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

State of New Mexico
Energy Minerals and Natural Resources

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

HOBBS OCD
JUL 20 2015
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Form C-141
Revised October 10, 2003

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

Release Notification and Corrective Action

OPERATOR

☐ Initial Report ☒ Final Report

Name of Company	SM Energy Company	Contact	Tejay Simpson
Address	6301 Holiday Hill Rd, Bldg 1 Midland, TX 79707	Telephone No.	(432) 212-3408
Facility Name	Inca Tank Battery	Facility Type	Well

Surface Owner: BLM	Mineral Owner: BLM	Lease No. (API#) 30-025-30039

LOCATION OF RELEASE

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

REVIEWED
By Kellie Jones at 8:51 am, Oct 28, 2015

Latitude N 32.73805° **Longitude** W 103.81254°

NATURE OF RELEASE

Type of Release: Spill Produced Water	Volume of Release 75 bbls	Volume Recovered 70 bbls
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? Nathan Luoma	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. N/A	

APPROVED
By Kellie Jones at 8:51 am, Oct 28, 2015

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

The tank battery PLC malfunction resulting in the produced water level control to the water transfer pump and the call out high level alarm not working properly and nor making call out notification to the lease operator. Upon arrival to the battery routine rounds the lease operator found the produced water tank over flowing out of the tank hatch. The produced water was contained within the tank battery berm with the exception of approximately 1 barrel of water that ran over the top of the berm. Spill volume estimated at 75 barrels of produced water and 1 barrel of oil. Total fluids recovered is estimated at 70 barrels of water and 0.75 barrels of oil. Backhoe and contact gang was dispatched to the site and began removing the contaminated soil with disposal scheduled at CRI. Electrician and PLC programmer were dispatched to the facility to make the repair to the PCL.

Describe Area Affected and Cleanup Action Taken.*

Tetra Tech personnel inspected the site and collected samples to assess and define spill extents. Soil that exceeded RRAL was removed and hauled away for proper disposal. The site was then brought up to surface grade with clean backfill material. Tetra Tech prepared a closure report and submitted to NMOCD for review.

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.

Signature:	OIL CONSERVATION DIVISION
Printed Name: Ike Tavarez (agent for SM Energy)	Approved by District Supervisor:
Title: Senior Project Manager	Approval Date: 10/28/2015 Expiration Date: //
E-mail Address: ike.taverez@tetratech.com	Conditions of Approval: // Attached ☐ 1RP-3475
Date: 7-13-15 Phone: (432) 682-4559	

* Attach Additional Sheets If Necessary

District I
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State of New Mexico
Energy Minerals and Natural Resources

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

HOBBS OCD
JUL 20 2015
RECEIVED

Form C-141
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification 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 Battery

Surface Owner BLM	Mineral Owner	API No. 3002530039 (closest well)

LOCATION OF RELEASE

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 Water 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 Watercourse.	

If a Watercourse was Impacted, Describe Fully.* NA

Describe Cause of Problem and Remedial Action Taken.*
The tank battery PLC malfunctioned resulting in the produced water tank level control to the water transfer pump and the call out high level alarm not working properly and not making call out notification to the lease operator. Upon arrival to the battery during routine rounds the lease operator found the produced water tank over flowing out of the tank hatch. The produced water was contained within the tank berm with the exception of approximately 1 barrel of water that over ran the top of the berm. Spill volume estimated at 75 barrels of produced water and 1 barrel of oil. Total fluid recovered is estimated at 70 barrels of water and 0.75 barrels of oil. Back hoe and contract gang was dispatched to the site and began removal of contaminated soil with disposal scheduled at CRI. Electrician and PLC programmer were dispatched to the facility to make the repair to the PLC.

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.

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

SITE INFORMATION

Report Type: Closure Report

General Site Information:	
Site:	**Inca Federal Tank Battery**
Company:	**SM Energy Company**
Section, Township and Range	**Section 19, T18S, R32E** **Unit Letter - E**
Lease Number:	
County:	**Lea County**
GPS:	**32.73794° N, 103.81320° W**
Surface Owner:	**Federal**
Mineral Owner:	
Directions:	From the intersection of Hwy 529 and Co. Rd. 126A, go south on Co. Rd. 126A for approx. 4.5 miles. Turn to the west onto on a caliche road and travel east for 1 mile until the road turns southwest. Continue southwest appox. 0.4 miles and trun east. Continue east approx. 0.20 miles to the tank battery.

Release Data:	
Date Released:	5/21/2014
Type Release:	Produced Fluid
Source of Contamination:	Tank Overflow
Fluid Released:	75 bbls
Fluids Recovered:	70 bbls

Official Communication:			
Name:	Tejay Simpson		Ike Tavarez
Company:	SM Energy Company		Tetra Tech
Address:	6301 Holiday Hill Rd. Bldg 1		4000 N Big Spring, Suite 401
P.O. Box			
City:	Midland, Texas		Midland, Texas
Phone number:	(432) 212-3408		(432) 682-4559
Fax:			
Email:	tsimpson@sm-energy.com		ike.tavarez@tetratech.com

Ranking Criteria		
Depth to Groundwater:	***Ranking Score***	***Site Data***
<50 ft	20	
50-99 ft	10	
>100 ft.	0	**0**
WellHead Protection:	***Ranking Score***	***Site Data***
Water Source <1,000 ft., Private <200 ft.	*20*	
Water Source >1,000 ft., Private >200 ft.	***0***	*0*
Surface Body of Water:	***Ranking Score***	***Site Data***
<200 ft.	*20*	
200 ft - 1,000 ft.	10	
>1,000 ft.	**0**	*0*
Total Ranking Score:	**0**	

Acceptable Soil RRAL (mg/kg)		
Benzene	***Total BTEX***	***TPH***
10	50	5,000

HOBBS OCD

JUL 20 2015

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TETRA TECH

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

Tetra Tech
4000 North Big Spring, Midland,TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

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.

