District 1 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 HOBBS OCD

Energy Minerals and Natural Resources

Oil Conservation DivisionJUL 2 0 2015 1220 South St. Francis Dr. Santa Fe, NM 87505 Form C-141 Revised October 10, 2003

Submit 2 Copies to appropriate District Office in accordance with Rule 116 on back side of form

			Ren	ease Notifi	catio	n and Co	orrective A	ction	l			
						<b>OPERA</b>	FOR		🗌 Initia	al Report	$\boxtimes$	Final Repo
Name of Co			ergy Com			Contact			jay Simps	on		
		and the second se		lland, TX 7970	)7	Telephone 1	and the second se		212-3408			
Facility Na	me	Inca Tank E	Battery			Facility Typ	e	Well				
Surface Ow	ner: BLM			Mineral	Owner:	BLM		Le	ease No. (	API#) 30-	-025-30	0039
						N OF RE	LEASE					
Unit Letter	Section 19	Township 18S	Range 32E	Feet from the 760	Nort	h/South Line North	Feet from the 330		West Line West	County	Lea	1
	ones at			Latitude N 32. <b>8, 2015</b> A		OF REL	the second se	4°			20111	
Type of Keld	case. Spin Pi	roduced wate	I			Volume of	Release 75 bbls		Volume F	Recovered	/0 bbis	
Source of Re	elease: Wate	r Tank Overfl	ow			Date and H 12/21/14	lour of Occurrenc	e		Hour of Di @9:30 AM		'
Was Immedi	iate Notice C					If YES, To	Whom?		12/21/14	(1).50 AM		
			Yes 🖂	No 🗌 Not R	Required							
By Whom? 1						Date and H	lour blume Impacting t	ha Wata				
Was a Watercourse Reached?					N/A			cicourse.				
If a Waterco	urse was Im	pacted, Descr	ibe Fully.*	*			APPROV	'ED				
		em and Reme					By Kellie Jo	ones	at 8:51	am. O	ct 28	3. 2015
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\* Attach Additional Sheets If Necessary

District I 1625 N. French Dr., Hobbs, NM 88240 Dictrict II 811 S. First St., Artesia, NM 88210 District III 1000 Rio Brazos Road, Aztec, NM 87410 District IV 1220 S. St. Francis Dr., Santa Fe, NM 87505 Energy Minerals and Natural Resources

Form C-141 Revised August 8, 2011

API No. 3002530039 (closest well)

**Oil Conservation Division** 1220 South St. Francis Dr. Santa Fe, NM 87505

JUL 2 3 b2015 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

DECEIVED

<b>Release Notification</b> a	and Corrective Action

	OPERATOR	Initial Report	Final Report
Name of Company SM Energy	Contact Tejay Simpson		
Address 6301 Holiday Hill Road, Midland, TX 79707	Telephone No. 432-212-3408		
Facility Name Inca Battery	Facility Type Production Batter	у	

Surface Owner BLM
-------------------

LOCATION OF RELEASE

Mineral Owner

				2001				
Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
	19	18S	32E	760.	North	330	West	LEA

Latitude 32.73805 Longitude -103.81254

	NATURE	OF RELEASE	
Type of Release Produced Wate	er Spill	Volume of Release 75	Volume Recovered 70
Source of Release Water Tank (	Overflow .	Date and Hour of Occurrence 12/21/14	Date and Hour of Discovery 12/21/14 @ 9:30 AM
Was Immediate Notice Given?	🗌 Yes 🛛 No 🗌 Not Required	If YES, To Whom?	
By Whom?		Date and Hour	
Was a Watercourse Reached?	🗌 Yes 🛛 No	If YES, Volume Impacting the W	<sup>7</sup> atercourse.
working properly and not makin produced water tank over flowin parrel of water that over ran the	oned resulting in the produced water tank g call out notification to the lease operato g out of the tank hatch. The produced wa top of the berm. Spill volume estimated a	or. Upon arrival to the battery during ther was contained within the tank be at 75 barrels of produced water and	ump and the call out high level alarm not g routine rounds the lease operator found the erm with the exception of approximately 1 1 barrel of oil. Total fluid recovered is e and began removal of contaminated soil wit
	trician and PLC programmer were dispat		

Describe Area Affected and Cleanup Action Taken.\*

Tank battery pad inside of the tank berm with a small area north of the berm on the access road way. Free standing fluid was recovered. Contaminated soil was excavated and disposal scheduled at CRI.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

		OIL CONSERVATION DIVISION				
Signature:		_				
Printed Name: Tejay Simpson		Approved by Environmental	Specialist:			
Title: District Production Superintendent		Approval Date:	Expiration	Date:		
E-mail Address: tsimpson@sm-energy.con	1	Conditions of Approval:		Attached		
Date: 12/23/14	Phone: 432-212-3408					

# SITE INFORMATION

General Site Info	ormation:			
Site:		Inca Federal T	ank Battery	
Company:		SM Energy Co		Anne and a second and a three in the second second
Section, Towns	hin and Range	Section 19, T1		Unit Letter - E
Lease Number:	inp unu nunge			
County:		Lea County	Second States	
GPS:		32.73794° N, 1	03.81320° W	
Surface Owner:		Federal		
Mineral Owner:	an a			
Directions:		From the interse	ction of Hwy 529 and C	Co. Rd. 126A, go south on Co. Rd. 126A for approx. 4.5
Directions.		miles. Turn to th	e west onto on a calich	he road and travel east for 1 mile until the road turns
				0.4 miles and trun east. Continue east approx. 0.20 mile
		to the tank batte	ry.	
Release Data:				
Date Released:		5/21/2014		
Type Release:		Produced Fluid		
Source of Contai	mination:	Tank Overflow		
Fluid Released:		75 bbls		*
Fluids Recovere	d:	70 bbls		
<b>Official Commu</b>	nication:			
Name:	Tejay Simpson	化石炭石 法内部的		Ike Tavarez
Company:	SM Energy Comp	anv		Tetra Tech
Address:	6301 Holiday Hill Rd. Bldg 1			4000 N Big Spring, Suite 401
P.O. Box				
Channel and the second s	A falle and Taxaa			Midland, Texas
City:	Midland, Texas			
Phone number:	(432) 212-3408			(432) 682-4559
Fax:	<b>建设设计</b> 结构 (14-1)	1998 (1997) 1998 (1997)		
Email:	tsimpson@sm-e	energy.com		ike.tavarez@tetratech.com
<b>Ranking Criteri</b>	a			
Depth to Ground	water:		Ranking Score	Site Data
<50 ft			20	
50-99 ft			10	0
>100 ft.			0	U
WellHead Protec	tion:		Ranking Score	Site Data
	000 ft., Private <200	) ft.	20	
	000 ft., Private >200		0	0
	Water:		Ranking Score	Site Data
Surface Body of	the second se		20	
<200 ft.				
			10 0	0

1 

1

Acceptal	ole Soil RRAL (m	g/kg)
Benzene	Total BTEX	TPH
10	50	5,000

JUL 2 0 2015

RECEIVED



July 13, 2015

Dr. Tomas Oberding Environmental Engineer Specialist Oil Conservation Division, District 1 1625 North French Drive Hobbs, New Mexico 88240

Re: Closure Report SM Energy Company Inca Federal Tank Battery Water Tank Overflow Unit E, Section 19, Township 18 South, Range 32 East Lea County, New Mexico

#### Mr. Oberding:

Tetra Tech, Inc. (Tetra Tech) was contacted by SM Energy Company (SM Energy) to assess a produced water tank overflow release that occurred at the Inca Federal Tank Battery located in Unit E, Section 19, Township 18 South, Range 32 East, Lea County, New Mexico (Site). The spill site coordinates are N 32.73794°, W 103.81320°. The site location is shown on Figures 1 and 2.

#### Background

According to the State of New Mexico C-141 Initial Report, the leak was discovered on December 21, 2014. The tank battery PLC malfunction and the high level alarm did not work properly, which did not notify the lease operator overflowing the tank. A total of 75 barrels of produced fluid were released and contained within the facility berms, with the exception of approximately 1 barrel fluid that overran the berm. SM Energy recovered approximately 70 barrels of fluid and the soils with visible surface staining were scraped and hauled to Controlled Recovery Inc. (CRI) for disposal. The initial C-141 is enclosed in Appendix A.

#### Groundwater

The New Mexico Office of the State Engineers (OSE) Website listed two water wells within 2 miles of the site. The closest well (identified by the OSE as CP 00896) did not have any information available. The second closest well (identified by the OSE as CP 00672) had a total depth of 540 feet and a depth to water of 460 feet. The Geology and Groundwater Conditions in Southern Lea County New Mexico (Report 6) showed one well Section 19 of Township 18 South and Range 33 East, with a reported depth to



water of greater than 140 feet below ground surface (bgs). The New Mexico Oil Conservation Division (OCD) regional groundwater gradient map for Lea County shows the depth to groundwater in this section at approximately 225 to 250 feet bgs. The well report is shown in Appendix B.

# Regulatory

A risk-based evaluation was performed for the Site in accordance with the OCD Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethylbenzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX (sum of benzene, toluene, ethylbenzene, and xylene). Based upon the depth to groundwater, the proposed RRAL for TPH is 5,000 mg/kg.

#### Soil Assessment and Results

On February 16, 2015, Tetra Tech personnel installed a total of three (3) hand augers (AH-1, AH-2 and AH-3) using a hand auger to assess the spill area. Tetra Tech advanced two auger holes (AH-1 and AH-2) inside the facility firewalls and one auger hole (AH-3) outside the north firewall. Soil samples were submitted for laboratory analysis of TPH by EPA method 8015 modified BTEX by EPA Method 8021B and chloride by EPA method 300.0. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix B. The sampling results are summarized in Table 1. The auger hole locations are shown on Figure 3.

Referring to Table 1, the areas of AH-1 and AH-2 did not exceed the RRAL's for TPH and BTEX. However, auger hole (AH-3) at 0-1' did show exceeding TPH and total BTEX concentrations of 5,490 mg/kg and total BTEX of 71.4 mg/kg, respectively. The deeper sample at 1-1.5' decline below the RRAL's. A shallow chloride impact of 1,080 mg/kg was detected in AH-1 at 0-1' below surface which significantly declined to 59 mg/kg at 1-1.5' below surface. The shallow chlorides detected in the area of AH-1 are confined inside the facility firewalls and does not appear to be an environmental concern. The remaining auger holes did not show a significant chloride impact to the subsurface soils.

### **Closure Activities**

Based on the results, SM Energy removed the impacted material as highlighted (green) in Table 1 and shown on Figure 4. The area of AH-1 was excavated to a depth of approximately 1.0' below surface to remove the soils exceeded the RRAL for TPH and BTEX. The excavated material was transported to proper disposal and backfilled with clean soil.

TETRA TECH

Based on the assessment and remedial activities performed, SM Energy request closure for the spill issue. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted, **TETRA TECH**, **INC**.

Ike Tavarez, PG · Senior Project Manager

cc:

SM Energy Company – Tejay Simpson BLM – Jim Amos





Mapped By: Isabel Marmolejo







Sample ID		Sample	Soil Status	tatus	F	TPH (mg/kg)	(6	Benzene	Toluene	Ethlybenzene	Xylene	Total	Chloride
	Sample Date	Depth (ft)	In-Situ	Removed	GRO	DRO	Total	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
AH-1	2/16/2015	0-1	×		318	1,240	1,558	0.120	3.35	1.82	11.9	17.2	1,080
	=	1-1.5	×			•			-	-	-	,	59.0
	=	2-2.5	×		۰.	,		-	-	1	1	•	528
	=	3-3.5	×						-	•	1		288
	=	4-4.5	×			-	1		•	1	•		193
AH-2	2/16/2015	0-1	×		<8.00	376	376	<0.0400	<0.0400	<0.0400	<0.0400 <0.0400	<0.0400	29.0
	=	1-1.5	×		1				-			•	10.0
	=	2-2.5	×		•				-	-	1		10.0
	=	3-3.5	×			•		•	-	-	1	1	29.0
	=	4-4.5	×					-	-	-	1		29.0
	=	5-5.5	×		1	-	1	-			1		38.0
AH-3	2/16/2015	0-1		×	2,020	3,470	5,490	1.82	20.9	2.69	46.0	71.4	384
	=	1-1.5	×		<4.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	243
	=	2-2.5	×		•	•	•	••	-	•	1	-	146
	=	3-3.5	×			,	•	-	-	1	1	1	485
	=	4-4.5	×			•		-	•	-	1	1	194

(-) Not Analyzed



212C-MD-00149

SM Energy – Inca Federal Tank Battery Lea County, New Mexico



1. View of Areas of AH-1 and AH-3



2. View of Area of AH-2

# Water Well Data Average Depth to Groundwater (ft) SM Energy Inca 1 Tank Battery

	17 9	South	:	30 East	t
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	. 33	34	35	36

	18 9	South	:	t	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	19 Sc	outh	30	East	
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30 <mark>90</mark>	29	28	27	26	25
31 <b>115</b>	32	33	34	35	36

	17 5	South	:	31 East	t
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 .	36

	18 5	South	;	31 East	
6	5	4	3	2	1
7	8	9	10	11	12 <b>400</b>
18	17	16	15	14 <b>317</b>	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

-	19 9	South	:	31 East	t
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28 180	27	26	25
31	32	33 101	34	35	36 <b>130</b>

	17 Sc	outh	32		
6	5	4 82	3 175	2 60	1 225
7	8	9	10	11 70 88	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

	18 Sc	32	East		
6	5	4 65	3	2	1
7 460 82	8	9	10	11	12
18	17	16 <b>84</b>	15	14	13
19 Site	20 <b>164</b>	21	22 <b>429</b>	23	24
30	29	28	27	26	25
31	32	33	34 117	35	36

	19 Sc	outh	32	East	
6	5	4 .	3	2	1
7	8 365	9	10	11	12
18	17	16	15	14	13
19 <b>102</b>	20 <b>345</b>	21	22	23	24
30	29	28	27	26	25
31	32	33	34 <b>250</b>	35	36

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6) Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data



