

# R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Since 1996  
Artesia ▲ Carlsbad ▲ Durango ▲ Midland

August 9, 2017

## INFORMATION ONLY

Olivia Yu  
NMOCD District 1  
1625 French Drive  
Hobbs, New Mexico 88240  
Via E-Mail

RE: AMTEX Energy, Coop "6" State Lease Battery - OGRID # 000785, Unit A Section 6, T22S, R33E, Lea County, Addendum to Report of July 11, 2017

Dear Ms. Yu:

As requested in an email of July 13, 2017 from Amber Groves, R.T. Hicks Consultants, on behalf of Amtex Energy Inc., conducted an assessment of the area west of the lease road from the above referenced battery. We first inspected this late summer, 2016 release location in March of 2017. Evidence suggested that the release footprint terminated at the lease road. Thus, we did not examine the area west of the road. Please accept this report as an addendum to the July 11, 2017 report referenced above.

On July 19, 2017, we identified stained soil west of the road and collected soil samples from eight hand auger borings as shown on the attached map (Plate 3) and photographs. Field screening was performed using a photoionic detector (PID) calibrated to benzene and chloride titrations. Three soil samples were submitted to Cardinal Laboratory for analysis of hydrocarbons and chloride to verify the field screening data.

Generally, the visibly impacted soil followed the pathway of a small drainage system from the north-south lease road to a small depression approximately 500 feet to the west. The soil staining was not continuous along the pathway and there was no evidence of stressed vegetation.



Hydrocarbon concentrations are lower on the west side of the lease road than those observed on the east side and low chloride concentrations were also observed. The highest chloride concentrations of 450 and 185 mg/kg are from borings No. 21 and No. 20 respectively. While these concentrations are below the OCD screening level of 600 mg/kg, no samples from within the spill footprint on east side of the lease road exceeded 32 mg/kg. The difference in chloride concentrations near the road plus the 30- to 50-foot northern shift in the flow-path at the lease road indicates that the hydrocarbons on the west side of the road are from a different source than the late summer 2016 release on the east side of the lease road. We speculate that one of the many fluid transport trucks that utilize the lease road may have accidentally released a small volume of fluid – perhaps after loading from the Amtex battery.

Based on the environmental sensitivity of the site presented in our July 11, 2017 report, we conclude that no threat to the groundwater quality is present and the remedial actions recommended for the east side of the road should also be followed on the west side of the road. Currently, Amtex Energy, Inc. is waiting for a formal response from the NMOCD to the C-141 form submitted on July 17, 2017.

