RP 2913

TETRA TECH

HOBBS OCD

JUN 28 2013

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May 10, 2013

approved
Geoffrey Leking
Environmental Specialist
NMOCD-DIST 1
1/22/14

Mr. Geoffrey Leking
Environmental Engineer Specialist
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Assessment Work Plan for the NMR Energy, LLC., Barnhill and Post Tank Battery, Unit L, Section 1, Township 14 South, Range 37 East, Lea County, New Mexico.

Mr. Leking:

Tetra Tech, Inc. (Tetra Tech) was contacted by NMR Energy, LLC., (NMR) to assess a reportedly historical impact at the Barnhill and Post Tank Battery, Unit L, Section 1, Township 14 South, Range 37 East, Lea County, New Mexico (Site). The site coordinates are N 33.13336°, W 103.16141°. The site location is shown on Figures 1 and 2.

Background

Historical Release

The NMOCD requested NMR Energy to submit a State of New Mexico C-141 Initial Report for a reportedly historical spill that occurred under the previous operator of the facility.

Recent Release

After the historical spill was assessed, but before it could be remediated, a second recent release occurred. According to the C-141, the second spill released 3 barrels of crude oil and produced water, and then the next day a rainfall event occurred, which carried the fluids throughout the tank battery, and the caused the spill to cover the area around the storage tanks. All of the fluid was contained inside the facility's firewalls. Due to the rainfall event, 22 barrels of fluid (3 barrels of crude oil and produced water,

Tetra Tech
1910 North Big Spring, Midland, TX 79705
Tel 432.682.4559 Fax 432.682.3946 www.tetratech.com

and 19 barrels of rainwater) were recovered. The C-141 form is enclosed in Appendix A.

Groundwater

The New Mexico State Engineer's Office Well Reports showed one well in Section 1, with a reported groundwater depth of 50' below surface. In additional, wells were also noted in Section 2, 11 and 14, near the site, with depths to groundwater ranging from 46' to 100' below surface. The USGS data also showed groundwater depths ranging from 85' to 120' below surface. According to the NMOCD groundwater map and data, the depth to groundwater in this area is approximately 80' below surface. A private water well used by the landowner is located is located in the northwest corner of Section 12, approximately 0.5 miles south of the tank battery was measured by Tetra Tech personnel and measured 86' below ground surface. The groundwater data is shown in Appendix B.

Regulatory

A risk-based evaluation was performed for the Site in accordance with the New Mexico Oil Conservation Division (NMOCD) Guidelines for Remediation of Leaks, Spills and Releases, dated August 13, 1993. The guidelines require a risk-based evaluation of the site to determine recommended remedial action levels (RRAL) for benzene, toluene, ethyl-benzene and xylene (collectively referred to as BTEX) and total petroleum hydrocarbons (TPH) in soil. The proposed RRAL for benzene was determined to be 10 parts per million (ppm) or milligrams per kilogram (mg/kg) and 50 ppm for total BTEX. Based upon the depth to groundwater, the proposed RRAL for TPH is 1,000 mg/kg.

Assessment

Historical Release

On July 17, 2012, representatives from Tetra Tech and Helms Oil and Gas met with Mr. Geoffrey Leking with the NMOCD onsite to inspect and confirm the sampling locations at the facility. Mr. Leking selected two (2) locations to assess the subsurface soils from historical impact at the tank battery. On October 9, 2012, Tetra Tech installed two (2) backhoe trenches (T-1 and T-2) inside the berm to evaluate and vertically define extents of subsurface impact. Selected samples were analyzed for TPH analysis by

EPA method 8015 modified, BTEX by EPA Method 8021B and chloride by EPA method 300.0. The sampling results are summarized in Table 1. The trench locations are shown on Figure 3. Copies of laboratory analysis and chain-of-custody documentation are included in Appendix C.

Referring to Table 1, T-1 samples showed a TPH concentration above the RRAL in the 1.0' sample of 3,161 mg/Kg, but the concentrations decrease to below 50 mg/Kg in the 2' sample. Trench 2 (T-2) showed no hydrocarbon impact to the area.

Elevated chloride concentrations were detected in T-1 from surface to a depth of 5.0' below surface. The concentrations were 2,230 mg/Kg in the 1.0' sample, and spiked to 2,830 mg/Kg in the 4.0' sample, then significantly declined to 1,010 mg/kg in the 5.0', bottom hole sample. Deeper samples could not be collected due to the dense caliche formation. The chloride impact was not vertically defined.

Elevated chloride concentrations were also detected in T-2. The concentrations were 76.7 mg/Kg in the 1.0' sample, and significantly increased to 744 mg/Kg in the 2.0 sample, and 749 mg/Kg in the 4.0 sample before declining to 389 mg/Kg in the 6.0' sample. Deeper samples could not be collected due to the dense caliche formation. The chloride impact in the area of T-2 was vertically defined.

Work Plan

On November 30, 2012, a second release occurred at the site and will require an assessment, as requested by the NMOCD. The spill footprint is shown on Figure 3. Tetra Tech personnel will oversee the installation of four (4) boreholes in the release area to assess and define the extent of the contamination. As shown on Figure 3, the proposed borehole (BH-4) will be installed to assess the recent release as well as the historical release (T-1) in the area.

A drilling rig will be utilized, and all down hole equipment (i.e., drill rods, drill bits, etc.) will be thoroughly decontaminated between each borehole with a high-pressure hot water wash and rinse. The proposed boreholes are shown on Figure 3.

