# **Project Report**

**Project:** 

Susco State Lease Section 19, T9S, R33E Lea County, New Mexico

January 10, 2008

Prepared for:

Merit Energy Company 13727 Noel Rd. Ste. 500 Dallas, Texas 75240

# RECEIVED

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# **Jim Hollon Consulting**

14034 W. Co. Rd. 123, Odessa, Texas 79765 (432)631-5768 Fax (432)563-1166 Jim@JHCon.net

RP# 1763

### **Jim Hollon Consulting**

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January 10, 2008

Merit Energy Company 13727 Noel Rd. Ste. 500 Dallas, Texas 75240

Attn: Mr. Justin Findley

Phone: (972) 628-1493 Fax: (972) 628-1793

Re: Project Report Susco State Lease Section 19, T9S, R33E Lea County, New Mexico

Dear Mr. Findley:

Jim Hollon Consulting is pleased to submit four copies of the Project Report for the above referenced site.

I appreciate the opportunity to participate in this project at the Susco State lease for Merit Energy Company. Please contact me at (432) 631-5768 if you have questions regarding the information provided in the report.

Sincerely m Ho

Jim Hollon

### **TABLE OF CONTENTS**

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1.0	INTRODUCTION	1
2.0	SUMMARY OF ACTIVITIES COMPLETED	3
3.0	DATA EVALUATION	5
4.0	FINDINGS AND RECOMMENDATIONS	6

### LIST OF APPENDICES

.

3

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Appendix A:	Figure 1- Topographic Map
	Figure 2 – Aerial Photograph
	Figure 3 – Site Map
Appendix B:	Analytical Summary Table, Laboratory Data Sheets, Chain-of-Custody
Appendix C:	Soil Boring Logs
Appendix D:	Regulatory Report

### **Project Report**

### Susco State Lease Section 19, T9S, R33E Lea County, New Mexico

### 1.0 INTRODUCTION

This site is located in Lea County, New Mexico approximately sixteen miles west of Crossroads and approximately one quarter mile south of County Road 170 (Figure 1). The surrounding area is native rangeland in a grassland prairie region with naturally occurring salt lakes within two and one half miles of the site. The site is on property overseen by the State Lands Office (SLO). The facility included seven above grade tanks, consisting of three 500 barrel welded steel, two 300 barrel welded steel and two 300 barrel fiberglass. Two vertical heater/separators, a circulation and transfer pump, a manifold and associated piping is on the site as well as the pumping unit for the # 1 well. The facility was acquired by Merit Energy Company (Merit) in April, 1993.

In May 2007, the rancher, Carl Lane Johnson, made the request to repair the road leading into the lease. On June 15, 2007 the required permits were obtained from the SLO and work began in the following week, repairing the road from the pavement to the battery. The well sites were also addressed by clearing weeds, repairing the fences and general site clean-up.

On June 26, 2007 a site visit was performed by a New Mexico Oil Conservation Division (NMOCD) field inspector and the following violations were noted: repair or remove unused tanks; replace livestock fence; and, continue to repair the main road to access the battery.

Site Name	Susco State Lease
Site Location/GPS	Lea County, New Mexico / 33.51311° N, 103.60091° W
General Site Description	The site consisted of the tank battery and pumping unit for the # 1 well. The surrounding area is sandy loam rangeland with grass cover and naturally occurring salt lakes.

### 1.1 Site Description

A topographic map (Figure 1,) aerial photograph (Figure 2) and site map (Figure 3) are included in Appendix A.

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### 1.2 Scope of Services

The Scope of Services for JHC as requested by Merit included:

- Removal of the abandoned equipment from the site;
- Excavation and disposal of the affected soils;
- Collection of confirmation soil samples; and,
- Submittal of a project report detailing field activities, analytical results and recommendations.

### 1.3 Regulatory Framework

Crude oil facilities in New Mexico are generally regulated by the New Mexico Oil Conservation Division (NMOCD). Contamination of soil due to a surface release of crude oil is addressed within a NMOCD guideline titled *Guidelines for Remediation of Leaks, Spills and Releases.* Remediation standards for chloride contamination have not been published and are handled by the local district offices on a case by case basis.

Soils which are impacted by petroleum constituents are scored according to the ranking criteria to determine their relative threat to public health, fresh water, and the environment. Such limits are defined by the depth to groundwater, wellhead protection area, and distance to surface water. Based on these ranking criteria, the remediation action level at this site is as follows:

Depth to Ground Water50 - 99 feetRanking Score = 10(As defined as vertical distance from lowermost contaminants to seasonal high water level)

Wellhead Protection Area	>1000' to water source	
	>200' to domestic well	Ranking Score = 0
Distance to Surface Water	>1000 horizontal feet	Ranking Score = 0

Total Ranking Score = 10

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Based on total ranking criteria of 10, the following remediation levels apply:

Benzene = 10 ppm BTEX = 50 ppm TPH = 1000 ppm Chlorides = Site Specific

Depth to groundwater has been assumed to be between 50 and 99 feet. Although windmills are visible from the site, no water well records have been found. After contacting Andy Morely, with the State Engineer's Office, reports were found for two wells near the site. The depth to water was reported to be 61.7 feet in one well and 143.64 feet in the second well. It was also agreed upon that the more shallow groundwater was perched and isolated in nature.

