind nc.	1940 nd spike du 2 CCVs Percent	90 plicate r	90 - 110 esult. Ar Percent Recovery	1 nalyzed B A	20 y: PG Date

Page   of	5002 Basin Street, Suite A1         200 East Sunset Rd., Suite E         8808 Camp Bowie Blvd. West. Suite 180           Midland, Texas 79703         EI Paso, Texas 79922         Ft. Worth, Texas 7616           Tei (432) 689-6301         Tei (915) 585-3443         Tei (817) 201-5260           Fax (432) 689-6313         Tai (915) 585-3443         Tei (817) 560-4336	(Circle or Specify Method No.)	      	О 952 952 5 Сс БР 26 5 26 Н <sup>д</sup> 80 1002 Ех4(С	3260 / 1 224 224 224 24 24 24 24 24 24 24 24 24	/ 602 602 / 7 602 / 6 602 / 7 608 608 608 7 7 608 7 7 608 8 7 7 600 8 7 7 600 8 7 7 600 8 7 7 7 600 8 7 7 7 600 8 7 7 7 7 6 0 7 7 7 7 8 7 7 7 7 7 7 7 7 7 7 7 7 7 7	TIME 8021 / MTBE 8021 / BTEX 8021 / TCLP Wotals Ag A TCLP Wotals Ag A TCLP Wotals Ag A TCLP Pesticide ROD, TSS, pH Moisture Conte RCI CC/MS Semi. Vol. 82 CC/MS Vol. 82 CC/MS Vol. 82 ROD, TSS, pH Moisture Conte Pesticides 808 ROD, TSS, pH Moisture Conte ROD, TSS, pH ROD, TSS, pH			8			220 LAB USE REMARKS:		000	350	
	6701 Aberdeen Avenue, Suite 9 5002 Basir Lubbock, Texas 79424 Midland Tel (806) 794-1296 Tel (43 Fax (806) 794-1296 Fax (4;	2378	Basinene com	( # I		NTIVE SAMPLING		X 11/18 4:00	11/18	w]ig			Time:	Date: Time: INST	OBS COR	Date: Time: INST 0854 0854	
	071 Aberd 1001 Aberd 1000 1000 1000 1000 1000 1000 1000 10		88240 E-mail: PMAR	Project Name: Hahn State	Sampler Signature:	MATRIX PRESERVATIVE METHOD	N <sup>S</sup> OH H <sup>S</sup> 20 <sup>4</sup> HNO <sup>3</sup> HCI HCI STNDGE VIK SOIF						Received by: Company:	Received by: Company:		Received by: Company: Much NV TA	e side of C.
	<b>VSiS, In</b> alysis.com	Services	Levington, NM				# CONTAINE	1 250 X	1 252 1	1 250 X			Time: Re		16.00	Time: Red	ms and Condition
10112209	aceAnalysis, ] email: lab@traceanalysis.com	ental	Hwy LOUN	Quest	и		ш						Date:	Date:	1/101/10	Date:	eement to Terr
	Ir	ENVINON Street, City, Zip	in a	Project #:	Project Location (including state): NW of Lovinghu, NM	0	FIELD CODE	MW-2	MW-3	I-MW					intrace	d by: Company:	Submittal of samples constitutes agreement to Terms and Conditions listed on revers
LAB Order ID #		Company Name: Basin Address: (	Contact Person: 80 A AV Invoice to:	(If different fr Project #:	Project Locatio		LAB # LAB USE)	25/073	4 hLQ	02			Relinquished by:	Relinquished by:	A.	Relineduished by:	Submittal of

Depth Below Corund Drilling       Soil       Soil Boring SB-1 Pertodeum Petroleum       Soil Boring SB-1 Petroleum Petroleum       Soil Description <sup>1</sup> - 0 <sup>1</sup> - 0									
Boring Log Details       Clicket       Petroleum Petroleum       Soil Description       Soil Description         1 </td <td></td> <td></td> <td>Oblasida</td> <td>S</td> <td>oil Bo</td> <td>ring SB-1</td> <td></td> <td></td> <td></td>			Oblasida	S	oil Bo	ring SB-1			
Surface Depti Columns       Sories       Odor       Stain       Soli Description         1		Drilling Soil						Soil Boring	Details
1       0						Soil Descrip	otion	Date Drilled Jar	wary 22, 2009
Solution       Nome       Nome       Nome       Solution       Amole Solution       Amole Solution         Solution       100000       100000       100000       100000       100000       100000       100000       100000       1000000       1000000       10000000       100000000       100000000       100000000       10000000000       100000000000       1000000000000000000       1000000000000000000000000000000000000	F 16	F° POR							60 Ft
a	E.	E 1883		None	None		e to tan,		
25       1.0.167       State       None	Ē	F* 000	7,208			5 - 10' - Sand, tan, v			
P       P	-25		$\bigcirc$	None	None		)		
<ul> <li>Find Log Details</li> <li>Boring Log Details</li> <li>Bathan State Well #1</li> <li>Casto Markan State Vell #1</li> </ul>	Ē	E <sup>10</sup>	2,552			10 - 15' - Sand, tan 1		Indicates the PSH level	measured
15 - 25 - Sand, brown, very fine grained with calicle nodules, damp       15 - 25 - Sand, brown, very fine grained with calicle nodules, damp         6       100       None       None       None         700       None       None       Sand, tan to light calicle nodules, damp         70       None       None       None       Sand, tan to light calicle nodules, damp         70       None       None       None       Sand, tan to light calicle nodules, damp         70       None       None       None       Sand, tan to light calicle nodules, damp         700       None       None       None       Sand, tan to light calicle nodules, damp         700       None       None       None       Sand, tan to light calicle nodules, damp         700       None       None       Sand, tan to light calicle nodules, damp         700       None       None       Sand, tan to light calicle nodules, damp         700       None       None       Sand, tan to light calicle nodules, damp         700       None       None       Sand, tan to light calicle nodules, damp         700       None       None       Sand       Sand tamp         700       Mone       None       Sand       Sand tamp         700       Mone	- 30		1526	None	None				ar level
13       Exe       1643       The prained with caliche includes, damp       PD       Index statements       PD       Index statements       Index statements         16       Failer       Failer       None       None       None       Statements       PD       Index statements       Index statements         16       Failer       Failer       Failer       None       Soil Boring Log Details       None       None       Soil Boring SB-1       Hahn State Well #1       Satie Environmental Service Technologies, LLC       Image Textor       <	E	E"	1,000	None	None			Indicates samples selection	ted for
Figure 1       Total Production Control Contect Control Control Contect Control Control Contect Control Contro	- 35	E_20	(1.648)	NOTE	None			PID Head-space reading in p	
Image: Solution of the solution	E	E Ba		None	None			with a photo-ionization d	etector.
Answer       None	-40	-25	708			25 - 30' - Sand brow	en to		
So       35       - Sand, tan to light tan, very fine grained with calidre nodules, dry         So       - SS       - Sand, tan to light tan, very fine grained with calidre nodules, dry         So       - SS       - SS         Boring Log Details       Hahn State Well #1         Boring SB-1       Hahn State Well #1	E			None	None	tan, very fine graine	d with		
Image: Solution of the second seco	-45	-30	540						
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC	Ē	- 88		None	None	tan, very fine graine	d with		
End       Log       Image: Second sec	- 50	-35	980			caliche nodules, dry	1		
End       448       None       None       So       55       So	E 55	E	$\frown$	None	None				
Image: Solid Section Control and Participation Section Control and Participation Section Control and Participation Section Section Control and Participation Section Section Section Control and Participation Section	Ē	-40	(1,108)						
Image: Solution of the second seco	E_ 60	E 193		None	None				
Image: Second	E	-45 E	448						
Image: Solution of the second system       None       None       None       State Well #1       None	- 65		709	None	None		in p		
Image: Solution of the problem of t	E		100	Nono	Nono				
End       End       None       None       S5-60'- Sand, brown, very fine grained, damp         Fine grained, damp       None       None       None       None         None       None       None       None       None       None         None       None       None       None       None       None       None         None       None       None       None       None       None       None       None         None	- 70	E	(404)	NONE	NOTIO				
Era       Era       Motes         In the grained, deling       Notes         1.) The soil boring was advanced on date using all rotary diffing techniques.         1.) The soil boring was advanced on date using all rotary diffing techniques.         2.) The lines between material types shown on the profile production on the profile profile production on the profile profile profile profile production on the profile p	Ē	E SA		None	None		wn, very		
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC         Prep By: CDS       Checked By: CDS	-75	E <sub>60</sub>	404			nne grained, damp			
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC         Prep By: CDS       Checked By: CDS									
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC         Prep By: CDS       Checked By: CDS									
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC         Prep By: CDS       Checked By: CDS									
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Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC         Prep By: CDS       Checked By: CDS								1) The soil bosins was action	ned on deta
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC	1								
Boring Log Details Soil Boring SB-1       Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC       Basin Environmental Service Technologies, LLC	1								
Soil Boring SB-1 Lea County, New Mexico CrownQuest Operating, LLC	1							boundaries. Actual transit	ons may be
Soil Boring SB-1 Lea County, New Mexico CrownQuest Operating, LLC									
Soil Boring SB-1 Lea County, New Mexico CrownQuest Operating, LLC	1			Habr	Ctoto M	JI #1	Basis E.	companial Dandas Tacha	
CrownQuest Operating, LLC Prep By: CDS Checked By: CDS							Basin Envi	ronmental Service Techn	ologies, LLC
	Soi	Boring SB-	C				Prep By: CDS	Checked By: CDS	
. Augurt 4, 2009							Augsut 4, 2009		

