# Basin Environmental Service Technologies, LLC

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### 2RP-188

# SOIL INVESTIGATION SUMMARY AND SITE CLOSURE PROPOSAL

Fairway Resources Operating, LLC (241598)

South Red Lake II Unit #43 API # 30-015-23913

**Eddy County, New Mexico** 

UNIT "K" (NE/SW), Section 36, Township 17S, Range 27E

Latitude 32.7877800° North, Longitude 104.2350200° West

Prepared For:

Fairway Resources Operating, LLC 538 Silicon Drive, Suite 101 Southlake, Texas 76092

Prepared By:
Basin Environmental Service Technologies, LLC

August 2008

Curt D. Stanley

Basin Environmental Service Technologies, LLC

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### INTRODUCTION AND BACKGROUND INFORMATION

Basin Environmental Service Technologies, LLC (Basin), on behalf of Fairway Resources Operating, LLC (Fairway), has prepared this Soil Investigation Summary and Site Closure Proposal for the release site known as South Red Lake II Unit #43 (API # 30-015-23913). The legal description of the release site is NE¼ SW¼ (Unit Letter K), Section 36, Township 17 South, Range 27 East in Eddy County, New Mexico. The property is owned by the State of New Mexico (SLO). The release site GPS coordinates are 32.7877800° North and 104.2350200° West. Please reference Figure 1 for a Site Location Map and Figure 2 for a Site Map. The Release Notification and Corrective Action is included as Appendix B.

On June 16, 2008, a leak was discovered in a steel nipple at the South Red Lake II Unit #43 wellhead flowline connection. The Release Notification and Corrective Action (Form C-141) indicates 25 barrels (BBL) of a mixture of produced water and crude oil were released as a result of the nipple failure. The C-141 indicates 20 BBL of the mixture of produced water and crude oil were recovered during initial response operations using a vacuum truck. The release net loss was reported at 5 BBL of the mixture. The area affected by the release measures approximately 20 feet in width and 270 feet in length and included portion of the well pad and the adjacent lease road.

### NMOCD SITE CLASSIFICATION

As described in Section 3A of the Guidelines for Remediation of Leaks, Spills and Releases (NMOCD, 1993), the following characteristics are used to determine the site soil ranking criteria, which influences the site-specific cleanup standards applicable for this site. The depth to groundwater is between 50 - 100 feet from the base of the impacted zone, resulting in ten (10) points being assigned to the site as a result of this criterion.

The water well database, maintained by the New Mexico Office of the State Engineer (NMOSE), was accessed to determine the location and type of nearby registered water wells in the area. The database indicated there are no water wells less than 1,000 feet from the release, resulting in zero (0) points being assigned to this site as a result of this criterion.

There is no surface water body located within 1,000 feet of the site. Based on the NMOCD ranking system zero (0) points will be assigned to the site as a result of the criterion. The Guidelines indicate that the South Red Lake II Unit #43 release site has a ranking score of ten (10). Based on this score, the soil remediation levels for a site with a ranking score of ten (10) points are as follows:

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

The NMOCD chloride clean up level concentrations are site specific and will be 500 mg/Kg per the NMOCD – Artesia District office.

### SUMMARY OF RECENT FIELD ACTIVITIES

On June 19, 2008, a backhoe was mobilized to the release site to assess the extent of the impacted soil and remove highly saturated soil from the site. Approximately thirty (30) cubic yards (cy) of crude oil and produced water saturated soil was scraped from the flowpath to a depth of approximately eight (8) inches below ground surface (bgs) and transported to an NMOCD approved disposal site.

Following the removal of the saturated soil, three (3) investigation trenches (T-1, T-2 and T-3) were excavated along the release flowpath to assess the vertical extent of the release. Please reference Figure 2 (Site Map) for locations of the investigation trenches.

Investigation Trench T-1 was located on the well pad and was excavated to a depth of 2.5 feet bgs. A soil sample (T-1 @ 2.5') was collected from the floor of the trench and submitted to the laboratory for determination of the benzene, toluene, ethyl-benzene and xylene (BTEX) concentration, total petroleum hydrocarbon (TPH) concentration and chloride concentration by methods 8021b, 8015M, and EPA 300, respectively. The analytical results indicated benzene and BTEX concentrations were below the laboratory method detection limits (MDL) of 0.0012 mg/Kg and 0.0024 mg/Kg, respectively. The TPH concentration of soil sample T-1 @ 2.5' was 183.1 mg/Kg and the chloride concentration was 7,650 mg/Kg. Following the collection of the soil sample the investigation trench was backfilled. A summary of the laboratory results is provided as Table 1, Concentrations of Benzene, BTEX, TPH and Chloride in Soil. Laboratory reports are provided as Appendix A.

Investigation Trench T-2 was located off the well pad on the caliche road adjacent to the well pad and was excavated to a depth of two (2) feet bgs. A soil sample (T-2 @ 2') was collected from the floor of the trench and submitted to the laboratory and analyzed for concentrations of benzene, BTEX, TPH and chloride. The analytical results indicated benzene and BTEX concentrations were below the MDL of 0.0012 mg/Kg and 0.0024 mg/Kg, respectively. The TPH concentration of soil sample T-2 @ 2' was below the MDL of 17.7 mg/Kg and chloride concentration was 215 mg/Kg. Following the collection of the soil sample the investigation trench was backfilled.

Investigation Trench T-3 was located on the caliche road and was excavated to a depth of four (4) feet bgs. A soil sample (T-3 @ 4') was collected from the floor of the trench and submitted to the laboratory and analyzed for concentrations of benzene, BTEX, TPH and chloride. The analytical results indicated benzene and BTEX concentrations were below the MDL of 0.0006 mg/Kg and 0.0012 mg/Kg, respectively. The TPH concentration of soil sample T-2 @ 2' was below the MDL of 18 mg/Kg and the chloride concentration was 639 mg/Kg. Following the collection of the soil sample the investigation trench was backfilled.

### **CONCLUSIONS**

The analytical results of the submitted soil samples indicated benzene concentrations were less than the MDL and all BTEX concentrations are less than the NMOCD regulatory clean up levels.