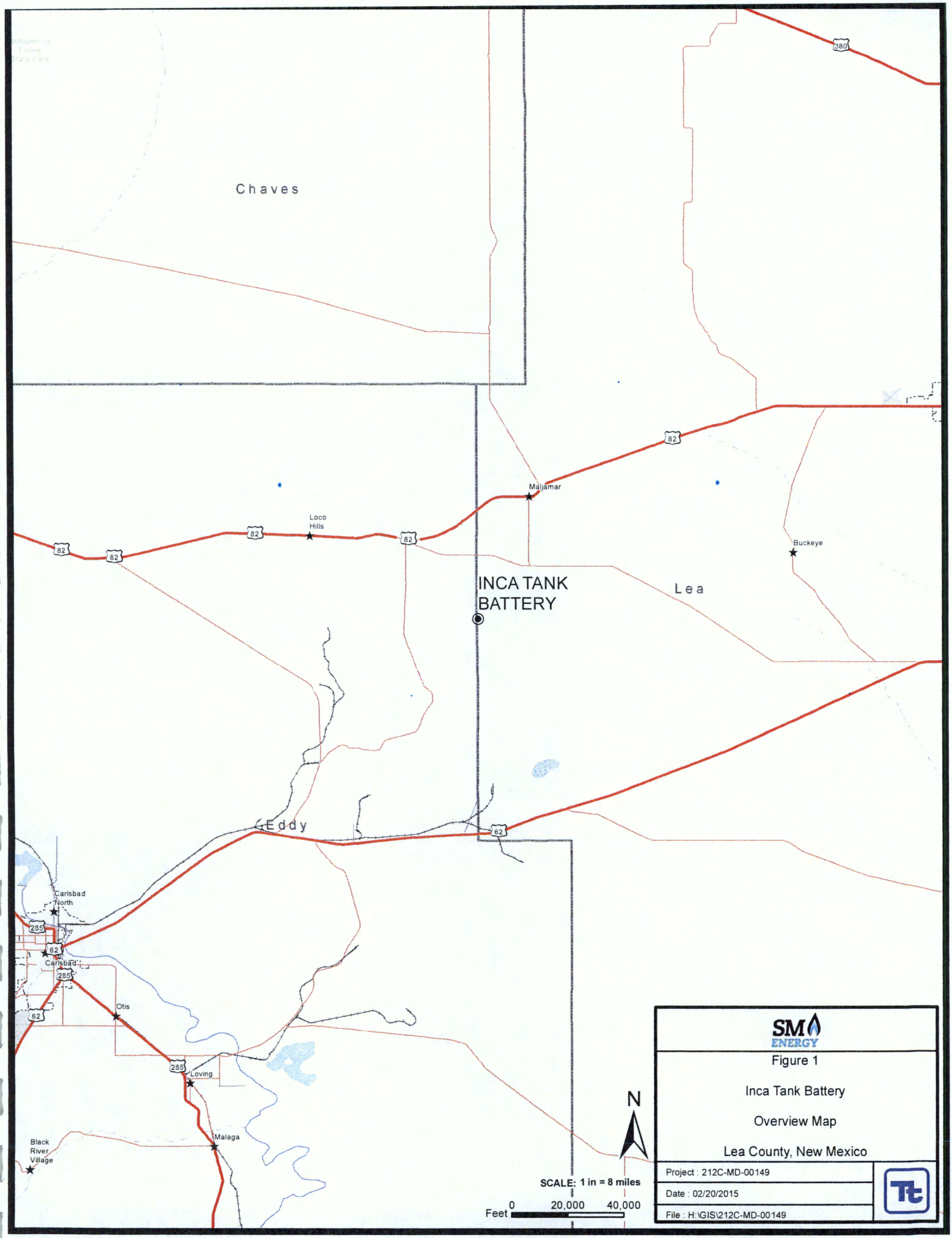
TETRA TECH

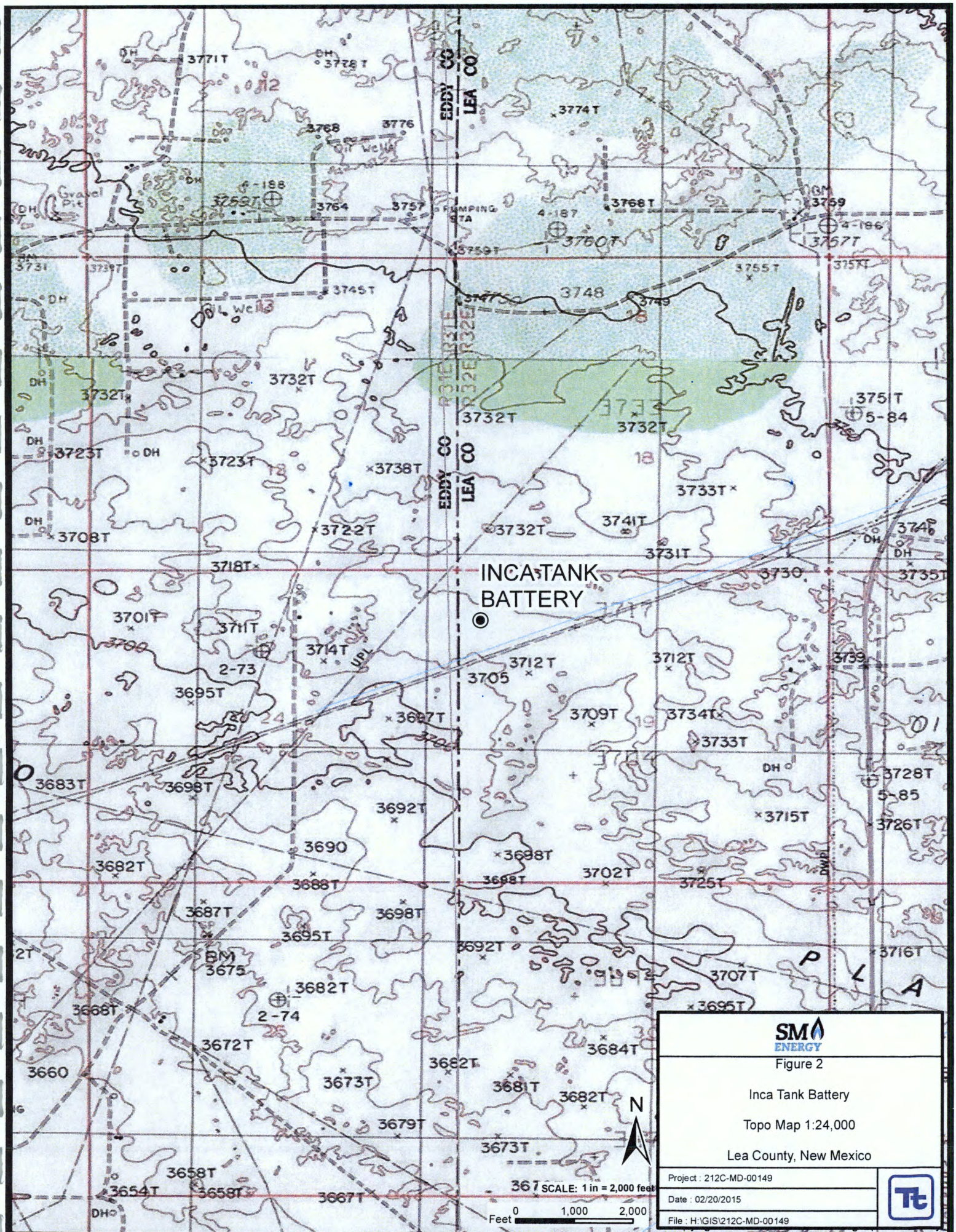
Based on the assessment and remedial activities performed, SM Energy request closure for the spill issue. The final C-141 is enclosed in Appendix A. If you have any questions or comments concerning the assessment or the remediation activities for this site, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH, INC.