### 1.4 Standard of Care

Services were performed in a manner consistent with generally accepted practices of the profession undertaken in similar studies in the same geographical area during the same time period. JHC makes no warranties, either express or implied, regarding the findings or recommendations. Please note that JHC can not warrant the work of laboratories, regulatory agencies or other third parties supplying information used in the preparation of the report.

### 2.0 FIELD ACTIVITIES

On August 23, 2007, following the receipt of a right of entry permit from the SLO, removal of half of the surface equipment from the battery began, while diverting the production to the second half of the equipment. Following the removal of the unused tanks, all visibly affected soils, totaling 276 cubic yards, were excavated and disposed at an NMOCD approved disposal facility. Five point composite soil samples were collected from the excavated area under each of the former tank locations. Samples were collected from each side wall and the bottom of each excavation, approximately four feet below ground surface (bgs). The samples were labeled 300 East and 300 West, according to the tank from which they were collected. The samples collected were submitted to Xenco Laboratories (formally Environmental Lab of Texas) for analysis of Total Petroleum Hydrocarbons (TPH), Benzene, Toluene, Ethylbenzene and total Xylenes (BTEX), and total chlorides.

On September 26, 2007, following the receipt of the laboratory analysis, an additional 150 cubic yards of soil was excavated, enlarging the excavations into one, measuring approximately 15 feet wide by 30 feet long and 10 feet deep. Samples were collected from each side wall and the bottom of the excavation, approximately ten feet bgs. The sample was submitted in duplicate and labeled 300-1 and 300-2. The samples were again submitted to Xenco Laboratories for

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#### Merit Energy Company Susco State Lease January 10, 2008

analysis. The sample labeled 300-1 was analyzed for TPH, BTEX, and total chlorides; the sample labeled 300-2 was submitted only as a duplicate for analysis of total chlorides.

A report was submitted to the OCD on October 16, 2007, summarizing the field activities and the analytical results from the laboratory. On December 3, 2007, the OCD had requested additional vertical delineation to be performed. The following day a backhoe was utilized to attempt to delineate the affected soils. Due to the hard rock that was encountered at 10 feet bgs, the backhoe was only capable of digging an additional three feet, making the total depth approximately 13 feet bgs, in a small area of the excavation. A sample was collected from the bottom at 13 feet bgs, and composites from each sidewall, and submitted for analysis of total chlorides. Following the receipt of the laboratory analysis, the decision was made to conduct soil borings to collect the required samples. A length of casing was set in the 13 feet bgs excavation and the excavations were backfilled to a point where a mobile drilling rig could gain access. Trenches were also cut to the east, west and south of the excavation in an effort to horizontally delineate the site. Three samples were collected from each trench and labeled as follows: E-1 - 6' out 7' bgs, E-2 - 10' out 7' bgs, E-3 - 16' out 5' bgs, W-1 - 4' out 10' bgs, W-2 - 8' out 8' bgs, W-3 - 12' out 4' bgs, S-1 - 4' out 8' bgs, S-2 - 8' out 6' bgs, and S-3 - 12' out 4' bgs.

On January 4, 2008, a mobile air rotary drilling rig was utilized to advance two soil borings within the footprints of the tanks. The first soil boring, labeled SB-1, was advanced through the casing to a total depth of 43 feet bgs. Four composite samples were collected from the cuttings at five foot intervals until a hard, dense red clay was encountered at 35 feet bgs. After encountering the red clay, a sample was collected from the cuttings both before and after a one foot core was collected. The boring was advanced to 43 feet bgs, approximately eight feet into the red clay, where the final sample was collected. The second soil boring, SB-2, was advanced in the footprint of the 500 barrel tank. SB-2 was advanced to a total depth of 44 feet bgs. The boring included approximately four feet of backfill before encountering native rock. Composite samples were collected at two foot intervals throughout the boring.

### Soil Sampling

The soil samples were placed in laboratory prepared glassware and sealed with the identification label. The soil samples submitted for analysis of TPH and BTEX were placed on ice in a cooler. The samples and completed chain-of-custody forms were relinquished to Xenco Laboratories in Odessa, Texas for analysis. The executed chain-of-custody forms, laboratory data sheets are provided in Appendix B.

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#### **Analytical Methods**

The soil samples collected on September 11 and 26, 2007 and January 4, 2008 were analyzed using the following methods:

Chlorides - EPA Method 325.3 BTEX – EPA Method 8021B TPH – EPA Method 8015M

#### 3.0 DATA EVALUATION

The soil samples collected on September 11, 2007, from under the eastern 300 barrel tank, labeled 300 East had a chloride concentration of 5,100 mg/kg, the BTEX concentration was below the detection limit of 0.0012 mg/kg, and the TPH concentration was below the detection limit of 12 mg/kg. The sample collected from under the western 300 barrel tank, labeled 300 West had a chloride concentration of 1,100 mg/kg, the BTEX concentration was below the detection limit of 0.0011 mg/kg, and the TPH concentration was 3,120 mg/kg.

The soil samples collected on September 26, 2007, from the excavation under the 300 barrel tanks, labeled 300-1 had a chloride concentration of 1,430 mg/kg, the BTEX concentration was 0.0199 mg/kg, and the TPH concentration was 49.1 mg/kg. The duplicate sample labeled 300-2 had a chloride concentration of 1,490 mg/kg.