The analytical results further indicate TPH concentrations are less than the NMOCD regulatory clean up level as described in the NMOCD Site Classification of this report. The analytical results indicated chloride concentrations were above the NMOCD regulatory clean up level of 500 mg/Kg in soil samples T-1@ 2.5' and T-3 @ 4'.

The analytical results indicate the contaminant of concern (COC) for this release site appears to be chloride, which has affected the well pad west of the release point and to a minor extent, areas along the flowpath.

### PROPOSED CLOSURE STRATEGY

Fairway proposes the following remedial activities to advance the release site known as South Red Lake II Unit #43 toward an NMOCD approved site closure:

• Excavation of impacted soil from three feet south of the wellhead (to maintain the integrity of the wellhead), west and east along the release flowpath to the edge of the caliche road to a maximum deep of six feet bgs. Should the excavation of impacted soil exceed six (6) feet in depth, Fairway proposes to collect soil samples from the floor of the excavation and submit the soil samples to the laboratory for determination of benzene, BTEX, TPH and chloride concentrations. Following receipt and evaluation of the analytical results, should the analytical results indicate COC concentrations on the floor of the excavation exceed the NMOCD regulatory standards, as outlined in the NMOCD site classification, Fairway will request NMOCD approval of a risk-based closure strategy.

On NMOCD approval, Fairway will place a twenty (20) mil polyethylene liner, manufactured for this purpose, on the floor of the excavation. A six (6) inch layer of non-impacted sand will be placed above and below the liner to protect the integrity of the liner. The lower sand layer will be mounded to encourage moisture to move toward the edges of the liner. This engineering control is designed to channel moisture to the edge of the liner and away from the impacted soil beneath the liner, reducing the potential for leaching of contaminants to the groundwater.

- Soil impacted along other areas of the release flowpath will be scraped and/or excavated and stockpiled on site. Confirmation soil samples will be collected and submitted to the laboratory for determination of concentrations of benzene, BTEX, TPH and chloride.
- When confirmation soil sample results collected from the remediated areas indicate all benzene, BTEX, TPH and chloride concentrations are within the NMOCD regulatory guidelines, with the exception of the potential risk-based closure strategy adjacent to the wellhead; Fairway will request permission to backfill the excavation(s). The impacted excavated soil stockpiles will be transported to an NMOCD approved landfill and locally purchased backfill material will be transported to the release site. The backfilled excavation will be contoured to fit the surrounding topography. If vegetated areas have been affected by the release or the proposed remediation activities, the affected areas will be reseeded.

### REPORTING

Following NMOCD approval of this Work Plan and upon the completion of the remediation activities detailed in this Work Plan, Fairway will submit a Site Closure Request to the NMOCD. The Site Closure Request will document the results of recent remediation activities and will present laboratory confirmation soil sample results as evidence for the Site Closure Request.

### LIMITATIONS

Basin Environmental Service Technologies, LLC has prepared this Soil Investigation Summary and Site Closure Proposal to the best of its ability. No other warranty, expressed or implied, is made or intended.

Basin Environmental Service Technologies, LLC has examined and relied upon documents referenced in the report and has relied on oral statements made by certain individuals. Basin Environmental Service Technologies, LLC has not conducted an independent examination of the facts contained in referenced materials and statements. We have presumed the genuineness of the documents and that the information provided in documents or statements is true and accurate. Basin Environmental Service Technologies, LLC has prepared this report, in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Basin Environmental Service Technologies, LLC also notes that the facts and conditions referenced in this report may change over time and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Fairway Resources Operating, LLC. The information contained in this report, including all exhibits and attachments, may not be used by any other party without the express consent of Basin Environmental Service Technologies, LLC and/or Fairway Resources Operating, LLC.

### **DISTRIBUTION:**

Copy 1: Sherry Bonham

New Mexico Oil Conservation Division

District 2

1301 W. Grand Avenue Artesia, New Mexico 88210

Copy 2: Kenneth Pearce

Fairway Resources Operating, LLC.