Ike Tavarez, PG
Senior Project Manager

cc: SM Energy Company – Tejay Simpson
BLM – Jim Amos


Chaves
Lea
Eddy
INCA TANK
BATTERY
Maljamar
Loco
Hills
Buckeye
Carlsbad
North
Carlsbad
Otis
Loving
Malaga
Black
River
Village
82
62
285
380
N
SCALE: 1 in = 8 miles
Feet 0 20,000 40,000
SM ENERGY
Figure 1
Inca Tank Battery
Overview Map
Lea County, New Mexico
Project : 212C-MD-00149
Date : 02/20/2015
File : H:\GIS\212C-MD-00149
Mapped By: Isabel Marmolejo



SM ENERGY

Figure 2

Inca Tank Battery

Topo Map 1:24,000

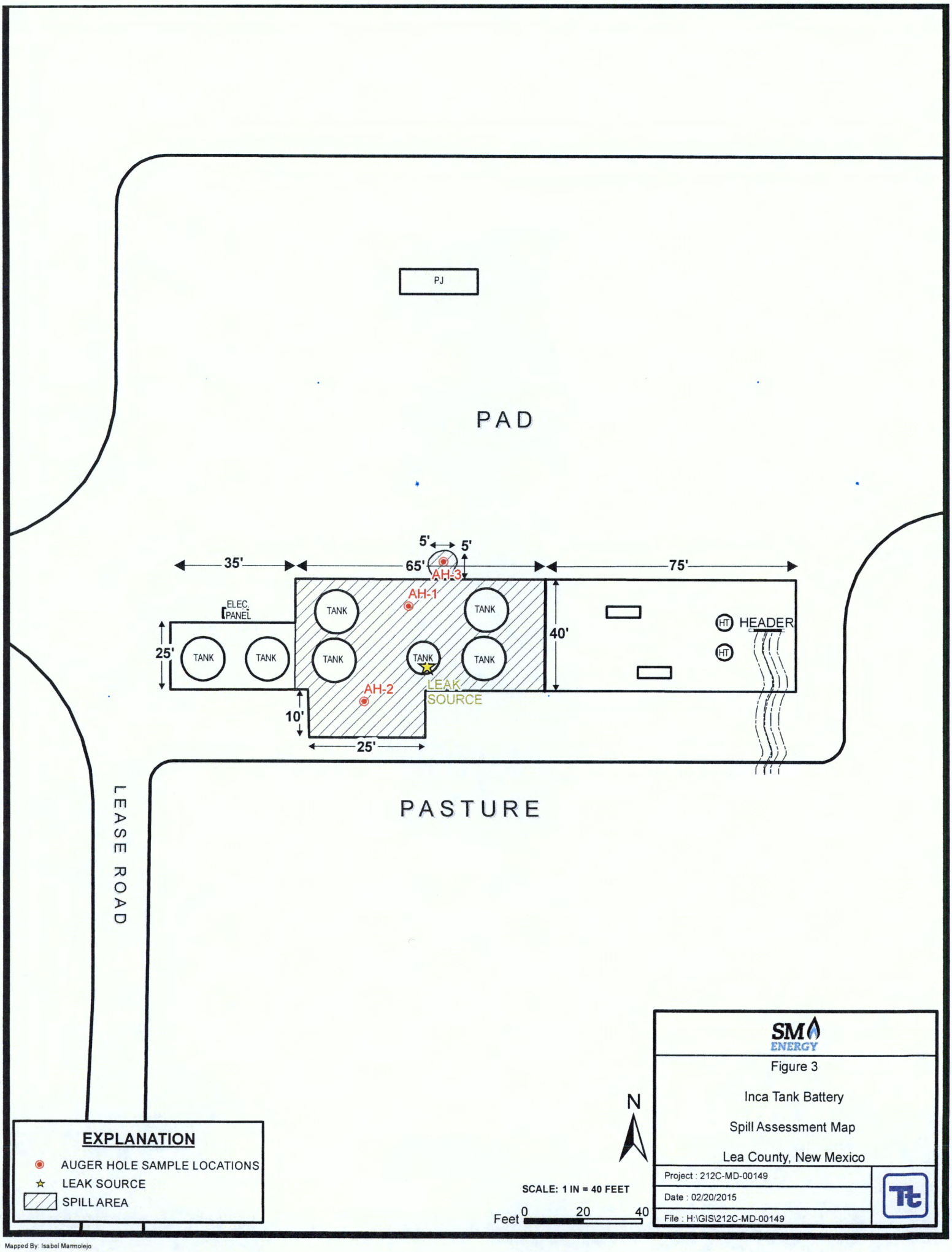
Lea County, New Mexico

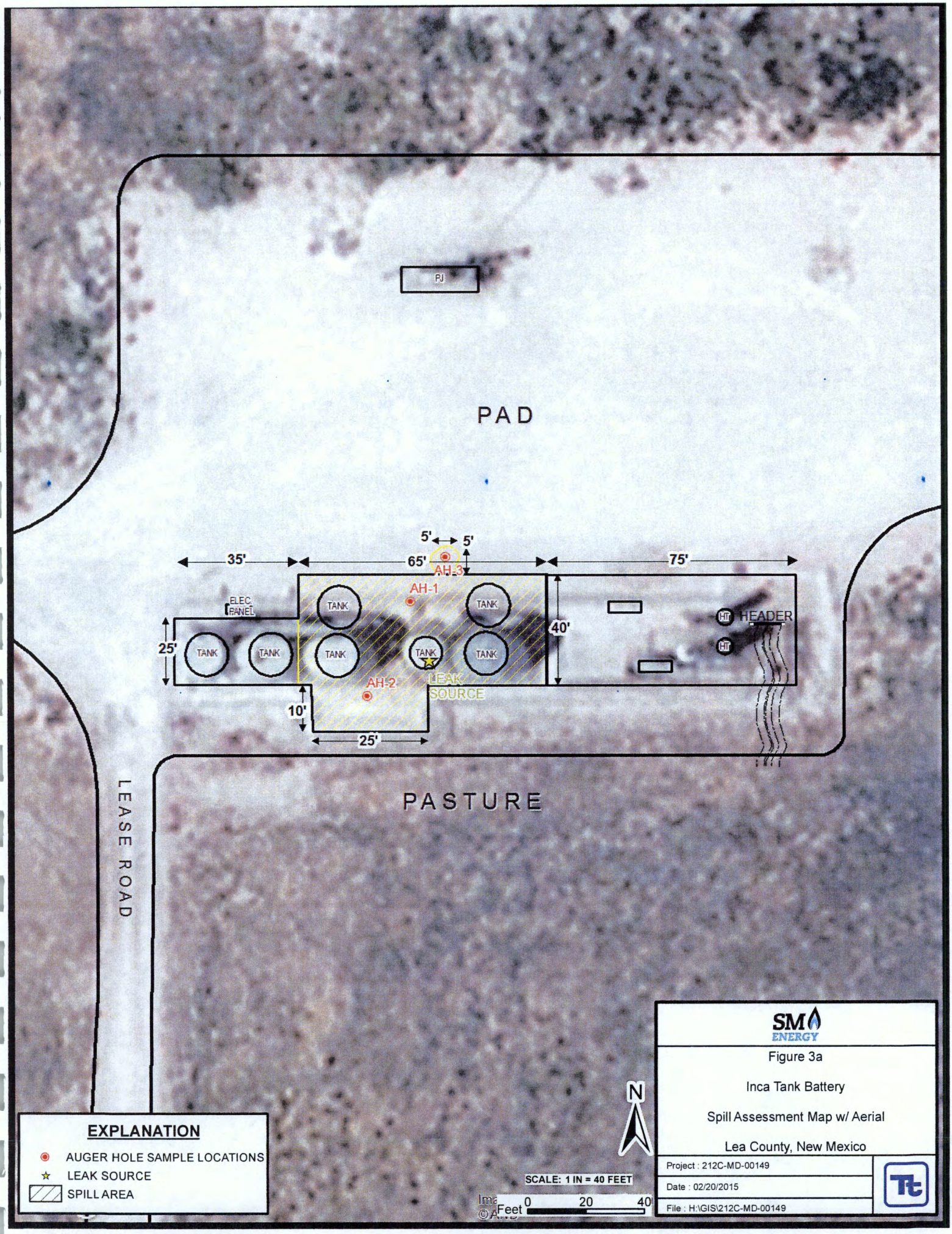
Project : 212C-MD-00149

Date : 02/20/2015

File : H:\GIS\212C-MD-00149

Mapped By: Isabel Marmolejo


PJ
PAD
5'
5'
35'
65'
75'
AH-3
AH-1
ELEC. PANEL
TANK
TANK
TANK
TANK
TANK
TANK
25'
40'
HT
HEADER
HT
AH-2
LEAK SOURCE
10'
25'
PASTURE
LEASE ROAD
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
N
SCALE: 1 IN = 40 FEET
Feet 0 20 40
SM ENERGY
Figure 3
Inca Tank Battery
Spill Assessment Map
Lea County, New Mexico
Project : 212C-MD-00149
Date : 02/20/2015
File : H:\GIS\212C-MD-00149
Mapped By: Isabel Marmolejo


PJ
PAD
5'
5'
35'
65'
75'
AH-3
AH-1
ELEC. PANEL
TANK
TANK
TANK
TANK
TANK
TANK
TANK
40'
25'
HT
HT
HEADER
AH-2
LEAK SOURCE
10'
25'
PASTURE
LEASE ROAD
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
SPILL AREA
N
SCALE: 1 IN = 40 FEET
Feet
0
20
40
SM ENERGY
Figure 3a
Inca Tank Battery
Spill Assessment Map w/ Aerial
Lea County, New Mexico
Project : 212C-MD-00149
Date : 02/20/2015
File : H:\GIS\212C-MD-00149
Mapped By: Isabel Marmolejo