# New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replaced O=orphaned, C=the file is closed)	(quar					IE 3=SW largest)	,	3 UTM in meters)		(In fee	t)
POD Number	POD Sub- Code basin	County	Q C 64 1			Tws	Rng	x	Ŷ			Water Column
CP 00566		LE				18S		614960	3627280* 🌗	133	65	68
CP 00672		LE	4	4	07	18S	32E	612475	3624947* 🌍	524	430	94
CP 00672 CLW475398	0	LE	4	4	07	18S.	32E	612475	3624947* 🌍	540	460	80
CP 00677		LE	1	1	26	18S	32E	617750	3621373* 🍑	700		
CP 00808		LE	4	4	26	18S	32E	618973	3620178* 🍑	400		
CP 00814		LE	2	2	08	18S	32E	614074	3626168* 虆	480		
									Average Depth to	Water:	318 f	eet
									Minimun	Depth:	65 f	eet
									Maximum	Depth:	460 f	eet

Record Count: 6

#### PLSS Search:

Township: 18S

Range: 32E

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

# **Summary Report**

(Corrected Report)

Ike Tavarez Tetra Tech 1901 N. Big Spring St. Midland, TX 79705

Project Location:	Lea Co, NM
Project Name:	SM Energy-Inca TB
Project Number:	212C-MD-00149

			Date	Time	Date
Sample	Description	Matrix	Taken	Taken	Received
387158	AH-1 0-1	soil	2015-02-16	00:00	2015-02-17
387159	AH-1 1-1.5	soil	2015-02-16	00:00	2015-02-17
387160	AH-1 2-2.5	soil	2015-02-16	00:00	2015-02-17
387161	AH-1 3-3.5	soil	2015-02-16	00:00	2015-02-17
387162	AH-1 4-4.5	soil	2015-02-16	00:00	2015-02-17
387163	AH-2 0-1	soil	2015-02-16	00:00	2015-02-17
387164	AH-2 1-1.5	soil	2015-02-16	00:00	2015-02-17
387165	AH-2 2-2.5	soil	2015-02-16	00:00	2015-02-17
387166	AH-2 3-3.5	soil	2015-02-16	00:00	2015-02-17
387167	AH-2 4-4.5	soil	2015-02-16	00:00	2015-02-17
387168	AH-2 5-5.5	soil	2015-02-16	00:00	2015-02-17
387169	AH-3 0-1	soil	2015-02-16	00:00	2015-02-17
387170	AH-3 1-1.5	soil	2015-02-16	00:00	2015-02-17
387171	AH-3 2-2.5	soil	2015-02-16	00:00	2015-02-17
387172	AH-3 3-3.5	soil	2015-02-16	00:00	2015-02-17
387173	AH-3 4-4.5	soil	2015-02-16	00:00	2015-02-17

		В	TEX		TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
387158 - AH-1 0-1	0.120	3.35	1.82	11.9	1240 Qr	318
387163 - AH-2 0-1	$< 0.0400^{-1}$	< 0.0400	< 0.0400	< 0.0400	<b>376</b> Qr	$< 8.00^{-2}$
387169 - AH-3 0-1	1.82	20.9	2.69	46.0	<b>3470</b> Qr	2020
387170 - AH-3 1-1.5	< 0.0200	< 0.0200	< 0.0200	< 0.0200	<50.0 Qs	<4.00

<sup>1</sup>Dilution due to surfactants. <sup>2</sup>Dilution due to surfactants.

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Report Date: March 3, 2015

Work Order: 15021803 

Report Date: March 3, 2015		Work Order: 15021803	Pag	Page Number: 2 of 3		
Sample: 387158	- AH-1 0-1					
Param	Flag	Result	Units	RL		
Chloride		1080	mg/Kg	5		
Sample: 387159	- AH-1 1-1.5					
Param	Flag	Result	Units	· RL		
Chloride	0	59.0	mg/Kg	5		
Sample: 387160	- AH-1 2-2.5					
Param	Flag	Result	Units	RL		
Chloride		528	m mg/Kg	5		
Sample: 387161 - Param Chloride	- <b>AH-1 3-3.5</b> Flag	Result 288	Units mg/Kg	RI		
Sample: 387162 -	- AH-1 4-4.5					
Param	Flag	Result	Units	DI		
Chloride	Tiag	193	mg/Kg	RL 5		
Sample: 387163 -	- AH-2 0-1					
Param	Flag	Result	Units	RL		
Chloride		29.0	mg/Kg	5		
Sample: 387164 -	- AH-2 1-1.5					
Param	Flag	Result	Units	RL		
Chloride		10.0	mg/Kg	5		
Sample: 387165 -	- AH-2 2-2.5					
		Result	Units	RL		
Param	Flag	nesuit	Units	BL.		

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Report Date: March 3, 2015		Work Order: 15021803	Page N	Page Number: 3 of 3		
Sample: 387166	- AH-2 3-3.5					
Param	Flag	Result	Units	RL		
Chloride		29.0	mg/Kg	5		
Sample: 387167	- AH-2 4-4.5					
Param	Flag	· Result	Units	RL		
Chloride		29.0	mg/Kg	5		
Sample: 387168	- AH-2 5-5.5					
Param	Flag	Result	Units	RL		
Chloride	0	38.0	mg/Kg			
Sample: 387169	- AH-3 0-1					
Param	Flag	Result	Units	RI		
Chloride	0	384	mg/Kg			
Param	- <b>AH-3 1-1.5</b> Flag	Result 243	Units			
Param Chloride	Flag	Result 243	Units mg/Kg			
Param Chloride Sample: 387171 -	Flag - AH-3 2-2.5	243	mg/Kg	5		
Sample: 387170 Param Chloride Sample: 387171 - Param Chloride	Flag			5 RL		
Param Chloride Sample: 387171 - Param Chloride Sample: 387172 - Param	Flag - AH-3 2-2.5 Flag	243 Result 146 Result	mg/Kg Units mg/Kg Units	5 RL 5 RL		
Param Chloride Sample: 387171 - Param Chloride Sample: 387172 -	Flag - AH-3 2-2.5 Flag - AH-3 3-3.5	243 Result 146	mg/Kg Units mg/Kg	RL RL		
Param Chloride Sample: 387171 - Param Chloride Sample: 387172 - Param Chloride	Flag - AH-3 2-2.5 Flag - AH-3 3-3.5 Flag	243 Result 146 Result	mg/Kg Units mg/Kg Units	5 RL 5 RL		
Param Chloride Sample: 387171 - Param Chloride Sample: 387172 - Param	Flag - AH-3 2-2.5 Flag - AH-3 3-3.5 Flag	243 Result 146 Result	mg/Kg Units mg/Kg Units	RL 5 RL 5 RL 5 RL		

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200 East Sunset Road, Suite 9 200 East Sunset Road, Suite E 5002 Basin Street, Suite A1 (BioAquatic) 2501 Mayes Rd., Suite 100

EUDOOCK, 1928/9424 El Paso, Texas 79922 Midland, Texas 79703 Carroliton, Texas 75006 ab@traceanalysis.com WEB:

E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

# Analytical and Quality Control Report

(Corrected Report)

Ike Tavarez Tetra Tech 1901 N. Big Spring St. Midland, TX, 79705

Report Date: March 3, 2015

FAX 915-585-4944

FAX 432-689-6313

Work Order: 15021803

915-585-3443

432-689-6301 972-242-7750

Project Location:Lea Co, NMProject Name:SM Energy-Inca TBProject Number:212C-MD-00149

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
387158	AH-1 0-1	soil	2015-02-16	00:00	2015-02-17
387159	AH-1 1-1.5	soil	2015-02-16	00:00	2015-02-17
387160	AH-1 2-2.5	soil	2015-02-16	00:00	2015-02-17
387161	AH-1 3-3.5	soil	2015-02-16	00:00	2015-02-17
387162	AH-1 4-4.5	soil	2015-02-16	00:00	2015-02-17
387163	AH-2 0-1	soil	2015-02-16	00:00	2015-02-17
387164	AH-2 1-1.5	soil	2015-02-16	00:00	2015-02-17
387165	AH-2 2-2.5	soil	2015-02-16	00:00	2015-02-17
387166	AH-2 3-3.5	soil	2015-02-16	00:00	2015-02-17
387167	AH-2 4-4.5	soil	2015-02-16	00:00	2015-02-17
387168	AH-2 5-5.5	soil	2015-02-16	00:00	2015-02-17
387169	AH-3 0-1	soil	2015-02-16	00:00	2015-02-17
387170	AH-3 1-1.5	soil	2015-02-16	00:00	2015-02-17
387171	AH-3 2-2.5	soil	2015-02-16	00:00	2015-02-17
387172	AH-3 3-3.5	soil	2015-02-16	00:00	2015-02-17
387173	AH-3 4-4.5	soil	2015-02-16	00:00	2015-02-17

### Notes

• Work Order 15021803: Run deeper samples if TPH exceeds 5000mg/kg, if benzene exceeds 10mg/kg, or if total BTEX exceeds 50mg/kg.

#### Report Corrections (Work Order 15021803)

• 3/3/15: Reran Chloride on sample 387162.

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

BiPa

Dr. Blair Leftwich, Director James Taylor, Assistant Director Brian Pellam, Operations Manager

# **Report Contents**

.....