538 Silicon Drive,

Suite 101

Southlake, Texas 76092

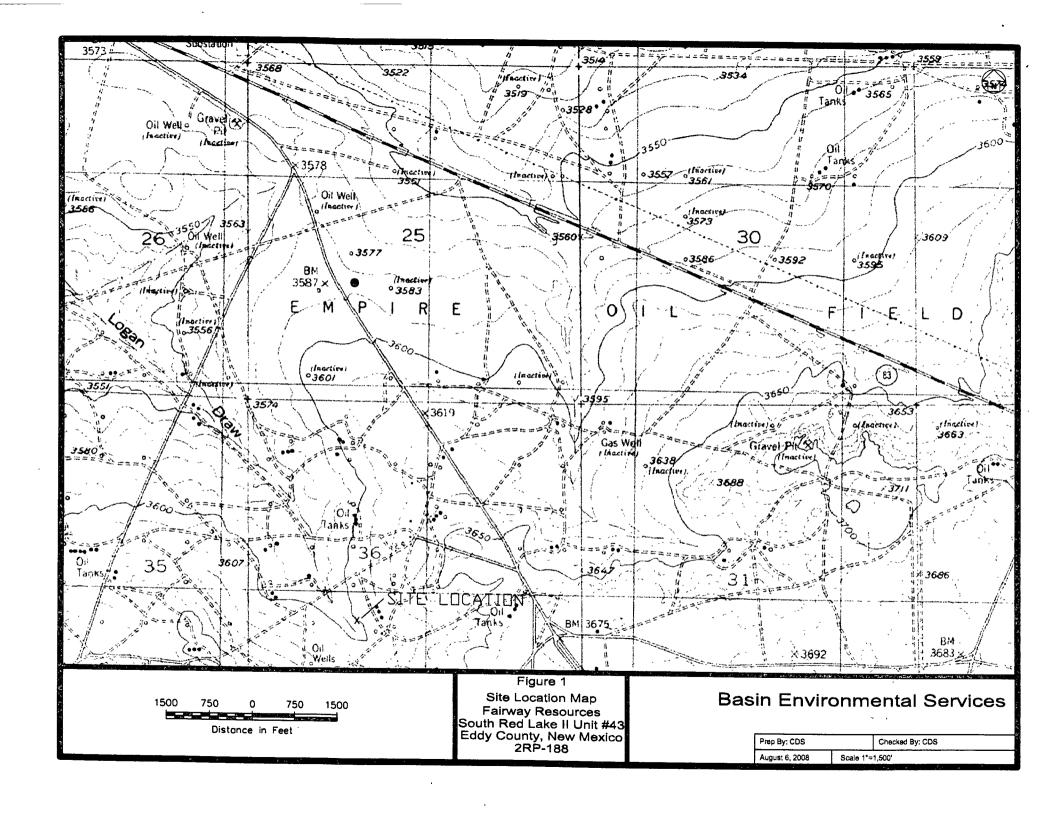
Copy 3: Curt Stanley

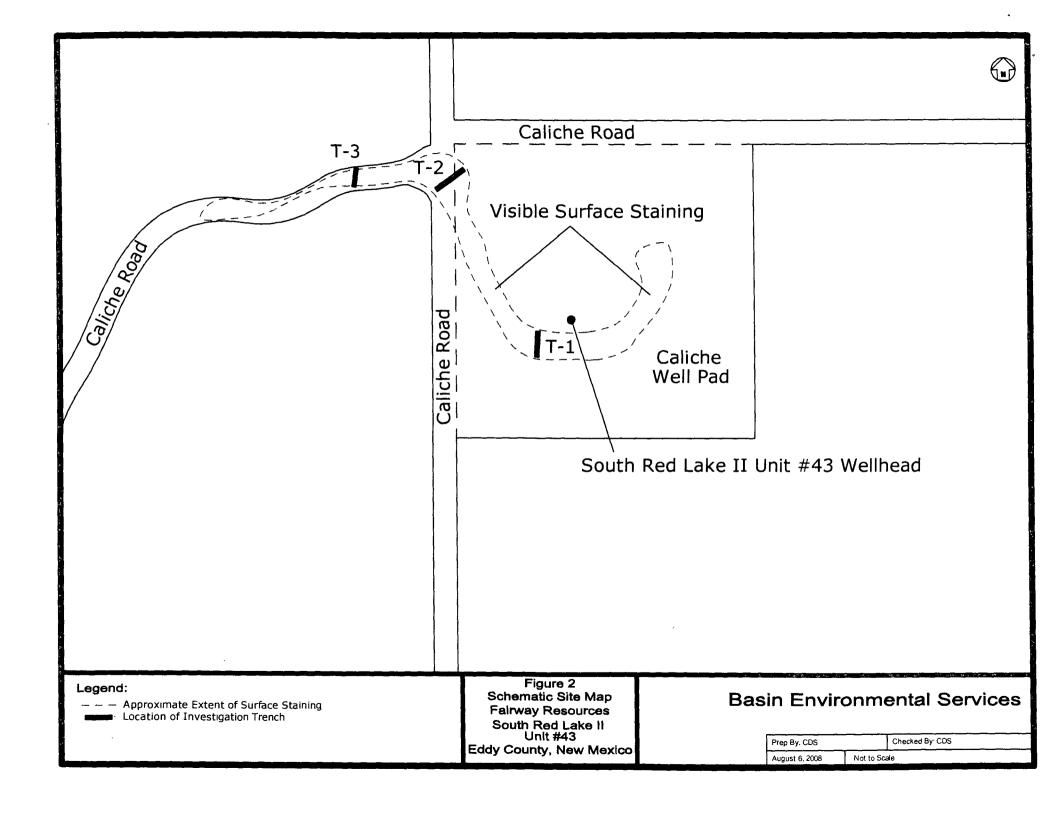
Basin Environmental Service Technologies, LLC

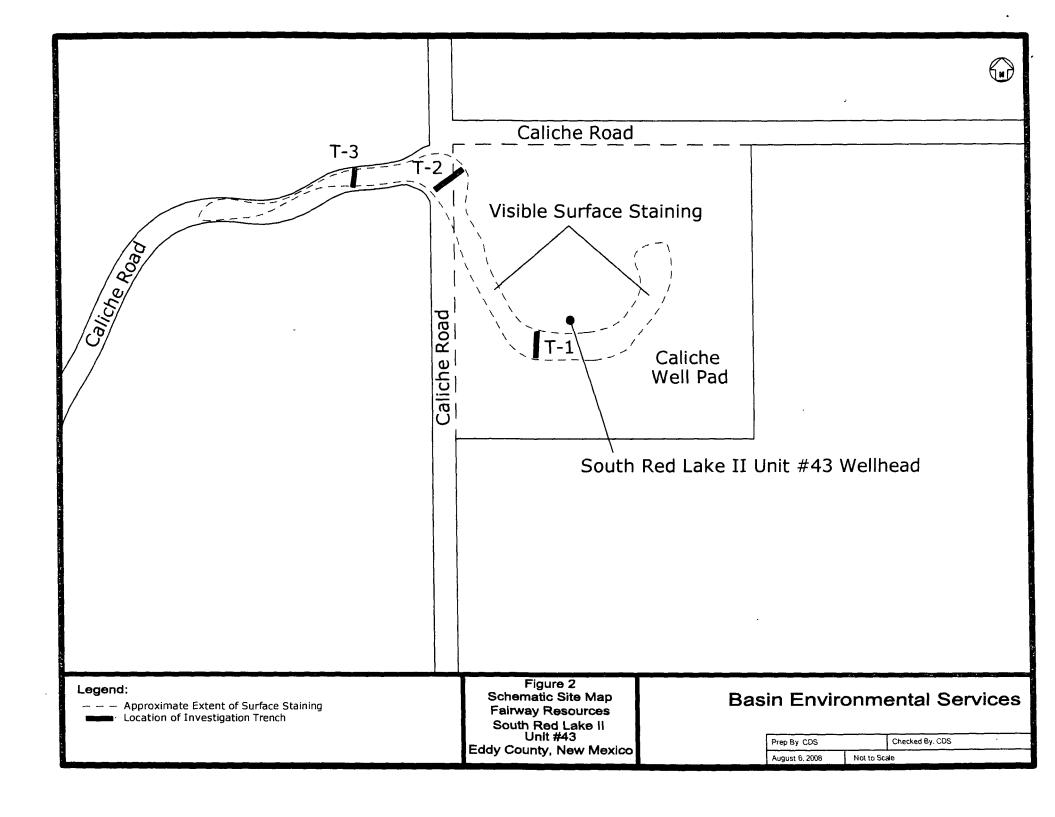
P.O. Box 301

Lovington, New Mexico 88220

Figures







**Tables** 

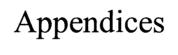
### Table 1

# CONCENTRATIONS of BTEX, TPH and CHLORIDE IN SOIL Fairway Resources - South Red Lake II Unit #43 EDDY COUNTY, NEW MEXICO