The samples selected for analysis will be determined from field observation and data. All samples will be collected and preserved in laboratory prepared sample containers with standard QA/QC procedures. All samples will be shipped under proper chain-of-custody control and analyzed within the standard holding times. The soil samples will be analyzed for Total

TETRA TECH

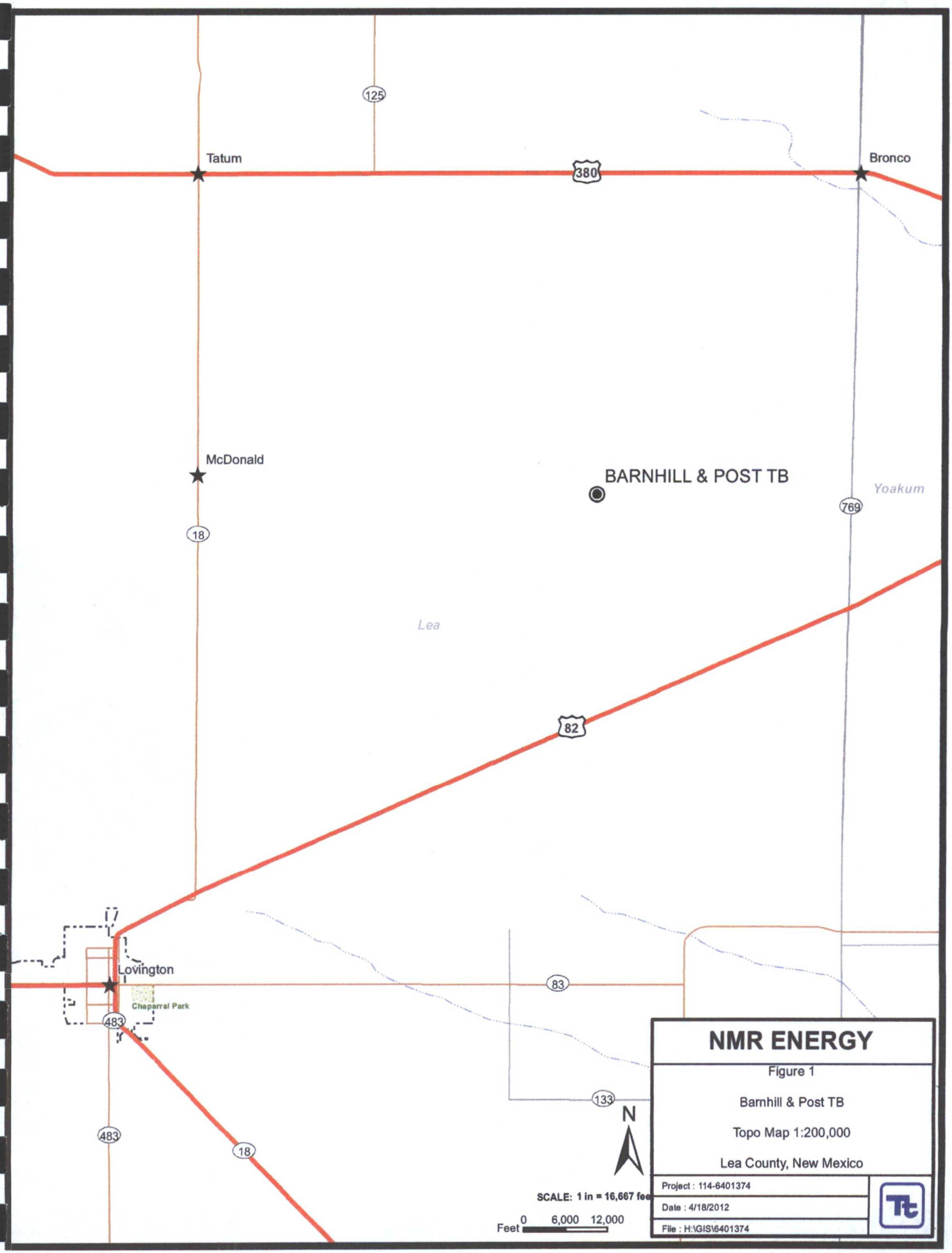
Petroleum Hydrocarbon (TPH) by method 8015 DRO/GRO, Benzene, Toluene, Ethyl benzene, and Xylene (BTEX) by method EPA Method 8021B and chloride by method EPA method 300.

Once the analytical data has been received and review, a remediation work plan will be prepared for both spill areas and submitted to the NMOCD for approval. If you have any questions or comments concerning the proposed work plan, please call me at (432) 682-4559.