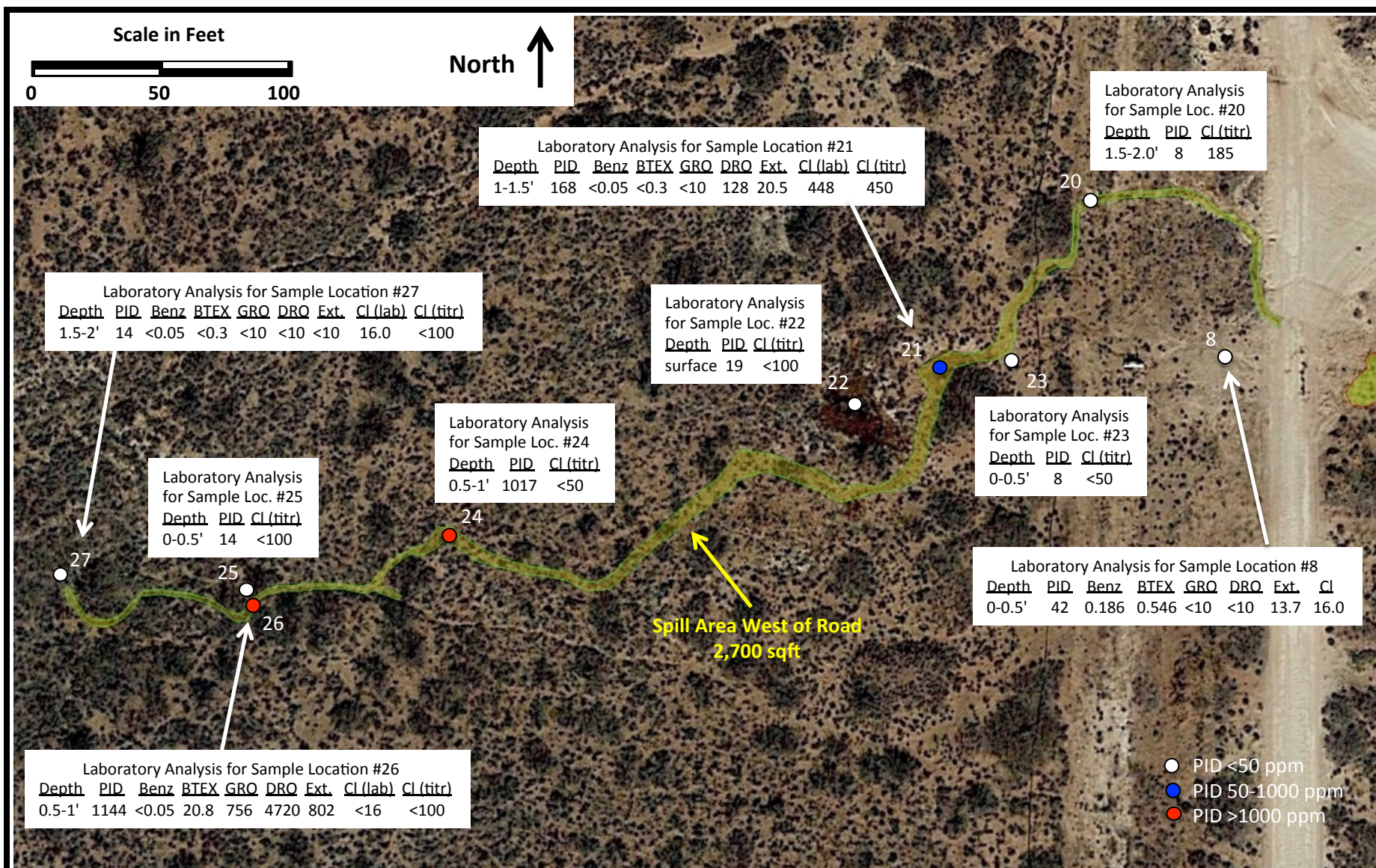
Sincerely,  
R.T. Hicks Consultants, Ltd.

A handwritten signature in black ink that reads "Dale T. Littlejohn". The signature is written in a cursive, flowing style.

Dale Littlejohn  
Geologist

Copy: Amtex Energy Inc.,  
Amber Groves, New Mexico State Land Office





R.T Hicks Consultants, Ltd  
901 Rio Grande Blvd. NW  
Ste F-142 Albuquerque, NM 87104  
(432) 528-3878

**Site Map Showing Location of Spill Area West of Road and  
Characterization Soil Samples**

**AMTEX Energy, Inc. - Coop "6" State Battery (on well 1H location)  
Unit A, Section 6, T22S, R33E, Lea County, New Mexico**

**Plate 3**

**August 2017**





View to West - Spill Pathway to North-South Lease Road



View to West - Typical Soil Staining Along Spill Pathway Near Lease Road



View to West - AH-21 (in spill pathway)



View to Northwest - Wet Soil at Location of AH-22





Typical Soil Staining Between  
AH-22 and AH-24



View to North – AH-24 (in spill pathway)



Typical Soil Staining Between  
AH-24 and AH-25/26



View to North – AH-25 (out of spill  
pathway) and AH-26 (in spill pathway)





View to North – Vegetation Along West End of Spill Pathway



View to West: Location of AH-27 (low basin)



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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July 26, 2017

DALE LITTLEJOHN

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: COOP '6' BATTERY RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 07/19/17 11:27.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-16-8. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene

Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
DALE LITTLEJOHN  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 07/19/2017  
Reported: 07/26/2017  
Project Name: COOP '6' BATTERY RELEASE  
Project Number: NONE GIVEN  
Project Location: SEC. 6 T22S R33E LEA COUNTY

Sampling Date: 07/19/2017  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Jodi Henson

**Sample ID: AH #21 (1.0 - 1.5') (H701874-01)**

BTEX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2017	ND	1.93	96.7	2.00	2.40	
Toluene*	<0.050	0.050	07/20/2017	ND	1.79	89.3	2.00	2.75	
Ethylbenzene*	<0.050	0.050	07/20/2017	ND	1.86	93.2	2.00	2.29	
Total Xylenes*	<0.150	0.150	07/20/2017	ND	5.55	92.5	6.00	2.64	
Total BTEX	<0.300	0.300	07/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	448	16.0	07/20/2017	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/19/2017	ND	193	96.4	200	3.43	
DRO >C10-C28	128	10.0	07/19/2017	ND	206	103	200	2.38	
EXT DRO >C28-C36	20.5	10.0	07/19/2017	ND					