All measurments recorded in ma/Ka

		1				Methods: EPA SW 846-8021B, 5030				Methods: EPA SW 846-8015M				EPA 300		
SAMPLE DATE	SAMPLE LOCATION	SAMPLE DEPTH	SAMPLE TYPE	SOIL STATUS	BENZENE (mg/Kg)	TOLUENE mg/Kg)	I BENZENE I	m,p- XYLENE (mg/Kg)	o-XYLENE (mg/Kg)	TOTAL XYLENE (mg/Kg)	TOTAL BTEX (mg/Kg)	GRO C <sub>e</sub> -C <sub>12</sub> (mg/Kg)	DRO C <sub>12</sub> -C <sub>28</sub> · (mg/Kg)	ORO C <sub>26</sub> -C <sub>35</sub> (mg/Kg)	TOTAL TPH C <sub>6</sub> -C <sub>36</sub> (mg/Kg)	Chloride (mg/Kg)
06/19/08	T-1 @ 25'	2.5 feet bgs	Soil	In-Situ	<0.0012	<0 0024	<0 0012	<0 0024	<0.0012	<0 0024	<0 0024	20 3	133	29 8	183 1	7,650
06/19/08	T-2 @ 2'	2 feet bgs	Soil	In-Situ	<0 0012	<0 0024	<0 0012	<0 0024	<0 0012	<0 0024	<0 0024	<17 7	<17 7	<17.7	<177	215
06/19/08	T-3 @ 4'	4 feet bgs	Soil	In-Situ	<0 0060	<0 0120	<0 0060	<0 0120	<0 0060	<0 0120	<0 0120	<18.0	<18 0	<18.0	<180	639
1.534.50.24745.	はからなければない。	J. Da. Ell' 13 (2)	行からなかっからん	and the contract	Authorite.	1773 W. M. S.	Bedon Spiller	就称"你们心际	会结例是多种	STATE OF THE SECOND	統合物域に公司時	一个学校学家	WATER SERVICE	位是"2000年"。	是是这种的"XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	となってい は
	NMOCD REGULATORY	STANDARD			10						50				1,000	500

BOLD indicates concentration exceeding NMOCD regulatory standards



Appendix A Laboratory Reports

# **Analytical Report 306371**

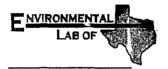
for

# **Basin Enivronmental Services**

**Project Manager: Curt Stanley** 

South Red Lake II Unit # 43
Same

27-JUN-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

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27-JUN-08

Project Manager: Curt Stanley Basin Enivronmental Services

P.O. Box 301

Lovington, NM 88260

Reference: XENCO Report No: 306371

South Red Lake II Unit # 43 Project Address: Artesia, NM

### **Curt Stanley:**

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 306371. 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. 306371 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 306371



# Basin Enivronmental Services, Lovington, NM

South Red Lake II Unit # 43

Sample Id	Matrix	<b>Date Collected</b>	Sample Depth	Lab Sample Id
T-1 @ 2.5	S	Jun-19-08 15:00		306371-001
T-2 @ 2'	S	Jun-19-08 15:10		306371-002
T-3 @ 4'	S	Jun-19-08 15:20		306371-003



### Certificate of Analysis Summary 306371

### Basin Enivronmental Services, Lovington, NM

Project Name: South Red Lake II Unit # 43

Contact: Curt Stanley

Date Received in Lab: Mon Jun-23-08 08:35 am

Report Date: 27-JUN-08

Project Location: Artesia, NM

Project Id: Same

ojeci Location: Attesia, 1414					Project Manager:	Brent Barron, II	
	Lab Id:	306371-001	306371-002	306371-003			
Analysis Dannard	Field Id:	T-1 @ 2 5	T-2 @ 2'	T-3 @ 4'			
Analysis Requested	Depth:					-	İ
	Matrix:	SOIL	SOIL	SOIL	,		
	Sampled:	Jun-19-08 15.00	Jun-19-08 15:10	Jun-19-08 15:20			
BTEX by EPA 8021B	Extracted:	Jun-23-08 15:00	Jun-23-08 15 00	Jun-24-08 12.00			
DILI by DIA 0021B	Analyzed:	Jun-24-08 00:08	Jun-24-08 00:32	Jun-24-08 16:15			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Benzene		ND 0 0012	ND 0.0012	ND 0 0060			
Toluene		ND 0.0024	ND 0 0024	ND 0.0120			
Ethylbenzene		ND 0 0012	ND 0 0012	ND 0 0060			
m.p-Xylenes		ND 0 0024	ND 0 0024	ND 0.0120			
o-Xylene		ND 0.0012	ND 0.0012	ND 0 0060			
Total Xylenes		ND	ND	ND			
Total BTEX		ND	ND	ND	· ·		
Inorganic Anions by EPA 300	Extracted:						
anoi game rations by 121 71 500	Analyzed:	Jun-24-08 10:52	Jun-24-08 10·52	Jun-24-08 10:52			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			
Chloride		7650 238	215 590	639 24.0			
Percent Moisture	Extracted:						
1 of tolk Moistai C	Analyzed:	Jun-23-08 17 00	Jun-23-08 17:00	Jun-23-08 17:00			
	Units/RL:	% RL	% RL	% RL			
Percent Moisture		159	15.3	167			
TPH by SW8015 Mod	Extracted:	Jun-24-08 08·48	Jun-24-08 08:48	Jun-24-08 08·48			
II II by 5 Woold Wood	Analyzed:	Jun-26-08 14:10	Jun-26-08 14:48	Jun-26-08 15·35			
	Units/RL:	mg/kg RL	mg/kg RL	mg/kg RL			_
C6-C12 Gasoline Range Hydrocarbons		20.3 17.8	ND 17.7	ND 180			
C12-C28 Diesel Range Hydrocarbons		133 178	ND 17.7	ND 180			
C28-C35 Oil Range Hydrocarbons		298 178	ND 177	ND 180			
Total TPH		183 1	ND	ND			