Respectfully submitted,
TETRA TECH

James F. Kennedy
Project Manager

cc: Hollie Lamb – Helm
Daniel Baker - Tumbleweed



NMR ENERGY

Figure 1

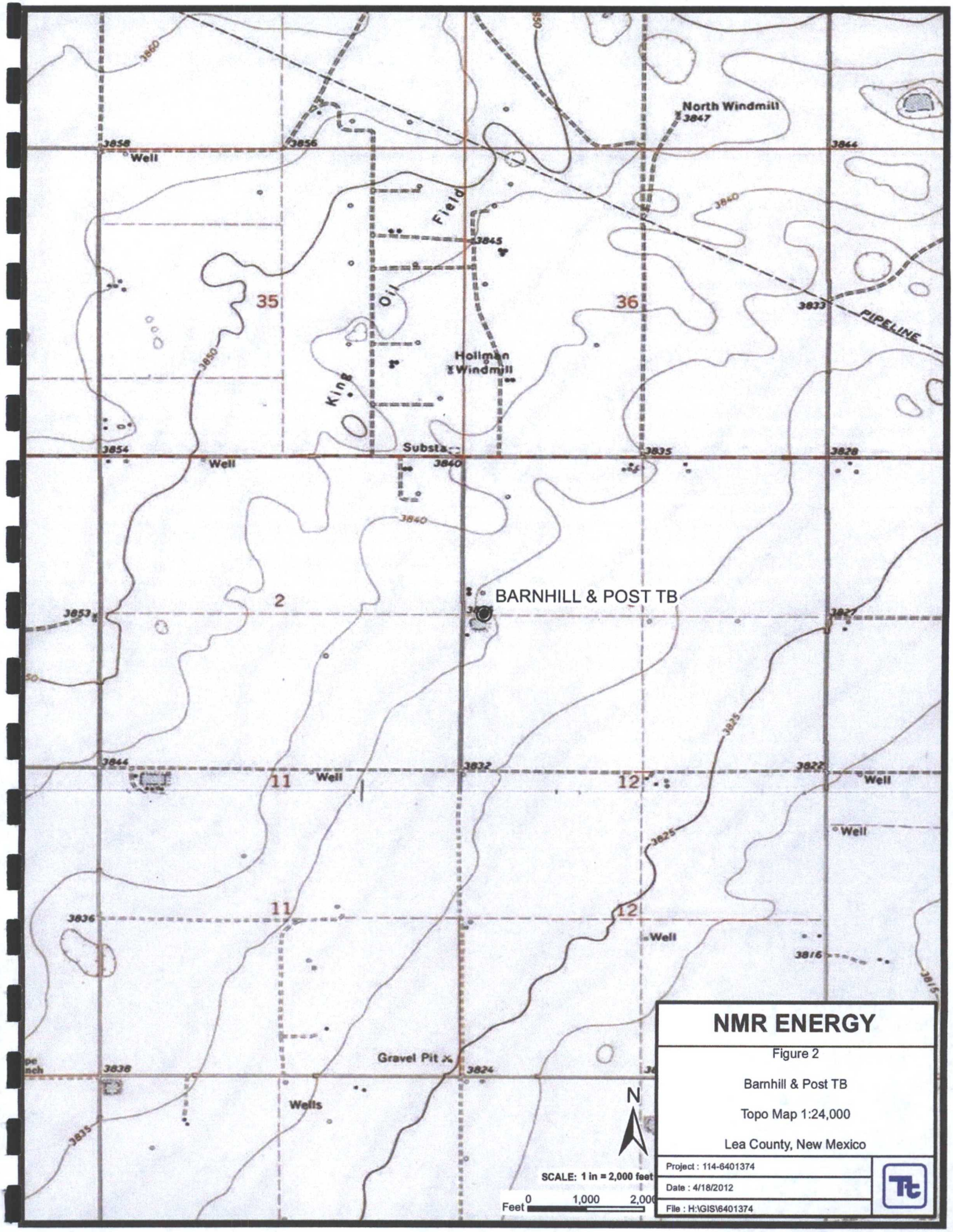
Barnhill & Post TB

Topo Map 1:200,000

Lea County, New Mexico

Project : 114-6401374	
Date : 4/18/2012	
File : H:\GIS\6401374	

Drawn By: Isabel Mercedes



NMR ENERGY

Figure 2

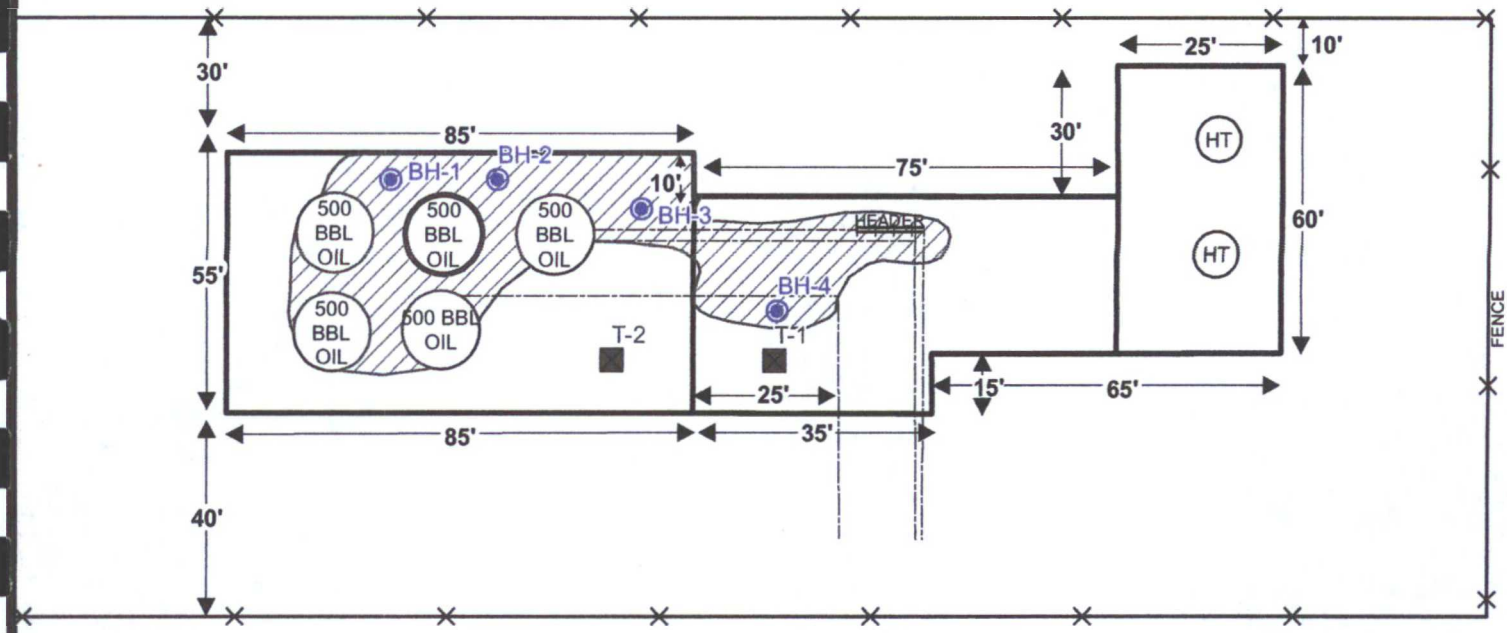
Barnhill & Post TB

Topo Map 1:24,000

Lea County, New Mexico

Project : 114-6401374	
Date : 4/18/2012	
File : H:\GIS\6401374	

Drawn By: Isabel Mamolejo



EXPLANATION

- PROPOSED BORE HOLE SAMPLE LOCATIONS
- BACKHOE TRENCH LOCATIONS

N

SCALE: 1 IN = 42 FEET

Feet 0 20 40

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Figure 3

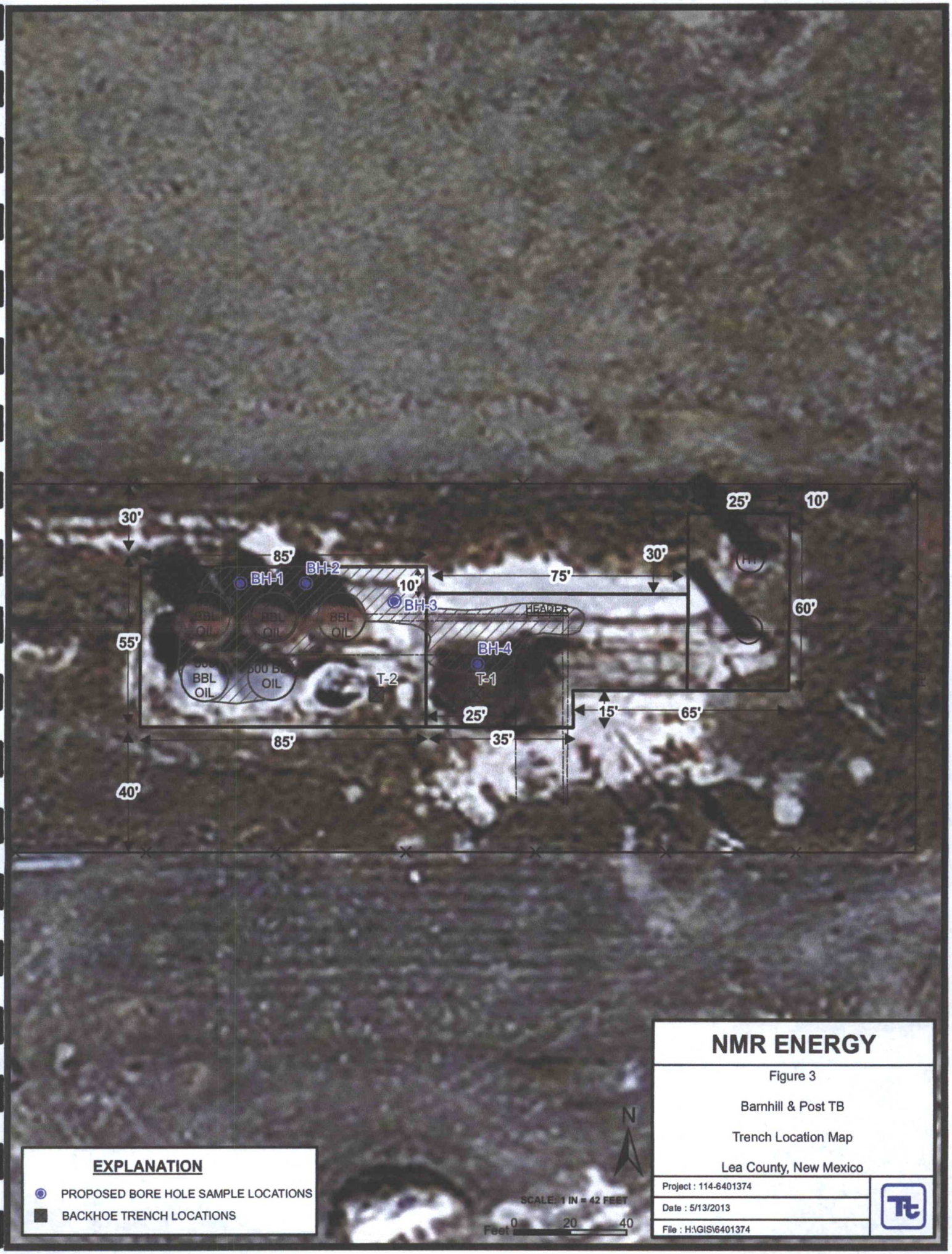
Barnhill & Post TB

Trench Location Map

Lea County, New Mexico

Project : 114-6401374	
Date : 5/13/2013	
File : H:\GIS\6401374	

Drawn By: Isabel Marmolejo



NMR ENERGY

Figure 3

Barnhill & Post TB

Trench Location Map

Lea County, New Mexico

Project : 114-6401374

Date : 5/13/2013

File : H:\GIS\6401374

Drawn By: Isabel Mamolejo

Table 1
NMR Energy LLC
Barnhill and Post Tank Battery
Lea County, New Mexico

Sample ID	Sample Date	Sample Depth (ft)	Soil Status		TPH (mg/kg)			Benzene (mg/kg)	Toluene (mg/kg)	Ethlybenzene (mg/kg)	Xylene (mg/kg)	Total BTEX (mg/kg)	Chloride (mg/kg)
			In-Situ	Removed	GRO	DRO	Total						
T-1	10/9/2012	0-1	X		1.03	3,160	3,161	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	2,230
	"	2	X		19.9	<50.0	19.9	-	-	-	-	-	2,510
	"	4	X		-	-	-	-	-	-	-	-	2,830
	"	5	X		-	-	-	-	-	-	-	-	1,010
T-2	10/9/2012	0-1	X		<1.00	<50.0	<50.0	<0.0200	<0.0200	<0.0200	<0.0200	<0.0200	76.7
	"	2	X		-	-	-	-	-	-	-	-	744
	"	4	X		-	-	-	-	-	-	-	-	749
	"	6	X		-	-	-	-	-	-	-	-	389

(--) Not Analyzed

Exceeding RRAL

PHOTOGRAPHIC DOCUMENTATION
NMR Energy, LLC
Post and Barnhill Tank Battery
Lea County, New Mexico

Photo 1. View of T-1 location.