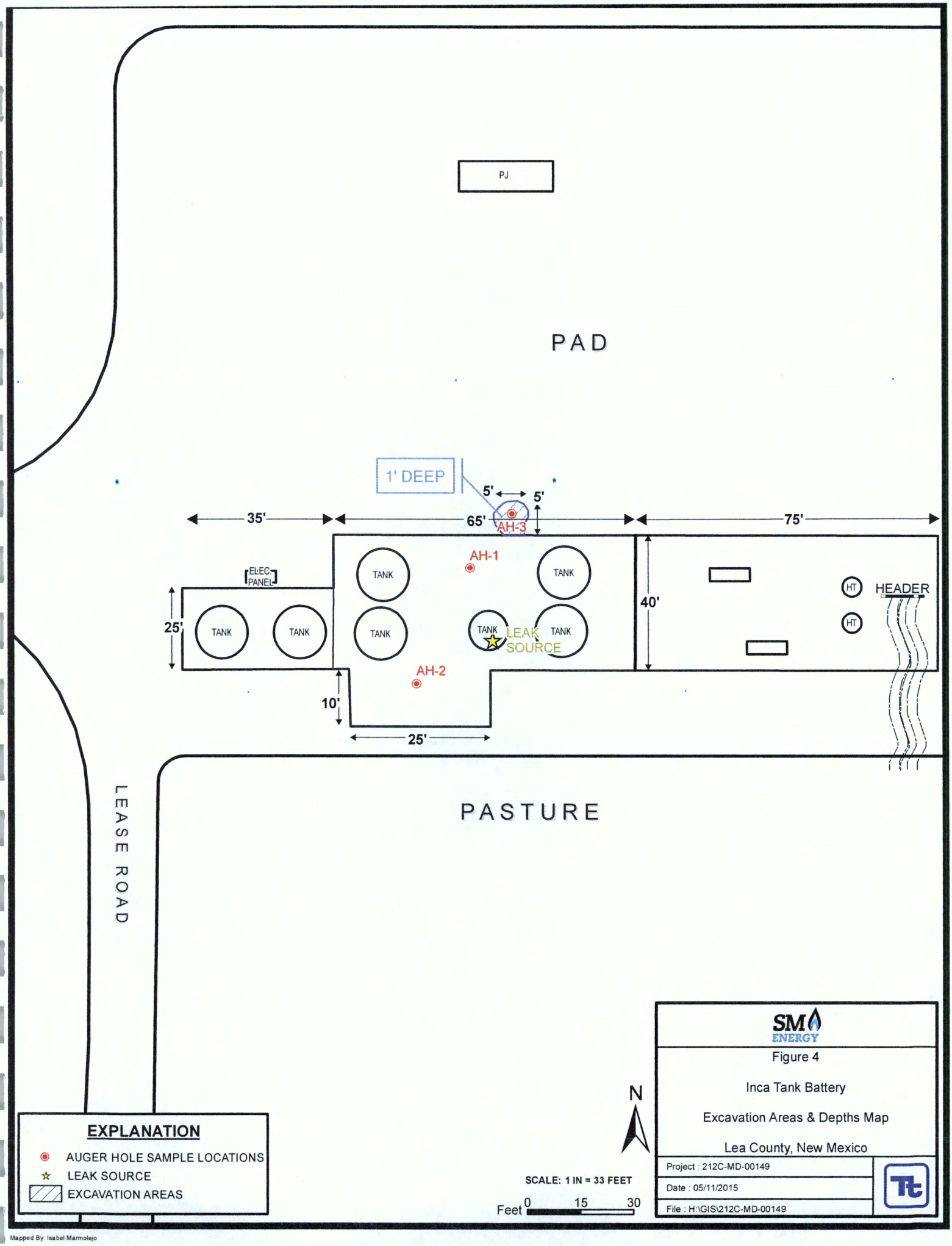

PJ
PAD
1' DEEP
5'
5'
35'
65'
75'
AH-3
AH-1
ELEC PANEL
TANK
TANK
TANK
TANK
TANK
TANK
25'
40'
LEAK SOURCE
HT
HT
HEADER
AH-2
10'
25'
PASTURE
LEASE ROAD
EXPLANATION
AUGER HOLE SAMPLE LOCATIONS
LEAK SOURCE
EXCAVATION AREAS
N
SCALE: 1 IN = 33 FEET
Feet 0 15 30
SM ENERGY
Figure 4
Inca Tank Battery
Excavation Areas & Depths Map
Lea County, New Mexico
Project : 212C-MD-00149
Date : 05/11/2015
File : H:\GIS\212C-MD-00149
Mapped By: Isabel Marmolejo

Table 1
SM Energy
Inca Tank Battery
Lea County, New Mexico

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

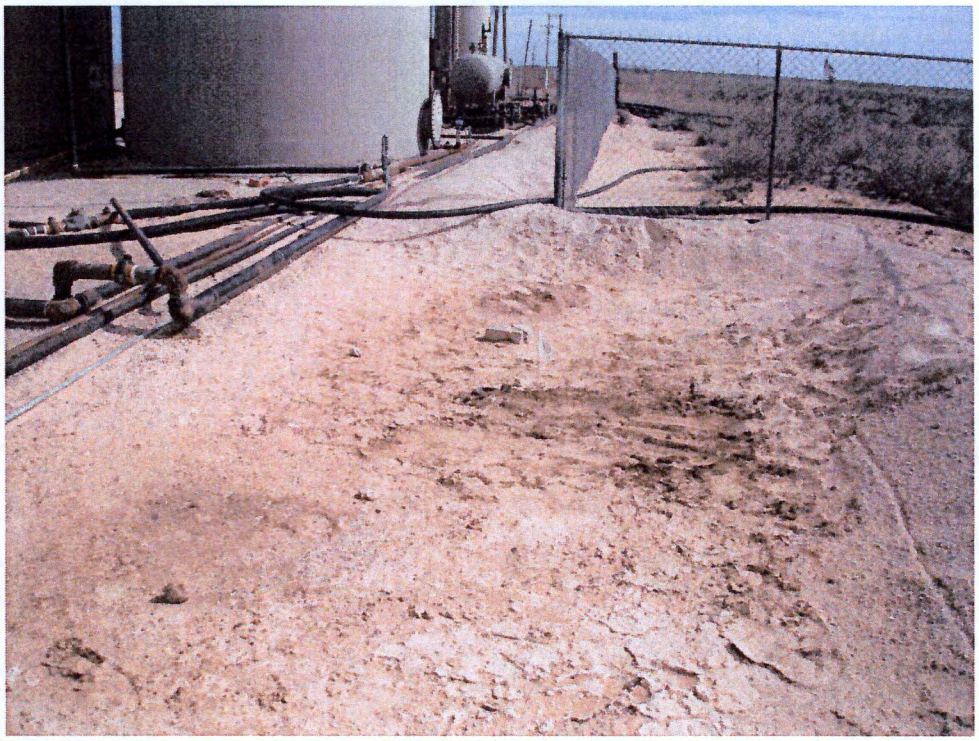
(-) Not Analyzed

Excavated Area

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 South 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	29	28	27	26	25
31	32	33	34	35	36

17 South 31 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	29	28	27	26	25
31	32	33	34	35	36

17 South 32 East

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 South 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	29	28	27	26	25
31	32	33	34	35	36

18 South 31 East

6	5	4	3	2	1
7	8	9	10	11	12 400
18	17	16	15	14 317	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35 261	36

18 South 32 East

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

19 South 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 90	29	28	27	26	25
31 115	32	33	34	35	36

19 South 31 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	29	28 180	27	26	25
31	32	33 101	34	35	36 130

19 South 32 East

6	5	4	3	2	1
7	8 365	9	10	11	12
18	17	16	15	14	13
19 102	20 345	21	22	23	24
30	29	28	27	26	25
31	32	33	34 250	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)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00566			LE	4	4	1	04	18S	32E	614960	3627280*	133	65	68
CP 00672			LE		4	4	07	18S	32E	612475	3624947*	524	430	94
CP 00672 CLW475398	O		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*	480		

Average Depth to Water: **318 feet**

Minimum Depth: **65 feet**

Maximum Depth: **460 feet**

Record Count: 6

PLSS Search:

Township: 18S **Range:** 32E

***UTM location was derived from PLSS - see Help**

Summary Report

(Corrected Report)

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

Report Date: March 3, 2015

Work Order: 15021803

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

Sample	Description	Matrix	Date Taken	Time Taken	Date 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

	BTEX				TPH DRO - NEW	TPH GRO
Sample - Field Code	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	DRO (mg/Kg)	GRO (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	**376** Qr	<8.00 [2]
387169 - AH-3 0-1	**1.82**	**20.9**	**2.69**	**46.0**	**3470** Qr	**2020**
387170 - AH-3 1-1.5	<0.0200	<0.0200	<0.0200	<0.0200	<50.0 Qs	<4.00

[1]Dilution due to surfactants.
[2]Dilution due to surfactants.