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 no responsibility and makes no warranty to the end use 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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Odessa Laboratory Director

# CENCO Laboratoria

# Flagging Criteria

- 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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Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Project ID: Same

Lab Batch #: 726318

Sample: 306371-001 / SMP

Batch:

Matrix: Soil

Units: mg/kg SURROGATE RECOVERY STUDY BTEX by EPA 8021B Amount True Control Found Recovery Limits Flags Amount %R [B] %R [A] [D] Analytes 1,4-Difluorobenzene 0.0336 112 80-120 0.03004-Bromofluorobenzene 0.0319 0.0300 106 80-120

Lab Batch #: 726318

Sample: 306371-002 / SMP

Batch:

1

Matrix: Soil

Units: mg/kg SURROGATE RECOVERY STUDY Amount True Control BTEX by EPA 8021B Found Limits Flags Amount Recovery %R %R [A] [B] [D] Analytes 1,4-Difluorobenzene 0.0332 0.0300 111 80-120 4-Bromofluorobenzene 0.0309 0.0300 103 80-120

Lab Batch #: 726318

Sample: 511084-1-BKS / BKS

Batch:

Matrix: Solid 1

Units: mg/kg	SU	RROGATE R	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes		1-1	[D]	,,,,,	
1,4-Difluorobenzene	0.0306	0.0300	102	80-120	
4-Bromofluorobenzene	0.0355	0.0300	118	80-120	

Lab Batch #: 726318

Sample: 511084-1-BLK / BLK

Batch: 1

Matrix: Solid

Units: mg/kg	SU	SURROGATE RECOVERY STUDY						
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes		'	[D]					
1,4-Difluorobenzene	0.0343	0.0300	114	80-120				
4-Bromofluorobenzene	0.0316	0.0300	105	80-120				

Lab Batch #: 726318

Sample: 511084-1-BSD / BSD

Batch: 1

Matrix: Solid

Units: mg/kg	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]	<u> </u>				
1,4-Difluorobenzene	0 0269	0.0300	90	80-120				
4-Bromofluorobenzene	0.0320	0.0300	107	80-120				

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

Surrogate Recovery [D] = 100 \* A / B

All results are based on MDL and validated for QC purposes.

<sup>\*\*\*</sup> Poor recoveries due to dilution





Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Project ID: Same

Lab Batch #: 726328

Sample: 306371-003 / SMP

Batch:

Matrix: Soil

Units: mg/kg	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes			[D]		*			
1,4-Dıfluorobenzene	0.0347	0.0300	116	80-120				
4-Bromofluorobenzene	0.0307	0.0300	102	80-120				

Lab Batch #: 726328

Sample: 511084-1-BKS / BKS

Batch: 1

Matrix: Solid

Units: mg/kg		RROGATE R	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes	[ [,-]	121	[D]	, ,,,	
1,4-Dıfluorobenzene	0.0270	0.0300	90	80-120	
4-Bromofluorobenzene	0.0323	0.0300	108	80-120	

Lab Batch #: 726328

Sample: 511084-1-BLK / BLK

Batch: 1

Matrix: Solid.

BTEX by EPA 8021B  Analytes  4-Difluorobenzene	SURROGATE RECOVERY STUDY							
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags			
Analytes	}	'-'	[D]					
1,4-Dıfluorobenzene	0.0349	0 0300	116	80-120				
4-Bromofluorobenzene	0.0299	0.0300	100	80-120				

Lab Batch #: 726328

Sample: 511084-1-BSD / BSD

Batch: 1

Matrix: Solid

Units: mg/kg	SU	RROGATE R	ECOVERY	STUDY	
BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			<b>[D</b> ]	1	
1,4-Dıfluorobenzene	0 0282	0.0300	94	80-120	
4-Bromofluorobenzene	0.0318	0.0300	106	80-120	

Lab Batch #: 726418

Sample: 306327-001 S / MS

Batch: 1

Matrix: Soil

Units: mg/kg	SU	RROGATE R	ECOVERY	STUDY	
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes 1-Chlorooctane	92.2	100	ļ	70.125	
	83.3	100	83	70-135	
o-Terphenyl	47.2	50.0	94	70-135	

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

Surrogate Recovery [D] = 100 \* A / B

All results are based on MDL and validated for QC purposes.

<sup>\*\*\*</sup> Poor recoveries due to dilution





Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Project ID: Same

Lab Batch #: 726418

**Sample:** 306327-001 SD / MSD

Batch:

Matrix: Soil

Units: mg/kg	SURROGATE RECOVERY STUDY								
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
Analytes			[D]						
1-Chlorooctane	83.8	100	84	70-135					
o-Terphenyl	48.2	50.0	96	70-135					

Lab Batch #: 726418

**Sample:** 306371-001 / SMP

Batch: 1

Matrix: Soil

Units: mg/kg	SU	RROGATE R	ECOVERY	STUDY	1
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags
Analytes			[D]		
-Chlorooctane	73.4	100	73	70-135	
o-Terphenyl	41.8	50.0	84	70-135	

Lab Batch #: 726418

Sample: 306371-002 / SMP

Batch: 1

Matrix: Soil

Units: mg/kg	SU	SURROGATE RECOVERY STUDY								
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
Analytes	İ	ļ	[D]	ļ	i					
1-Chlorooctane	72.6	100	73	70-135						
o-Terphenyl	41.7	50.0	83	70-135						

Lab Batch #: 726418

Sample: 306371-003 / SMP

Batch: 1

Matrix: Soil

TPH by SW8015 Mod  Analytes	SURROGATE RECOVERY STUDY								
·	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags				
I-Chlorooctane	70.4	100		70.176					
o-Terphenyl	70.4	50.0	70	70-135 70-135					

Lab Batch #: 726418

**Sample:** 511165-1-BKS / BKS

Batch: 1

Matrix: Solid

Units: mg/kg	SURROGATE RECOVERY STUDY								
TPH by SW8015 Mod  Analytes	Amount Found [A]	True Amount [B]	Recovery %R  D	Control Limits %R	Flags				
1-Chlorooctane	79.4	100	79	70-135					
o-Terphenyl	44.3	50.0	89	70-135					

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

Surrogate Recovery [D] = 100 \* A / B

All results are based on MDL and validated for QC purposes.