Photo 2. View of T-2 location.

PHOTOGRAPHIC DOCUMENTATION
NMR Energy, LLC
Post and Barnhill Tank Battery
Lea County, New Mexico

Photo 3. View of T-1 being installed.

Photo 4. View of T-2.

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

State of New Mexico
Energy Minerals and Natural Resources

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

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Form C-141
Revised August 8, 2011
Submit 1 Copy to appropriate District Office in accordance with 19.15.29 NMAC.

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company NMR Energy LLC	Contact Daniel Baker
Address 800 Bering Drive, STE 250 Houston, TX 77057	Telephone No. (432) 559-7520
Facility Name Post and Barnhill Battery	Facility Type Battery

Surface Owner Bos Dairy (Issak)	Mineral Owner Kirby Schenck Trust/Tierra Oil Comp.	API No. 30-025-~~28597~~ 28576 (POST #3)

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
D	1	14-S	37-E	330'	North	330'	West	Lea

Latitude _____ Longitude _____

NATURE OF RELEASE

Type of Release Oil and Produced Water	Volume of Release 3 bbls	Volume Recovered 3 bbls
Source of Release Hatch on oil tank leaked	Date and Hour of Occurrence 11/30/2012	Date and Hour of Discovery 12/1/2012
Was Immediate Notice Given? ☐ Yes ☒ No ☐ Not Required	If YES, To Whom?	
By Whom?	Date and Hour	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse.	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*
Oil tank #211 had a hatch leak. Estimated 3 bbls of oil and produced water released on ground. The following day, it rained. A vacuum truck was called out to assist in picking up fluid on surface and rain water. Picked up 3 bbls of reportable spill. Transferred 9" (22 bbls) to tank #212. Pulled hatch and jetted tank clean. Checked tank for leaks. Gasket around hatch was determined to be bad. Replaced gasket and hatch. Loaded tank with 130 bbls of FW. Test tank for 4 days. Held good.