-		and the second second					
Approximate		Soi	il Bo	ring	SB-2 / Monitor Well	M\	N-1
Depth Below Ground Drilli Surface Dep	ng Soil <u>th</u> Columns		Petroleum Odor	Petroleum Stain	Soil Description		Soil Boring SB-2 / Monitor Well MW-1 Date DifledMarch 31, 2009
		NA	None	None	0 - 5' bgs - Calliche, white to tan, dry, soft		Thickness of Bentonitie Seat_ <u>65 Ft</u> Depth of Exploratory Boring <u>Approx, 95 Ft</u> Depth to Groundwater <u>78 Ft (Approx, 95 ft bps</u> )
		$\frown$	None	None	5 - 10' bgs - Sand, white to tan, dry, soft with caliche nodules		Ground Water Elevation
		NA	None	None	10 - 15' bgs - Sand, tan, dry, soft with caliche nodules		Indicates the PSH level measured     on      Indicates the groundwater level
-35 -20		NA	None	None			Indicates samples selected for Laboratory Analysis.
40 - 25		NA	None	None	15 - 30' bgs - Sand, brown, very fine grained, dry with caliche nodules		
45 -30		NA	None	None			
50 -35		NA	None	None			
		NA	None	None	30 - 45' bgs - Sand, brown to tan, very fine grained, dry		
60 - 45		NA	None	None			
65 50		NA	None	None	<ul> <li>45 - 60' bgs - Sand, tan to brown, very fine grained, with callche nodules</li> <li>60 - 70' bgs - Sand, brown, very fine grained, with callche nodules, damp</li> <li>70 - 75' bgs - Sand, brown, very fine grained, with callche nodules, molst</li> <li>75 - 80' bgs - Sand, brown, very fine grained, with</li> </ul>		
70		NA	None	None			Grout Surface Seal
-75 - 60		NA	None	None			Bentonite Pellet Seal
80 65		NA	None	None	60 - 70' bgs - Sand, brown, very fine grained, with caliche nodules, damp		Sand Pack
- 85 - 70		NA	None	None	70 75 her Sand hour units for going with	<b>U.S.C.Y</b>	Screen
- 90 - 75		NA	None	None	70 - 75' bgs - Sand, brown, very fine grained, with callche nodules, moist 75 - 80' bgs - Sand, brown, very fine grained, with		
-95 - 80	<b>▼</b>	NA	None	None	callche nodules, damp		
-100 - 45		NA	None	None		1011	
-105 -90		NA	None	None	80 - 95' bgs - Sand, brown, very fine grained, damp	S-SPACE	
E 110 E 112 E 112 E 95	то	NA	None	None	語目		
1							Completion Notes
							<ol> <li>The monitor well was advanced on date using air rotary drilling techniques.</li> </ol>
							<ol> <li>The well was constructed with 2" ID, 0.010 Inch factory stotled, threaded joint, schedule 40 PVC pipe.</li> </ol>
							<ol> <li>The well is protected with a locked slick up steel cover and compression cap.</li> <li>The lines between material types shown</li> </ol>
							on the profile log represent approximate boundaries. Actual transitions may be gradual.
Soil B	oring	)etaile					
Soil Boring Details SB-2 Monitor Well Details Hahn State Well # Lea County, New Mer				Checked By: CDS			
Monito	MW-1	Details			st Operating, LLC		UNDERED DY. GUO