The soil samples collected on December 4, 2007, had chloride concentrations as follows: North side wall, 851 mg/kg, South sidewall, 13,600 mg/kg, East sidewall, 7,440 mg/kg, West sidewall, 6,270 mg/kg, the bottom and the duplicate bottom were 1,340 mg/kg and 1,320 mg/kg, respectively. The samples from the east trench, collected on December 12, 2007, had chloride concentrations as follows: E-1, E-2 and E-3, 6,160 mg/kg, 1,030 mg/kg and 1,540 mg/kg, respectively. The west trench had chloride concentrations as follows: W-1, W-2 and W-3, 5,950 mg/kg, 1,230 mg/kg and 1,000 mg/kg, respectively. The south trench had chloride concentrations as follows: S-1, S-2 and S-3, 317 mg/kg, 1,830 mg/kg and 1,110 mg/kg, respectively.

The soil samples collected on January 4, 2008, from soil boring SB-1 had chloride concentrations ranging from 1,340 mg/kg to 117 mg/kg. The first sample with chloride concentrations below 250 mg/kg and subsequent samples also below 250 mg/kg was collected at 36-37 feet bgs. The samples collected from SB-2 had chloride concentrations ranging from 1,910 mg/kg to 106 mg/kg. The first sample with chloride concentrations below 250 mg/kg and

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subsequent samples also below 250 mg/kg was collected at 34-36 feet bgs. A table summarizing the analytical results is presented as Table 1 in Appendix B.

The lithology of site, as compiled from the excavations and soil borings, is as follows:

- 0-1' bgs caliche pad
- 1-3' bgs light brown, fine sand, poorly graded
- 3-9' bgs tan sandstone, cemented (caliche)
- 9-22' bgs very hard and dense, white sandstone, cemented (caliche)
- 22-30' bgs various silty sands, with small rounded gravel
- 30-35' bgs gray clay
- 35-44' bgs red, dense, firm clay

### 4.0 FINDINGS AND RECOMMENDATIONS

JHC submits this report to Merit which documents the activities, findings and recommendations for the project. Based on results of the field activities and laboratory analysis the findings are as follows:

- The concentrations of BTEX and TPH in the confirmation sample from the initial excavation were 0.0199 mg/kg and 49.1 mg/kg, respectively, well below the remediation levels for the site's ranking;
- The chloride concentrations in the soils under the site have been delineated to below 250 mg/kg with subsequent samples also below 250 mg/kg; this depth was found at approximately 35 feet bgs;
- The dense red clay layer (red bed) was also encountered at approximately 35 feet bgs. No groundwater was encountered during any boring or excavation activities; and,
- Throughout the soil samples collected from both soil borings, only three of the 28 samples had chloride concentrations above 1,000 mg/kg, additionally, these three samples were below 2,000 mg/kg.
- Consideration should be given to the proximity to the naturally occurring salt lakes, and that the new battery will be constructed on a poly liner.

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The recommendations are as follows:

- Submittal of this report to the OCD to document the delineation of the chloride affected soils; and,
- Based on the discovery that there is no groundwater to protect under the site, between the surface and the red beds, and the very low chloride concentrations remaining in the soils, the current excavations should be satisfactory.

### APPENDIX A

Figure 1 – Topographic Map Figure 2 – Aerial Photograph Figure 3 – Site Map





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### **APPENDIX B**

Analytical Summary Table Laboratory Data Sheets Laboratory Chain of Custody Documents

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#### Table 1

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#### CONCENTRATIONS OF CHEMICALS OF CONCERN IN SOIL

#### Merit Energy Susco State Tatum, Lea County, New Mexico

#### All concentrations are in mg/kg

			EPA 325.3		EPA Met	hod 8015M		I	EPA	Method 80	21B	
SAMPLE	SAMPLE	SAMPLE	TOTAL	TPH	TPH	TPH	ТРН			ETHYL-	TOTAL	TOTAL
DATE	LOCATION	DEPTH	CHLORIDE	C6-C12	C12-C28	C12-C35	C <sub>6</sub> -C <sub>35</sub>	BENZENE	TOLUENE	BENZENE	XYLENES	BTEX
9/11/2007	300 E	4'	5,100	<12.0	<12.0	<12 0	<12.0	<0.0012	<0 0012	<0 0012	<0 0024	<0 0024
	300 W	4'	1,110	218	2,350	552	3,120	<0.0011	<0 0011	<0 0011	<0 0023	<0 0023
9/26/2007	300-1	10'	1,430	18.2	30 9	<11 2	49.1	<0.0056	<0.0056	<0.0056	0 0199	0.0199
	300-2 (DUP)	10'	1,490					I				
	Topsoil	comp	681									
	Stockpile	comp	2,210									
12/4/2007	300 N	comp	851									
	S	comp	13,600									
	E	comp	7,440									
	W	comp	6,270									
	Bottom	13'	1,340									
	Dup Bottom	13'	1,320									
	Caliche pit	8'	21					ļ				
12/12/2007	E-1 6'	7'	6,160					1	`			
	E-2 10'	7'	1,030					]				
	E-3 16'	5'	1,540					1				
	W-1 4'	10'	5,950					1				
	VV-2 8	0	1,230					1				
	VV-3 12	4 8'	1,000					1				
	S-2 8'	6'	1 830									
	S-3 12'	4'	1 110									
1/4/2008	SB-1	16-18'	117			~~~~~						
	00 1	21-23'	1.340									
		26-28'	893									
		31-33'	681									
		35-36'	425									
		36-37'	170									
		37-38'	213									
		41-43'	128									
	SB-2	4-6'	298									
		6-8'	1,660									
		8-10'	1,910									
		10-12	700									
		14.16'	909									
		16-18'	723									
		18-20	808									
		20-22'	723									
		22-24'	978									
-		24-26'	510									
		26-28'	383									
		28-30'	425									
		30-32'	298									
		32-34'	298									
		34-36	1/0									
		38,40'	213									
		40-42'	106									
		42-44'	170									