Sample 387159 (AH-1 1-15).         Sample 387160 (AH-1 2-2.5).         Sample 387161 (AH-1 3-3.5).         Sample 387162 (AH-1 4-4.5).         Sample 387163 (AH-2 0-1).         Sample 387164 (AH-2 1-1.5).         Sample 387165 (AH-2 2-2.5).         Sample 387166 (AH-2 2-2.5).         Sample 387166 (AH-2 2-3.5).         Sample 387166 (AH-2 2-3.5).         Sample 387166 (AH-2 2-5.5).         Sample 387169 (AH-3 0-1).         Sample 387170 (AH-3 1-1.5).         Sample 387170 (AH-3 1-2.5).         Sample 387171 (AH-3 2-2.5).         Sample 387173 (AH-3 4-3.5).         Sample 387173 (AH-3 4-4.5).         Sample 387174 (AH-2 4-4.5).         Sample 387174 (AH-3 3-3.5).	Case Narrative	
Sample 387169 (AH-1 1-1.5).       5         Sample 387161 (AH-1 2-2.5).       5         Sample 387161 (AH-1 3-3.5).       6         Sample 387163 (AH-2 0-1).       5         Sample 387163 (AH-2 1-1.5).       10         Sample 387165 (AH-2 2-2.5).       11         Sample 387165 (AH-2 2-2.5).       10         Sample 387166 (AH-2 2-3.5).       11         Sample 387166 (AH-2 2-3.5).       11         Sample 387166 (AH-3 0-1).       12         Sample 387169 (AH-3 0-1).       13         Sample 387169 (AH-3 0-1).       14         Sample 387170 (AH-3 1-1.5).       11         Sample 387171 (AH-3 2-2.5).       14         Sample 387172 (AH-3 3-3.5).       14         Sample 387173 (AH-3 4-4.5).       15         Sample 387173 (AH-3 4-4.5).       14         Sample 387173 (AH-3 4-4.5).       14         QC Batch 119534 - Method Blank (1).       14         QC Batch 119535 - Method Blank (1).       14         QC Batch 119535 - Method Blank (1).       14         QC Batch 119543 - Method Blank (1).       14         QC Batch 119593 - Method Blank (1).       14         QC Batch 119543 - Method Blank (1).       14         QC Batch 119568 - Method Blank (1).       14	Analytical Report	
Sample 387169 (AH-1 1-1.5).       5         Sample 387161 (AH-1 2-2.5).       5         Sample 387161 (AH-1 3-3.5).       5         Sample 387161 (AH-1 4-4.5).       5         Sample 387163 (AH-2 0-1).       5         Sample 387163 (AH-2 1-1.5).       10         Sample 387165 (AH-2 2-2.5).       10         Sample 387166 (AH-2 2-3.5).       10         Sample 387166 (AH-2 2-3.5).       10         Sample 387166 (AH-2 2-5.5).       11         Sample 387169 (AH-3 0-1).       11         Sample 387169 (AH-3 0-1).       11         Sample 387170 (AH-3 1-1.5).       11         Sample 387171 (AH-3 2-2.5).       12         Sample 387172 (AH-3 3-3.5).       12         Sample 387173 (AH-3 4-4.5).       12         Sample 387173 (AH-3 4-4.5).       13         Sample 387173 (AH-3 4-4.5).       14         Sample 387173 (AH-3 4-4.5).       14         Sample 387173 (AH-3 4-4.5).       14         Sample 387174 (AH-3 3-3.5).       14         Sample 387174 (AH-3 3-4.5).       14         QC Batch 119534 - Method B	Sample 387158 (AH-1 0-1)	
Sample 387160 (AH-1 2-2.5).       5         Sample 387161 (AH-1 4-4.5)       5         Sample 387162 (AH-1 4-4.5)       5         Sample 387162 (AH-1 4-4.5)       5         Sample 387162 (AH-1 4-4.5)       16         Sample 387164 (AH-2 2-2.5)       10         Sample 387165 (AH-2 2-2.5)       10         Sample 387167 (AH-2 3-3.5)       11         Sample 387167 (AH-2 4-5.5)       11         Sample 387167 (AH-3 1-1.5)       12         Sample 387170 (AH-3 1-1.5)       13         Sample 387171 (AH-3 2-2.5)       14         Sample 387171 (AH-3 2-2.5)       14         Sample 387173 (AH-3 4-4.5)       14         QC Batch 119534 - Method Blank (1)       16         QC Batch 119535 - Method Blank (1)       16         QC Batch 119534 - Method Blank (1)       17         QC Batch 119534 - Method Blank (1)       16         QC Batch 11954 - Method Blank (1)       16         QC B		
Sample 387161 (AH-1 3-3.5)       5         Sample 387162 (AH-1 44.5)       6         Sample 387163 (AH-2 0-1)       6         Sample 387163 (AH-2 0-1)       6         Sample 387165 (AH-2 2-1.5)       10         Sample 387166 (AH-2 3-3.5)       11         Sample 387166 (AH-2 3-3.5)       11         Sample 387167 (AH-2 4-4.5)       11         Sample 387168 (AH-2 5-5.5)       11         Sample 387170 (AH-3 1-1.5)       12         Sample 387170 (AH-3 1-1.5)       12         Sample 387171 (AH-3 2-2.5)       14         Sample 387172 (AH-3 3-3.5)       14         Sample 387172 (AH-3 3-3.5)       14         Sample 387173 (AH-3 4-4.5)       14         Sample 387173 (AH-3 4-4.5)       14         QC Batch 119535 - Method Blank (1)       14         QC Batch 119535 - Method Blank (1)       14         QC Batch 119533 - Method Blank (1)       14         QC Batch 119533 - Method Blank (1)       14         QC Batch 119533 - Method Blank (1)       14         QC Batch 119543 - MEthod Blank (1)       14 </td <td></td> <td></td>		
Sample 387162 (AH-1 4.4.5)       4         Sample 387163 (AH-2 0-1)       4         Sample 387164 (AH-2 1-1.5)       10         Sample 387165 (AH-2 2-3.5)       11         Sample 387167 (AH-2 4.4.5)       11         Sample 387168 (AH-2 4.5.5)       11         Sample 387167 (AH-2 4.4.5)       11         Sample 387167 (AH-2 4.4.5)       11         Sample 387167 (AH-3 0-1)       11         Sample 387170 (AH-3 1-1.5)       11         Sample 387171 (AH-3 2-2.5)       14         Sample 387173 (AH-3 4.4.5)       14         Sample 387173 (AH-3 4.4.5)       14         QC Batch 119534 - Method Blank (1)       14         QC Batch 119535 - Method Blank (1)       14         QC Batch 119536 - Method Blank (1)       14         QC Batch 119506 - Method Blank (1)       14         QC Batch 119506 - Method Blank (1)       15         QC Batch 119506 - Method Blank (1)       16         QC Batch 119506 - LCS (1)		
Sample 387163 (AH-2 0-1)       1         Sample 387164 (AH-2 1-1.5)       11         Sample 387166 (AH-2 2-2.5)       11         Sample 387167 (AH-2 4-4.5)       11         Sample 387168 (AH-2 5-5.5)       11         Sample 387169 (AH-3 0-1)       12         Sample 387170 (AH-3 1-1.5)       13         Sample 387171 (AH-3 2-2.5)       14         Sample 387172 (AH-3 3-3.5)       14         Sample 387173 (AH-3 4-4.5)       14         Sample 387173 (AH-3 4-4.5)       14         QC Batch 119534 - Method Blank (1)       14         QC Batch 119535 - Method Blank (1)       14         QC Batch 119535 - Method Blank (1)       14         QC Batch 119536 - Method Blank (1)       14         QC Batch 119537 - Method Blank (1)       14         QC Batch 119538 - Method Blank (1)       14         QC Batch 119536 - Method Blank (1)       14         QC Batch 119536 - Method Blank (1)       14         QC Batch 119537 - Method Blank (1)       14         QC Batch 119538 - Method Blank (1)       15         QC Batch 119539 - Method Blank (1)       14         QC Batch 119536 - LCS (1)       14         QC Batch 119536 - LCS (1)       14         QC Batch 119536 - LCS (1)       <		
Sample 387164 (AH-2 1-1.5)       11         Sample 387165 (AH-2 2-2.5)       11         Sample 387166 (AH-2 3-3.5)       11         Sample 387166 (AH-2 4-4.5)       11         Sample 387166 (AH-2 5-5.5)       11         Sample 387167 (AH-2 4-4.5)       12         Sample 387167 (AH-2 5-5.5)       11         Sample 387170 (AH-3 1-1.5)       12         Sample 387171 (AH-3 2-2.5)       14         Sample 387173 (AH-3 2-2.5)       14         Sample 387172 (AH-3 2-2.5)       14         Sample 387172 (AH-3 2-2.5)       14         QC Batch 119535       14         Method Blank (1)       14         QC Batch 119536       14         QC Batch 119536       14         QC Batch 119537       14         QC Batch 119538       17         QC Batch 119539       10         QC Batch 119534       12 <td></td> <td></td>		
Sample 387165 (AH-2 2-5).       11         Sample 387166 (AH-2 3-3.5).       11         Sample 387168 (AH-2 4-4.5).       11         Sample 387169 (AH-2 4-4.5).       11         Sample 387169 (AH-2 4-4.5).       11         Sample 387170 (AH-3 1-1.5).       11         Sample 387171 (AH-3 1-2.5).       12         Sample 387172 (AH-3 3-3.5).       12         Sample 387173 (AH-3 4-4.5).       14         Method Blanks       14         QC Batch 119534 - Method Blank (1).       14         QC Batch 119535 - Method Blank (1).       14         QC Batch 119536 - Method Blank (1).       14         QC Batch 119536 - Method Blank (1).       14         QC Batch 119536 - Method Blank (1).       14         QC Batch 119537 - Method Blank (1).       14         QC Batch 119538 - Method Blank (1).       15         QC Batch 119593 - Method Blank (1).       16         QC Batch 119508 - Method Blank (1).       17         QC Batch 119536 - LCS (1).       16         QC Batch 119536 - LCS (1).       16         QC Batch 119536 - LCS (1).       16         QC Batch 119536 - LCS (1).       22         QC Batch 119536 - LCS (1).       22         QC Batch 119536 - LCS (1).       22	Sample 387164 (AH-2 1-1 5)	
Sample 387166 (AH-2 3-3.5).       14         Sample 387167 (AH-2 4-4.5).       1         Sample 387168 (AH-2 5-5.5).       1         Sample 387169 (AH-3 0-1).       1         Sample 387170 (AH-3 1-1.5).       11         Sample 387171 (AH-3 2-2.5).       12         Sample 387172 (AH-3 2-2.5).       14         Sample 387173 (AH-3 4-4.5).       14         Wethod Blanks       14         QC Batch 119534 - Method Blank (1).       14         QC Batch 119535 - Method Blank (1).       14         QC Batch 119536 - Method Blank (1).       14         QC Batch 119539 - Method Blank (1).       15         QC Batch 119539 - Method Blank (1).       17         QC Batch 119539 - Method Blank (1).       17         QC Batch 119539 - Method Blank (1).       17         QC Batch 119535 - LCS (1).       17         QC Batch 119535 - LCS (1).       12         QC Batch 119535 - LCS (1).       22         QC Batch 119536 - LCS	Sample 387165 (AH-2 2-2 5)	
Sample 387167 (AH-2 44.5)       1         Sample 387168 (AH-2 5-5.5)       1         Sample 387170 (AH-3 0-1)       1         Sample 387171 (AH-3 0-1)       1         Sample 387171 (AH-3 0-1)       1         Sample 387171 (AH-3 2-2.5)       1         Sample 387172 (AH-3 3-3.5)       1         Sample 387173 (AH-3 4-4.5)       1         Method Blanks       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119539 - Method Blank (1)       1         QC Batch 119530 - LCS (1)       1         QC Batch 119530 - LCS (1)       2         QC Batch 119530 - LCS (1)       2		
Sample 387168 (AH-2 5-5.)       1         Sample 387169 (AH-3 0-1)       1         Sample 387170 (AH-3 1-1.5)       1         Sample 387171 (AH-3 1-1.5)       1         Sample 387172 (AH-3 3-3.5)       1         Sample 387173 (AH-3 4-4.5)       1         Sample 387173 (AH-3 4-4.5)       1         Method Blanks       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119539 - Method Blank (1)       1         QC Batch 119539 - Method Blank (1)       1         QC Batch 11954 - Method Blank (1)       1         QC Batch 11954 - Method Blank (1)       1         QC Batch 11954 - LCS (1)       1         QC Batch 119535 - LCS (1)       1         QC Batch 119536 - LCS (1)       2         QC Batch 119536 - LCS (1)       2         QC Batch 119536 - LCS (1)       2         QC Batch 119537 - LCS (1)       2         QC Batch 119538 - LCS (1)       2         QC Batch 11	Sample 387167 (AH-2 4-4 5)	
Sample 387169 (AH-3 0-1).       1         Sample 387170 (AH-3 1-1.5).       1         Sample 387171 (AH-3 2-2.5).       1         Sample 387172 (AH-3 3-3.5).       1         Sample 387173 (AH-3 4-4.5).       1         Method Blanks       1         QC Batch 119534 - Method Blank (1)       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119537 - Method Blank (1)       1         QC Batch 119538 - Method Blank (1)       1         QC Batch 119539 - Method Blank (1)       1         QC Batch 119534 - Method Blank (1)       1         QC Batch 119535 - LCS (1)       1         QC Batch 119535 - LCS (1)       2         QC Batch 119535 - LCS (1)       2 </td <td></td> <td></td>		
Sample 387170 (AH-3 1-1.5)       1         Sample 387171 (AH-3 2-2.5)       1         Sample 387172 (AH-3 3-3.5)       1         Sample 387173 (AH-3 4-4.5)       1         Method Blanks       1         QC Batch 119534 - Method Blank (1)       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119538 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119595 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119535 - LCS (1)       1         QC Batch 119535 - LCS (1)       2         QC Batch 119535 - LCS (1)       2         QC Batch 119563 - LCS (1)       2         QC Batch 119593 - LCS (1)       2         QC Batch 119594 - LCS (1)       2         QC Batch 119594 - LCS (1)       2         QC Batch 119534 - MS (1)       2		
Sample 387171 (AH-3 2-2.5)       1         Sample 387172 (AH-3 3-3.5)       1         Sample 387173 (AH-3 4-4.5)       1         Method Blanks       1         QC Batch 119534 - Method Blank (1)       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119563 - Method Blank (1)       1         QC Batch 119563 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119535 - CS (1)       1         QC Batch 119535 - LCS (1)       1         QC Batch 119536 - LCS (1)       2         QC Batch 119594 - MS (1)       2		
Sample 387172 (AH-3 3-3.5)       1         Sample 387173 (AH-3 4-4.5)       1         Method Blanks       1         QC Batch 119534 - Method Blank (1)       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119595 - Method Blank (1)       1         QC Batch 119595 - Method Blank (1)       1         QC Batch 119534 - LCS (1)       1         QC Batch 119535 - LCS (1)       1         QC Batch 119535 - LCS (1)       2         QC Batch 119533 - LCS (1)       2         QC Batch 119593 - LCS (1)       2         QC Batch 119593 - LCS (1)       2         QC Batch 119593 - LCS (1)       2         QC Batch 119594 - LCS (1)       2         QC Batch 1195934 - MS (1)       2		
Sample 387173 (AH-3 4-4.5)       1         Method Blanks       1         QC Batch 119534 - Method Blank (1)       1         QC Batch 119535 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119536 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119593 - Method Blank (1)       1         QC Batch 119594 - Method Blank (1)       1         QC Batch 119595 - LCS (1)       1         QC Batch 119535 - LCS (1)       1         QC Batch 119535 - LCS (1)       2         QC Batch 119534 - LCS (1)       2         QC Batch 119534 - MS (1)       2		
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QC Batch 119563 - LCS (1)       2         QC Batch 119593 - LCS (1)       2         QC Batch 119594 - LCS (1)       2         QC Batch 119608 - LCS (1)       2         QC Batch 119710 - LCS (1)       2         QC Batch 119534 - MS (1)       2         QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2		
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QC Batch 119594 - LCS (1)       2         QC Batch 119608 - LCS (1)       2         QC Batch 119710 - LCS (1)       2         Matrix Spikes       2         QC Batch 119534 - MS (1)       2         QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2		
QC Batch 119608 - LCS (1)       2         QC Batch 119710 - LCS (1)       2         Matrix Spikes       2         QC Batch 119534 - MS (1)       2         QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2		
QC Batch 119710 - LCS (1)       2         Matrix Spikes       2         QC Batch 119534 - MS (1)       2         QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2	QC Batch 119608 - LCS $(1)$	
Matrix Spikes       2         QC Batch 119534 - MS (1)       2         QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2         QC Batch 119536 - MS (1)       2         QC Batch 119563 - MS (1)       2	QC Batch 119710 - LCS (1)	
QC Batch 119534 - MS (1)       2         QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2         QC Batch 119563 - MS (1)       2         QC Batch 119563 - MS (1)       2		
QC Batch 119535 - MS (1)       2         QC Batch 119536 - MS (1)       2         QC Batch 119563 - MS (1)       2		
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QC Batch 119536 - MS (1)       2         QC Batch 119563 - MS (1)       2		
QC Batch 119563 - MS (1)		
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# **Case Narrative**

Samples for project SM Energy-Inca TB were received by TraceAnalysis, Inc. on 2015-02-17 and assigned to work order 15021803. Samples for work order 15021803 were received intact at a temperature of 3.3 C.