Approxima	te	So	il Bori	ing	SB-3 / Monitor Well M	W-2	
Depth Below	Drilling Soi	Chloride Field	Petroleum Pe	troleum		Soil Borir	ng SB-3 / Monitor Well MW-2
Ground Surface	Depth Colum			Stain	Soil Description	Date Drilled_	
	E B	NA	None	None	0 - 5' - Caliche, white, dry, soft	Depth of Exp Depth to Gro	l Bentonite Seat <u>56 Ft</u> Noratory Boring <u>Approx, 90 Ft</u> undwater <u>78 Ft (Approx, 95 ft b</u> gs)
-25			None	None	5 - 10' - Sand, white to tan, dry, soft with caliche nodules	Ground Wat	er Elevation
-30	- 15	NA	None	None	10 - 15' - Sand, tan, dry, soft with caliche nodules	⊻ ⊻	Indicates the PSH level measured on Indicates the groundwater level measured on
- 35	-20	NA	None	None	15 - 25' - Sand, brown, dry, soft with caliche nodules	0	Indicates samples selected for Laboratory Analysis,
- 40	-25	NA	None	None			
- 45	- 30	NA	None	None	25 - 35' - Sand, brown to tan, very fine grained, dry with callche nodules		
50	- 35	NA	None	None			
- 55		NA	None	None	35 - 45' - Sand, brown to tan, very fine grained, dry		
- 60 E	45	NA	None	None	45 - 50' - Sand, brown to tan, very fine grained, dry		
- 65	50	NA	None	None	with caliche nodules 50 - 55' - Sand, tan, very fine grained, damp with		
-70	-55	NA	None	None	calliche nodules	44	Grout Surface Seel
- 75	- 60	NA	None	None	55 - 70' - Sand, brown, very fine grained, with	Ø	Bentonite Pellet Seal
- 80	-65	NA	None	None	caliche nodules, damp	3	Sand Pack
- 85	-70	NA	None	None		E	Screen
- 90	-75	NA		None			
-95	-80	NA	None	None	70 - 90' bgs - Sand, brown, very fine grained, with caliche nodules, moist		
- 100	- 85	NA	None	None			
E 105 E 107	E., 🗱	TD NA	None	None			
						9	Completion Notes
						2.)	The monitor well was advanced on date using air rotary drilling techniques, The well was constructed with 2" ID, 0.010
						3.)	inch factory stotled, threaded joint, schedule 40 PVC ptpe. The well is protected with a locked slick up steel cover and compression cap.
						4.)	The lines between material types shown on the profile log represent approximate ooundaries. Actual transitions may be gradual.

Soil Boring Details SB-3 Monitor Well Details MW-2 Hahn State Well #1 Lea County, New Mexico CrownQuest Operating, LLC

Basin Environmental Service Technologies, LLC

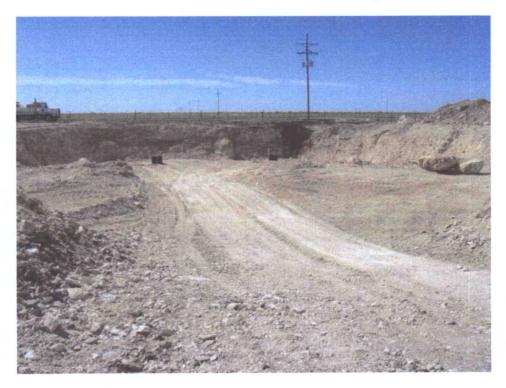
Checked By: CDS

Prep By: CDS August 4, 2009

App	proximate		So	il Bo	ring	SB-4 / Monitor W	/ell M	W-3
C	Depth Below Ground Gurface (C	Soil Columns	Chloride Field Screen	Petroleum F Odor	Petroleum Stain	Soil Description		Soil Boring SB-4 / Monitor Well MW-3
	Ē		NA	None	None			Date Drillod         March 31, 2009           Thickness of Bentonille Seat         80 Ft           Depth of Exploratory Boring <u>Approx</u> , 110 Ft           Depth to Groundwelfor <u>Approx</u> , 90 ft bgs
	15			None	None	0 - 10' - Calliche, tan, dry		Ground Water Elevation
	- 10		NA	None	None			Indicates the PSH level measured     on Indicates the groundwater level
	20		(NA)	None	None			Indicates samples selected for Laboratory Analysis.
	25		NA	None	None			
	30		NA	None	None	10 - 55' - Sand, tan, very fine grained, dry, soft		
	- 35		NA	None	None	with caliche nodules		
	40		NA	None	None			
	45		NA	None	None			
	50		NA	None	None			Grout Surface Seal
	55		NA	None	None			Bentonite Pellet Seal
	60		NA	None	None	55 - 65' - Sand, brown, very fine grained, with calliche nodules, dry		
	65		NA	None	None			Sand Pack
	- 70		NA	None	None	FE 95' Sood brown way flag amland with		Screen
	- 75		NA	None	None	65 - 85' - Sand, brown, very fine grained, with calliche nodules, damp		
	- 80		NA	None	None			
	- 85		NA	None	None	85 - 90' - Sand, brown, very fine grained, damp		
	- 95	5. 9. 5. 9.	NA	None	None	90 - 95' - Sand, brown, very fine grained, moist with gravel	100498 1111111	
	- 100		NA	None	None		RATE A	
	- 105		NA	None	None	95 - 110' - Sand, brown, very fine grained, moist	A CONTRACTOR	
	E 110	10 10 10	NA	None	None			Completion Notes
								<ol> <li>The monitor well was advanced on date using air rotary drilling techniques,</li> <li>The well was constructed with A" ID, 0.010 inch factory slotted, threaded joint, schedule 40 PVC pipe.</li> <li>The well is protected with a locked slick up steel cover and compression cap.</li> <li>The lines between material types shown on the profile log represent approximate boundaries. Actual transitions may be gradual.</li> </ol>
So	Bo	ing [	Details	ł	lahn :	State Well #1	Basin Enviro	nmental Service Technologies, LLC
Mor	nitor '	SB-4 Well IW-3	Details	Lea	Cour	nty, New Mexico	Prep By: CDS	Checked By: CDS
	IV				100			



Hahn State Well #1 Release Site - Excavation (facing North)



Hahn State Well #1 Release Site - Excavation (facing South)



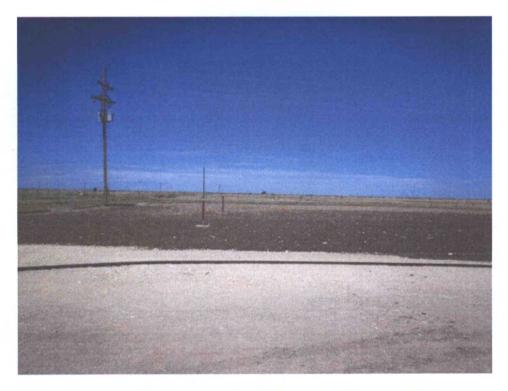
Hahn State Well #1 Release Site - Liner Installation



Hahn State Well #1 Release Site - MW-1 & MW-2 (prior to backfilling)



Hahn State Well #1 Release Site - MW-3



Hahn State Well #1 Release Site (following backfill and seeding)