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		**59.0**	mg/Kg	5

Sample: 387160 - AH-1 2-2.5

Param	Flag	Result	Units	RL
Chloride		**528**	mg/Kg	5

Sample: 387161 - AH-1 3-3.5

Param	Flag	Result	Units	RL
Chloride		**288**	mg/Kg	5

Sample: 387162 - AH-1 4-4.5

Param	Flag	Result	Units	RL
Chloride		**193**	mg/Kg	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

Param	Flag	Result	Units	RL
Chloride		**10.0**	mg/Kg	5

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		**38.0**	mg/Kg	5

Sample: 387169 - AH-3 0-1

Param	Flag	Result	Units	RL
Chloride		**384**	mg/Kg	5

Sample: 387170 - AH-3 1-1.5

Param	Flag	Result	Units	RL
Chloride		**243**	mg/Kg	5

Sample: 387171 - AH-3 2-2.5

Param	Flag	Result	Units	RL
Chloride		**146**	mg/Kg	5

Sample: 387172 - AH-3 3-3.5

Param	Flag	Result	Units	RL
Chloride		**485**	mg/Kg	5

Sample: 387173 - AH-3 4-4.5

Param	Flag	Result	Units	RL
Chloride		**194**	mg/Kg	5

TRACEANALYSIS, INC.

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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

Work Order: 15021803

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

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

Sample	Description	Matrix	Date Taken	Time Taken	Date 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.

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

Report Contents

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.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis 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.

Analytical Report

Sample: 387158 - AH-1 0-1

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

Parameter	Flag	Cert	RL 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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	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

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119534	Date Analyzed:	2015-02-20	Analyzed By:	HJ
Prep Batch:	101094	Sample Preparation:	2015-02-20	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**1080**	mg/Kg	5	5.00

Sample: 387158 - AH-1 0-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	119593	Date Analyzed:	2015-02-25	Analyzed By:	SC
Prep Batch:	101143	Sample Preparation:	2015-02-24	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	2	**1240**	mg/Kg	1	50.0

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:	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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	**318**	mg/Kg	5	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			9.40	mg/Kg	5	10.0	94	70 - 130
4-Bromofluorobenzene (4-BFB)	Qsr	Qsr	17.3	mg/Kg	5	10.0	173	70 - 130

Sample: 387159 - AH-1 1-1.5

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119534	Date Analyzed:	2015-02-20	Analyzed By:	HJ
Prep Batch:	101094	Sample Preparation:	2015-02-20	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**59.0**	mg/Kg	1	5.00

Sample: 387160 - AH-1 2-2.5

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

continued ...

sample 387160 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**528**	mg/Kg	5	5.00

Sample: 387161 - AH-1 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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**288**	mg/Kg	5	5.00

Sample: 387162 - AH-1 4-4.5

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119710	Date Analyzed:	2015-03-02	Analyzed By:	HJ
Prep Batch:	101256	Sample Preparation:		Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**193**	mg/Kg	5	5.00

Sample: 387163 - AH-2 0-1

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene [1]	U	2	<0.0400	mg/Kg	2	0.0200
Toluene	U	2	<0.0400	mg/Kg	2	0.0200
Ethylbenzene	U	2	<0.0400	mg/Kg	2	0.0200
Xylene	U	2	<0.0400	mg/Kg	2	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			3.69	mg/Kg	2	4.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			3.92	mg/Kg	2	4.00	98	70 - 130

Sample: 387163 - AH-2 0-1

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**29.0**	mg/Kg	1	5.00

Sample: 387163 - AH-2 0-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	119593	Date Analyzed:	2015-02-25	Analyzed By:	SC
Prep Batch:	101143	Sample Preparation:	2015-02-24	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	2	**376**	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		157	mg/Kg	1	100	157	70 - 130

Sample: 387163 - AH-2 0-1

Laboratory:	Midland				
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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO [2]	U	2	<8.00	mg/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

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**10.0**	mg/Kg	1	5.00

Sample: 387165 - AH-2 2-2.5

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**10.0**	mg/Kg	1	5.00

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**29.0**	mg/Kg	1	5.00

Sample: 387167 - AH-2 4-4.5

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**29.0**	mg/Kg	1	5.00

Sample: 387168 - AH-2 5-5.5

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**38.0**	mg/Kg	1	5.00

Sample: 387169 - AH-3 0-1

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene		2	**1.82**	mg/Kg	50	0.0200
Toluene		2	**20.9**	mg/Kg	50	0.0200
Ethylbenzene		2	**2.69**	mg/Kg	50	0.0200

continued ...

sample 387169 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Xylene		2	**46.0**	mg/Kg	50	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			89.5	mg/Kg	50	100	90	70 - 130
4-Bromofluorobenzene (4-BFB)			112	mg/Kg	50	100	112	70 - 130

Sample: 387169 - AH-3 0-1

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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**384**	mg/Kg	5	5.00

Sample: 387169 - AH-3 0-1

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	119593	Date Analyzed:	2015-02-25	Analyzed By:	SC
Prep Batch:	101143	Sample Preparation:	2015-02-24	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qr	2	**3470**	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane Qsr	Qsr		204	mg/Kg	5	100	204	70 - 130

Sample: 387169 - AH-3 0-1

Laboratory:	Midland				
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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		2	**2020**	mg/Kg	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	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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Benzene	U	2	<0.0200	mg/Kg	1	0.0200
Toluene	U	2	<0.0200	mg/Kg	1	0.0200
Ethylbenzene	U	2	<0.0200	mg/Kg	1	0.0200
Xylene	U	2	<0.0200	mg/Kg	1	0.0200

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	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:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119594	Date Analyzed:	2015-02-25	Analyzed By:	HJ
Prep Batch:	101145	Sample Preparation:	2015-02-24	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**243**	mg/Kg	5	5.00

Sample: 387170 - AH-3 1-1.5

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	119608	Date Analyzed:	2015-02-25	Analyzed By:	SC
Prep Batch:	101144	Sample Preparation:	2015-02-24	Prepared By:	SC

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Qs,U	2	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.2	mg/Kg	1	100	94	70 - 130

Sample: 387170 - AH-3 1-1.5

Laboratory:	Midland				
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

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	2	<4.00	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.80	mg/Kg	1	2.00	90	70 - 130
4-Bromofluorobenzene (4-BFB)			1.78	mg/Kg	1	2.00	89	70 - 130

Sample: 387171 - AH-3 2-2.5

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119594	Date Analyzed:	2015-02-25	Analyzed By:	HJ
Prep Batch:	101145	Sample Preparation:	2015-02-24	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**146**	mg/Kg	5	5.00

Sample: 387172 - AH-3 3-3.5

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119594	Date Analyzed:	2015-02-25	Analyzed By:	HJ
Prep Batch:	101145	Sample Preparation:	2015-02-24	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**485**	mg/Kg	5	5.00

Sample: 387173 - AH-3 4-4.5

Laboratory:	Lubbock				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	119594	Date Analyzed:	2015-02-25	Analyzed By:	HJ
Prep Batch:	101145	Sample Preparation:	2015-02-24	Prepared By:	HJ

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride		1	**194**	mg/Kg	5	5.00