NMR Energy is proposing to scrape the surface with a backhoe and have the contaminated soil hauled off. We will then replace with fresh caliche and smooth surface.

Describe Area Affected and Cleanup Action Taken.*

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

Signature: D. Baker	OIL CONSERVATION DIVISION
Printed Name: Daniel Baker	Approved by Environmental Specialist: Geoffrey Leking Environmental Specialist
Title: VP of Engineering	Approval Date: 4/30/13 Expiration Date: 7/01/13
E-mail Address: dbaker@tumbleweedllc.com	Conditions of Approval: CONFIRMATION SAMPLING SHOULD BE PERFORMED WHICH DISPLAYS THAT THE CONTAMINATION WAS ADEQUATELY DELINEATED AND REMEDIATED. FINAL C-141 DUE BY 7/01/13 Attached ☐ IRP-4-13-2913
Date: 4/18/2013 Phone: (432) 559-7520	

* Attach Additional Sheets If Necessary

Water Well Data
Average Depth to Groundwater (ft)
NMR - Barnhill and Post Tank Battery
Lea County, New Mexico

13 South 36 East

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

13 South 37 East

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27 75	26 55	25 40
31	32	33	34	35 65 80	36 78 40 65

13 South 38 East

6	5	4	3	2
7	8	9	10	11
18	17	16	15	14
19 53	20 40	21	22	23
30 85	29	28	27	26
31 87	32	33	34	35

14 South 36 East

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

14 South 37 East

6 85	5	4	3 32	2 55 46	1 85 50
7	8 42	9	10 62	11 85 60	12 85
18	17	16	15 50	14 100	13 120
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

14 South 38 East

6 77	5 45	4	3	2
7	8	9 45	10	11
18 115	17	16	15	14
19 40 65	20	21	22	23
30	29	28	27	26
31	32	33	34	35

15 South 36 East

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

15 South 37 East

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

15 South 38 East

6	5	4	3	2
7	8	9	10	11
18	17	16	15	14
19	20	21	22	23
30	29	28	27	26
31	32	33	34	35

88 New Mexico State Engineers Well Reports

105 USGS Well Reports

90 Geology and Groundwater Conditions in Southern Lea, County, NM (Report 6)

Geology and Groundwater Resources of Eddy County, NM (Report 3)

34 NMOCD - Groundwater Data

123 Tetra Tech installed temporary wells and field water level

143 NMOCD Groundwater map well location

Summary Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX 79705

Report Date: October 18, 2012

Work Order: 12101038

Project Location: Lea Co., NM
Project Name: NMR Energy LLC/Barnhill Tank Battery
Project Number: 114-6401374

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
311453	T-1 (0-1')	soil	2012-10-09	00:00	2012-10-10
311454	T-1 (2')	soil	2012-10-09	00:00	2012-10-10
311455	T-1 (4')	soil	2012-10-09	00:00	2012-10-10
311456	T-1 (5')	soil	2012-10-09	00:00	2012-10-10
311457	T-2 (0-1')	soil	2012-10-09	00:00	2012-10-10
311458	T-2 (2')	soil	2012-10-09	00:00	2012-10-10
311459	T-2 (4')	soil	2012-10-09	00:00	2012-10-10
311460	T-2 (6')	soil	2012-10-09	00:00	2012-10-10

	BTEX				TPH DRO - NEW	TPH GRO
	Benzene	Toluene	Ethylbenzene	Xylene	DRO	GRO
Sample - Field Code	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)	(mg/Kg)
311453 - T-1 (0-1')	<0.0200	<0.0200	<0.0200	<0.0200	**3160**	**1.03**
311454 - T-1 (2')					<50.0	**19.9**
311457 - T-2 (0-1')	<0.0200	<0.0200	<0.0200	<0.0200	<50.0	<1.00

Sample: 311453 - T-1 (0-1')

Param	Flag	Result	Units	RL
Chloride		**2230**	mg/Kg	4

Sample: 311454 - T-1 (2')

Param	Flag	Result	Units	RL
Chloride		**2510**	mg/Kg	4

Sample: 311455 - T-1 (4')

Param	Flag	Result	Units	RL
Chloride		**2830**	mg/Kg	4

Sample: 311456 - T-1 (5')

Param	Flag	Result	Units	RL
Chloride		**1010**	mg/Kg	4

Sample: 311457 - T-2 (0-1')

Param	Flag	Result	Units	RL
Chloride		**76.7**	mg/Kg	4

Sample: 311458 - T-2 (2')

Param	Flag	Result	Units	RL
Chloride		**744**	mg/Kg	4

Sample: 311459 - T-2 (4')

Param	Flag	Result	Units	RL
Chloride		**749**	mg/Kg	4

Sample: 311460 - T-2 (6')

Param	Flag	Result	Units	RL
Chloride		**389**	mg/Kg	4

TRACEANALYSIS, INC.