District I 1625 N. French Dr., Hobbs, NM 88240 1025 N. French Dr., HODDS, NM 88240 <u>District II</u> 1301 W. Grand Avenue, Artesia, NM 88210 <u>District III</u> 1000 Rio Bezzos Road, Aztec, NM 87410 <u>District IV</u> 1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico **Energy Minerals and Natural Resources** Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

<u>Pit</u> ,	Closed-Loop System, Bel	ow-Grade Tank, or	
Proposed A	Iternative Method Permit of	or Closure Plan Appli	cation
	mit of a pit, closed-loop system, belo sure of a pit, closed-loop system, belo odification to an existing permit losure plan only submitted for an exis k, or proposed alternative method	w-grade tank, or proposed alt	ernative method
	lication (Form C-144) per individual pit,	closed-loop system, helow-grad	e tank or alternative request
lease be advised that approval of this request doe wironment. Nor does approval relieve the opera	s not relieve the operator of liability should	operations result in pollution of sur	rface water, ground water or the
1. Operator: CrownQuest Operation, LLC	OGRID # 213190		
111 00 0 55510	00kib # <u>2(5170</u>		
Facility or well name: Hahn State Well #1			
API Number: 30-025-38598			
U/L or Qtr/Qtr P (SE 1/4, SE 1/4)_ Section 15			
Center of Proposed Design: Latitude			
Surface Owner: D Federal X State D Private			
2.			
X Pit: Subsection F or G of 19.15.17.11 NM	AAC		
Temporary: XX Drilling 🗌 Workover			
Permanent Emergency Cavitation	P&A		
XX Lined Unlined Liner type: Thickne	ssmil 🔲 LLDPE XX HDF	E XX PVC Other	
String-Reinforced			
Liner Seams: X Welded D Factory Othe	volume:	12,000 bbl Dimensions:	Lx Wx D
3.			
Closed-loop System: Subsection H of 19			
Type of Operation: P&A Drilling a ne intent)	w well 🗌 Workover or Drilling (Applie	s to activities which require prior	approval of a permit or notice of
Drying Pad Above Ground Steel Tan			
Lined Unlined Liner type: Thickness		DPE PVC Other	
Liner Seams: Welded Factory Ot	her		
Below-grade tank: Subsection I of 19.1: Volume:bbl Type			
Tank Construction material:			
Secondary containment with leak detection	n 🗌 Visible sidewalls, liner, 6-inch lift	and automatic overflow shut-off	
Visible sidewalls and liner Visible sidewalls	dewails only  Other		
Liner type: Thickness	mil HDPE PVC Other		
s. <u>Alternative Method</u> : Submittal of an exception request is required.	Exceptions must be submitted to the Sat	nta Fe Environmental Bureau offi	ce for consideration of approval.
Suomittai or an exception request is required.	Enceptions must be submitted to the out		
Form C-144	Oil Conservation Divi	sion	Page 1 of 5

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)

Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)

Four foot height, four strands of barbed wire evenly spaced between one and four feet

Alternate. Please specify\_

Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)

Screen Netting Other

Monthly inspections (If netting or screening is not physically feasible)

Signs: Subsection C of 19.15.17.11 NMAC

12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

Signed in compliance with 19.15.3.103 NMAC

#### Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

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#### Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes XX No
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes XX No
<ul> <li>Within 300 fect from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to temporary, emergency, or cavitation pits and below-grade tanks)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	Yes XX No
<ul> <li>Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to permanent pits)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes XX No ☐ NA
<ul> <li>Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes XX No
<ul> <li>Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.</li> <li>Written confirmation or verification from the municipality; Written approval obtained from the municipality</li> </ul>	🗌 Yes XX No
<ul> <li>Within 500 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	Yes XX No
<ul> <li>Within the area overlying a subsurface mine.</li> <li>Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division</li> </ul>	Yes XX No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes XX No
Within a 100-year floodplain. - FEMA map	No Information available