CONCENTRATIONS IN BOLD ARE ABOVE REGULATORY GUIDELINES

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### **Analytical Report 295486**

for

**Merit Energy** 

**Project Manager: Jim Hollon** 

**Susco State** 

08-JAN-08



12600 West I-20 East Odessa, Texas 79765

Texas certification numbers: Houston, TX T104704215

Florida certification numbers: Houston, TX E871002 - Miami, FL E86678 - Tampa, FL E86675 Norcross(Atlanta), GA E87429

> South Carolina certification numbers: Norcross(Atlanta), GA 98015

> North Carolina certification numbers: Norcross(Atlanta), GA 483

Houston - Dallas - San Antonio - Austin - Tampa - Miami - Latin America Midland - Corpus Christi - Atlanta



08-JAN-08



Project Manager: **Jim Hollon Merit Energy** P.O. Box 300 Whiteface, TX 79379

Reference: XENCO Report No: 295486 Susco State Project Address: Tatum

#### Jim Hollon:

We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number 295486. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. Estimation of data uncertainty for this report is found in the quality control section of this report unless otherwise noted. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 295486 will be filed for 60 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Brent Barron, II Odessa Laboratory Manager

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# Sample Cross Reference 295486



### Merit Energy, Whiteface, TX

Susco State

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB - 1	S	Jan-04-08 00:00	16 - 18	295486-001
SB - 1	S	Jan-04-08 00:00	21 - 23	295486-002
SB - 1	S	Jan-04-08 00:00	26 - 28	295486-003
SB - 1	S	Jan-04-08 00:00	31 - 33	295486-004
SB - 1	S	Jan-04-08 00:00	35 - 36	295486-005
SB - 1	S	Jan-04-08 00:00	36 - 37	295486-006
SB - 1	S	Jan-04-08 00:00	37 - 38	295486-007
SB - 1	S	Jan-04-08 00:00	41 - 43	295486-008
SB - 2	S	Jan-04-08 00:00	4 - 6	295486-009
SB - 2	S	Jan-04-08 00:00	6 - 8	295486-010
SB - 2	S	Jan-04-08 00:00	8 - 10	295486-011
SB - 2	S	Jan-04-08 00:00	10 - 12	295486-012
SB - 2	S	Jan-04-08 00:00	12 - 14	295486-013
SB - 2	S	Jan-04-08 00:00	14 - 16	295486-014
SB - 2	S	Jan-04-08 00:00	16 - 18	295486-015
SB - 2	S	Jan-04-08 00:00	18 - 20	295486-016
SB - 2	S	Jan-04-08 00:00	20 - 22	295486-017
SB - 2	S	Jan-04-08 00:00	22 - 24	295486-018
SB - 2	S	Jan-04-08 00:00	24 - 26	295486-019
SB - 2	S	Jan-04-08 00:00	26 - 28	295486-020
SB - 2	S	Jan-04-08 00:00	<b>28 - 3</b> 0	295486-021
SB - 2	S	Jan-04-08 00:00	30 - 32	295486-022
SB - 2	S	Jan-04-08 00:00	32 - 34	295486-023
SB - 2	S	Jan-04-08 00:00	34 - 36	295486-024
SB - 2	S	Jan-04-08 00:00	36 - 38	295486-025
SB - 2	S	Jan-04-08 00:00	38 - 40	295486-026
SB - 2	S	Jan-04-08 00:00	40 - 42	295486-027
SB - 2	S	Jan-04-08 00:00	42 - 44	295486-028

Project Id:

Contact: Jim Hollon Project Location: Tatum

### Certificate of Analysis Summary 295486 Merit Energy, Whiteface, TX

Project Name: Susco State

Date Received in Lab: Mon Jan-07-08 11 55 am Report Date: 08-JAN-08

								Project Ma	nager:	Brent Barron,	Π		
	Lab Id:	295486-0	01	295486-0	02	295486-0	03	295486-0	04	295486-0	05	295486-0	06
Analysis Paguantad	Field Id:	SB - 1	SB - 1		SB - 1		SB - 1			SB - 1		SB - 1	
Analysis Requested	Depth:	16-18	16-18		21-23		26-28		31-33		35-36		
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-04-08 0	0 00	Jan-04-08 0	0 00	Jan-04-08 0	0.00	Jan-04-08 (	0 00	Jan-04-08 0	0 00	Jan-04-08 (	00 00
Total Chloride, by EPA 325.3	Extracted:												
Four chiefful by Diff bable	Analyzed:	Jan-07-08 1	5 30	Jan-07-08 1	5 30	Jan-07-08 1	5.30	Jan-07-08 1	5 30	Jan-07-08 1	5 30	Jan-07-08 1	5 30
	Units/RL:	mg/kg	RL	mg/kg	RL.	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		117	5 00	1340	5.00	893	5 00	681	5 00	425	5 00	170	5 00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use The interpretations and results expressed throughout this analytical report reports the best judgment of XENCO Laboratories XENCO Laborationers assume no responsibility and makes no warms to the data use of the data hereby presented Our lubility is limited to the amount invoiced for this work order unless otherwise agreed to in writing