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

		Prep	Prep	QC	Analysis
Test	Method	Batch	Date	Batch	Date
BTEX	S 8021B	101075	2015-02-20 at 10:19	119535	2015-02-21 at 19:55
Chloride (Titration)	SM 4500-Cl B	101094	2015-02-19 at 20:00	119534	2015-02-20 at 17:30
Chloride (Titration)	SM 4500-Cl B $$	101117	2015-02-20 at 21:00	119563	2015-02-23 at 08:00
Chloride (Titration)	SM 4500-Cl B	101145	2015-02-23 at 17:00	119594	2015-02-25 at 16:00
Chloride (Titration)	SM 4500-Cl B	101256	2015-03-02 at 16:53	119710	2015-03-02 at 16:53
TPH DRO - NEW	S 8015 D	101143	2015-02-24 at 17:00	119593	2015-02-25 at 08:30
TPH DRO - NEW	S 8015 D	101144	2015-02-24 at 17:35	119608	2015-02-25 at 13:48
TPH GRO	S 8015 D	101075	2015-02-20 at 10:19	119536	2015-02-21 at 20:01

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 15021803 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 3, 2015 212C-MD-00149

1.00

Work Order: 15021803 SM Energy-Inca TB Page Number: 6 of 33 Lea Co, NM

# Analytical Report

### Sample: 387158 - AH-1 0-1

Laboratory:MidlandAnalysis:BTEXQC Batch:119535Prep Batch:101075		Da	ate Anal	Method: yzed: eparation	S 8021B 2015-02- 2015-02-	21		Prep Method Analyzed By: Prepared By:	AK
					RL				
Parameter	Flag		Cert	I	Result	Units		Dilution	RL
Benzene			2		0.120	mg/Kg		5	0.0200
Toluene			2		3.35	mg/Kg		5	0.0200
Ethylbenzene			2		1.82	mg/Kg		5	0.0200
Xylene			2		11.9	mg/Kg		5	0.0200
							Spike	Percent	Recovery
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)				9.12	mg/Kg	5	10.0	91	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr		13.0	mg/Kg	5	10.0	130	70 - 130

### Sample: 387158 - AH-1 0-1

Chloride		1	1080	m mg/Kg	5	5.00
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Laboratory: Lubbock Analysis: Chloride (Titration) QC Batch: 119534 Prep Batch: 101094		Date An	al Method: alyzed: Preparation:	SM 4500-Cl B 2015-02-20 2015-02-20	Prep Method: Analyzed By: Prepared By:	HJ

# Sample: 387158 - AH-1 0-1

DRO		Qr	2	1240	mg/Kg	1	50.0
Parameter		Flag	Cert	Result	Units	Dilution	RL
_				RL			
Prep Batch:	101143		Sample	Preparation:	2015-02-24	Prepared By:	
QC Batch:	119593			nalyzed:	2015-02-25	Analyzed By:	/
Analysis:	TPH DRO - NEW	7	Analyti	cal Method:	S 8015 D	Prep Method:	N/A
Laboratory:	Midland						

Report Date: March 3, 2015 212C-MD-00149					Vork Order: 1 SM Energy-I	Page Number: 7 of 33 Lea Co, NM			
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		132	mg/Kg	1	100	132	70 - 130

# Sample: 387158 - AH-1 0-1

Laboratory:	Midland									
Analysis:		Analytical Method: S 8015 D						Prep Metho	d: S 5035	
QC Batch: 119536			Date Analyzed:			2015-02	2-21		Analyzed B	y: AK
Prep Batch: 101075			S	ample P	reparation	n: 2015-02	2-20		Prepared By	y: AK
						RL				
Parameter		Flag		Cert	F	lesult	Unit	S	Dilution	RL
GRO				2		318	mg/K	g	5	4.00
								Spike	Percent	Recovery
Surrogate			Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluer	ne (TFT)				9.40	mg/Kg	5	10.0	94	70 - 130
4-Bromofluoro	benzene (4-BFB)	Qsr	Qsr		17.3	mg/Kg	5	10.0	173	70 - 130

# Sample: 387159 - AH-1 1-1.5

Chloride		1	59.0	m mg/Kg	1	5.00
Parameter	Fla	.g Cert	RL Result	Units	Dilution	RL
Prep Batch:	101094	Sar	nple Preparation:	2015-02-20	Prepared By:	HJ
QC Batch:	119534	Da	te Analyzed:	2015-02-20	Analyzed By:	HJ
Analysis:	Chloride (Titration)	An	alytical Method:	SM 4500-Cl B $$	Prep Method:	N/A
Laboratory:	Lubbock					

# Sample: 387160 - AH-1 2-2.5

Prep Batch:	101117	Sample Preparation:	2015-02-23	Prepared By:	HJ
QC Batch:	119563	Date Analyzed:	2015-02-23	Analyzed By:	HJ
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
Laboratory:	Lubbock				

continued ...

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sample 38710	60 continued						
Parameter	Flag	Cert	RL Result	Units	Dilution	RL	
			RL				
Parameter	Flag	Cert	Result	Units	Dilution	RL	
Chloride		1	528	mg/Kg	5	5.00	
Sample: 38	7161 - AH-1 3-3.5						
Laboratory:	Lubbock						
Analysis:	Chloride (Titration)		cal Method:	SM 4500-Cl B	Prep Method:	N/A	
QC Batch: Prep Batch:	$\frac{119563}{101117}$	Date An		2015-02-23	Analyzed By:	HJ	
Frep Datch:	101117	Sample	Preparation:	2015-02-23	Prepared By:	HJ	
			RL				
Parameter	Flag	Cert	Result	Units	Dilution	RI	
Chloride		1	288	m mg/Kg	5	5.00	
Sample: 38	7162 - AH-1 4-4.5						
Laboratory:	Lubbock						
Analysis:	Chloride (Titration)		cal Method:	SM 4500-Cl B	Prep Method:	N/A	
QC Batch: Prep Batch:	119710 101256	Date Ar Sample	alyzed: Preparation:	2015-03-02	Analyzed By: Prepared By:	HJ HJ	
Parameter	E1	Cont	RL	TT		D	
Chloride	Flag	Cert	Result 193	Units mg/Kg	Dilution 5	RI 5.00	
Unionae		1	193	mg/kg	5	50	

# Sample: 387163 - AH-2 0-1

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Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	119535	Date Analyzed:	2015-02-21	Analyzed By:	AK
Prep Batch:	101075	Sample Preparation:	2015-02-20	Prepared By:	AK

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						RL					
Parameter			Flag	Cert		Result	-	nits	Dilution	R	
Benzene		1	U	2		< 0.0400	mg		2	0.020	
Toluene			U	2	•	< 0.0400	mg		2	0.020	
Ethylbenzene	9		U	2		< 0.0400	mg	'Kg	2	0.020	
Xylene			U	2		< 0.0400	mg	/Kg	2	0.020	
								Spike	Percent	Recover	
Surrogate			Flag	Cert	Result	Units	Dilutior		Recovery	Limits	
Trifluorotolue	ene (TFT)	)			3.69	mg/Kg	2	4.00	92	70 - 130	
4-Bromofluor					3.92	mg/Kg	2	4.00	98	70 - 130	
QC Batch: Prep Batch:	$119563 \\ 101117$				e Analyze ple Prepa	ration: 20	015-02-23 015-02-23		Analyzed Prepared		
Parameter			Flag	Cert		RL Result	U	nits	Dilution	R	
Parameter Chloride			Flag	Cert			-	nits /Kg	Dilution 1	R 5.0	
Chloride Sample: 38 Laboratory: Analysis: QC Batch:	Midland			1 Ana Dat	alytical M te Analyz nple Prep	Result 29.0 fethod:	-			5.0 thod: N/ l By: SC	
Chloride Sample: 38 Laboratory: Analysis: QC Batch:	Midland TPH DF 119593			1 Ana Dat	alytical M te Analyz	Result 29.0 fethod:	mg S 8015 D 2015-02-25		1 Prep Met Analyzed	5.0 thod: N/ l By: SC	
Chloride Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DF 119593			1 Ana Dat	alytical M te Analyz	Result 29.0 fethod: fethod: fe	mg S 8015 D 2015-02-25 2015-02-24 U	/Kg nits	1 Prep Met Analyzed	5.0 thod: N/ l By: SC By: SC R	
Chloride Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter	Midland TPH DF 119593		V	1 An: Dat Sar	alytical M te Analyz	Result 29.0 fethod: 1 aration: 1 RL	mg S 8015 D 2015-02-25 2015-02-24 U	/Kg	1 Prep Met Analyzed Prepared	5.0 thod: N/ By: SC By: SC	
	Midland TPH DF 119593		V Flag	1 An: Dat Sar Cert	alytical M te Analyz	Result 29.0 fethod: ed: aration: RL Result 376	mg S 8015 D 2015-02-25 2015-02-24 U	/Kg nits	1 Prep Met Analyzed Prepared Dilution	5.0 thod: N/ l By: SC By: SC R	

# Sample: 387163 - AH-2 0-1

Laboratory: Analysis:		Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:		Date Analyzed:	2015-02-21	Analyzed By:	AK
Prep Batch:	101075	Sample Preparation:	2015-02-20	Prepared By:	AK

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Parameter	Flag	Cert		RL Result	Uni	ts	Dilution	RL
GRO <sup>2</sup>	U	2		<8.00	mg/ł	Kg	2	4.00
Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.64	mg/Kg	2	4.00	91	70 - 130
4-Bromofluorobenzene (	4-BFB)		3.65	mg/Kg	2	4.00	91	70 - 130

# Sample: 387164 - AH-2 1-1.5

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Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 119563 101117	Analytical Method: Date Analyzed: Sample Preparation:		SM 4500-Cl B 2015-02-23 2015-02-23	Prep Method: Analyzed By: Prepared By:	НĴ
Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	10.0	mg/Kg	1	5.00

# Sample: 387165 - AH-2 2-2.5

Lubbock					
halysis: Chloride (Titration) C Batch: 119563		al Method:	SM 4500-Cl B	Prep Method:	N/A
119563	J		2015-02-23	Analyzed By:	HJ
101117	Sample 1	Sample Preparation: 2015-02-23		Prepared By:	HJ
		RL			
Flag	Cert	Result	Units	Dilution	RL
	1	10.0	mg/Kg	1	5.00
	119563 101117	Chloride (Titration)Analytic119563Date An101117Sample I	Chloride (Titration)Analytical Method:119563Date Analyzed:101117Sample Preparation:RLFlagCertResult	Chloride (Titration)Analytical Method:SM 4500-Cl B119563Date Analyzed:2015-02-23101117Sample Preparation:2015-02-23RLFlagCertResultUnits	Chloride (Titration)Analytical Method:SM 4500-Cl BPrep Method:119563Date Analyzed:2015-02-23Analyzed By:101117Sample Preparation:2015-02-23Prepared By:RLFlagCertResultUnitsDilution

# Sample: 387166 - AH-2 3-3.5

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119563	Date Analyzed:	2015-02-23	Analyzed By:	HJ
Prep Batch:	101117	Sample Preparation:	2015-02-23	Prepared By:	HJ

Report Date: March 3, 2015 212C-MD-00149		Work Order: 15021803 SM Energy-Inca TB			Page Number: 11 of 33 Lea Co, NM	
D	71	~	RL	2.0		
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride		1	29.0	m mg/Kg	1	5.00

# Sample: 387167 - AH-2 4-4.5

Laboratory: Analysis: QC Batch: Prep Batch:	Lubbock Chloride (Titration) 119563 101117	Analytical Method: Date Analyzed: Sample Preparation:		SM 4500-Cl B 2015-02-23 2015-02-23	Prep Method: Analyzed By: Prepared By:	НĴ
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride		1	29.0	m mg/Kg	1	5.00

# Sample: 387168 - AH-2 5-5.5

Laboratory:	Lubbock					
Analysis: QC Batch:				SM 4500-Cl B 2015-02-23	Prep Method: Analyzed By:	,
Prep Batch:	101117		Date Analyzed:2015-02-23Sample Preparation:2015-02-23		Prepared By:	
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride		1	38.0	m mg/Kg	1	5.00

# Sample: 387169 - AH-3 0-1

Laboratory: Analysis: QC Batch: Prep Batch:	Midland BTEX 119535 101075		Analytical Me Date Analyze Sample Prepa	d: 2015-0	2-21	Prep Method: Analyzed By: Prepared By:	AK
				RL			
Parameter		Flag	Cert	Result	Units	Dilution	RL
Benzene			2	1.82	mg/Kg	50	0.0200
Toluene			2	20.9	mg/Kg	50	0.0200
Ethylbenzene	9		2	2.69	mg/Kg	50	0.0200

continued ...

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sample 38710	69 continu	ved									
D						RL			200		
Parameter Verlage			Flag	Cert		Result	Units		Dilution		RL
Xylene				2		46.0	mg/Kg		50		0.0200
								Spike	Percent	Re	covery
Surrogate			Flag	Cert	Result	Units	Dilution	Amount	Recovery		imits
Trifluorotolu	ene (TFT)	)	0		89.5	mg/Kg	50	100	90		- 130
4-Bromofluor					112	mg/Kg	50	100	112		- 130
Prep Batch: Parameter	*		Flag	Cert	ple Prepa	RL Result	015-02-23 Unit	s	Prepared Dilution	. Бу.	HJ RL
						004	17.5				F 00
				1		384	mg/K	g	5		5.00
Chloride Sample: 38 Laboratory: Analysis: QC Batch:	Midland		V	Ana Dat	lytical M e Analyze ple Prepa	ethod: S	mg/K S 8015 D 2015-02-25 2015-02-24	g	5 Prep Met Analyzed Prepared	l By:	
Chloride Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DF 119593			Ana Dat Sam	e Analyze pple Prepa	ethod: S sd: S aration: S RL	5 8015 D 2015-02-25 2015-02-24	_	Prep Met Analyzed	l By:	N/A SC
Chloride Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch: Parameter	Midland TPH DF 119593		Flag	Ana Dat Sam Cert	e Analyze pple Prepa	ethod: 5 sd: 5 aration: 5 RL Result	5 8015 D 2015-02-25 2015-02-24 Unit	s	Prep Met Analyzed Prepared Dilution	l By:	N/A SC SC
Chloride Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch: Prep Batch: Parameter	Midland TPH DF 119593			Ana Dat Sam	e Analyze pple Prepa	ethod: S sd: S aration: S RL	5 8015 D 2015-02-25 2015-02-24	s	Prep Met Analyzed Prepared	l By:	N/A SC SC
Chloride Sample: 38 Laboratory: Analysis: QC Batch: Prep Batch:	Midland TPH DF 119593		Flag	Ana Dat Sam Cert	e Analyze pple Prepa	ethod: 5 ed: 2 aration: 2 RL Result <b>3470</b>	S 8015 D 2015-02-25 2015-02-24 Unit mg/K	s	Prep Met Analyzed Prepared Dilution	l By: By: Ree	

#### Laboratory: Midland Analysis: TPH GRO Analytical Method:

Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	119536	Date Analyzed:	2015-02-21	Analyzed By:	AK
Prep Batch:	101075	Sample Preparation:	2015-02-20	Prepared By:	AK

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Parameter	Flag		Cert		RL Result	Uni	ts	Dilution	RL	
GRO			2		2020	mg/K	g	50	4.00	
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits	
Trifluorotoluene (TFT)				95.6	mg/Kg	50	100	96	70 - 130	
4-Bromofluorobenzene (4-BFB)				122	mg/Kg	50	100	122	70 - 130	

# Sample: 387170 - AH-3 1-1.5

Laboratory: Midland Analysis: BTEX QC Batch: 119535 Prep Batch: 101075		Date Ana	l Method: lyzed: reparation:	S 8021E 2015-02 2015-02	-21		Prep Method Analyzed By: Prepared By:	AK
				RL				
Parameter	Flag	Cert	F	Result	Unit	S	Dilution	RL
Benzene	U	2	<0	0.0200	mg/K	J.	1	0.0200
Toluene	U	2	<0	0.0200	$mg/K_{c}$	r r	1	0.0200
Ethylbenzene	U	2	<0	0.0200	mg/K	-	1	0.0200
Xylene	U	2	<0	0.0200	$mg/K_{c}$	-	1	0.0200
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.71	mg/Kg	1	2.00	86	70 - 130
4-Bromofluorobenzene (4-BFB)			2.00	mg/Kg	1	2.00	100	70 - 130