<sup>\*\*\*</sup> Poor recoveries due to dilution





Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Project ID: Same

Lab Batch #: 726418

Sample: 511165-1-BLK / BLK

Batch:

Matrix: Solid

Units: mg/kg  TPH by SW8015 Mod	SURROGATE RECOVERY STUDY								
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags				
Analytes			[D]						
I-Chlorooctane	73 0	100	73	70-135					
o-Terphenyl	, 41.3	50.0	83	70-135					

Lab Batch #: 726418

Sample: 511165-1-BSD / BSD

Batch: 1

Matrix: Solid

Units: mg/kg	SU	SURROGATE RECOVERY STUDY								
TPH by SW8015 Mod	Amount Found [A]	True Amount [B]	Recovery %R	Control Limits %R	Flags					
Analytes	Ì		[D]		!					
1-Chlorooctane	80.0	100	80	70-135						
o-Terphenyl	44.1	50 0	88	70-135						

<sup>\*\*</sup> Surrogates outside limits; data and surrogates confirmed by reanalysis

<sup>\*\*\*</sup> Poor recoveries due to dilution Surrogate Recovery [D] = 100 \* A / B All results are based on MDL and validated for QC purposes.



# Blank Spike Recovery



Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Project ID:

Same

Lab Batch #: 726343

Sample: 726343-1-BKS

Matrix: Solid

**Date Analyzed:** 06/24/2008

**Date Prepared:** 06/24/2008

Analyst: LATCOR

Reporting Units mo/ko

Reporting Units: mg/kg	Batch #:	BLANK	/BLANK SP	IKE REC	COVERY	STUDY
Inorganic Anions by EPA 300	Blank Result	Spike Added	Blank Spike	Blank Spike	Control Limits	Flags
Analytes	[A]	[B]	Result [C]	%R [D]	%R	
Chloride	ND	100	114	114	75-125	

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



# **BS / BSD Recoveries**



Project Name: South Red Lake II Unit #43

Work Order #: 306371

Analyst: BRB

Date Prepared: 06/23/2008

Project ID: Same
Date Analyzed: 06/23/2008

Lab Batch ID: 726318

Sample: 511084-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg

### BLANK/BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

BTEX by EPA 8021B	Blank Sample Result	Spike Added	Blank Spike	Blank Spike	Spike Added	Blank Spike	Blk. Spk Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	[A]	[B]	Result [C]	%R [D]	[E]	Duplicate Result [F]	%R [G]	%	%R	%RPD	
Benzene	ND	0.1000	0.1165	117	0.1	0.0984	98	17	70-130	35	
Toluene	ND	0.1000	0.1152	115	0.1	0.0961	96	18	70-130	35	
Ethylbenzene	ND	0.1000	0.1269	127	0.1	0.1060	106	18	71-129	35	
m,p-Xylenes	ND	0.2000	0.2584	129	0.2	0.2165	108	18	70-135	35	
o-Xylene	ND	0 1000	0.1255	126	0.1	0.1044	104	18	71-133	35	

Analyst: BRB

Date Prepared: 06/24/2008

**Date Analyzed:** 06/24/2008

Lab Batch ID: 726328

Sample: 511084-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg		BLAN	K/BLANK S	SPIKE / B	LANK S	PIKE DUPI	ICATE I		RY STUD		
BTEX by EPA 8021B	Blank Sample Result [A]	Spike Added	Blank Spike Result	Blank Spike %R	Spike Added	Blank Spike Duplicate	Blk. Spk Dup. %R	RPD %	Control Limits %R	Control Limits %RPD	Flag
Analytes		[ <b>B</b> ]	[C]	[D]	[E]	Result [F]	[G]				
Benzene	ND	0.1000	0.0998	100	0.1	0.1047	105	5	70-130	35	
Toluene	ND	0.1000	0.0987 ·	99	0.1	0.1035	104	5	70-130	35	
Ethylbenzene	ND	0.1000	0.1111	111	0.1	0.1166	117	5	71-129	35	
m,p-Xylenes	ND	0.2000	0,2237	112	0.2	0.2348	117	5	70-135	35	
o-Xylene	ND	0.1000	0.1083	108	0.1	0.1138	114	5	71-133	35	

Relative Percent Difference RPD = 200\*|(D-F)/(D+F)|
Blank Spike Recovery [D] = 100\*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100\*(F)/[E]
All results are based on MDL and Validated for QC Purposes



# **BS / BSD Recoveries**



Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Analyst: ASA

**Date Prepared:** 06/24/2008

Project ID: Same
Date Analyzed: 06/25/2008

Lab Batch ID: 726418

Sample: 511165-1-BKS

Batch #: 1

Matrix: Solid

Units: mg/kg		BLAN	K/BLANK S	PIKE / B	LANK S	PIKE DUPL	ICATE 1	RECOVE	ERY STUD	Y	
TPH by SW8015 Mod  Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
C6-C12 Gasoline Range Hydrocarbons	ND	1000	840	84	1000	838	84	0	70-135	35	***
C12-C28 Diesel Range Hydrocarbons	ND	1000	838	84	1000	832	83	1	70-135	35	

Relative Percent Difference RPD = 200\*|(D-F)/(D+F)|
Blank Spike Recovery [D] = 100\*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100\*(F)/[E]
All results are based on MDL and Validated for QC Purposes



# Form 3 - MS Recoveries

Project Name: South Red Lake II Unit # 43



Work Order #: 306371

Lab Batch #: 726343

Project ID: Same

Date Analyzed: 06/24/2008

**Date Prepared:** 06/24/2008

Analyst: LATCOR

QC- Sample ID: 306370-001 S

Batch #:

Matrix: Soil

Reporting Units: mg/kg	MATRIX / MATRIX SPIKE RECOVERY STUDY								
Inorganic Anions by EPA 300  Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag			
Chloride	2140	2040	5140	147	75-125	x			



### Form 3 - MS / MSD Recoveries

Project Name: South Red Lake II Unit # 43

Work Order #: 306371

QC- Sample ID: 306327-001 S

Project ID: Same

Lab Batch ID: 726418 **Date Analyzed:** 06/26/2008

Batch #:

Matrix: Soil

Date Prepared: 06/24/2008

Analyst: ASA

Reporting Units: mg/kg	MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY										
TPH by SW8015 Mod	Parent Sample	Spike	Spiked Sample Result	Sample	•	Duplicate Spiked Sample	Spiked Dup.	RPD	Control Limits	Control Limits	Flag
Analytes	Result [A]	Added [B]	[C]	%R [D]	Added [E]	Result [F]	%R [G]	%	%R	%RPD	
C6-C12 Gasoline Range Hydrocarbons	ND	1300	1090	84	1300	1090	84	0	70-135	0	
C12-C28 Diesel Range Hydrocarbons	ND	1300	1120	86	1300	1110	85	1	70-135	1	



# **Sample Duplicate Recovery**



Project Name: South Red Lake II Unit # 43

Work Order #: 306371

Lab Batch #: 726343 Date Analyzed: 06/24/2008

Project ID: Same

**Date Prepared:** 06/24/2008

Analyst: LATCOR

QC- Sample ID: 306370-001 D

Batch #:

Matrix: Soil

Reporting Units: mg/kg	SAMPLE /	SAMPLE / SAMPLE DUPLICATE RECOVERY							
Inorganic Anions by EPA 300  Analyte	Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag				
Chlonde	2140	2300	7	20 .					

Lab Batch #: 726229

Date Analyzed: 06/23/2008

**Date Prepared:** 06/23/2008

I

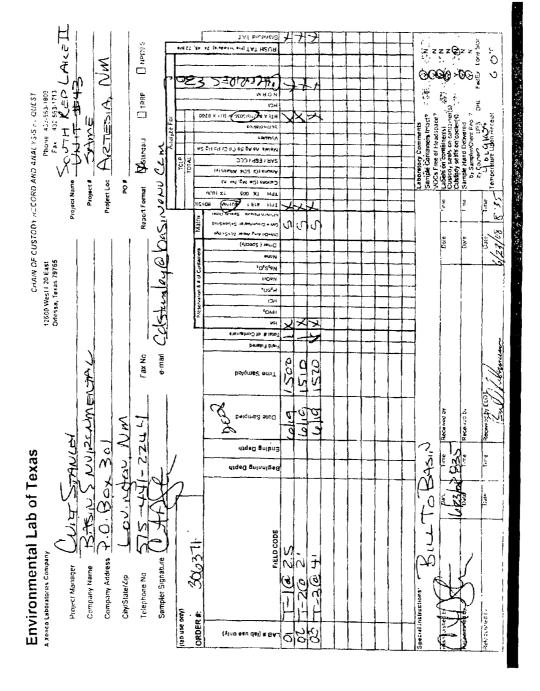
Analyst: JLG

QC- Sample ID: 306371-001 D

Batch #:

Matrix: Soil

Reporting Units: %	SAMPLE / SAMPLE DUPLICATE RECOVERY								
Percent Moisture	Parent Sample Result [A]	Sample Duplicate Result	RPD	Control Limits %RPD	Flag				
Analyte	11	[B]	ļ						
Percent Moisture	15.9	16.2	2	20					



	Environmental La	b of Texa	38	
	Variance/ Corrective Action Rep	ort- Sample	e Log-Ir	1
Client.	Basin Env.			
Date/ Time	673.08 8:35			
Lab ID#	306371			
Initials ·	al			
	Sample Receipt	Checklist		
#1 Tempera	ture of container/ cooler?	Y(B)	No	(a.O °C
#2 Shipping	container in good condition?	(es)	No	
#3 Custody	Seals intact on shipping container/ cooler?	Yes	No	Not Present
#4 Custody	Seals intact on sample bottles/ container?	(FEST)	No	Not Present
#5 Chain of	Custody present?	Yes	No	
#6 Sample	nstructions complete of Chain of Custody?	(es)	No	
#7 Chain of	Custody signed when relinquished/ received?	Yes	No	
#8 Chain of	Custody agrees with sample label(s)?	(es)	No	ID written on Cont / Lid
#9 Containe	r label(s) legible and intact?	Yes	No	Not Applicable
#10 Sample	matrix/ properties agree with Chain of Custody?	Yes	No	
#11 Contain	ers supplied by ELOT?	YES)	No	
#12 Sample	s in proper container/ bottle?	(es)	No	See Below
#13 Sample	s properly preserved?	Yes	No	See Below
#14 Sample	bottles intact?	Yes	No	
#15 Preserv	ations documented on Chain of Custody?	Yes	No	
#16 Contain	ers documented on Chain of Custody?	Yes)	Nο	
#17 Sufficie	nt sample amount for indicated test(s)?	Yes.	No	See Below
#18 All sam	ples received within sufficient hald time?	Yes	No	See Below
#19 Subcon	tract of sample(s)?	Yes	_ No	Not Applicable
#20 VOC \$8	imples have zero headspace?	(Pes)	No	Not Applicable

### Variance Documentation

Contact.		Contacted by		2	Date/ Time:	
Regarding						
Corrective Action Taker	1:					
Check all that Apply	<u> </u>		fax nd would like to proce begun shortly after sa			,