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Odessa Laboratory Director

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Project Id:

Contact: Jum Hollon Project Location: Tatum

### Certificate of Analysis Summary 295486 Merit Energy, Whiteface, TX Project Name: Susco State

Date Received in Lab: Mon Jan-07-08 11.55 am Report Date: 08-JAN-08

<u> </u>							_	Project Mar	nager:	Brent Barron,	II		
	Lab Id:	295486-00	.07	295486-0	JO8	295486-00	J9	295486-0	10 ·	295486-0	<u>, 11</u>	295486-0	12
Analysis Paquastad	Field Id:	SB - 1	١	SB - 1	. 1	SB - 2		SB - 2	, I	SB - 2	. !	SB - 2	ļ
Anuiysis Kequesicu	Depth:	37-38	37-38		41-43		1	6-8		8-10		10-12	
	Matrix:	SOIL	)	SOIL	1	SOIL	1	SOIL	J	SOIL	ļ	SOIL	ļ
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10m 0m0100 2, 211-120	Analyzed:	Jan-07-08 1	5 30	Jan-07-08 1	15 30 I	Jan-07-08 15	5 30	Jan-07-08 1	.5 30	Jan-07-08 1	5 30	Jan-07-08 1	5 30
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chioride		213	5 00	128	5 00	298	5 00	1660	5 00	1910	5 00	766	5 00

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**Project Id:** 

Contact: Jim Hollon Project Location: Tatum

#### Certificate of Analysis Summary 295486 Merit Energy, Whiteface, TX Project Name: Susco State

Date Received in Lab: Mon Jan-07-08 11 55 am Report Date: 08-JAN-08

oject Escution. Talant								Project Man	ager:	Brent Barron,	11		
	Lab Id:	295486-0	13	295486-0	14	295486-0	15	295486-0	16	295486-0	17	295486-0	18
Anabusia Daguastad	Field Id:	SB - 2		SB - 2		SB - 2							
Anulysis Requested	Depth:	12-14		14-16		16-18		18-20		20-22		22-24	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Jan-04-08 0	0 00	Jan-04-08 0	0 00	Jan-04-08 (	00 00						
Total Chloride, by EPA 325.3	Extracted:												
total emotive of Director	Analyzed:	Jan-07-08 1	5 30	Jan-07-08 1	5 30	Jan-07-08 1	5 30						
	Units/RL:	mg/kg	RL.	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		723	5.00	808	5 00	723	5 00	808	5 00	723	5 00	978	5 00

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use The interpretations and results expressed throughout this sandytical report represent the best judgment of XEINCO Labo XEINCO Liborations assumes no responsibility and makes no avantary to the end use of the data hierdy presented Our lability is limited to the amount invoiced for this work order unless otherwise agreed to in writing

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Page 6 of 15

ENVIRONMENTAL

Project Id: Contact: Jim Hollon Project Location: Tatum

### Certificate of Analysis Summary 295486 Merit Energy, Whiteface, TX Project Name: Susco State

Date Received in Lab: Mon Jan-07-08 11.55 am Report Date: 08-JAN-08

-								Project Ma	nager:	Brent Barron,	II				
	Lab Id:	295486-0	19	295486-0	20	295486-0	21	295486-0	22	295486-0	23	295486-0	24		
Analysis Paguastad	Field Id:	SB - 2	SB - 2		SB - 2		B - 2 SB - 2			SB - 2		SB - 2		SB - 2	
Analysis Requested	Depth:	24-26	24-26		26-28		28-30		30-32		32-34				
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL			
	Sampled:	Jan-04-08 0	0 00	Jan-04-08 0	0 00	Jan-04-08 0	00 00	Jan-04-08 (	0 00	Jan-04-08 0	0 00	Jan-04-08 0	0 00		
Total Chloride by EPA 325.3	Extracted:														
	Analyzed:	Jan-07-08 1	5 30	Jan-07-08 1	5 30	Jan-07-08 1	6.15	Jan-07-08 I	6 15	Jan-07-08 1	6 1 5	Jan-07-08 1	6 15		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL.	mg/kg	RL	mg/kg	RL	mg/kg	RL		
Chloride		510	5 00	383	5 00	425	5 00	298	5.00	298	5 00	170	5 00		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use. The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories XENCO Laboratories assumes an empensibility and markets no warranty to the end use of the data hereby presented Our hability is limited to the amount in voiced for this work order unless otherwise agreed to in writing

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Ê Brent Barron Odessa Laboratory Director

Page 7 of 15

**Project Id:** 

Contact: Jim Hollon Project Location: Tatum

### Certificate of Analysis Summary 295486 Merit Energy, Whiteface, TX Project Name: Susco State

Date Received in Lab: Mon Jan-07-08 11 55 am Report Date: 08-JAN-08

-								Project Mar	nager:	Brent Barron, II	
	Lab Id:	295486-0	25	295486-0	26	295486-0	27	295486-0	28		
Analysis Paguastad	Field Id:	SB - 2	SB - 2		SB - 2		SB - 2				
Analysis Requested	Depth:	36-38		38-40		40-42		42-44			
	Matrix:	SOIL		SOIL		SOIL		SOIL			
	Sampled:	Jan-04-08 0	0 00								
Total Chloride, by EPA 325.3	Extracted:										
	Analyzed:	Jan-07-08 1	6 1 5	Jan-07-08 1	6 1 5	Jan-07-08 1	6.12	Jan-07-08 1	6 15		
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL.	mg/kg	RL		
Chioride		128	5 00	213	5 00	106	5 00	170	5 00		