6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800-378-1296 806-794-1296 FAX 806-794-1298
200 East Sunset Road, Suite E El Paso, Texas 79922 915-585-3443 FAX 915-585-4944
5002 Basin Street, Suite A1 Midland, Texas 79703 432-689-6301 FAX 432-689-6313
(BioAquatic) 2501 Mayes Rd., Suite 100 Carrollton, Texas 75006 972-242-7750
E-Mail: lab@traceanalysis.com WEB: www.traceanalysis.com

Certifications

WBE HUB NCTRCA DBE NELAP DoD LELAP Kansas Oklahoma ISO 17025

Analytical and Quality Control Report

Ike Tavarez
Tetra Tech
1910 N. Big Spring Street
Midland, TX, 79705

Report Date: October 18, 2012

Work Order: 12101038

Project Location: Lea Co., NM
Project Name: NMR Energy LLC/Barnhill Tank Battery
Project Number: 114-6401374

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

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
311453	T-1 (0-1')	soil	2012-10-09	00:00	2012-10-10
311454	T-1 (2')	soil	2012-10-09	00:00	2012-10-10
311455	T-1 (4')	soil	2012-10-09	00:00	2012-10-10
311456	T-1 (5')	soil	2012-10-09	00:00	2012-10-10
311457	T-2 (0-1')	soil	2012-10-09	00:00	2012-10-10
311458	T-2 (2')	soil	2012-10-09	00:00	2012-10-10
311459	T-2 (4')	soil	2012-10-09	00:00	2012-10-10
311460	T-2 (6')	soil	2012-10-09	00:00	2012-10-10

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

Michael Abel

Dr. Blair Leftwich, Director
Dr. Michael Abel, Project Manager

Report Contents

Case Narrative

Samples for project NMR Energy LLC/Barnhill Tank Battery were received by TraceAnalysis, Inc. on 2012-10-10 and assigned to work order 12101038. Samples for work order 12101038 were received intact at a temperature of -0.6 C.

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

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	81075	2012-10-09 at 14:39	95681	2012-10-11 at 14:39
Chloride (Titration)	SM 4500-Cl B	81143	2012-10-15 at 12:12	95757	2012-10-16 at 16:13
Chloride (Titration)	SM 4500-Cl B	81143	2012-10-15 at 12:12	95758	2012-10-16 at 16:14
TPH DRO - NEW	S 8015 D	81152	2012-10-16 at 08:00	95773	2012-10-17 at 08:28
TPH DRO - NEW	S 8015 D	81211	2012-10-17 at 09:00	95844	2012-10-18 at 15:14
TPH GRO	S 8015 D	81075	2012-10-09 at 14:39	95682	2012-10-11 at 14:39
TPH GRO	S 8015 D	81184	2012-10-17 at 08:34	95818	2012-10-17 at 08:34

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 12101038 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Analytical Report

Sample: 311453 - T-1 (0-1')

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	95681	Date Analyzed:	2012-10-11	Analyzed By:	YG
Prep Batch:	81075	Sample Preparation:	2012-10-09	Prepared By:	YG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.87	mg/Kg	1	2.00	94	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Sample: 311453 - T-1 (0-1')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95757	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2230**	mg/Kg	10	4.00

Sample: 311453 - T-1 (0-1')

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	95773	Date Analyzed:	2012-10-17	Analyzed By:	CW
Prep Batch:	81152	Sample Preparation:	2012-10-16	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO		1	**3160**	mg/Kg	5	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr	593	mg/Kg	5	100	593	55.1 - 135.7

Sample: 311453 - T-1 (0-1')

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	95682	Date Analyzed:	2012-10-11	Analyzed By:	YG
Prep Batch:	81075	Sample Preparation:	2012-10-09	Prepared By:	YG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO		1	**1.03**	mg/Kg	1	1.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.82	mg/Kg	1	2.00	91	70 - 130
4-Bromofluorobenzene (4-BFB)			1.75	mg/Kg	1	2.00	88	70 - 130

Sample: 311454 - T-1 (2')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95757	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2510**	mg/Kg	10	4.00

Sample: 311454 - T-1 (2')

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	95844	Date Analyzed:	2012-10-18	Analyzed By:	CW
Prep Batch:	81211	Sample Preparation:	2012-10-17	Prepared By:	CW

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
DRO	Jb	1	<50.0	mg/Kg	1	50.0

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			94.4	mg/Kg	1	100	94	55.1 - 135.7

Sample: 311454 - T-1 (2')

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	95818	Date Analyzed:	2012-10-17	Analyzed By:	YG
Prep Batch:	81184	Sample Preparation:	2012-10-17	Prepared By:	YG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	B	1	**19.9**	mg/Kg	1	4.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.99	mg/Kg	1	2.00	100	70 - 130
4-Bromofluorobenzene (4-BFB)			1.81	mg/Kg	1	2.00	90	70 - 130

Sample: 311455 - T-1 (4')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95757	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**2830**	mg/Kg	10	4.00

Sample: 311456 - T-1 (5')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95757	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

continued ...

sample 311456 continued ...

Parameter	Flag	Cert	RL Result	Units	Dilution	RL

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**1010**	mg/Kg	10	4.00

Sample: 311457 - T-2 (0-1')

Laboratory:	Midland				
Analysis:	BTEX	Analytical Method:	S 8021B	Prep Method:	S 5035
QC Batch:	95681	Date Analyzed:	2012-10-11	Analyzed By:	YG
Prep Batch:	81075	Sample Preparation:	2012-10-09	Prepared By:	YG

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.95	mg/Kg	1	2.00	98	70 - 130
4-Bromofluorobenzene (4-BFB)			1.95	mg/Kg	1	2.00	98	70 - 130

Sample: 311457 - T-2 (0-1')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95757	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**76.7**	mg/Kg	5	4.00

Sample: 311457 - T-2 (0-1')

Laboratory:	Midland				
Analysis:	TPH DRO - NEW	Analytical Method:	S 8015 D	Prep Method:	N/A
QC Batch:	95773	Date Analyzed:	2012-10-17	Analyzed By:	CW
Prep Batch:	81152	Sample Preparation:	2012-10-16	Prepared By:	CW

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

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			89.7	mg/Kg	1	100	90	55.1 - 135.7

Sample: 311457 - T-2 (0-1')

Laboratory:	Midland				
Analysis:	TPH GRO	Analytical Method:	S 8015 D	Prep Method:	S 5035
QC Batch:	95682	Date Analyzed:	2012-10-11	Analyzed By:	YG
Prep Batch:	81075	Sample Preparation:	2012-10-09	Prepared By:	YG

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
GRO	U	1	<1.00	mg/Kg	1	1.00

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			2.35	mg/Kg	1	2.00	118	70 - 130
4-Bromofluorobenzene (4-BFB)			1.86	mg/Kg	1	2.00	93	70 - 130

Sample: 311458 - T-2 (2')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95758	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**744**	mg/Kg	5	4.00

Sample: 311459 - T-2 (4')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95758	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**749**	mg/Kg	5	4.00