Oil Conservation Division

Hydrogeologic Report (Relow-grade Tanks) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC     Hydrogeologic Data (remover and Emregory) Philos based upon the appropriate requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC     Design Plans - based upon the appropriate requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC     Design Plans - based upon the appropriate requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC     Design Plans - based upon the appropriate requirements of 19.15.17.1 NMAC     Design Plans - based upon the appropriate requirements of 19.15.17.1 NMAC     Hydrogeologic Data (remly for on-site Caure) - based upon the appropriate requirements of 19.15.17.9 NMAC     Instructions: Each of the following items must be attached to the application. Planse inflacts, by a check mark in the bas, that the documents are attached     Geologic and Hydrogeologic Data (rely for on-site cloure) - based upon the appropriate requirements of 19.15.17.1 NMAC     Subsection D (19.15.17.9 NMAC     Subsection D (19.15.17.9 NMAC     Subsection D (19.15.17.9 NMAC     Subsection D (19.15.17.1 NMAC     Subsection D (19.15.17.0 NMAC     Subsection D (19.15.17.1 NMAC     Subsection D (19.15.17.1 NMAC     Subsection D (19.15.17.1 NMAC     Subsection D (19.15.17.1 NMAC     Course mark in the base, that the documents are attached.     Geologic and Hydrogeologic Data (rely for on-site cloure) - based upon the appropriate requirements of 19.15.17.1 NMAC     Course T for the interaction of the superprint requirements of 19.15.17.1 NMAC     Previously Approved Densing and Maintenance Plan - APM Number:	Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
The Closed-loop Systems Permit Application Attachment Checklist: Subsection B of 19.15.17.9 NMAC Thistructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the bax, that the documents are attached Goologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9 Constrained Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC Openting and Maintenance Then-house requirements of Paragraph (3) of Subsection C of 19.15.17.9 Constrained Maintenance Then-house requirements of Paragraph (3) of Subsection C of 19.15.17.9 NMAC Perviously Approved Design (attach copy of design) API Number: Perviously Approved Operating and Maintenance Plan API Number: Permit Application Checklist: Subsection B of 19.15.17.9 NMAC Stratection: Ecol of the following litem must be attached to the application. Please indicate, by a check mark in the bax, that the documents are attached Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC Climatodigue Factors Assessment Climatodigue Factors Asses	<ul> <li>Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC</li> <li>Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC</li> </ul>
Closed-Joop System Permit Application Attachment Checkligt: Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Pangraph (3) of Subsection B of 19.15.17.9 Design Plane - based upon the appropriate requirements of 19.15.17.11 NMAC Design Plane - based upon the appropriate requirements of 19.15.17.12 NMAC Closure Plane (Plane compatible Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC Previously Approved Design (attach copy of design) API Number: Previously Approved Design (attach copy of design) API Number: Previously Approved Design (attach copy of design) API Number: Closure Plane Plane - based upon the appropriate requirements of 19.15.17.13 NMAC Closure Plane Plane - based upon the appropriate requirements of 19.15.17.10 NMAC Closure Plane Plane - based upon the appropriate requirements of 19.15.17.10 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.10 NMAC Closure Plane - based upon the requirements of Plangraph (1) of Subsection B of 19.15.17.9 NMAC Closure Plane - based upon the requirements of 19.15.17.10 NMAC Closure Plane - based upon the requirements of 19.15.17.10 NMAC Closure Plane - based upon the requirements of 19.15.17.10 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.10 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.10 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.11 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.11 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.11 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.11 NMAC Closure Plane - based upon the appropriate requirements of 19.15.17.11 NMAC Closure Plane -	Previously Approved Design (attach copy of design) API Number: or Permit Number: or
Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.11 NMAC         Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC         Closure Plan (Please compliete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC         Previously Approved Design (attach copy of design)       API Number:         # Previously Approved Operating and Maintenance Plan       API Number:         # Oreand 19th Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Bernancet Pits Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Brandson Pits Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Brandson Pits Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Clinnatological Pactos Assessment       Log upon the appropriate requirements of 19.15.17.10 NMAC         Clinnatological Pactos Assessment       Log upon the appropriate requirements of 19.15.17.10 NMAC         Clinnatological Pactos Assessment       Log upon the appropriate requirements of 19.15.17.11 NMAC         Dake Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Dake Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Dake Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 N	<u>Closed-loop Systems Permit Application Attachment Checklist</u> : Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
Previously Approved Operating and Maintenance Plan API Number:	<ul> <li>Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC</li> </ul>
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)         13.         Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC         Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.            Hydrogeologic Report - based upon the requirements of Peragraph (1) of Subsection B of 19.15.17.10 NMAC            Climatological Pactors Assessment             Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC            Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC            Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC            Duality Assurance Construction and Installation Plan            Dering and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC            Duality Assurance Construction and Installation Plan            Dimergency Response Plan            Dimergency Respons	Previously Approved Design (attach copy of design) API Number:
it.         Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC         Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.            Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.10 NMAC            Citimatological Factors Assessment             Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC             Liner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC             During and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC             Cities and Advectorization Plan - based upon the appropriate requirements of 19.15.17.11 NMAC             Divisiance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan             Errosion Control Plan             Closure Plan - based upon the appropriate requirements of 19.15.17.13 NMAC             Instructions: Please complete the applicable boxes, Baxes 14 through 18, in regards to the p	Previously Approved Operating and Maintenance Plan API Number: (Applies only to closed-loop system that use
Permanent Pits Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Instructions:       Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.         Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.10 NMAC         Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC         Certifica Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC         Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Lack Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Quality Control/Quality Assurance Construction and Installation Plan         Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC         Prevention Han       based upon the appropriate requirements of 19.15.17.11 NMAC         Musiane or Hazardous doors, including H <sub>2</sub> S, Prevention Plan       Energency Response Plan         Di Field Waste Stream Characterization       Montioning and Inspection Plan         Erosion Control Plan       Erosion Control Plan         Closure Plan - based upon the appropriate requirements of 19.15.17.9 NMAC and 19.15.17.13 NMAC         Instructors: XW aste Excavation and Removal       Peroseod closure plan.         Type: XXDFilling       Workover       Energency P cav	above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.         Type: XXDrilling       Workover       Emergency       Cavitation       P&A       Permanent Pit       Below-grade Tank       Closed-loop System         Alternative         Proposed Closure Method:       XX Waste Excavation and Removal       Waste Removal (Closed-loop systems only)       On-site Closure Method (Only for temporary pits and closed-loop systems)         In-place Burial       On-site Trench Burial       In-place Burial       On-site Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)         15.       Waste Excavation and Removal Closure Plan Checklist:       (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.         X Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC       X Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC         X Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC       X Reveetation Plan - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC	Permanent Pits Permit Application Checklist:       Subsection B of 19.15.17.9 NMAC         Instructions:       Each of the following items must be attached to the application.       Please indicate, by a check mark in the box, that the documents are attached.            Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC         Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC         Climatological Factors Assessment         Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC         Diske Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Luner Specifications and Compatibility Assessment - based upon the appropriate requirements of 19.15.17.11 NMAC         Quality Control/Quality Assurance Construction and Installation Plan         Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC         Subsection Plan = based upon the appropriate requirements of 19.15.17.11 NMAC         Dit Field Waste Stream Characterization         Monitoring and Inspection Plan         Erosion Control Plan         Closure Plan - based upon the appropriate requirements of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.         X Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC         X Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC         X Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)         X Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC         X Re-vecetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC	Instructions: Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.         Type: XXDrilling Workover       Emergency       Cavitation       P&A       Permanent Pit       Below-grade Tank       Closed-loop System         Alternative         Proposed Closure Method:       XX Waste Excavation and Removal         Waste Removal (Closed-loop systems only)         On-site Closure Method (Only for temporary pits and closed-loop systems)         In-place Burial       On-site Trench Burial
X Site Reclamation Plan - based upon the appropriate reduirements of Subsection G of 19,15,17,15 MWAC	15. Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached. X Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC X Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC X Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings) X Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC

Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel					
Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling facilities are required.	g jiulas ana arui cuttings. Use attachment if h	nore inan iwo			
Disposal Facility Name: Marley-Gandy Dispo	sal Facility Permit Number: <u>NM-01-0019</u>				
Disposal Facility Name: Dispo	sal Facility Permit Number:				
Will any of the proposed closed-loop system operations and associated activities occur or Yes (If yes, please provide the information below) No	n or in areas that will not be used for future serve	vice and operations?			
Required for impacted areas which will not be used for future service and operations: Soil Backfill and Cover Design Specifications - based upon the appropriate require X Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19. X Site Reclamation Plan - based upon the appropriate requirements of Subsection G of	15.17.13 NMAC	2			
<sup>17.</sup> Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closur provided below. Requests regarding changes to certain siting criteria may require adm considered an exception which must be submitted to the Santa Fe Environmental Buree demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for gui	inistrative approval from the appropriate dist au office for consideration of approval. Justi	rict office or may be			
Ground water is less than 50 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtain	ned from nearby wells	Yes No X NA			
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtain	ned from nearby wells	☐ Yes ☐ No X NA			
Ground water is more than 100 feet below the bottom of the buried waste NM Office of the State Engineer - iWATERS database search; USGS; Data obtain	ned from nearby wells	Yes No X NA			
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	tt watercourse or lakebed, sinkhole, or playa.	🗌 Yes X No			
Within 300 feet from a permanent residence, school, hospital, institution, or church in exit - Visual inspection (certification) of the proposed site; Aerial photo; Satellite image		Yes X No			
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, - NM Office of the State Engineer - iWATERS database; Visual inspection (certified)	in existence at the time of initial application.	🗌 Yes X No			
Within incorporated municipal boundaries or within a defined municipal fresh water well adopted pursuant to NMSA 1978, Section 3-27-3, as amended. • Written confirmation or verification from the municipality; Written approval obta		🗌 Yes X No			
Within 500 feet of a wetland. - US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspe	ection (certification) of the proposed site	🗌 Yes X No			
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and M	fineral Division	🗋 Yes X No			
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mis Society; Topographic map</li> </ul>	ineral Resources; USGS; NM Geological	🗌 Yes X No			
Within a 100-year floodplain. - FEMA map	-	Ne information available			
18. On-Site Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.					
X Siting Criteria Compliance Demonstrations - based upon the appropriate requirement X Proof of Surface Owner Notice - based upon the appropriate requirements of Subsec Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - b Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 X Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements	ction F of 19.15.17.13 NMAC ate requirements of 19.15.17.11 NMAC ased upon the appropriate requirements of 19.1 3 NMAC nts of Subsection F of 19.15.17.13 NMAC	15,17.11 NMAC			
<ul> <li>Waste Material Sampling Plan - based upon the appropriate requirements of Subset X Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cut)</li> <li>Soil Cover Design - based upon the appropriate requirements of Subsection H of 19</li> </ul>	ction F of 19.15.17.13 NMAC tings or in case on-site closure standards canno	t be achieved)			

X Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

Form C-144

Oil Conservation Division

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Operator Application Certification: I hereby certify that the information submitted with this application is true, accurate and complete to the best of my knowledge and belief.
Name (Print): Title:
Signature: Date:
e-mail address: Telephone:
20. OCD Approval: Permit Application (including closure plan) Closure Plan (only) OCD Conditions (see attachment)
OCD Representative Signature: Approval Date: 11.9.09
Title:ENVIRONMENTAL ENGINEER OCD Permit Number: PI-00786
21. <u>Closure Report (required within 60 days of closure completion)</u> : Subsection K of 19.15.17.13 NMAC Instructions: Operators are required to obtain an approved closure plan prior to implementing any closure activities and submitting the closure report. The closure report is required to be submitted to the division within 60 days of the completion of the closure activities. Please do not complete this section of the form until an approved closure plan has been obtained and the closure activities have been completed.
Closure Completion Date:
22. <u>Closure Method:</u> Waste Excavation and Removal On-Site Closure Method Alternative Closure Method Waste Removal (Closed-loop systems only) If different from approved plan, please explain.
23. <u>Closure Report Regarding Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only:</u> Instructions: Please indentify the facility or facilities for where the liquids, drilling fluids and drill cuttings were disposed. Use attachment if more than two facilities were utilized.
Disposal Facility Name: Disposal Facility Permit Number:
Disposal Facility Name: Disposal Facility Permit Number:
Were the closed-loop system operations and associated activities performed on or in areas that will not be used for future service and operations? Yes (If yes, please demonstrate compliance to the items below) No
Required for impacted areas which will not be used for future service and operations:         Site Reclamation (Photo Documentation)         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique
24.         Closure Report Attachment Checklist: Instructions: Each of the following items must be attached to the closure report. Please indicate, by a check         mark in the box, that the documents are attached.         Proof of Closure Notice (surface owner and division)         Proof of Deed Notice (required for on-site closure)         Plot Plan (for on-site closures and temporary pits)         Confirmation Sampling Analytical Results (if applicable)         Waste Material Sampling Analytical Results (required for on-site closure)         Disposal Facility Name and Permit Number         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique         Site Reclamation (Photo Documentation)         On-site Closure Location: Latitude Longitude NAD: [1927 ] 1983
25. Operator Closure Certification: I hereby certify that the information and attachments submitted with this closure report is true, accurate and complete to the best of my knowledge and belief. I also certify that the closure complies with all applicable closure requirements and conditions specified in the approved closure plan.
Name (Print): Kant Graberse Title: Terman
Signature: Lend Hallotto Date: 9-3-09
c-mail address: KCISSEFF @ CIOLAGUSSF. Com Telephone: 422-556-00770

Oil Conservation Division

Crown Quest Operating, Hahn State #1 C-144 closure is conditional. The C-144 closure will be amended to permanent closure status on completion of remedial activities and NMOCD approval of the Release Notification and Corrective Action (C-141).

District I 1625 N. French Dr., Hobbs, NM 88240 District II 1301 W. Grand Avenue, Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 State of New Mexico Energy Minerals and Natural Resources Department Oil Conservation Division 1220 South St. Francis Dr. Santa Fe, NM 87505

For temporary pits, closed-loop systems, and below-grade tanks, submit to the appropriate NMOCD District Office. For permanent pits and exceptions submit to the Santa Fe Environmental Bureau office and provide a copy to the appropriate NMOCD District Office.

Pit, Closed-Loop System, Below-Grade Tank, or
Proposed Alternative Method Permit or Closure Plan Application         RECENCE       Permit of a pit, closed-loop system, below-grade tank, or proposed alternative method         MAR 2 2 2011       Modification to an existing permit         Closure plan only submitted for an existing permitted or non-permitted TOBES loop         HOBBS Strem, below-grade tank, or proposed alternative method
Instructions: Please submit one application (Form C-144) per individual pit, closed-loop system, below-grade tank or alternative request lease be advised that approval of this request does not relieve the operator of liability should operations result in pollution of surface water, ground water or the invironment. Nor does approval relieve the operator of its responsibility to comply with any other applicable governmental authority's rules, regulations or ordinances.
i. Operator: <u>CrownQuest Operation, LLC</u> OGRID #: <u>213190</u> Address: <u>P.O. Box 53310</u>
Facility or well name: Hahn State Well #1
API Number: 30-025-38598         OCD Permit Number: PI-00786
U/L or Qtr/Qtr P (SE ¼, SE ¼) Section 15 Township 14S Range 33E County: Lea
Center of Proposed Design: Latitude Longitude NAD: 1927 [ 1983
Surface Owner: 🔲 Federal X State 🗋 Private 🗌 Tribal Trust or Indian Allotment
Permanent Emergency Cavitation P&A     XX Lined Unlined Liner type: Thickness mil LLDPE XX HDPE XX PVC Other     String-Reinforced     Liner Seams: X Welded Factory Other Volume: 12,000 bbl Dimensions: L x W x D     s.   Closed-loop System: Subsection H of 19.15.17.11 NMAC   Type of Operation: P&A Drilling a new well Workover or Drilling (Applies to activities which require prior approval of a permit or notice of intent)   Drying Pad Above Ground Steel Tanks Haul-off Bins Other   Liner Seams: Welded Factory Other
Below-grade tank: Subsection I of 19.15.17.11 NMAC Volume:bbl Type of fluid: Tank Construction material: Secondary containment with leak detection □ Visible sidewalls, liner, 6-inch lift and automatic overflow shut-off     Visible sidewalls and liner □ Visible sidewalls only □ Other Liner type: Thicknessmil □ HDPE □ PVC □ Other
s. <u>Alternative Method:</u> Submittal of an exception request is required. Exceptions must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Fencing: Subsection D of 19.15.17.11 NMAC (Applies to permanent pits, temporary pits, and below-grade tanks)

Chain link, six feet in height, two strands of barbed wire at top (Required if located within 1000 feet of a permanent residence, school, hospital, institution or church)

Four foot height, four strands of barbed wire evenly spaced between one and four feet

Alternate. Please specify\_

Netting: Subsection E of 19.15.17.11 NMAC (Applies to permanent pits and permanent open top tanks)

Screen Netting Other

10

Monthly inspections (If netting or screening is not physically feasible)

Signs: Subsection C of 19.15.17.11 NMAC

12"x 24", 2" lettering, providing Operator's name, site location, and emergency telephone numbers

Signed in compliance with 19.15.3.103 NMAC

#### Administrative Approvals and Exceptions:

Justifications and/or demonstrations of equivalency are required. Please refer to 19.15.17 NMAC for guidance.