This analytical report, and the entire data package it represents, has been made for your exclusive and confidential use The interpretations and results expressed throughout this analytical report represent the best judgment of XENCO Laboratories XENCO Laboratories assume no responsibility and makes no avarianty to the end us of the data hereby presented Our liability is limited to the amount invoiced for this work order unless otherwise agreed to in writing

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H Brent Barron

Odessa Laboratory Director

Page 8 of 15



- X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to effect the recovery of the spike concentration. This condition could also effect the relative percent difference in the MS/MSD.
- **B** A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.
- **D** The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.
- E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.
- **F** RPD exceeded lab control limits.
- J The target analyte was positively identified below the MQL(PQL) and above the SQL(MDL).
- U Analyte was not detected.
- L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.
- **H** The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

\* Outside XENCO'S scope of NELAC Accreditation

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11381 Meadowglen Lane Suite L Houston, Tx 77082-2647	(281) 589-0692	(281) 589-0695
9701 Harry Hines Blvd, Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, Suite 104, San Antonio, TX 78238	(210) 509-3334	(201) 509-3335
2505 N Falkenburg Rd, Tampa, FL 33619	(813) 620-2000	(813) 620-2033
5757 NW 158th St, Miami Lakes, FL 33014	(305) 823-8500	(305) 823-8555
6017 Financial Dr., Norcross, GA 30071	(770) 449-8800	(770) 449-5477



**Blank Spike Recovery** 



.

### Project Name: Susco State

Work Order #: 295486		Project ID:											
Lab Batch #: 711678	Si Dote Pres	Sample: 711678-1-BKS Matrix: Solid											
Reporting Units: mg/kg	Bate I Te	tch #: 1	BLANK /	BLANK SPI	KE REC	COVERYS	STUDY						
Total Chloride by EPA 325.3 Analytes		Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags						
Chloride		ND	100	91.5	92	75-125							
Lab Batch #: 711680	Sa	mple: 711680-	1-BKS	Matr	ix: Solid								
Date Analyzed: 01/07/2008	Date Pre	pared: 01/07/20	08	Analy	st: IRO								
Reporting Units: mg/kg	Ba	tch #: 1	BLANK /	BLANK SPI	KE REC	COVERY S	STUDY						
Total Chloride by EPA 325.3 Analytes		Blank Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Control Limits %R	Flags						
Chloride		ND	100	95 7	96	75-125							

Blank Spike Recovery [D] = 100\*[C]/[B] All results are based on MDL and validated for QC purposes.

2 CEN CO	For	rm 3	- MS / N	ISD ]	Reco	veries		P		all and L	ADAH
Laboratorics	Proje	ct Nan	1e: Susco S	tate						inela	IG:
Work Order #: 295486						Project II	D:				
Lab Batch ID: 711678	QC- Sample ID:	295486	-009 S	Ba	tch #:	l Matri	x: Soil				
Date Analyzed: 01/07/2008	Date Prepared:	01/07/2	008	An	alyst:	IRO					
Reporting Units: mg/kg	[	M	ATRIX SPIK	E/MAT	RIX SPI	KE DUPLICA	TE RECO	OVERY !	STUDY		]
Total Chloride by EPA 325.3	Parent Sample	Spike	Spiked Sample Result	Spiked Sample	Spike	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	Added [B]	[C]	%к [D]	Added [E]	Result [F]	%к [G]	%	%K	%RPD	
Chlonde	298	1000	1280	98	1000	1300	100	2	75-125	30	
Lab Batch ID: 711680	QC- Sample ID:	295486	-027 S	Ba	tch #:	1 Matri:	x: Soil				
Date Analyzed: 01/07/2008	Date Prepared:	01/07/2	008	An	alyst:	IRO					
Reporting Units: mg/kg		M	ATRIX SPIK	E/MAT	RIX SPI	KE DUPLICA	TE RECO	OVERY S	STUDY		
Total Chloride by EPA 325.3 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Сыюлае	106	1000	1230	112	1000	1230	112	0	75-125	30	

-

.

Matnx Spike Duplicate Percent Recovery [G] = 100\*(F-A)/E

 Matrix Spike Percent Recovery
 [D] = 100\*(C-A/)B
 Matrix Spike Duplic

 Relative Percent Difference
 RPD = 200\*(D-G)/(D+G)
 ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not ApplicableN = Sec Narrative, EQL = Estimated Quantitation Limit