# Sample: 387170 - AH-3 1-1.5

Laboratory: Analysis: QC Batch: Prep Batch:	nalysis: Chloride (Titration)		al Method: alyzed: Preparation:	SM 4500-Cl B 2015-02-25 2015-02-24	Prep Method: Analyzed By: Prepared By:	HJ
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride		1	243	mg/Kg	5	5.00

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Sample: 38	7170 - AH-3 1-1	.5						
Laboratory:	Midland							
Analysis:	TPH DRO - NE	W	Ana	lytical Meth	od: S 8015	5 D	Prep Me	thod: N/A
QC Batch:	119608		Date	e Analyzed:	2015-0	2-25	Analyzed	d By: SC
Prep Batch:	101144		Sam	ple Preparat	tion: 2015-0	2-24	Preparec	By: SC
					RL			
Parameter		Flag	Cert	Res	sult	Units	Dilution	RL
DRO		Qs,U	2	<5	50.0	mg/Kg	1	50.0
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
n-Tricosane			94.2	mg/Kg	1	100	94	70 - 130

# Sample: 387170 - AH-3 1-1.5

4-Bromofluorobenzene (4-BFB	)			1.78	mg/Kg	1	2.00	89	70 - 130
Trifluorotoluene (TFT)				1.80	mg/Kg	1	2.00	90	70 - 130
Surrogate		Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
							Spike	Percent	Recovery
GRO	U		2		<4.00	mg/K	g	1	4.00
Parameter	Flag		Cert		RL Result	Uni	ts	Dilution	RL
Laboratory:MidlandAnalysis:TPH GROQC Batch:119536Prep Batch:101075			Date An	al Methoo alyzed: Preparatio	2015-0	2-21		Prep Metho Analyzed B Prepared B	y: AK

# Sample: 387171 - AH-3 2-2.5

Laboratory:	Lubbock					
Analysis:	Chloride (Titration)	Analyti	cal Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119594	Date A	nalyzed:	2015-02-25	Analyzed By:	'
Prep Batch:	101145	Sample	Preparation:	2015-02-24	Prepared By:	HJ
			RL			
Parameter	Flag	Cert	Result	Units	Dilution	RL
Chloride		1	146	mg/Kg	5	5.00

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Sample: 38	7172 - AH-3 3-3.5					
Laboratory:	Lubbock					
Analysis:	Chloride (Titration)	Analytic	al Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119594	Date An	alyzed:	2015-02-25	Analyzed By:	HJ
Prep Batch:	101145	Sample	Preparation:	2015-02-24	Prepared By:	HJ
			RL			
Parameter	$\operatorname{Flag}$	Cert	Result	Units	Dilution	RL
Chloride		1	485	mg/Kg	5	5.00

# Sample: 387173 - AH-3 4-4.5

Chloride		1	194	mg/Kg	5	5.00
Parameter	Flag	g Cert	RL Result	Units	Dilution	RL
Analysis: QC Batch: Prep Batch:	Chloride (Titration) 119594 101145	Date	ytical Method: e Analyzed: ple Preparation:	2015-02-25	Prep Method: Analyzed By: Prepared By:	нĴ
Laboratory:	Lubbock					

Report Date: March 3, 2015 212C-MD-00149 Work Order: 15021803 SM Energy-Inca TB

# Method Blanks

Method Blank (1)	QC Batch: $119534$				
QC Batch: 119534 Prep Batch: 101094		Date Analyzed: QC Preparation:	2015-02-20 2015-02-19	Analyzed By: Prepared By:	
			MDL		
Parameter	Flag	Cert	Result	Units	RL
Chloride		1	<3.05	mg/Kg	5

# Method Blank (1) QC Batch: 119535

QC Batch:	119535	Date Analyzed:	2015-02-21	Analyzed By:	AK
Prep Batch:	101075	QC Preparation:	2015-02-20	Prepared By:	AK

					MDL			
Parameter	Flag		Cert		Result	Units		RL
Benzene			2		< 0.00533	1	mg/Kg	0.02
Toluene			2		< 0.00645	1	mg/Kg	0.02
Ethylbenzene			2		< 0.0116	1	mg/Kg	0.02
Xylene			2		< 0.00874	1	mg/Kg	0.02
						Spike	Percent	Recovery
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits
Trifluorotoluene (TFT)			1.65	mg/Kg	1	2.00	82	70 - 130
4-Bromofluorobenzene (4-BFB)			1.93	mg/Kg	1	2.00	96	70 - 130

### Method Blank (1) QC Batch: 119536

QC Batch: Prep Batch:		Date Analyzed: QC Preparation:		Analyzed By: Prepared By:	
			MDL		
Parameter	Flag	Cert	Result	Units	RL
GRO		2	<2.32	m mg/Kg	4

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Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.66	mg/Kg	1	2.00	83	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

# Method Blank (1) QC Batch: 119563

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QC Batch: Prep Batch:		Date Analyzed: QC Preparation:		Analyzed By: Prepared By:	
_			MDL		
Parameter	Flag	Cert	Result	Units	RL
Chloride		1	<3.05	m mg/Kg	5

# Method Blank (1) QC Batch: 119593

QC Batch: Prep Batch:	$119593 \\ 101143$				analyzed: eparation:	2015-02-25 2015-02-24			ed By: SC ed By: SC
Parameter			Fla		Cert		MDL	I.I.a.ita	DI
DRO			F 18	ig	2 Cert		Result <7.41	Units mg/Kg	RL 50
								0, 0	
Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane				98.4	mg/Kg	1	100	98	70 - 130

# Method Blank (1) QC Batch: 119594

QC Batch: Prep Batch:		Date Analyzed: QC Preparation:		Analyzed By: Prepared By:	
Parameter	Flag	Cart	MDL	TT	DI
	 Flag	Cert	Result	Units	RL
Chloride		1	<3.05	m mg/Kg	5

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Method Blank (1)	QC B	atch: 1196	508							
QC Batch: 119608			Date A	analyzed:	2015-02-25		Analyz	ed By: SC		
Prep Batch: 101144			QC Pr	eparation:	2015-02-24		Prepare	ed By: SC		
					М	DL				
Parameter		Fla	ıg	Cert	Rea	sult	Units	RL		
DRO				2	<7	7.41	m mg/Kg	50		
						Spike	Percent	Recovery		
Surrogate	Flag	Cert	Result	Units	Dilution	Amount	Recovery	Limits		
n-Tricosane			93.3	mg/Kg	1	100	93	70 - 130		

Method Blank (1)	QC Batch: 119710	

QC Batch: Prep Batch:		Date Analyzed: QC Preparation:		Analyzed By: Prepared By:	
			MDL		
Parameter	Flag	Cert	Result	Units	RL
Chloride		1	<3.05	m mg/Kg	5
Report Date: March 3, 2015 212C-MD-00149 Work Order: 15021803 SM Energy-Inca TB Page Number: 19 of 33 Lea Co, NM

# Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

		ate Analyz C Prepara		-02-20 -02-19			U	By: HJ By: HJ
F	С	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
	1	2400	mg/Kg	5	2500	<15.2	96	85 - 115
	F sed on the spike resu	F C	ECS FCResult 1 2400	LCS F C Result Units	LCS F C Result Units Dil.	LCS Spike F C Result Units Dil. Amount	LCS Spike Matrix F C Result Units Dil. Amount Result	LCS Spike Matrix F C Result Units Dil. Amount Result Rec.

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride		1	2350	mg/Kg	5	2500	$<\!15.2$	94	85 - 115	2	20

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

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

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QC Batch: 119535 Prep Batch: 101075			Date Analy QC Prepara		5-02-21 5-02-20			v	By: AK By: AK
D			LCS			Spike	Matrix		Rec.
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		2	1.87	mg/Kg	1	2.00	< 0.00533	94	70 - 130
Toluene		2	1.87	mg/Kg	1	2.00	< 0.00645	94	70 - 130
Ethylbenzene		2	1.92	mg/Kg	1	2.00	< 0.0116	96	70 - 130
Xylene		2	5.79	mg/Kg	1	6.00	< 0.00874	96	70 - 130

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

			LCSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		2	1.84	mg/Kg	1	2.00	< 0.00533	92	70 - 130	2	20
Toluene		2	1.81	mg/Kg	1	2.00	< 0.00645	90	70 - 130	3	20
Ethylbenzene		2	1.84	mg/Kg	1	2.00	< 0.0116	92	70 - 130	4	20
Xylene		2	5.55	mg/Kg	1	6.00	< 0.00874	92	70 - 130	4	20

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

continued ...

Report Date: March 3, 2015 212C-MD-00149			ork Order: M Energy	15021803 -Inca TB			Pa	ge Numbe Le	r: 20 of 33 ea Co, NM
control spikes continued									
		LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
		LCS	LCSD			Spike	LCS	LCSD	Rec.
Surrogate		Result	Result	Units	Dil.	Amount	Rec.	Rec.	Limit
Trifluorotoluene (TFT)		1.73	1.63	mg/Kg	1	2.00	86	82	70 - 130
4-Bromofluorobenzene (4-BFB)		2.01	1.97	mg/Kg	1	2.00	100	98	70 - 130
Laboratory Control Spike (L QC Batch: 119536 Prep Batch: 101075	vCS-1)	Date An QC Prep		2015-02-21 2015-02-20				Analyzed Prepared	
D	F	C Resu		nits Dil		Spike mount	Matrix Result	Rec.	Rec. Limit
Param	Г								
GRO		2 19.3	3 mg	And a state of the second s	l spike	20.0 duplicate r	<2.32 result.	96	70 - 130
GRO Percent recovery is based on the Param	spike resu F C	2 19.3 lt. RPD is b LCSD Result U	3 mg, ased on th Jnits D	ne spike and Spike il. Amou	e M nt R	duplicate r atrix esult Re	result. Re c. Lir	ec. nit RP	RPD D Limit
GRO Percent recovery is based on the Param GRO	spike resu F C 2	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m	3 mg, ased on th Jnits D g/Kg	ne spike and Spike il. Amou 1 20.0	e M nt R	duplicate r latrix esult Rec 2.32 10	result. Re c. Lir 4 70-	ec. nit RP	RPD D Limi
GRO Percent recovery is based on the Param GRO	spike resu F C 2	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b	3 mg, ased on th Jnits D g/Kg ased on th	ne spike and Spike il. Amou 1 20.0	e M nt R	duplicate r fatrix esult Rec 2.32 10 duplicate r	result. Re c. Lir 4 70 - result.	ec. nit RP 130 8	RPD D Limit 20
GRO Percent recovery is based on the Param GRO Percent recovery is based on the	spike resu F C 2	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS	3 mg, ased on th Jnits D g/Kg ased on th LCSD	ne spike and Spike il. Amou 1 20.0 ne spike and	e M nt R < d spike	duplicate r latrix esult Rec (2.32 10) duplicate r Spike	result. Re c. Lir 4 70 - result. LCS	ec. nit RP 130 8 LCSD	RPD D Limit 20 Rec.
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate	spike resu F C 2	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result	3 mg, ased on th Jnits D g/Kg ased on th LCSD Result	ne spike and Spike il. Amou 1 20.0 ne spike and Units	e M nt R < d spike Dil.	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount	result. Re c. Lir 4 70 - result. LCS Rec.	ec. nit RP 130 8 LCSD Rec.	RPD D Limit 20 Rec. Limit
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT)	spike resu F C 2	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result 1.77	3 mg, ased on th Jnits D g/Kg ased on th LCSD Result 1.82	ne spike and Spike vil. Amou 1 20.0 ne spike and Units mg/Kg	e M nt R < d spike Dil. 1	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount 2.00	result. Re c. Lir 4 70 - result. LCS Rec. 88	ec. nit RP 130 8 LCSD Rec. 91	RPD D Limit 20 Rec. Limit 70 - 130
Param GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	spike resu F C 2 spike resu	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result	3 mg, ased on th Jnits D g/Kg ased on th LCSD Result	ne spike and Spike il. Amou 1 20.0 ne spike and Units	e M nt R < d spike Dil.	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount	result. Re c. Lir 4 70 - result. LCS Rec.	ec. nit RP 130 8 LCSD Rec.	RPD D Limit 20 Rec. Limit 70 - 130
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (L	spike resu F C 2 spike resu	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result 1.77 1.85	3 mg, ased on th Jnits D g/Kg ased on th LCSD Result 1.82 1.84	ne spike and Spike vil. Amou 1 20.0 ne spike and Units mg/Kg	e M nt R < d spike Dil. 1	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount 2.00	result. Re c. Lir 4 70 - result. LCS Rec. 88	ec. nit RP 130 8 LCSD Rec. 91	20 Rec.
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (L QC Batch: 119563	spike resu F C 2 spike resu	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result 1.77 1.85	3 mg, ased on th Juits D g/Kg ased on th LCSD Result 1.82 1.84	ne spike and Spike il. Amou 1 20.0 ne spike and Units mg/Kg mg/Kg 2015-02-23	e M nt R < d spike Dil. 1 1 3	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount 2.00	result. Re c. Lir 4 70 - result. LCS Rec. 88	ec. nit RP 130 8 LCSD Rec. 91 92	RPD D Limi 20 Rec. Limit 70 - 130 70 - 130
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB)	spike resu F C 2 spike resu	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result 1.77 1.85	3 mg, ased on th Jnits D g/Kg ased on th LCSD Result 1.82 1.84	ne spike and Spike il. Amou 1 20.0 ne spike and Units mg/Kg mg/Kg	e M nt R < d spike Dil. 1 1 3	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount 2.00	result. Re c. Lir 4 70 - result. LCS Rec. 88	ec. nit RP 130 8 LCSD Rec. 91 92	RPD D Limi 20 Rec. Limit 70 - 130 70 - 130
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (L QC Batch: 119563	spike resu F C 2 spike resu	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result 1.77 1.85	3 mg, ased on th Units D g/Kg ased on th LCSD Result 1.82 1.84	ne spike and Spike il. Amou 1 20.0 ne spike and Units mg/Kg mg/Kg 2015-02-23	e M nt R < < d spike Dil. 1 1 1	duplicate r fatrix esult Rec (2.32 10) duplicate r Spike Amount 2.00	result. Re c. Lir 4 70 - result. LCS Rec. 88	ec. nit RP 130 8 LCSD Rec. 91 92	RPD D Limit 20 Rec. Limit 70 - 130 70 - 130
GRO Percent recovery is based on the Param GRO Percent recovery is based on the Surrogate Trifluorotoluene (TFT) 4-Bromofluorobenzene (4-BFB) Laboratory Control Spike (L QC Batch: 119563	spike resu F C 2 spike resu	<sup>2</sup> 19.3 lt. RPD is b LCSD Result U 20.8 m lt. RPD is b LCS Result 1.77 1.85 Date An QC Prep	3 mg, ased on th Units D g/Kg ased on th LCSD Result 1.82 1.84 nalyzed: paration:	ne spike and Spike il. Amou 1 20.0 ne spike and Units mg/Kg mg/Kg 2015-02-23	e M nt R < < d spike Dil. 1 1 1	duplicate r fatrix esult Rec 2.32 10 duplicate r Spike Amount 2.00 2.00	result. Re c. Lir 4 70 - result. LCS Rec. 88 92	ec. nit RP 130 8 LCSD Rec. 91 92	RPD D Limit 20 Rec. Limit 70 - 130 70 - 130 70 - 130 8y: HJ By: HJ