Please check a box if one or more of the following is requested, if not leave blank:

Administrative approval(s): Requests must be submitted to the appropriate division district or the Santa Fe Environmental Bureau office for consideration of approval.

Exception(s): Requests must be submitted to the Santa Fe Environmental Bureau office for consideration of approval.

Siting Criteria (regarding permitting): 19.15.17.10 NMAC

Instructions: The applicant must demonstrate compliance for each siting criteria below in the application. Recommendations of acceptable source material are provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate district office or may be considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Applicant must attach justification for request. Please refer to 19.15.17.10 NMAC for guidance. Siting criteria does not apply to drying pads or above-grade tanks associated with a closed-loop system.

Ground water is less than 50 feet below the bottom of the temporary pit, permanent pit, or below-grade tank. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells	Yes XX No
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes XX No
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>(Applies to temporary, emergency, or cavitation pits and below-grade tanks)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes XX No ☐ NA
<ul> <li>Within 1000 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application. (Applies to permanent pits)</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>	☐ Yes XX No ☐ NA
<ul> <li>Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application.</li> <li>NM Office of the State Engineer - iWATERS database search; Visual inspection (certification) of the proposed site</li> </ul>	Yes XX No
Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended. - Written confirmation or verification from the municipality; Written approval obtained from the municipality	☐ Yes XX No
<ul> <li>Within 500 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>	🗌 Yes XX No
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division	Yes XX No
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes XX No
Within a 100-year floodplain. - FEMA map	No Information

11. <u>Temporary Pits, Emergency Pits, and Below-grade Tanks Permit Application Attachment Checklist</u> : Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
<ul> <li>Hydrogeologic Report (Below-grade Tanks) - based upon the requirements of Paragraph (4) of Subsection B of 19.15.17.9 NMAC</li> <li>Hydrogeologic Data (Temporary and Emergency Pits) - based upon the requirements of Paragraph (2) of Subsection B of 19.15.17.9 NMAC</li> <li>Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC</li> </ul>
<ul> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> <li>Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC</li> </ul>
Previously Approved Design (attach copy of design) API Number: or Permit Number:
12.
<u>Closed-loop Systems Permit Application Attachment Checklist</u> : Subsection B of 19.15.17.9 NMAC Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.
<ul> <li>Geologic and Hydrogeologic Data (only for on-site closure) - based upon the requirements of Paragraph (3) of Subsection B of 19.15.17.9</li> <li>Siting Criteria Compliance Demonstrations (only for on-site closure) - based upon the appropriate requirements of 19.15.17.10 NMAC</li> <li>Design Plan - based upon the appropriate requirements of 19.15.17.11 NMAC</li> <li>Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.12 NMAC</li> </ul>
Closure Plan (Please complete Boxes 14 through 18, if applicable) - based upon the appropriate requirements of Subsection C of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Previously Approved Design (attach copy of design) API Number:
Previously Approved Operating and Maintenance Plan API Number: (Applies only to closed-loop system that use
above ground steel tanks or haul-off bins and propose to implement waste removal for closure)
13.         Permanent Pits Permit Application Checklist: Subsection B of 19.15.17.9 NMAC         Instructions: Each of the following items must be attached to the application. Please indicate, by a check mark in the box, that the documents are attached.         Hydrogeologic Report - based upon the requirements of Paragraph (1) of Subsection B of 19.15.17.9 NMAC         Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC         Climatological Factors Assessment         Certified Engineering Design Plans - based upon the appropriate requirements of 19.15.17.11 NMAC         Dike Protection and Structural Integrity Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Leak Detection Design - based upon the appropriate requirements of 19.15.17.11 NMAC         Quality Control/Quality Assurance Construction and Installation Plan         Operating and Maintenance Plan - based upon the appropriate requirements of 19.15.17.11 NMAC         Nuisance or Hazardous Odors, including H <sub>2</sub> S, Prevention Plan         Emergency Response Plan         Oil Field Waste Stream Characterization         Monitoring and Inspection Plan         Erosion Control Plan         Closure Plan - based upon the appropriate requirements of 19.15.17.9 NMAC and 19.15.17.13 NMAC
Proposed Closure:       19.15.17.13 NMAC         Instructions:       Please complete the applicable boxes, Boxes 14 through 18, in regards to the proposed closure plan.         Type:       XXDrilling         Workover       Emergency         Cavitation       P&A         Permanent Pit       Below-grade Tank         Closed-loop System         Alternative         Proposed Closure Method:       XX Waste Excavation and Removal         Waste Removal (Closed-loop systems only)
<ul> <li>On-site Closure Method (Only for temporary pits and closed-loop systems)</li> <li>In-place Burial</li> <li>On-site Trench Burial</li> <li>Alternative Closure Method (Exceptions must be submitted to the Santa Fe Environmental Bureau for consideration)</li> </ul>
<ul> <li><sup>15.</sup></li> <li>Waste Excavation and Removal Closure Plan Checklist: (19.15.17.13 NMAC) Instructions: Each of the following items must be attached to the closure plan. Please indicate, by a check mark in the box, that the documents are attached.</li> <li>X Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC</li> <li>X Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC</li> <li>X Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings)</li> <li>X Soil Backfill and Cover Design Specifications - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC</li> <li>X Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC</li> <li>X Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC</li> </ul>