Sample: 311460 - T-2 (6')

Laboratory:	Midland				
Analysis:	Chloride (Titration)	Analytical Method:	SM 4500-Cl B	Prep Method:	N/A
QC Batch:	95758	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	Sample Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	RL Result	Units	Dilution	RL
Chloride			**389**	mg/Kg	5	4.00

Method Blanks

Method Blank (1) QC Batch: 95681

QC Batch: 95681 | Date Analyzed: 2012-10-11 | Analyzed By: YG
Prep Batch: 81075 | QC Preparation: 2012-10-09 | Prepared By: YG

Parameter	Flag	Cert	MDL Result	Units	RL
Benzene		1	<0.00100	mg/Kg	0.02
Toluene		1	<0.00100	mg/Kg	0.02
Ethylbenzene		1	<0.00110	mg/Kg	0.02
Xylene		1	<0.00360	mg/Kg	0.02

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.92	mg/Kg	1	2.00	96	70 - 130
4-Bromofluorobenzene (4-BFB)			1.85	mg/Kg	1	2.00	92	70 - 130

Method Blank (1) QC Batch: 95682

QC Batch: 95682 | Date Analyzed: 2012-10-11 | Analyzed By: YG
Prep Batch: 81075 | QC Preparation: 2012-10-09 | Prepared By: YG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<0.482	mg/Kg	1

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			1.84	mg/Kg	1	2.00	92	70 - 130
4-Bromofluorobenzene (4-BFB)			1.72	mg/Kg	1	2.00	86	70 - 130

Method Blank (1) QC Batch: 95757

QC Batch: 95757 | Date Analyzed: 2012-10-16 | Analyzed By: AR
Prep Batch: 81143 | QC Preparation: 2012-10-15 | Prepared By: AR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 95758

QC Batch:	95758	Date Analyzed:	2012-10-16	Analyzed By:	AR
Prep Batch:	81143	QC Preparation:	2012-10-15	Prepared By:	AR

Parameter	Flag	Cert	MDL Result	Units	RL
Chloride			<3.85	mg/Kg	4

Method Blank (1) QC Batch: 95773

QC Batch:	95773	Date Analyzed:	2012-10-17	Analyzed By:	CW
Prep Batch:	81152	QC Preparation:	2012-10-16	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	<15.7	mg/Kg	50

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane			89.1	mg/Kg	1	100	89	61.6 - 141.2

Method Blank (1) QC Batch: 95818

QC Batch:	95818	Date Analyzed:	2012-10-17	Analyzed By:	YG
Prep Batch:	81184	QC Preparation:	2012-10-17	Prepared By:	YG

Parameter	Flag	Cert	MDL Result	Units	RL
GRO		1	<1.22	mg/Kg	4

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)			0.0945	mg/Kg	1	0.00	94	70 - 130

continued ...

method blank continued ...

Surrogate	Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
4-Bromofluorobenzene (4-BFB)			0.0786	mg/Kg	1	0.00	78	70 - 130

Method Blank (1) QC Batch: 95844

QC Batch:	95844	Date Analyzed:	2012-10-18	Analyzed By:	CW
Prep Batch:	81211	QC Preparation:	2012-10-17	Prepared By:	CW

Parameter	Flag	Cert	MDL Result	Units	RL
DRO		1	27.4	mg/Kg	50

Surrogate		Flag	Cert	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	Qsr	Qsr		112	mg/Kg	1	100	112	61.6 - 141.2

Laboratory Control Spikes

Laboratory Control Spike (LCS-1)

QC Batch: 95681 | Date Analyzed: 2012-10-11 | Analyzed By: YG
Prep Batch: 81075 | QC Preparation: 2012-10-09 | Prepared By: YG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	1.89	mg/Kg	1	2.00	<0.00100	94	70 - 130
Toluene		1	1.88	mg/Kg	1	2.00	<0.00100	94	70 - 130
Ethylbenzene		1	1.81	mg/Kg	1	2.00	<0.00110	90	70 - 130
Xylene		1	5.72	mg/Kg	1	6.00	<0.00360	95	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	1.92	mg/Kg	1	2.00	<0.00100	96	70 - 130	2	20
Toluene		1	1.91	mg/Kg	1	2.00	<0.00100	96	70 - 130	2	20
Ethylbenzene		1	1.82	mg/Kg	1	2.00	<0.00110	91	70 - 130	1	20
Xylene		1	5.74	mg/Kg	1	6.00	<0.00360	96	70 - 130	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.91	1.96	mg/Kg	1	2.00	96	98	70 - 130
4-Bromofluorobenzene (4-BFB)	1.90	1.93	mg/Kg	1	2.00	95	96	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 95682 | Date Analyzed: 2012-10-11 | Analyzed By: YG
Prep Batch: 81075 | QC Preparation: 2012-10-09 | Prepared By: YG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	17.7	mg/Kg	1	20.0	<0.482	88	70 - 130

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	17.4	mg/Kg	1	20.0	<0.482	87	70 - 130	2	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.05	2.09	mg/Kg	1	2.00	102	104	70 - 130
4-Bromofluorobenzene (4-BFB)	1.94	1.88	mg/Kg	1	2.00	97	94	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 95757 | Date Analyzed: 2012-10-16 | Analyzed By: AR
Prep Batch: 81143 | QC Preparation: 2012-10-15 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2530	mg/Kg	1	2500	<3.85	101	85 - 115

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2600	mg/Kg	1	2500	<3.85	104	85 - 115	3	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 95758 | Date Analyzed: 2012-10-16 | Analyzed By: AR
Prep Batch: 81143 | QC Preparation: 2012-10-15 | Prepared By: AR

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2570	mg/Kg	1	2500	<3.85	103	85 - 115

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

continued ...

control spikes continued ...