	9			Work Or SM En		Page Number: 21 of 33 Lea Co, NM						
control spikes co	ontinued			LCSD			Spike	Matrix		Rec.		RPD
Param		F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limi
				LOOD			G :1	1.6		D		DDD
Param		F	С	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limi
Chloride		1	1	2400	mg/Kg		2500	<15.2	<u>96</u>	85 - 11		20
	y is based on the s	snike										
QC Batch: 11	<b>ontrol Spike (L</b> 19593 01143	CS-1	.)		e Analyze Preparati		5-02-25 5-02-24				nalyzed B repared B	•
- r					1						1	
					LCS			Spike	Ma	atrix		Rec.
Param			F	С	Result	Units	Dil.	Amount			Rec.	Limit
DRO				2	243	mg/Kg		250		7.41		70 - 13
Param DRO		F	C 2	Result 240	Units mg/Kg		Amount 250	Result <7.41	Rec. 96	Limit 70 - 13	RPD 0 1	Limi 20
Percent recover	is based on the	milro	100111	IF DDD								
Percent recovery	y is based on the s					on the sp	Jine and S				TED	Dee
	y is based on the s	L	CS	LCS	SD			Spike	LC	S LO	CSD	Rec.
Surrogate	y is based on the s	L0 Re:			SD ult U	nits g/Kg	Dil.			S LO c. R	lec.	Limit
Surrogate n-Tricosane Laboratory C QC Batch: 11	ontrol Spike (L <sup>.</sup> 19594	LO Res 10	CS sult 06	LCS Resu 10	SD 1lt U 5 mg	nits g/Kg d: 20	Dil. 1 15-02-25	Spike Amount	LC: Rec	S LC c. R <u>5 1</u>	nalyzed E	Limit 70 - 13 Sy: H.
Surrogate n-Tricosane Laboratory C	ontrol Spike (L <sup>.</sup> 19594	LO Res 10	CS sult 06	LCS Resu 10	SD ult U 5 mg e Analyze Preparati	nits g/Kg d: 20	Dil. 1 15-02-25	Spike Amount 100	LC: Rec 106	S LC c. R <u>5 1</u> An Pr	tec. 05	Limit 70 - 13 Sy: H. y: H.
Surrogate n-Tricosane Laboratory C QC Batch: 1 Prep Batch: 10	ontrol Spike (L <sup>.</sup> 19594	LO Res 10	CS sult 06	LCS Rest 10 Dat QC	SD ult U 5 mg e Analyze Preparati LCS	nits g/Kg d: 20 on: 20	Dil. 1 15-02-25 15-02-23	Spike Amount 100 Spike	LC Rec 100	S LC c. R <u>5 1</u> An Pr atrix	dec. 05 nalyzed E repared B	Limit 70 - 13 Sy: HJ y: HJ Rec.
Surrogate n-Tricosane Laboratory C QC Batch: 1 Prep Batch: 10 Param	ontrol Spike (L <sup>.</sup> 19594	LO Res 10	CS sult 06	LCS Rest 10 Dat QC	SD <u>ult U</u> 5 mą e Analyze Preparati LCS Result	nits g/Kg d: 20 on: 20 Units	Dil. 1 15-02-25 15-02-23 Dil.	Spike Amount 100 Spike Amount	LC Rec 100	S LC <u>c. R</u> <u>5 1</u> An Pr atrix esult	dec. 05 nalyzed E repared B Rec.	Limit 70 - 13 y: H. y: H. Rec. Limit
Surrogate n-Tricosane Laboratory C QC Batch: 1: Prep Batch: 10 Param Chloride	ontrol Spike (L <sup>.</sup> 19594	L( Res 10 CS-1	CS sult 06 L)	LCS Rest 10 Dat QC	5D 11t U 5 mg 25 mg Preparati LCS Result 2480	inits g/Kg d: 20 on: 20 Units mg/Kg	Dil. 1 15-02-25 15-02-23 Dil. 5	Spike Amount 100 Spike Amount 2500	LC Rec 100 Mi Rec	S LC 2. R 5 1 An Pr atrix esult 15.2	dec. 05 nalyzed E repared B Rec.	Limit 70 - 13 y: H. y: H. Rec. Limit
Surrogate n-Tricosane Laboratory C QC Batch: 1: Prep Batch: 10 Param Chloride	ontrol Spike (L 19594 01145	L( Res 10 CS-1	CS sult 06 L)	LCS Rest 10 Dat QC <u>C</u> 1 	5D 11t U 5 mg 2480 2480 0 is based of	inits g/Kg d: 20 on: 20 Units mg/Kg	Dil. 1 15-02-25 15-02-23 Dil. 5 pike and s	Spike Amount 100 Spike Amount 2500 pike duplica	LC Rec 100 Mi Rec	S LC <u>c. R</u> <u>5 1</u> An Pr atrix essult <u>15.2</u> ult.	dec. 05 nalyzed E repared B Rec.	Limit 70 - 13 5y: HJ y: HJ Rec. Limit 85 - 11
Surrogate n-Tricosane Laboratory C QC Batch: 1: Prep Batch: 10 Param Chloride	ontrol Spike (L 19594 01145	L( Res 10 CS-1	CS sult 06 L)	LCS Rest 10 Dat QC	5 mg 5 mg 6 Analyze Preparati LCS Result 2480 9 is based of	inits g/Kg d: 20 on: 20 Units mg/Kg	Dil. 1 15-02-25 15-02-23 Dil. 5	Spike Amount 100 Spike Amount 2500	LC Rec 100 Mi Rec	S LC 2. R 5 1 An Pr atrix esult 15.2	dec. 05 nalyzed E repared B Rec.	Limit 70 - 13 y: HJ y: HJ Rec. Limit

212C-MD-001	March 3, 2015 49		Work Order: 15021803Page Number: 22 orSM Energy-Inca TBLea Co,										
Percent recove	ery is based on the s	spike	resu	lt. RPI	) is based	on the sp	pike and s	pike duplica	ate resu	ılt.			
Laboratory (	Control Spike (L	<b>CS-1</b>	)										
	119608				te Analyze		15-02-25				Analyz		/
Prep Batch:	101144			QC	Preparat	ion: 201	15-02-24				Prepar	red By	y: SC
					LCS			Spike	Ma	atrix			Rec.
Param			F	С	Result	Units	Dil.	Amount	Re	sult	Rec		Limit
DRO				2	254	mg/Kg	1	250	and the second se	7.41	102	2 7	70 - 13
Percent recove	ery is based on the s	pike	resu	lt. RPD	) is based	on the sp	pike and s	pike duplica	ate resu	ılt.			
				LCSD			Spike	Matrix		Re			RPI
						D'1	Amana	D 14	D	Lin	.:+ 1	RPD	Lim
Param		F	С	Result		Dil.	Amount	Result	Rec.				
DRO			2	252	mg/Kg	<u>5</u> 1	250	<7.41	101	70 -		$\frac{\mathbf{RFD}}{1}$	20
DRO	ery is based on the s		2	252	mg/Kg	<u>5</u> 1	250	<7.41	101	70 -			
DRO	ery is based on the s		2 resu	252 lt. RPD	mg/Kg ) is based	<u>5</u> 1	250	<7.41 pike duplica	101 ate resu	70 - ilt.	130		20
DRO	ery is based on the s	spike	2 resu CS	252	mg/Kg ) is based SD	<u>5</u> 1	250	<7.41	101	70 - ılt. S	130 LCSD		20 Rec.
DRO Percent recove	ery is based on the s	spike LC	2 resu CS ult	252 lt. RPD LCS	mg/Kg ) is based SD ult U	5 1 on the sp	250 pike and s	<7.41 pike duplica Spike	101 ate resu LCS	70 - ılt. 5	130	1	20 Rec. Limit
DRO Percent recove Surrogate n-Tricosane Laboratory ( QC Batch:	Try is based on the s Control Spike (LO 119710 101256	spike LC Res 10	2 resu CS ult	252 lt. RPD LCS Res <sup></sup>	mg/Kg ) is based SD ult U	g 1 on the sp Units g/Kg ed: 201	250 pike and s Dil.	<7.41 pike duplica Spike Amount	101 ate resu LCS Rec	70 - 1lt. 5	130 LCSD Rec.	1 zed B	20 Rec. Limit 70 - 13 y: HJ
DRO Percent recove Surrogate n-Tricosane Laboratory ( QC Batch: Prep Batch:	Control Spike (LO	pike LC Res 10	<sup>2</sup> resu CS ult 6	252 lt. RPD LCS Res 10 Dat QC	mg/Kg ) is based SD ult U 7 m ce Analyze Preparati LCS	s 1 on the sp Units g/Kg ed: 201 ion: 201	250 pike and s Dil. 1 1 15-03-02 15-03-02	<7.41 pike duplica Spike Amount 100 Spike	101 ate resu LCS Rec 106	70 - ilt. 5	130 LCSD Rec. 107 Analyz Prepar	1 zed By	20 Rec. Limit 70 - 13 y: HJ 7: HJ Rec.
DRO Percent recove Surrogate n-Tricosane Laboratory ( QC Batch: Prep Batch: Prep Batch: Param	Control Spike (LO	pike LC Res 10	2 resu CS ult	252 lt. RPD LCS Res 10 Dat QC	mg/Kg b is based 5D ult U 7 m ce Analyze Preparati LCS Result	s 1 on the sp Units g/Kg ed: 201 ion: 201 Units	250 pike and s Dil. 1 15-03-02 15-03-02 Dil.	<7.41 pike duplica Spike Amount 100 Spike Amount	101 ate resu Rec 106 Ma Re	70 - ilt. 5	130 LCSD Rec. 107 Analyz Prepar Rec.	1 zed By red By	20 Rec. Limit 70 - 13 y: HJ 7: HJ Rec. Limit
DRO Percent recove Surrogate n-Tricosane Laboratory ( QC Batch: Prep Batch: Prep Batch: Param Chloride	Control Spike (LC 119710 101256	LC Res 10 CS-1	<sup>2</sup> resu CS ult 6 ()	252 lt. RPD LCS Ress 10 Dat QC	mg/Kg D is based SD ult U 7 m 7 m Freparati LCS Result 2410	ynits g/Kg d: 201 ion: 201 Units mg/Kg	250 pike and sy Dil. 1 15-03-02 15-03-02 Dil. 5	<7.41 pike duplica Spike Amount 100 Spike Amount 2500	101 ate resu Rec 106 Ma Re <1	70 - Ilt. S	130 LCSD Rec. 107 Analyz Prepar	1 zed By red By	20 Rec. Limit 70 - 13 y: HJ 7: HJ Rec. Limit
DRO Percent recove Surrogate n-Tricosane Laboratory ( QC Batch: Prep Batch: Prep Batch: Param Chloride	Control Spike (LO	LC Res 10 CS-1	<sup>2</sup> resu CS ult 6 ()	252 It. RPD LCS Ress 10 Dat QC Lt. RPD	mg/Kg b is based SD ult U 7 m re Analyze Preparati LCS Result 2410 b is based of	ynits g/Kg d: 201 ion: 201 Units mg/Kg	250 pike and sy Dil. 1 15-03-02 15-03-02 Dil. 5 pike and sy	<7.41 pike duplica Spike Amount 100 Spike Amount 2500 pike duplica	101 ate resu Rec 106 Ma Re <1	TO - llt. S	130 Rec. 107 Analyz Prepar Rec. 96	1 zed By red By	20 Rec. Limit 70 - 13 y: HJ y: HJ X: HJ Rec. Limit 35 - 11
DRO Percent recove Surrogate n-Tricosane Laboratory ( QC Batch: Prep Batch: Prep Batch: Param Chloride	Control Spike (LC 119710 101256	LC Res 10 CS-1	<sup>2</sup> resu CS ult 6 ()	252 lt. RPD LCS Ress 10 Dat QC	mg/Kg b is based SD ult U 7 m, ce Analyze Preparati LCS Result 2410 b is based of	ynits g/Kg d: 201 ion: 201 Units mg/Kg	250 pike and sy Dil. 1 15-03-02 15-03-02 Dil. 5	<7.41 pike duplica Spike Amount 100 Spike Amount 2500	101 ate resu Rec 106 Ma Re <1	70 - Ilt. S	130 Rec. 107 Analyz Prepar Rec. 96 c.	1 zed By red By	20 Rec. Limit 70 - 130 y: HJ 7: HJ Rec.