Surrogate: 1-Chlorooctane 83.9 % 28.3-164

Surrogate: 1-Chlorooctadecane 84.9 % 34.7-157

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Analytical Results For:**

R T HICKS CONSULTANTS  
DALE LITTLEJOHN  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 07/19/2017  
Reported: 07/26/2017  
Project Name: COOP '6' BATTERY RELEASE  
Project Number: NONE GIVEN  
Project Location: SEC. 6 T22S R33E LEA COUNTY

Sampling Date: 07/19/2017  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Jodi Henson

**Sample ID: AH #26 (0.5 - 1.0') (H701874-02)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/25/2017	ND	1.93	96.7	2.00	2.40	
Toluene*	1.61	0.050	07/25/2017	ND	1.79	89.3	2.00	2.75	
Ethylbenzene*	<0.050	0.050	07/25/2017	ND	1.86	93.2	2.00	2.29	
Total Xylenes*	19.2	0.150	07/25/2017	ND	5.55	92.5	6.00	2.64	
Total BTX	20.8	0.300	07/25/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 114 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	<16.0	16.0	07/20/2017	ND	432	108	400	3.64		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	756	50.0	07/19/2017	ND	193	96.4	200	3.43	
DRO >C10-C28	4720	50.0	07/19/2017	ND	206	103	200	2.38	
EXT DRO >C28-C36	802	50.0	07/19/2017	ND					

Surrogate: 1-Chlorooctane 138 % 28.3-164

Surrogate: 1-Chlorooctadecane 136 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

**Analytical Results For:**

R T HICKS CONSULTANTS  
DALE LITTLEJOHN  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 07/19/2017  
Reported: 07/26/2017  
Project Name: COOP '6' BATTERY RELEASE  
Project Number: NONE GIVEN  
Project Location: SEC. 6 T22S R33E LEA COUNTY

Sampling Date: 07/19/2017  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Jodi Henson

**Sample ID: AH #27 (1.5 - 2.0') (H701874-03)**

BTX 8021B		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	07/20/2017	ND	1.93	96.7	2.00	2.40	
Toluene*	<0.050	0.050	07/20/2017	ND	1.79	89.3	2.00	2.75	
Ethylbenzene*	<0.050	0.050	07/20/2017	ND	1.86	93.2	2.00	2.29	
Total Xylenes*	<0.150	0.150	07/20/2017	ND	5.55	92.5	6.00	2.64	
Total BTX	<0.300	0.300	07/20/2017	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 72-148

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	07/20/2017	ND	432	108	400	3.64	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10	<10.0	10.0	07/19/2017	ND	193	96.4	200	3.43	
DRO >C10-C28	<10.0	10.0	07/19/2017	ND	206	103	200	2.38	
EXT DRO >C28-C36	<10.0	10.0	07/19/2017	ND					

Surrogate: 1-Chlorooctane 91.0 % 28.3-164

Surrogate: 1-Chlorooctadecane 92.9 % 34.7-157

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 6 of 6



**From:** William J. Savage  
**To:** ["Groves, Amber"; Yu, Olivia, EMNRD](#)  
**Cc:** ["Dale Littlejohn"; r@rthicksconsult.com; tate.savage@amtenergy.com; "Karol Ann Eads"; "Naranjo, Mark"; Martin, Ed; Bill Savage](#)  
**Subject:** RE: Coop "6" Tank Battery Assessment Report  
**Date:** Thursday, July 13, 2017 9:33:45 AM  
**Attachments:** image001.png  
image003.png

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Will do!

*William J. Savage, President  
Amtex Energy, Inc.  
P.O. Box 3418  
Midland, TX 79702*

*Office: (432) 686-0847  
Fax: (888) 789-5245  
Cell: (432) 770-0913  
Email: [bsavage@amtenergy.com](mailto:bsavage@amtenergy.com)*