<sup>16.</sup> Waste Removal Closure For Closed-loop Systems That Utilize Above Ground Steel Tanks or Haul-off Bins Only: (19.15.17.13.1 Instructions: Please indentify the facility or facilities for the disposal of liquids, drilling fluids and drill cuttings. Use attachment if n					
facilities are required.	nore man tro				
	Disposal Facility Permit Number: <u>NM-01-0019</u>				
Disposal Facility Name: Disposal Facility Permit Number:					
Will any of the proposed closed-loop system operations and associated activities occur on or in areas that <i>will not</i> be used for future server Yes (If yes, please provide the information below) No	vice and operations?				
Required for impacted areas which will not be used for future service and operations: Soil Backfill and Cover Design Specifications based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC X Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC X Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC	С				
<sup>17.</sup> Siting Criteria (regarding on-site closure methods only): 19.15.17.10 NMAC Instructions: Each siting criteria requires a demonstration of compliance in the closure plan. Recommendations of acceptable sour provided below. Requests regarding changes to certain siting criteria may require administrative approval from the appropriate disti considered an exception which must be submitted to the Santa Fe Environmental Bureau office for consideration of approval. Justi demonstrations of equivalency are required. Please refer to 19.15.17.10 NMAC for guidance.	rict office or may be				
Ground water is less than 50 feet below the bottom of the buried waste NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells					
Ground water is between 50 and 100 feet below the bottom of the buried waste - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells					
Ground water is more than 100 feet below the bottom of the buried waste. - NM Office of the State Engineer - iWATERS database search; USGS; Data obtained from nearby wells					
<ul> <li>Within 300 feet of a continuously flowing watercourse, or 200 feet of any other significant watercourse or lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).</li> <li>Topographic map; Visual inspection (certification) of the proposed site</li> </ul>					
<ul> <li>Within 300 feet from a permanent residence, school, hospital, institution, or church in existence at the time of initial application.</li> <li>Visual inspection (certification) of the proposed site; Aerial photo; Satellite image</li> </ul>					
Within 500 horizontal feet of a private, domestic fresh water well or spring that less than five households use for domestic or stock watering purposes, or within 1000 horizontal feet of any other fresh water well or spring, in existence at the time of initial application. - NM Office of the State Engineer - iWATERS database; Visual inspection (certification) of the proposed site					
<ul> <li>Within incorporated municipal boundaries or within a defined municipal fresh water well field covered under a municipal ordinance adopted pursuant to NMSA 1978, Section 3-27-3, as amended.</li> <li>Written confirmation or verification from the municipality; Written approval obtained from the municipality</li> </ul>					
<ul> <li>Within 500 feet of a wetland.</li> <li>US Fish and Wildlife Wetland Identification map; Topographic map; Visual inspection (certification) of the proposed site</li> </ul>					
Within the area overlying a subsurface mine. - Written confirmation or verification or map from the NM EMNRD-Mining and Mineral Division					
<ul> <li>Within an unstable area.</li> <li>Engineering measures incorporated into the design; NM Bureau of Geology &amp; Mineral Resources; USGS; NM Geological Society; Topographic map</li> </ul>	🗌 Yes X No				
Within a 100-year floodplain.	No information				

by a check mark in the box, that the documents are attached.

X Siting Criteria Compliance Demonstrations - based upon the appropriate requirements of 19.15.17.10 NMAC

X Proof of Surface Owner Notice - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

Construction/Design Plan of Burial Trench (if applicable) based upon the appropriate requirements of 19.15.17.11 NMAC 

Construction/Design Plan of Temporary Pit (for in-place burial of a drying pad) - based upon the appropriate requirements of 19.15.17.11 NMAC

Protocols and Procedures - based upon the appropriate requirements of 19.15.17.13 NMAC

Confirmation Sampling Plan (if applicable) - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC X

Waste Material Sampling Plan - based upon the appropriate requirements of Subsection F of 19.15.17.13 NMAC

X Disposal Facility Name and Permit Number (for liquids, drilling fluids and drill cuttings or in case on-site closure standards cannot be achieved)

Soil Cover Design - based upon the appropriate requirements of Subsection H of 19.15.17.13 NMAC X Re-vegetation Plan - based upon the appropriate requirements of Subsection I of 19.15.17.13 NMAC

Site Reclamation Plan - based upon the appropriate requirements of Subsection G of 19.15.17.13 NMAC

19.						
Operator Application Certification: I hereby certify that the information submitted with this application is true, accurately accurately applied to the information of the second	urate and complete to the best of my knowledge and belief.					
Name (Print):	ne (Print): Title:					
Signature:	Date:					
e-mail address:	Telephone:					
20. OCD Approval:  Permit Application (including closure plan) Closure	/					
OCD Representative Signature:	Approval Date: 11.9.09					
Title:ENVIRONMENTAL ENGINEER	OCD Permit Number: PI - 00786					
<sup>21.</sup> <u>Closure Report (required within 60 days of closure completion)</u> : Subsection Instructions: Operators are required to obtain an approved closure plan prion The closure report is required to be submitted to the division within 60 days of section of the form until an approved closure plan has been obtained and the	r to implementing any closure activities and submitting the closure report. f the completion of the closure activities. Please do not complete this closure activities have been completed.					
CERTIFIED CLOSED BY Jogg Leking 03/22/1	Closure Completion Date: NOVEMBER 18, 2010					
<ul> <li>22.</li> <li>Closure Method:</li> <li>Waste Excavation and Removal On-Site Closure Method Alter</li> <li>If different from approved plan, please explain.</li> </ul>						
<sup>23.</sup> Closure Report Regarding Waste Removal Closure For Closed-loop System Instructions: Please indentify the facility or facilities for where the liquids, du two facilities were utilized.						
Disposal Facility Name:	Disposal Facility Permit Number:					
Disposal Facility Name:	Disposal Facility Permit Number:					
Were the closed-loop system operations and associated activities performed on Yes (If yes, please demonstrate compliance to the items below) No	or in areas that will not be used for future service and operations?					
Required for impacted areas which will not be used for future service and operation         Site Reclamation (Photo Documentation)         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique	ntions:					
24.         Closure Report Attachment Checklist: Instructions: Each of the following mark in the box, that the documents are attached.         Proof of Closure Notice (surface owner and division)         Proof of Deed Notice (required for on-site closure)         Plot Plan (for on-site closures and temporary pits)         Confirmation Sampling Analytical Results (if applicable)         Waste Material Sampling Analytical Results (required for on-site closure         Disposal Facility Name and Permit Number         Soil Backfilling and Cover Installation         Re-vegetation Application Rates and Seeding Technique         Site Reclamation (Photo Documentation)         On-site Closure Location: Latitude						
25. Operator Closure Certification:	and the second					
I hereby certify that the information and attachments submitted with this closure belief. I also certify that the closure complies with all applicable closure require	e report is true, accurate and complete to the best of my knowledge and ements and conditions specified in the approved closure plan.					
Name (Print): Kont Grabtie	Title: Terman					

Signature: Lent Linkotto	Date:	9-	3	- 0	9
e-mail address: KLISSTITE @ 610000 Quest. Com Te	lephone:	43.	Z -	55	6-00700

Crown Quest Operating, Hahn State #1 C-144 closure is conditional. The C-144 closure will be amended to permanent closure status on completion of remedial activities and NMOCD approval of the Release Notification and Corrective Action (C-141).