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

Report Date: March 3, 2015 212C-MD-00149 Work Order: 15021803 SM Energy-Inca TB

# Matrix Spikes

Matrix Spike	(MS-1)	Spiked	Sample:	387159
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QC Batch:	119534	Date Analyzed:	2015-02-20	Analyzed By:	HJ
Prep Batch:	101094	QC Preparation:	2015-02-19	Prepared By:	HJ

				MS			Spike	Ma	atrix		Rec.
Param		F	C ]	Result	Units	Dil.	Amount	Re	esult 1	Rec.	Limit
Chloride			1	2330	mg/Kg	1	2500	<	3.05	93	80 - 120
Percent recovery is base	ed on the spike	resu	lt. RPD	is based o	on the sp	oike and sp	oike duplic	ate resi	ult.		
			MSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Chloride			2350	mg/Kg	1	2500	<3.05	92	80 - 120	1	20

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

#### Matrix Spike (MS-1) Spiked Sample: 387120

QC Batch:	119535	Date Analyzed:	2015-02-21	Analyzed By:	AK
Prep Batch:	101075	QC Preparation:		Prepared By:	

			MS			Spike	Matrix		Rec.
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit
Benzene		2	1.58	mg/Kg	1	2.00	< 0.00533	79	70 - 130
Toluene		2	1.60	mg/Kg	1	2.00	< 0.00645	80	70 - 130
Ethylbenzene		2	1.75	mg/Kg	1	2.00	< 0.0116	88	70 - 130
Xylene		2	5.26	mg/Kg	1	6.00	< 0.00874	88	70 - 130

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

			MSD			Spike	Matrix		Rec.		RPD
Param	F	$\mathbf{C}$	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limit
Benzene		2	1.54	mg/Kg	1	2.00	< 0.00533	77	70 - 130	3	20
Toluene		2	1.60	mg/Kg	1	2.00	< 0.00645	80	70 - 130	0	20
Ethylbenzene		2	1.75	mg/Kg	1	2.00	< 0.0116	88	70 - 130	0	20
Xylene		2	5.25	mg/Kg	1	6.00	< 0.00874	88	70 - 130	0	20

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

4-Bromofluorobenzene (4-BFB)   2.0     Matrix Spike (MS-1)   Spiked Sample: 387120     QC Batch:   119536   Date     Prep Batch:   101075   QC	sult IS sult 79 00 e Ana Prepa MS Result 18.7 is bas Ur mg is bas	mg, ased on th nits D g/Kg	Spike bil. Amou 1 20.0	) l. A d spike e M unt R	$\frac{1}{20.0}$	H Matrix Result <2.32 sult. Rec	it RP	By: AK Rec. Limit 70 - 130 RPD D Limit
Surrogate   Messon     Surrogate   Res     Trifluorotoluene (TFT)   1.1     4-Bromofluorobenzene (4-BFB)   2.0     Matrix Spike (MS-1)   Spiked Sample: 387120     QC Batch:   119536   Date     Prep Batch:   101075   QC     Param   F   C   I     GRO   2   Percent recovery is based on the spike result. RPD   MSD     Param   F   C   Result     GRO   2   15.7     Percent recovery is based on the spike result. RPD   M     Surrogate   Res     Trifluorotoluene (TFT)   1.	sult IS sult 79 00 e Ana Prepa MS Result 18.7 is bas Ur mg is bas	Result MSD Result 1.71 1.89 alyzed: aration: t Ur mg, ased on th nits D g/Kg	Units mg/Kg mg/Kg 2015-02-21 2015-02-20 nits Dil /Kg 1 ne spike and Spik vil. Amou 1 20.0	Dil. 1 1 1 1 1 1 1 1 1 1 1 1 1	Amount Spike Amount 2 2 2 Spike M mount H 20.0 duplicate re atrix esult Rec.	Rec. MS Rec. 90 100 A H Matrix Result <2.32 sult. Rec Lim	Rec. MSD Rec. 86 94 Analyzed Prepared 2 Rec. 94	Limit Rec. Limit 70 - 130 70 - 130 By: AK By: AK By: AK Rec. Limit 70 - 130 RPD D Limit
SurrogateResTrifluorotoluene (TFT)1.'4-Bromofluorobenzene (4-BFB)2.0Matrix Spike (MS-1)Spiked Sample: 387120QC Batch:119536DatePrep Batch:101075QCParamFCGRO2Percent recovery is based on the spike result.RPDParamFCResMSDParamFCResultGRO2ParamFCResultGROParamFCResultMSDParamFCResMSDParamFCResMSDParamFCResMSDParamFCResMSDParamFCResMSDParamFCResTrifluorotoluene (TFT)1.	IS sult 79 00 Prepa MS Result 18.7 is bas Ur mg is bas	MSD Result 1.71 1.89 alyzed: aration: t Ur mg, ased on th nits D g/Kg	Units mg/Kg mg/Kg 2015-02-21 2015-02-20 nits Dil /Kg 1 ne spike and Spik vil. Amou 1 20.0	Dil. 1 1 1 1 1 1 1 1 1 1 1 1 1	Spike Amount 2 2 2 Spike M mount H 20.0 duplicate re atrix esult Rec.	MS Rec. 90 100 A H Matrix Result <2.32 sult. Rec Lim	MSD Rec. 86 94 Analyzed Prepared Rec. 94 c. it RP	Rec. Limit 70 - 130 70 - 130 By: AK By: AK By: AK Rec. Limit 70 - 130 RPD D Limit
Surrogate   Res     Trifluorotoluene (TFT)   1.'     4-Bromofluorobenzene (4-BFB)   2.0     Matrix Spike (MS-1)   Spiked Sample: 387120     QC Batch:   119536   Date     Prep Batch:   101075   QC     Param   F   C   I     GRO   2   Percent recovery is based on the spike result. RPD   MSD     Param   F   C   Result     GRO   2   15.7     Percent recovery is based on the spike result. RPD   M     Surrogate   Res     Trifluorotoluene (TFT)   1.	sult 79 00 Prepa MS Result 18.7 is bas Ur mg is bas	Result     1.71     1.89     alyzed:     aration:     t   Ur     mg,     ased on th     nits   D     g/Kg	mg/Kg mg/Kg 2015-02-21 2015-02-20 nits Dil /Kg 1 ne spike and Spik vil. Amou 1 20.0	1 1 1 1 1 1 A d spike e M nnt R	Amount 2 2 2 Spike M mount H 20.0 duplicate re- atrix esult Rec.	Rec. 90 100 A H Matrix Result <2.32 sult. Rec Lim	Rec. 86 94 Analyzed Prepared Rec. 94 c. it RP	Limit 70 - 130 70 - 130 By: AK By: AK Rec. Limit 70 - 130 RPD D Limit
Trifluorotoluene (TFT)1.'4-Bromofiluorobenzene (4-BFB)2.0Matrix Spike (MS-1)Spiked Sample: 387120QC Batch:119536DatePrep Batch:101075QCParamFCGRO2Percent recovery is based on the spike result.RPDMSDMSDParamFCResultGRO2Percent recovery is based on the spike result.RPDMSD215.7Percent recovery is based on the spike result.RPDMurogateMatrixTrifluorotoluene (TFT)1.	79 00 e Ana Prepa MS Result 18.7 is bas Ur mg is bas	1.71 1.89 alyzed: aration: <u>t Ur</u> mg, ased on th nits D g/Kg	mg/Kg mg/Kg 2015-02-21 2015-02-20 nits Dil /Kg 1 ne spike and Spik vil. Amou 1 20.0	1 1 1 1 1 1 A d spike e M nnt R	Amount 2 2 2 Spike M mount H 20.0 duplicate re- atrix esult Rec.	90 100 A Matrix Result <2.32 sult. Rec Lim	86 94 Analyzed Prepared Rec. 94 c. it RP	70 - 130 70 - 130 By: AK By: AK Rec. Limit 70 - 130 RPD D Limit
Trifluorotoluene (TFT)1.'4-Bromofluorobenzene (4-BFB)2.0Matrix Spike (MS-1)Spiked Sample: 387120QC Batch:119536Prep Batch:101075QCQCParamFCIGRO2Percent recovery is based on the spike result.RPDMSDMSDParamFCResultGRO215.7Percent recovery is based on the spike result.RPDMSDSurrogateResTrifluorotoluene (TFT)1.	e Ana Prepa MS Result 18.7 is bas Ur mg is bas	1.89 alyzed: aration: <u>t Ur</u> mg, ased on th nits D g/Kg	mg/Kg 2015-02-21 2015-02-20 hits Dil /Kg 1 he spike and Spike bil. Amou 1 20.0	1 l. A d spike e M int R	2 Spike M mount H 20.0 duplicate re atrix esult Rec.	100 A Matrix Result <2.32 sult. Rec Lim	94 Analyzed Prepared Rec. 94 c. it RP	70 - 130 By: AK By: AK Rec. Limit 70 - 130 RPD D Limit
Matrix Spike (MS-1)Spiked Sample: $387120$ QC Batch:119536DatePrep Batch:101075QCParamFCGRO2Percent recovery is based on the spike result.RPDMSDMSDParamFCResultGRO215.7Percent recovery is based on the spike result.RPDMSD215.7Percent recovery is based on the spike result.RPDMatrixMatr	e Anai Prepa MS Result 18.7 is bas Ur mg is bas	alyzed: aration: <u>t Ur</u> mg, ased on th nits D g/Kg	mg/Kg 2015-02-21 2015-02-20 hits Dil /Kg 1 he spike and Spike bil. Amou 1 20.0	l ) d spike e M unt R	Spike M mount I 20.0 duplicate re atrix esult Rec.	A H Matrix Result <2.32 sult. Rec Lim	Analyzed Prepared T Rec. 94 c. it RP	By: AK By: AK Rec. Limit 70 - 130 RPD D Limit
QC Batch:119536DatePrep Batch:101075QCParamFCGRO2Percent recovery is based on the spike result.RPDParamFCResultGROQC215.7Percent recovery is based on the spike result.RPDMSDParamFCResultMSDQC215.7Percent recovery is based on the spike result.RPDSurrogateResTrifluorotoluene (TFT)1.	Prepa MS Result 18.7 is bas Ur mg is bas	aration: <u>t</u> Ur <u>mg</u> ased on th nits D g/Kg	2015-02-20 nits Dil /Kg 1 ne spike and Spike bil. Amou 1 20.0	) l. A d spike e M unt R	mount I 20.0 duplicate re atrix esult Rec.	H Matrix Result <2.32 sult. Rec Lim	Rec. 94	By: AK Rec. Limit 70 - 130 RPD D Limit
GRO   2     Percent recovery is based on the spike result.   RPD     MSD   MSD     Param   F   C   Result     GRO   2   15.7     Percent recovery is based on the spike result.   RPD     Surrogate   Result     Trifluorotoluene (TFT)   1.	Result 18.7 is bas Ur mg is bas	mg, ased on th nits D g/Kg	/Kg 1 ne spike and Spike vil. Amou 1 20.0	l. A d spike e M unt R	mount I 20.0 duplicate re atrix esult Rec.	Result <2.32 sult. Rec Lim	94 c. it RP	Limit 70 - 130 RPD D Limit
GRO   2     Percent recovery is based on the spike result.   RPD     MSD   MSD     Param   F   C   Result     GRO   2   15.7     Percent recovery is based on the spike result.   RPD     Surrogate   Result     Trifluorotoluene (TFT)   1.	18.7 is bas Ur mg is bas	mg, ased on th nits D g/Kg	/Kg 1 ne spike and Spike vil. Amou 1 20.0	d spike e M int R	20.0 duplicate re atrix esult Rec.	<2.32 sult. Rec Lim	94 c. it RP	70 - 130 RPD D Limi
Percent recovery is based on the spike result. RPD MSD Param F C Result GRO 2 15.7 Percent recovery is based on the spike result. RPD Surrogate Res Trifluorotoluene (TFT) 1.	is bas Ur mg is bas	nits D g/Kg	ne spike and Spike il. Amou 1 20.0	d spike e M int R	duplicate re atrix esult Rec.	sult. Rec Lim	e. it RP	RPD D Limit
Param F C Result GRO 2 15.7 Percent recovery is based on the spike result. RPD Surrogate Res Trifluorotoluene (TFT) 1.	Ur mg is bas	nits D g/Kg	Spike bil. Amou 1 20.0	e M int R	atrix esult Rec.	Rec Lim	it RP	D Limit
Param F C Result   GRO 2 15.7   Percent recovery is based on the spike result. RPD   Surrogate Res   Trifluorotoluene (TFT) 1.	mg is bas	g/Kg	oil. Amou 1 20.0	int R	esult Rec.	Lim	it RP	D Limit
GRO   2   15.7     Percent recovery is based on the spike result.   RPD     Surrogate   Res     Trifluorotoluene (TFT)   1.	mg is bas	g/Kg	oil. Amou 1 20.0	int R				
Percent recovery is based on the spike result. RPD M Surrogate Res Trifluorotoluene (TFT) 1.	is bas			) <	2.32 78	70 -	130 17	20
Surrogate Mes Trifluorotoluene (TFT) 1.		ased on th			2.02 10			Contract of the second s
Surrogate Mes Trifluorotoluene (TFT) 1.			ne spike and	d spike	duplicate re	sult.		
SurrogateResTrifluorotoluene (TFT)1.		1.000	1	1			1.000	
Trifluorotoluene (TFT) 1.		MSD	TT	D'1	Spike	MS	MSD	Rec.
		Result	Units	Dil.	Amount	Rec.	Rec.	Limit
4-DIOINOINUOIODENZENE (4-DFD)		$1.79 \\ 1.86$	mg/Kg mg/Kg	1 1	$\frac{2}{2}$	86 92	90 93	70 - 130 70 - 130
Matrix Spike (MS-1) Spiked Sample: 387169								
		alyzed:	2015-02-2					By: HJ
Prep Batch: 101117 QC	Prepa	aration:	2015-02-2	0			Prepared	By: HJ
					a	Matrix		Pag
Param F C	MAC				Spilco 1			Rec.
Chloride 1	MS Result	lt II-	nits Di		-	Result	Rec.	Limit