'Page 11 of 15

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	Project Manager.	Jam Hollon															Pr	ojer	t Na	we.	Su	500	Sta	ite	<u></u>							
	Company Name	Merit Energy	Company															P	roje	ct #:												
	Company Address:	P.O. Box 300	<u> </u>															Proj	ect i	Loc:	Tat	um									_	
	Crty/State/Zip	Whiteface, T	exas 79379							_						-			٩	0#:	_											
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	City/Stata/Zip.	Whitelace, Texas 7	9379												_				РО	#:											
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All \$ (lab mas only)	FIE	LD CODE	Joginning Depth	Ending Depth	Date Sampled	Time Sampled	No of Containens	8	HNCy	Ŧ	H_SO.	NeOH	Ne <sub>3</sub> S <sub>2</sub> O <sub>3</sub>	NG10 28-403		W-Gunden S-Man	Printer Posters Specify Other	TPH: 416 1 B01GM 1005 10	Cathorus (C.a., Mig., Na, K)	Amons (CI, SOM, CUU MCUU) BAR / ESP / CEC	Metatic As Ag Bin Od Cr Pb Hg (	Volations	Semivolatiles	BTEX 8021845030 or BTEX 826	20	NORM	Chloridea	Specific Conductance		RUSH TAT Products 24.	Standard TAT
51		SB - 2	24	26	1/4/2008		1	t	1-	t	T	T	H	x	Ť	s	-	1		T	ſ	T.	Π	h	Ť	Ŧ	x	T	T	Γ	X
020		SB - 2	26	28	1/4/2008		1	Γ	T		Γ			x	Τ	S				Т	Γ	Γ		$\Box$	Τ	I	x	Τ	$\Box$	Γ	X
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23		SB - 2	32	34	1/4/2008		1	L						x		S						L					x		┶	L	x
024		SB - 2	34	36	1/4/2008		1	L				L	Ц	x		s	_		_		L			Ц	$\bot$		×			L	X
125		SB - 2	36	38	1/4/2008		1	L						x	+	S				_				Ц	$\perp$	4	×	⊥	┶	⊢	×
i Zb		SB - 2	38	40	1/4/2008		1	L				L	Ц	x	+	S			_	+			L		4	4	<u>×</u>	+	╇	┡	×
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#### Environmental Lab of Texas Variance/ Corrective Action Report- Sample Log-In

Client. Date/ Time	Marit Energy Conyrany
Lab ID #	215:484
Initials	- griazy

#### Sample Receipt Checklist

				c	lient Initials
#1	Temperature of container/ cooler?	(Yes)	No	19.0 °C	
#2	Shipping container in good condition?	(Yes)	No		
#3	Custody Seals intact on shipping container/ cooler?	Yes	No	Not Present	
#4	Custody Seals intact on sample bottles/ container?	Yes	No	Not Present,	
#5	Chain of Custody present?	Tes	No		
#6	Sample instructions complete of Chain of Custody?	Yes	No		
#7	Chain of Custody signed when relinquished/ received?	Yes	No		
#8	Chain of Custody agrees with sample label(s)?	(Tes)	Nq	ID written on Cont / Lid	>
#9	Container label(s) legible and intact?	(Yes)	No	Not Applicable	
#10	Sample matrix/ properties agree with Chain of Custody?	Tes	No		
#11	Containers supplied by ELOT?	res	No		
#12	Samples in proper container/ bottle?	(Yes)	No	See Below	
#13	Samples properly preserved?	Yes	No	See Below	
#14	Sample bottles intact?	Yes	No		
#15	Preservations documented on Chain of Custody?	Yes	No		
#16	Containers documented on Chain of Custody?	Yes	No		
#17	Sufficient sample amount for indicated test(s)?	Yes	No	See Below	
#18	All samples received within sufficient hold time?	Yes	No	See Below	
#19	Subcontract of sample(s)?	Yes	No	(Not Applicable)	
#20	VOC samples have zero headspace?	Yes	No	Not Applicable	

Variance Documentation \_\_\_\_\_

Date/ Time

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Contacted by

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\_\_\_\_\_

\_\_\_\_

Contact

Regarding

Corrective Action Taken

Check all that Apply

See attached e-mail/ fax Client understands and would like to proceed with analysis

Cooling process had begun shortly after sampling event

APPENDIX C

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Soil Boring Logs

Boring ID: SB-1 Project: Susco State Lease Location: 24 mi. NW of Tatum NM Boring Date: 1/4/2008 Datum: Ground surface

Logged By: Jim Hollon Consulting Installed By: Straub Corporation Bore Diameter: 5" Well Diameter: N/A Screen Size: N/A

Depth	Boring	Soil	Profile		Sarr	ples	Co	mpletion Data
Feet	Method	Description	Strata	Depth (BGS)	ID	Туре		
GS 1								
2		Open Excavation						
3				3'				
4								Anton and have
6								and the second s
7		Cased Hole,						12, 19
9		Backfill						
10								
11 12				13'				43' Bentonite
13							Chloride	hole plug
14							Concentration	
16		Very hard & dense,					(119/kg)	
17		cemented			16-18'	С	117	
18 19		sandstone (caliche)						Charles and the second s
20							1	
21				22'	21-22	C	1 240	An Contractor and Anna and Ann
22		Tan silty sand w/			21-23	<u> </u>	1,340	
24		small gravel		001				
25 26	≥	-		26'			4	
20	ota	Orange silty sand			26-28'	С	893	
28	Ř	w/ small gravel					1	and a second s
29 30	Ai	W/ Small graver	-	31'				
31							1	
32		Gray clay			31-33	<u> </u>	681	
34				35'				
35					35-36'	C	425	
36 37					36-37	C C	170 213	A CALL
38		Red Clay, dense,						and the second
39 40		firm						
40							1	
42			and an O	43'	41-43'	<u> </u>	128	
43 44		End of expl	oration @	43 <sup>.</sup>				
45								
46 47								
48								
49 50								
50 51								
52								
53 54								
55								
56								
57 58								
59								
60								

Boring ID: SB-2 Project. Susco State Lease Location: 24 mi. NW of Tatum NM Boring Date: 1/4/2008 Datum: Ground surface

.