# Appendix B Release Notification and Corrective Action (Form C-141)

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

### State of New Mexico Energy Minerals and Natural Resources

JUN 2 0 2008

Form C-141 Revised October 10, 2003

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

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

! Seange	26/20	,	Rel	ease Notific	catio	and Co	orrective A	ction	1			
1 SEB0819						<b>OPERA</b>	ГOR		⊠ Init	ial Report	☐ Fi≀	nal Repo
Name of Co	mpany F	airway Reso		perating LLC24			nneth Pearce					
				thlake, TX 760 30-015-239	92	Telephone 1 Facility Typ	No. 817-416-19	946				
Surface Ow	ner State	of New Mex	tico	Mineral C	Owner	State of Nev	v Mexico		Lease	No. NM10	9695X	<del></del>
						OF REI	LEASE					
Unit Letter	Section	Township	Range	Feet from the	North/	South Line	Feet from the	East/V	West Line	County		
"K"	36	17-S	27-E	1,650	South		1,650	West	····	Eddy		
			Lati	tude <u>32.7877</u>	800	Longitude	-104.23502	200				
				NAT	URE	OF RELI	EASE					
Type of Relea							Release 25 bbls			Recovered 2		
Source of Rel	ease rlow	line leak near	ine welln	eaa		Date and H   6/16/08 unl	our of Occurrenc cnown time	e	6/17/08 8	Hour of Disc 8:00am	overy:	
Was Immedia	te Notice G		V [7	No. Claire		If YES, To	Whom?	L				
D. Whan?	V ann ath Da		res _	No Not Re	quirea	Data and II	···· (/17/00			·····		
By Whom? Was a Watero							our 6/17/08 lume Impacting tl	he Wate	rcourse.			
			Yes 🏻	No								
If a Watercou	rse was Imp	acted, Descri	be Fully.*				**************************************	···				
												,
Describe Caus	e of Proble	m and Remed	ial Action	Taken.*		·						
A look dayalor	and in a star	d aiamle at the	a walibaad	fouling connect	ion The	- mimmla		_ 41 1	1.			
A leak develop	ed ili a siec	nippic at un	e weililead	flowline connect	.10f1. I II	anppie was i	replaced, repairing	g the lea	LK.			
Describe Area	A ffeeted or	od Cleanup A	ction Take									
		-										
The affected a	ea was the	well location,	lease roa	d, and area immed	liately al	ong the lease	road.					
All free-standi	ng liquids v	vere picked-u	p with a v	cuum truck and t	ransport	ed to the cent	ral facility. A res	mediatio	n work pla	an will be pro	pared and	1
submitted for a	pproval wit	thin 30 days o	of this noti	fication.								
I hereby certify	that the in	formation giv	en above i	s true and comple	te to the	best of my k	nowledge and un	derstand	that pursu	ant to NMO	CD rules a	nd
public health of	r the enviro	nment. The a	cceptance	/or file certain rel of a C-141 report	by the l	VMOCD mar	ked as "Final Rep	oort" do	es not relie	eve the opera	tor of liabil	ity
should their op	erations hav	e failed to ad	lequately i	nvestigate and renunce of a C-141 re	nediate o	contamination	that pose a threa	it to gro	und water,	surface water	r, human h	ealth
federal, state, o					port doc	s not reneve	me operator of re	sponsio	inty for co	inpliance wit	n any onici	
- <del></del>	1/	ا هـ					OIL CONS	ERVA	TION I	DIVISION	4	
Signature: 1	Kec	LLL	Que	<u> </u>				<u> </u>	i pro	emediation Actional C-141 subm		
Printed Name:	V anneth De	arce			Aŗ	proved by D	istrict Supervisor	70m	ar	nalyses/documen xpiration Date.		
Pinted Name.	Kemicui Fe	arce			_			35.		<u>·</u>		
Title: Operatio	ns Engineer	•			Ap	proval Date:	7-10-08	Ex	piration D	ate: 9-12	-08	
E-mail Address	: kpearce@	fairwayreso	urces.com		Co	nditions of A	pproval:			A	<del>-</del> -7	
_				017 417 1047	The	plan must includ	e general site characte	ristics, sit	e ranking	Attached	니 1 <b>4</b> 0	
Date: June l Attach Additio	7, 2008 nal Sheets	If Necessar		817-416-1946	' and	planned analytics	on action levels, soil re al testing for TPH, B-1	TEX, Chlo	rides or any	2RP-	18 bours ==	
SEB 08192			,		othe Rem	r COCs as applic ediation of Leak	able. Please use the " s, Spills, & Releases" and at the following lir	Guidelines as your gu	s for	Notify OCD a obtaining san are to be pres	iples where a	analyses

http://www.enunrd state nm us/ocd/documents/7C\_spill1.pdf

# New Mexico Energy, Minerals and Natural Resources Department

Bill Richardson

Governor

Joanna Prukop Cabinet Secretary Reese Fullerton Deputy Cabinet Secretary Mark Fesmire Division Director Oil Conservation Division



August 18, 2008

Fairway Resources Operating, LLC 538 Silicon Drive, Suite 101 Southlake, TX 76092

Reference:

South Red Lake II Unit #43 K-36-17S-27E 30-015-23913 Eddy County, New Mexico

2RP-188

Operator,

The New Mexico Oil Conservation Division District 2 Office (OCD) is in receipt of a remediation work plan (plan) submitted by Basin Environmental Service Technologies, LLC on behalf of Fairway Resources Operating, LLC regarding above referenced facility. The plan is approved with the following stipulations:

- Notify the OCD 48 hours prior to obtaining samples where analyses are to be submitted to the OCD.
- Results of analytical data obtained through sampling shall be forwarded to OCD for approval
  prior to any backfilling activities.
- Should operator request NMOCD approval of a risk-based closure strategy, a vertical and lateral
  delineation for constituents of concern must be accomplished to a site specific background or
  agreed upon acceptable level.
- Any stockpiled soils are to be placed on plastic and a perimeter berm constructed around stockpiled soils to control run-on and run-off.
- Remediation requirements may be subject to change as site conditions warrant.
- A final Report C-141 is to be submitted to the OCD upon satisfactory completion of remediation project.
- Remediation activities to be completed on or before October 20, 2008.

Please be advised that NMOCD acceptance of documentation/work plan etc., 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 documentation/plans, etc., does not relieve the operator of responsibility for compliance with any other federal, state, local laws and/or regulations.

Respectfully,

Sherry Bonham
NMOCD District 2
1301 W Grand Avenue
Artesia, NM 88210
575.748.1283 ext. 109
sherry bonham@state.nm.us