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matrix spikes continued											
			MSD			Spike	Matrix		Rec.		RPD
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limi
			MSD			Spike	Matrix		Rec.		RPE
Param	F	С	Result	Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limi
Chloride		1	2830	mg/Kg	5	2500	384	98	80 - 120	4	20
Percent recovery is based	on the spike	resu	lt. RPD	is based o	on the sp	pike and sp	oike duplica	ate resu	ılt.		
Matrix Spike (MS-1) QC Batch: 119593	Spiked Sa	nple:		e Analyze	4. 201	15-02-25			Ana	lyzed B	v: SC
Prep Batch: 101143				Preparatio		15-02-23				pared By	
				MS			Spike	Ma	atrix		Rec.
Param		F	C I	Result	Units	Dil.	Amount			.ec.	Limit
DRO			2	192	mg/Kg	1	250	<	7.41	77 '	70 - 13
Param DRO	F Qr Qr	C2	MSD Result 237	Units mg/Kg	Dil.	Spike Amount 250	Matrix Result <7.41	Rec.	Rec. Limit 70 - 130	RPD 21	RPI Limi 20
Percent recovery is based											20
		IS	MS					М		D	Rec.
		10	MD.	U			Spike	IVI	S MD		
Surrogate		sult	Resi	lt T	nite	Dil	Amount	Re	Ro Ro		
	Re	sult D.1	Resu 102		nits g/Kg	Dil. 1	Amount 100	Re 9		c.	Limit
Surrogate n-Tricosane Matrix Spike (MS-1)	Re	).1	102							c.	Limit
n-Tricosane	Re 90	).1	102 387300 Date		g/Kg 1: 20	1 15-02-25			D 10 Ana	c.	Limit 70 - 13 y: HJ
n-Tricosane Matrix Spike (MS-1) QC Batch: 119594 Prep Batch: 101145	Re 90	).1 mple:	10: 387300 Date QC	2 m; e Analyzee Preparatie MS	g/Kg d: 20 on: 20	1 15-02-25 15-02-23	100 Spike	90 9	0 10 Ana Prej atrix	c. 2 lyzed B pared B	Limit 70 - 13 y: HJ y: HJ Rec.
n-Tricosane Matrix Spike (MS-1) QC Batch: 119594 Prep Batch: 101145 Param	Re 90	).1	10: 387300 Date QC C H	2 m e Analyzee Preparatie MS Result	g/Kg d: 20: on: 20: Units	1 15-02-25 15-02-23 Dil.	100 Spike Amount	9 Ma Re	0 10 Ana Prep atrix esult R	c. 2 lyzed B pared B ec.	Limit 70 - 13 y: HJ y: HJ y: HJ Rec. Limit
n-Tricosane Matrix Spike (MS-1) QC Batch: 119594 Prep Batch: 101145 Param Chloride	Re 90 Spiked Sar	).1 mple: F	10: 387300 Date QC C H	2 m; e Analyze Preparatio MS Result 2420	g/Kg d: 20 on: 20 Units mg/Kg	1 15-02-25 15-02-23 Dil. 1	100 Spike Amount 2500	9 Mi Re	0 10 Ana Prep atrix esult R 19 9	c. 2 lyzed B pared B ec.	Limit 70 - 13 y: HJ y: HJ Rec.
n-Tricosane Matrix Spike (MS-1) QC Batch: 119594 Prep Batch: 101145 Param	Re 90 Spiked Sar	).1 mple: F	10: 387300 Date QC C I	2 m; e Analyze Preparatio MS Result 2420	g/Kg d: 20 on: 20 Units mg/Kg	1 15-02-25 15-02-23 Dil. 1 pike and sp	100 Spike Amount 2500 sike duplica	9 Mi Re	0 10 Ana Prep atrix esult R 19 9 ılt.	c. 2 lyzed B pared B ec.	Limit 70 - 13 y: HJ y: HJ Rec. Limit 80 - 12
n-Tricosane Matrix Spike (MS-1) QC Batch: 119594 Prep Batch: 101145 Param Chloride	Re 90 Spiked Sar	).1 mple: F	10: 387300 Date QC C H	2 m; e Analyze Preparatio MS Result 2420	g/Kg d: 20 on: 20 Units mg/Kg	1 15-02-25 15-02-23 Dil. 1	100 Spike Amount 2500	9 Mi Re	0 10 Ana Prep atrix esult R 19 9	c. 2 lyzed B pared B ec.	Limit 70 - 13 y: H. y: H. Rec. Limit

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Percent recovery is based on the	ne spike r	esult.	. RPD	is based o	on the sp	ike and sp	oike duplica	te resul	lt.		
Matrix Spike (xMS-1) S	piked Sa	mple:	38710	7							
QC Batch: 119608 Prep Batch: 101144				e Analyze Preparati		5-02-25 5-02-24				alyzed E pared E	
Param		F	С	MS Result	Units	Dil.	Spike		trix sult F		Rec. Limit
DRO		Г Qs	2	785	mg/Kg		Amount 250			Rec. 22	70 - 130
					0, 0					22	10 - 130
Percent recovery is based on the	ne spike i	esuit	. RPD	is based o	on the sp	ike and sp	oike duplica	te resu	lt.		
			MSD			Spike	Matrix		Rec.		RPI
Param	F	С	Result	t Units	Dil.	Amount	Result	Rec.	Limit	RPD	Limi
DRO	Qs Qs	2	727	mg/Kg	g 1	250	729	1	70 - 130	8	20
Surrogate	Res		Res		Units	Dil.	Amount	Rec			Limit
n-Tricosane	11	ō	11	3 m	lg/Kg	1	100	115	5 11	3	70 - 13
	nikod So	mple:	38715	7							
QC Batch: 119710	priked 5a		Dat	e Analyze Preparati		5-03-02 5-03-02			Pre	alyzed H pared H	By: HJ
QC Batch: 119710 Prep Batch: 101256			Dat QC	e Analyze Preparati MS	ion: 201	5-03-02	Spike		Pre	pared E	By: HJ Rec.
QC Batch: 119710 Prep Batch: 101256	рикец За.		Dat QC	e Analyze Preparati MS Result	ion: 201 Units	5-03-02 Dil.	Amount	Res	Pre trix sult H	•	By: HJ Rec. Limit
QC Batch: 119710 Prep Batch: 101256 Param Chloride	I	- -	Dat QC C	e Analyze Preparati MS Result 4530	ion: 201 Units mg/Kg	5-03-02 Dil. 5	Amount 2500	Res 20	Pre trix sult F 70	pared E Rec.	By: HJ Rec. Limit
QC Batch: 119710 Prep Batch: 101256 Param Chloride	I	- -	Dat QC <u>1</u> . RPD	e Analyze Preparati MS Result 4530	ion: 201 Units mg/Kg	5-03-02 Dil. 5 ike and sp	Amount 2500 bike duplica	Res 20	Pre trix sult F 70 lt.	pared E Rec.	By: HJ Rec. Limit 80 - 12
QC Batch: 119710 Prep Batch: 101256 Param Chloride Percent recovery is based on t	I he spike 1	result	Dat QC 1 . RPD MSD	e Analyze Preparati MS Result 4530 is based o	Units <u>Units</u> <u>mg/Kg</u> on the sp	5-03-02 Dil. 5 ike and sp Spike	Amount 2500 Dike duplica Matrix	Res 20 ate resu	Pre trix sult F 70 lt. Rec.	pared E Rec. 98	By: HJ Rec. Limit 80 - 120 RPL
QC Batch: 119710 Prep Batch: 101256 Param Chloride	I	result	Dat QC <u>1</u> . RPD	e Analyze Preparati MS Result 4530	Units <u>Units</u> <u>mg/Kg</u> on the sp Dil.	5-03-02 Dil. 5 ike and sp	Amount 2500 bike duplica	Res 20	Pre trix sult F 70 lt.	pared E Rec.	By: HJ Rec. Limit 80 - 120 RPL

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# **Calibration Standards**

#### Standard (ICV-1)

QC Batch:	119534		Date .	Analyzed:	2015-02-20		Analy	yzed By: HJ
				ICVs	ICVs	ICVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		1	mg/Kg	100	100	100	85 - 115	2015-02-20

#### Standard (CCV-1)

QC Batch:	119534		Date	Analyzed:	2015-02-20		Analy	zed By: HJ
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		1	mg/Kg	100	100	100	85 - 115	2015-02-20

#### Standard (CCV-2)

QC Batch: 119535	QC Batch: 119535			alyzed: 20		Analyzed By: AK		
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Benzene		2	mg/kg	0.100	0.0945	94	80 - 120	2015-02-21
Toluene		2	mg/kg	0.100	0.0953	95	80 - 120	2015-02-21
Ethylbenzene		2	mg/kg	0.100	0.0968	97	80 - 120	2015-02-21
Xylene		2	mg/kg	0.300	0.290	97	80 - 120	2015-02-21

#### Standard (CCV-3)

QC Batch: 119535

Date Analyzed: 2015-02-21

Analyzed By: AK

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed		
Benzene		2	mg/kg	0.100	0.101	101	80 - 120	2015-02-21		
Toluene		2	mg/kg	0.100	0.0995	100	80 - 120	2015-02-21		
Ethylbenzene		2	mg/kg	0.100	0.100	100	80 - 120	2015-02-21		
Xylene		2	mg/kg	0.300	0.303	101	80 - 120	2015-02-21		

# Standard (CCV-2)

1

QC Batch:	119536		Date	Analyzed:	2015-02-21		Analy	zed By: AK
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		2	m mg/Kg	1.00	1.03	103	80 - 120	2015-02-21

### Standard (CCV-3)

QC Batch:	119536		Date	Analyzed:	2015-02-21		Analy	zed By: AK
				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
GRO		2	mg/Kg	1.00	1.01	101	80 - 120	2015-02-21

### Standard (ICV-1)

QC Batch: 11	9563		Date 1	Analyzed:	2015-02-23		Analy	yzed By: HJ
				ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		1	mg/Kg	100	100	100	85 - 115	2015-02-23

### Standard (CCV-1)

QC Batch: 119563

Date Analyzed: 2015-02-23

Analyzed By: HJ

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				CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		1	mg/Kg	100	100	100	85 - 115	2015-02-23

# Standard (CCV-1)

QC Batch:	119593		Date	Analyzed:	2015-02-25		Analy	yzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	mg/Kg	250	233	93	80 - 120	2015-02-25

# Standard (CCV-2)

QC Batch:	119593		Date	Analyzed:	2015-02-25		Analy	yzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	m mg/Kg	250	232	93	80 - 120	2015-02-25

### Standard (ICV-1)

QC Batch:	119594			Date A	Analyzed:	2015-02-25		Analy	vzed By: HJ
					ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param		Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride			1	mg/Kg	100	100	100	85 - 115	2015-02-25

# Standard (CCV-1)

QC Batch: 119594

Date Analyzed: 2015-02-25

Analyzed By: HJ

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Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/Kg	100	100	100	85 - 115	2015-02-25

### Standard (CCV-2)

QC Batch:	119608		Date	Analyzed:	2015-02-25		Analy	vzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	mg/Kg	250	231	92	80 - 120	2015-02-25

# Standard (CCV-3)

QC Batch:	119608		Date	Analyzed:	2015-02-25		Analy	yzed By: SC
				CCVs	CCVs	CCVs	Percent	
				True	Found	Percent	Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
DRO		2	mg/Kg	250	255	102	80 - 120	2015-02-25

#### Standard (ICV-1)

QC Batch: 1	19710		Date A	Analyzed:	2015-03-02		Analy	vzed By: HJ
				ICVs True	ICVs Found	ICVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		1	mg/Kg	100	101	101	85 - 115	2015-03-02

# Standard (CCV-1)

QC Batch: 119710

Date Analyzed: 2015-03-02

Analyzed By: HJ

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Demons	El	Gent	TT 1	CCVs True	CCVs Found	CCVs Percent	Percent Recovery	Date
Param	Flag	Cert	Units	Conc.	Conc.	Recovery	Limits	Analyzed
Chloride		1	mg/Kg	100	99.0	99	85 - 115	2015-03-02

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# Appendix

#### **Report Definitions**

Name	Definition
MDL	Method Detection Limit
MQL	Minimum Quantitation Limit
SDL	Sample Detection Limit

### Laboratory Certifications

	Certifying	Certification	Laboratory
С	Authority	Number	Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	PJLA	L14-93	Lubbock
2	NELAP	T104704392-14-8	Midland

# Standard Flags

- F Description
- B Analyte detected in the corresponding method blank above the method detection limit
- H Analyzed out of hold time
- J Estimated concentration
- Jb The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
- Je Estimated concentration exceeding calibration range.
- MI1 Split peak or shoulder peak
- MI2 Instrument software did not integrate
- MI3 Instrument software misidentified the peak
- MI4 Instrument software integrated improperly
- MI5 Baseline correction
- Qc Calibration check outside of laboratory limits.
- Qr RPD outside of laboratory limits
- Qs Spike recovery outside of laboratory limits.
- Qsr Surrogate recovery outside of laboratory limits.
- U The analyte is not detected above the SDL

Report Date: March 3, 2015 212C-MD-00149

Work Order: 15021803 SM Energy-Inca TB Page Number: 33 of 33 Lea Co, NM

# **Result Comments**

1 Dilution due to surfactants.

2 Dilution due to surfactants.

# Attachments

The scanned attachments will follow this page. Please note, each attachment may consist of more than one page.

PAGE: 7 2	ANALYSIS REQUEST (Circle or Specify Method No.)		20/625 50/624 80/624	s Ag As se folatiles (olatiles 508 33 33 33 33 33 33 33 33 33 33 33 33 33	RCRA Metals TCLP Metals TCLP Volatile TCLP Volatile RCI GG.MS Vol. 8 GG.MS VOL. 8 G	×	· · · · · · · · · · · · · · · · · · ·	×	>	y	9	×	7	7	9	Adr & SAMPLED BY: (Print & Initial) Adr & Screex & Mart Me Danie Time: & 1/10/15		OTHI OTHI		Authorized: Yes: No	1100,
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PAGE: 2 . 2	ANALYSIS REQUEST (Circle or Specify Method No.)	Ar Pd Hg Se	D. TX1005 As Ba Cd les 8270/624	BTEX 8021B* TPH 8015 Mdl PAH 8015 Mdl PAH 8270 TCLP Metals Ag TCLP Metals Ag TCLP Volatijes Gamma Spec. Pest. 808/608 Chloride Camma Spec. Gamma Spec. Gamma Spec. Camma Spec.		XX							25 SAMPLED BY: (Print Almittal) . Date: 31/16/15	A	CT PERSON:	LKe-Tavaret Authorized: Authorized:	Yes No
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