Logged By: Jim Hollon Consulting Installed By: Straub Corporation Bore Diameter: 5" Well Diameter: N/A Screen Size: N/A

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Depth	Boring	Soil	Profile		San	ples	Co	mpletion [	Data
Feet	Method	Description	Strata	Depth (BGS)	ID	Туре			
GS								_	
1 2 3 4		Caliche Backfill		4			Chloride Concentration (mg/kg)		
5 6		Tan silty,			4-6'	С	298		
8		sandstone (caliche)		a	6-8'	с	1,660		
10					8-10'	С	1,910		
11 12					10-12'	С	766		44' Bentonite
13 14		Very hard & dense			12-14'	с	723		nole plug
15 16		cemented			14-16'	С	808		
17 18		sandstone (caliche)			16-18'	с	723		
19 20	~				18-20'	с	808		
21 22	otar			22	20-22'	с	723		۲
23 24	Nir R	Tan sitly sand w/ sm Red silty sand		23 24	22-24'	С	978		
25 26	4				24-26'	С	510		
、27 28		Orange sand			26-28'	С	383		
29 30				29	28-30'	С	425		
31 32		Gray clayey sand			30-32'	С	298		
33 34		Red clay w/ caliche		33	32-34'	С	298		
35 36		Grav clav			34-36'	С	170		
37 38				37	36-38'	 C	128		
39 40		` 			38-40'	C C	213		
41		Red Clay, dense,			40 42		100		
42				44	40-42	0	100		
44 45		End of expl	oration @	44'	42-44		170	Mar Della Carl	
47 48 49 50 51 52 53 54 55 56			·						
57 58 59 60									

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# APPENDIX D

# Regulatory Report

State of New Mexico Energy Minerals and Natural Resources

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

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

			Rele	ease Notific	ation	and Co	orrective	e Act	ion			
					OPER	RATOR			🛛 Initia	al Report		Final Report
Name of Co	ompany: N	Aerit Energy	Compan	y 2255		Contact: D	wain Wall	6-1758	2			
Facility Na	me: Susco	State	IN.IVI., 00	233	h	Facility Typ	e: Product	ion Bat	tery			
				Minaral O	where	<u> </u>			Lassa		00-25	25554
Surface Ow	ner: SLU									NO 71115	00-25	23334
Unit Letter	Section	Townshin	Range	LOCA Feet from the	North/	N OF KEI	LEASE Feet from 1	he E	ast/West Line	County		
	19	9S	33E	660'	South	South Enite	660'	E	last	Lea		
		Lat	itude_ <u>33</u>	.51298		Longitude	<u>-103.60</u>	<u>086</u>	,			
er				NAT	URE	OF REL	EASE		1			
Type of Rele	ase: Production	ced fluids				Volume of	Release: un	known	Volume I Date and	Recovered:	COVERN	··
Source of Re	lease. Store	age taiks				Unknown		frence.	6/25/07			•
Was Immedi	ate Notice (	Given?	Yes 🗵	No Not Rec	quired	If YES, To	Whom?					
By Whom?						Date and H	lour:			· , · ·		
Was a Water	course Read	ched?	Yes 🛛	No		If YES, Vo	olume Impac	ting the	Watercourse.			
If a Watercon N/A	urse was Im	pacted, Descr	ibe Fully.	*								
Describe Cau Integrity fail from the exc	use of Problure of oil sto avation and	em and Reme ock tanks. Th submitted to	dial Actio e tanks ha Environm	n Taken.* ve been removed a ental Labs of Texa	and 425 is, in Oc	cubic yards lessa, Texas f	of affected so for analysis.	oil remo	ved from the sit	e. Soil sam	ples we	ere collected
Describe Are The suspect t	ea Affected at anks and af	and Cleanup / fected soils ha	Action Tal ave been r	cen.* emoved, the current	nt excav	ation measur	res 15' x 30'	x 10' de	eep, and soil san	nples have b	een co	llected.
I hereby cert regulations a public health should their or the enviro federal, state	ify that the i ll operators or the envir operations h nment. In a , or local (a)	information gi are required t ronment. The ave failed to a ddition, NMC ws and/or regu	iven above o report an acceptane adequately OCD accept alations.	e is true and compl nd/or file certain re- ce of a C-141 report investigate and re- ptance of a C-141 re-	lete to the elease not rt by the emediate report de	ne best of my otifications a e NMOCD m e contaminations of the second	knowledge and perform c narked as "Fini- ion that pose we the operato	and unde orrective nal Repo a threat or of resp	erstand that purs e actions for rel ort" does not rel to ground wate ponsibility for c	suant to NM eases which ieve the ope r, surface way ompliance w	OCD 1 may e rator o ater, hu with an	rules and ndanger f liability iman health y other
		$I \Omega$					<u>OIL C</u>	ONSE	ERVATION	DIVISIO	<u>DN</u>	
Signature: Printed Nam	e:/Jim Holl	on				Approved by	District Sup	ervisor:	¥			
Title: Consu	iltant					Approval Da	te:		Expiration	Date:		<u> </u>
E-mail Addr	ess: Jim@J	HCon.net		Dhamma 422 621 6	769	Conditions of	f Approval:			Attached		
* Attach Addi	tional Shee	ets If Necess	ary	none: 432-031-3	708		Þ	Chr	is Will ver sheet	iàms c PC	рі 11.	ped 24/08
										R	)#	763