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**From:** Groves, Amber [mailto:[agroves@slo.state.nm.us](mailto:agroves@slo.state.nm.us)]  
**Sent:** Thursday, July 13, 2017 10:27 AM  
**To:** William J. Savage <[bsavage@amtenergy.com](mailto:bsavage@amtenergy.com)>; [olivia.yu@state.nm.us](mailto:olivia.yu@state.nm.us)  
**Cc:** Dale Littlejohn <[dale@rthicksconsult.com](mailto:dale@rthicksconsult.com)>; [r@rthicksconsult.com](mailto:r@rthicksconsult.com);  
[tate.savage@amtenergy.com](mailto:tate.savage@amtenergy.com); Karol Ann Eads <[keads@amtenergy.com](mailto:keads@amtenergy.com)>; Naranjo, Mark  
<[MNaranjo@slo.state.nm.us](mailto:MNaranjo@slo.state.nm.us)>; Martin, Ed <[emartin@slo.state.nm.us](mailto:emartin@slo.state.nm.us)>  
**Subject:** RE: Coop "6" Tank Battery Assessment Report

Good Morning, Mr. Savage,

Thank you for your prompt response to my request. The full extent of the release area is not reflected in the submitted report. The release did breach the lease road located to the west of the Coop 6 Tank Battery, went past the white riser and pooled in the pasture west of the lease road. Based on this evidence, please re-evaluate.

Thank you,

**Amber Groves**  
*Remediation Specialist  
Field Operations Division  
(575)392-3697  
(575)263-3209 cell  
New Mexico State Land Office  
2827 N. Dal Paso Suite 117  
Hobbs, NM 88260*

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**From:** William J. Savage [<mailto:bsavage@amtexenergy.com>]  
**Sent:** Wednesday, July 12, 2017 6:16 PM  
**To:** Groves, Amber <[agroves@slo.state.nm.us](mailto:agroves@slo.state.nm.us)>; [olivia.yu@state.nm.us](mailto:olivia.yu@state.nm.us)  
**Cc:** Dale Littlejohn <[dale@rthicksconsult.com](mailto:dale@rthicksconsult.com)>; [r@rthicksconsult.com](mailto:r@rthicksconsult.com);  
[tate.savage@amtexenergy.com](mailto:tate.savage@amtexenergy.com); Karol Ann Eads <[keads@amtexenergy.com](mailto:keads@amtexenergy.com)>; Bill Savage  
<[bsavage@amtexenergy.com](mailto:bsavage@amtexenergy.com)>  
**Subject:** FW: Coop "6" Tank Battery Assessment Report

Amber Groves and Olivia Yu,

Please find the attached Coop 6 State Battery - Spill Assessment Report, which Amber Groves has requested to be filed. This was not a reportable spill volume, which requires a C-141 to be filed.

Amtex Energy, Inc. ("Amtex") rapid response to your email request, of 07-10-17, for a C-141 to be filed, asap, is only possible because Amtex had already investigated this spill and determined it was not a reportable spill volume.

Please review this report and then inform Amtex, if you agree or disagree, that this spill volume is below the guideline for what is a reportable spill volume?

Please call Dale Littlejohn, (575) 528-3878, or Bill Savage, (432) 770-0913, if you have questions.

Regards,  
Bill Savage

*William J. Savage, President  
Amtex Energy, Inc.  
P.O. Box 3418  
Midland, TX 79702*

*Office: (432) 686-0847  
Fax: (888) 789-5245  
Cell: (432) 770-0913  
Email: [bsavage@amtexenergy.com](mailto:bsavage@amtexenergy.com)*

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## Upper Spill Area

Hydrocarbons			DRO	Ext.	Total
		GRO			
Sample #16	0.5	909	6510	1350	8769
	1.0	2490	6750	1400	10640
Worst-Case Area Concentration =					

Area =	4100	sqft	
Average Thickness =	0.5	feet	
Volume of Impacted Area =	2050	cubic feet	or
Porosity =	40%		
Volume of Impacted Soil in Area =	219.1	bbls	

**Volume of Hydrocarbons in Upper Area = 2.1 bbls**

## Lower Spill Area

Hydrocarbons			DRO	Ext.	Total
		GRO			
Sample #6	0.5	1090	6530	1310	8930
	1.0	3460	6560	1220	11240
	1.5	4320	6670	1220	12210
	5.0	664	1690	260	2614
Worst-Case Area Concentration =					

Area =	1100	sqft	
Average Thickness =	1.5	feet	
Volume of Impacted Area =	1650	cubic feet	or
Porosity =	40%		
Volume of Impacted Soil in Area =	176.3	bbls	

**Volume of Hydrocarbons in Lower Area = 1.9 bbls**

Percent  
Hydrocarbons  
in Soil

0.88%

1.06%

**0.97%**

365.1      bbls

Percent  
Hydrocarbons  
in Soil

0.89%

1.12%

1.22%

0.26%

**1.08%**

293.9      bbls