Method Blanks

Method Blank (1) QC Batch: 119534

QC Batch: 119534 | Date Analyzed: 2015-02-20 | Analyzed By: HJ
Prep Batch: 101094 | QC Preparation: 2015-02-19 | Prepared By: HJ

Parameter	Flag	Cert	MDL 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

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		2	<0.00533	mg/Kg	0.02
Toluene		2	<0.00645	mg/Kg	0.02
Ethylbenzene		2	<0.0116	mg/Kg	0.02
Xylene		2	<0.00874	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	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: 119536 | Date Analyzed: 2015-02-21 | Analyzed By: AK
Prep Batch: 101075 | QC Preparation: 2015-02-20 | Prepared By: AK

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		2	<2.32	mg/Kg	4

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

QC Batch: 119563 | Date Analyzed: 2015-02-23 | Analyzed By: HJ
Prep Batch: 101117 | QC Preparation: 2015-02-20 | Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	<3.05	mg/Kg	5

Method Blank (1) QC Batch: 119593

QC Batch: 119593 | Date Analyzed: 2015-02-25 | Analyzed By: SC
Prep Batch: 101143 | QC Preparation: 2015-02-24 | Prepared By: SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<7.41	mg/Kg	50

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: 119594 | Date Analyzed: 2015-02-25 | Analyzed By: HJ
Prep Batch: 101145 | QC Preparation: 2015-02-23 | Prepared By: HJ

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	<3.05	mg/Kg	5

Method Blank (1) QC Batch: 119608

QC Batch:	119608	Date Analyzed:	2015-02-25	Analyzed By:	SC
Prep Batch:	101144	QC Preparation:	2015-02-24	Prepared By:	SC

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		2	<7.41	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			93.3	mg/Kg	1	100	93	70 - 130

Method Blank (1) QC Batch: 119710

QC Batch:	119710	Date Analyzed:	2015-03-02	Analyzed By:	HJ
Prep Batch:	101256	QC Preparation:	2015-03-02	Prepared By:	HJ

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride		1	<3.05	mg/Kg	5

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 119534
Prep Batch: 101094

Date Analyzed: 2015-02-20
QC Preparation: 2015-02-19

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2400	mg/Kg	5	2500	<15.2	96	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	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)

QC Batch: 119535
Prep Batch: 101075

Date Analyzed: 2015-02-21
QC Preparation: 2015-02-20

Analyzed By: AK
Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	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.

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	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 ...

control spikes continued ...

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD 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 (LCS-1)

QC Batch: 119536 | Date Analyzed: 2015-02-21 | Analyzed By: AK
Prep Batch: 101075 | QC Preparation: 2015-02-20 | Prepared By: AK

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	19.3	mg/Kg	1	20.0	<2.32	96	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	20.8	mg/Kg	1	20.0	<2.32	104	70 - 130	8	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.82	mg/Kg	1	2.00	88	91	70 - 130
4-Bromofluorobenzene (4-BFB)	1.85	1.84	mg/Kg	1	2.00	92	92	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 119563 | Date Analyzed: 2015-02-23 | Analyzed By: HJ
Prep Batch: 101117 | QC Preparation: 2015-02-20 | Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2400	mg/Kg	5	2500	<15.2	96	85 - 115

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2400	mg/Kg	5	2500	<15.2	96	85 - 115	0	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 119593 | Date Analyzed: 2015-02-25 | Analyzed By: SC
Prep Batch: 101143 | QC Preparation: 2015-02-24 | Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	243	mg/Kg	1	250	<7.41	97	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	240	mg/Kg	1	250	<7.41	96	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	106	105	mg/Kg	1	100	106	105	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 119594 | Date Analyzed: 2015-02-25 | Analyzed By: HJ
Prep Batch: 101145 | QC Preparation: 2015-02-23 | Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2480	mg/Kg	5	2500	<15.2	99	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2480	mg/Kg	5	2500	<15.2	99	85 - 115	0	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 119608
Prep Batch: 101144

Date Analyzed: 2015-02-25
QC Preparation: 2015-02-24

Analyzed By: SC
Prepared By: SC

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	254	mg/Kg	1	250	<7.41	102	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		2	252	mg/Kg	1	250	<7.41	101	70 - 130	1	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	106	107	mg/Kg	1	100	106	107	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 119710
Prep Batch: 101256

Date Analyzed: 2015-03-02
QC Preparation: 2015-03-02

Analyzed By: HJ
Prepared By: HJ

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2410	mg/Kg	5	2500	<15.2	96	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2460	mg/Kg	5	2500	<15.2	98	85 - 115	2	20

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

Matrix Spikes

Matrix Spike (MS-1) Spiked Sample: 387159

QC Batch: 119534
Prep Batch: 101094

Date Analyzed: 2015-02-20
QC Preparation: 2015-02-19

Analyzed By: HJ
Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2330	mg/Kg	1	2500	<3.05	93	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	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
Prep Batch: 101075

Date Analyzed: 2015-02-21
QC Preparation: 2015-02-20

Analyzed By: AK
Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	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.

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	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.

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.79	1.71	mg/Kg	1	2	90	86	70 - 130
4-Bromofluorobenzene (4-BFB)	2.00	1.89	mg/Kg	1	2	100	94	70 - 130

Matrix Spike (MS-1) Spiked Sample: 387120

QC Batch: 119536 | Date Analyzed: 2015-02-21 | Analyzed By: AK
Prep Batch: 101075 | QC Preparation: 2015-02-20 | Prepared By: AK

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		2	18.7	mg/Kg	1	20.0	<2.32	94	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		2	15.7	mg/Kg	1	20.0	<2.32	78	70 - 130	17	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.71	1.79	mg/Kg	1	2	86	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.83	1.86	mg/Kg	1	2	92	93	70 - 130

Matrix Spike (MS-1) Spiked Sample: 387169

QC Batch: 119563 | Date Analyzed: 2015-02-23 | Analyzed By: HJ
Prep Batch: 101117 | QC Preparation: 2015-02-20 | Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2930	mg/Kg	5	2500	384	102	80 - 120

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

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2830	mg/Kg	5	2500	384	98	80 - 120	4	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: 387138

QC Batch: 119593 | Date Analyzed: 2015-02-25 | Analyzed By: SC
Prep Batch: 101143 | QC Preparation: 2015-02-24 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		2	192	mg/Kg	1	250	<7.41	77	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qr	Qr 2	237	mg/Kg	1	250	<7.41	95	70 - 130	21	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	90.1	102	mg/Kg	1	100	90	102	70 - 130

Matrix Spike (MS-1) Spiked Sample: 387300

QC Batch: 119594 | Date Analyzed: 2015-02-25 | Analyzed By: HJ
Prep Batch: 101145 | QC Preparation: 2015-02-23 | Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	2420	mg/Kg	1	2500	19	96	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	2400	mg/Kg	1	2500	19	95	80 - 120	1	20

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

Matrix Spike (xMS-1) Spiked Sample: 387107

QC Batch: 119608 | Date Analyzed: 2015-02-25 | Analyzed By: SC
Prep Batch: 101144 | QC Preparation: 2015-02-24 | Prepared By: SC

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	Qs Qs	2	785	mg/Kg	1	250	729	22	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	Qs Qs	2	727	mg/Kg	1	250	729	1	70 - 130	8	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	115	113	mg/Kg	1	100	115	113	70 - 130

Matrix Spike (xMS-1) Spiked Sample: 387157

QC Batch: 119710 | Date Analyzed: 2015-03-02 | Analyzed By: HJ
Prep Batch: 101256 | QC Preparation: 2015-03-02 | Prepared By: HJ

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride		1	4530	mg/Kg	5	2500	2070	98	80 - 120

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride		1	4530	mg/Kg	5	2500	2070	98	80 - 120	0	20

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

Calibration Standards

Standard (ICV-1)

QC Batch: 119534 Date Analyzed: 2015-02-20 Analyzed By: HJ

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride		1	mg/Kg	100	100	100	85 - 115	2015-02-20

Standard (CCV-1)

QC Batch: 119534 Date Analyzed: 2015-02-20 Analyzed By: HJ

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	2015-02-20

Standard (CCV-2)

QC Batch: 119535 Date Analyzed: 2015-02-21 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		2	mg/kg	0.100	0.0945	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

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)

QC Batch: 119536 Date Analyzed: 2015-02-21 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.03	103	80 - 120	2015-02-21

Standard (CCV-3)

QC Batch: 119536 Date Analyzed: 2015-02-21 Analyzed By: AK

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		2	mg/Kg	1.00	1.01	101	80 - 120	2015-02-21

Standard (ICV-1)

QC Batch: 119563 Date Analyzed: 2015-02-23 Analyzed By: HJ

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date 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

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	2015-02-23

Standard (CCV-1)

QC Batch: 119593 Date Analyzed: 2015-02-25 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	233	93	80 - 120	2015-02-25

Standard (CCV-2)

QC Batch: 119593 Date Analyzed: 2015-02-25 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	232	93	80 - 120	2015-02-25

Standard (ICV-1)

QC Batch: 119594 Date Analyzed: 2015-02-25 Analyzed By: HJ

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date 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

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 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	231	92	80 - 120	2015-02-25

Standard (CCV-3)

QC Batch: 119608 Date Analyzed: 2015-02-25 Analyzed By: SC

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		2	mg/Kg	250	255	102	80 - 120	2015-02-25

Standard (ICV-1)

QC Batch: 119710 Date Analyzed: 2015-03-02 Analyzed By: HJ

Param	Flag	Cert	Units	ICVs True Conc.	ICVs Found Conc.	ICVs Percent Recovery	Percent Recovery Limits	Date 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

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

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory 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

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.

15021803

Analysis Request of Chain of Custody Record

PAGE: 1 : 2

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST (Circle or Specify Method No.)

CLIENT NAME: SM Energy
SITE MANAGER: Ike Tavarez
PROJECT NO.: 216C-MD-00149
PROJECT NAME: SM Energy - Inca T13 Lea Co. NM

LAB I.D. NUMBER	DATE 2015	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
387158	2/16		S		X	AH 1 (0-1)	1	N			X		X	X											X				
159						(1-1.5)																			X				
160						(2-2.5)																			X				
161						(3-3.5)																			X				
162						(4-4.5)																			X				
163						AH 2 (0-1)							X	X											X				
164						(1-1.5)																			X				
165						(2-2.5)																			X				
166						(3-3.5)																			X				
167						(4-4.5)																			X				

RELINQUISHED BY: (Signature) — Date: 2-17-15 Time: 9:55
RECEIVED BY: (Signature) — Date: 2-17-15 Time: 14:55
SAMPLED BY: (Print & Initial) Adria Garcia/Mat McDaniel — Date: 2/16/15 Time:

RELINQUISHED BY: (Signature) — Date: 2-18-15 Time: 15:30
RECEIVED BY: (Signature) — Date: Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: 2-18-15 Time: 8:38
TETRA TECH CONTACT PERSON: Ike Tavarez — Results by:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature) IR3 5.8
DATE 2-18-15 TIME:
RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3.3

REMARKS: Run deeper depths if TPH exceeds 5,000 mg/kg.

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.

Run deeper depths if benzene exceeds 10 mg/kg or total BTEX exceeds 50 mg/kg.

Analysis Request of Chain of Custody Record

TETRA TECH
1910 N. Big Spring St.
Midland, Texas 79705
(432) 682-4559 • Fax (432) 682-3946

ANALYSIS REQUEST
(Circle or Specify Method No.)

CLIENT NAME: SM Energy

SITE MANAGER: Ike Tavarez

PROJECT NO.: 212C-MD-00149

PROJECT NAME: SM Energy - Inca TB

LAB I.D. NUMBER	DATE 2015	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION (Lea Co. NM)	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH 8015 MOD. TX1005 (Ext. to C35)	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
387168	2/16		X		X	AH 2 (5-5.5)	1	N			X													X				
169						AH 3 (0-1)							X	X										X				
170						(1-1.5)																		X				
171						(2-2.5)																		X				
172						(3-3.5)																		X				
173						(4-4.5)																		X				

RELINQUISHED BY: (Signature) — Date: 2-17-15 Time: 1455
RECEIVED BY: (Signature) — Date: 2-17-15 Time: 14:55

RELINQUISHED BY: (Signature) — Date: 2.18.15 Time: 15:30
RECEIVED BY: (Signature) — Date: 2-19-15 Time: 8:30

RELINQUISHED BY: (Signature) — Date: Time:
RECEIVED BY: (Signature) — Date: Time:

SAMPLED BY: (Print & Initial) Adrian Garcia/Mat McDaniel — Date: 2/16/15 Time:

SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: OTHER:

RECEIVING LABORATORY: Trace
ADDRESS:
CITY: Midland STATE: ZIP:
CONTACT: PHONE:
RECEIVED BY: (Signature)
DATE: TIME:

TETRA TECH CONTACT PERSON: Ike Tavarez

Results by:

RUSH Charges Authorized: Yes No

SAMPLE CONDITION WHEN RECEIVED: 3-3

REMARKS:

Please fill out all copies - Laboratory retains Yellow copy - Return Orginal copy to Tetra Tech - Project Manager retains Pink copy - Accounting receives Gold copy.