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2670	mg/Kg	1	2500	<3.85	107	85 - 115	4	20

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

Laboratory Control Spike (LCS-1)

QC Batch: 95773 | Date Analyzed: 2012-10-17 | Analyzed By: CW
Prep Batch: 81152 | QC Preparation: 2012-10-16 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	183	mg/Kg	1	250	<15.7	73	66.9 - 119.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	171	mg/Kg	1	250	<15.7	68	66.9 - 119.9	7	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	86.2	79.3	mg/Kg	1	100	86	79	76.8 - 140.2

Laboratory Control Spike (LCS-1)

QC Batch: 95818 | Date Analyzed: 2012-10-17 | Analyzed By: YG
Prep Batch: 81184 | QC Preparation: 2012-10-17 | Prepared By: YG

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	21.9	mg/Kg	1	20.0	3.6	110	70 - 130

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	22.0	mg/Kg	1	20.0	3.6	110	70 - 130	0	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.03	2.00	mg/Kg	1	2.00	102	100	70 - 130
4-Bromofluorobenzene (4-BFB)	2.10	2.10	mg/Kg	1	2.00	105	105	70 - 130

Laboratory Control Spike (LCS-1)

QC Batch: 95844 | Date Analyzed: 2012-10-18 | Analyzed By: CW
Prep Batch: 81211 | QC Preparation: 2012-10-17 | Prepared By: CW

Param	F	C	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	282	mg/Kg	1	250	27.4	102	66.9 - 119.9

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

Param	F	C	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	242	mg/Kg	1	250	27.4	86	66.9 - 119.9	15	20

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

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	126	92.7	mg/Kg	1	100	126	93	76.8 - 140.2

Matrix Spike (MS-1) Spiked Sample: 311465

QC Batch: 95681 | Date Analyzed: 2012-10-11 | Analyzed By: YG
Prep Batch: 81075 | QC Preparation: 2012-10-09 | Prepared By: YG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene		1	2.31	mg/Kg	1	2.00	<0.00100	116	70 - 130
Toluene		1	2.33	mg/Kg	1	2.00	<0.00100	116	70 - 130
Ethylbenzene		1	2.26	mg/Kg	1	2.00	<0.00110	113	70 - 130
Xylene		1	7.12	mg/Kg	1	6.00	<0.00360	119	70 - 130

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

continued ...

matrix spikes continued ...

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene		1	2.34	mg/Kg	1	2.00	<0.00100	117	70 - 130	1	20
Toluene		1	2.35	mg/Kg	1	2.00	<0.00100	118	70 - 130	1	20
Ethylbenzene		1	2.30	mg/Kg	1	2.00	<0.00110	115	70 - 130	2	20
Xylene		1	7.24	mg/Kg	1	6.00	<0.00360	121	70 - 130	2	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	1.94	mg/Kg	1	2	98	97	70 - 130
4-Bromofluorobenzene (4-BFB)	1.95	1.93	mg/Kg	1	2	98	96	70 - 130

Matrix Spike (MS-1) Spiked Sample: 311465

QC Batch: 95682 | Date Analyzed: 2012-10-11 | Analyzed By: YG
Prep Batch: 81075 | QC Preparation: 2012-10-09 | Prepared By: YG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	15.8	mg/Kg	1	20.0	<0.482	79	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	15.8	mg/Kg	1	20.0	<0.482	79	70 - 130	0	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.77	1.80	mg/Kg	1	2	88	90	70 - 130
4-Bromofluorobenzene (4-BFB)	1.87	1.85	mg/Kg	1	2	94	92	70 - 130

Matrix Spike (MS-1) Spiked Sample: 311457

QC Batch: 95757 | Date Analyzed: 2012-10-16 | Analyzed By: AR
Prep Batch: 81143 | QC Preparation: 2012-10-15 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			2600	mg/Kg	5	2500	76.7	101	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			2730	mg/Kg	5	2500	76.7	106	78.9 - 121	5	20

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

Matrix Spike (MS-1) Spiked Sample: 311467

QC Batch: 95758 | Date Analyzed: 2012-10-16 | Analyzed By: AR
Prep Batch: 81143 | QC Preparation: 2012-10-15 | Prepared By: AR

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Chloride			3440	mg/Kg	10	2500	941	100	78.9 - 121

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Chloride			3720	mg/Kg	10	2500	941	111	78.9 - 121	8	20

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

Matrix Spike (MS-1) Spiked Sample: 311450

QC Batch: 95773 | Date Analyzed: 2012-10-17 | Analyzed By: CW
Prep Batch: 81152 | QC Preparation: 2012-10-16 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	229	mg/Kg	1	250	48	72	36.1 - 147.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	238	mg/Kg	1	250	48	76	36.1 - 147.2	4	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	90.5	90.0	mg/Kg	1	100	90	90	78.3 - 131.6

Matrix Spike (MS-1) Spiked Sample: 311773

QC Batch: 95818 | Date Analyzed: 2012-10-17 | Analyzed By: YG
Prep Batch: 81184 | QC Preparation: 2012-10-17 | Prepared By: YG

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO		1	23.4	mg/Kg	1	20.0	<1.22	117	70 - 130

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO		1	23.6	mg/Kg	1	20.0	<1.22	118	70 - 130	1	20

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

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.03	2.00	mg/Kg	1	2	102	100	70 - 130
4-Bromofluorobenzene (4-BFB)	2.13	2.13	mg/Kg	1	2	106	106	70 - 130

Matrix Spike (MS-1) Spiked Sample: 311454

QC Batch: 95844 | Date Analyzed: 2012-10-18 | Analyzed By: CW
Prep Batch: 81211 | QC Preparation: 2012-10-17 | Prepared By: CW

Param	F	C	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO		1	218	mg/Kg	1	250	37.2	72	36.1 - 147.2

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

Param	F	C	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO		1	214	mg/Kg	1	250	37.2	71	36.1 - 147.2	2	20

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

continued ...

matrix spikes continued ...

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	92.9	86.8	mg/Kg	1	100	93	87	78.3 - 131.6

Calibration Standards

Standard (CCV-1)

QC Batch: 95681 | Date Analyzed: 2012-10-11 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	2.00	1.97	98	80 - 120	2012-10-11
Toluene		1	mg/kg	2.00	1.97	98	80 - 120	2012-10-11
Ethylbenzene		1	mg/kg	2.00	1.88	94	80 - 120	2012-10-11
Xylene		1	mg/kg	6.00	5.93	99	80 - 120	2012-10-11

Standard (CCV-2)

QC Batch: 95681 | Date Analyzed: 2012-10-11 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		1	mg/kg	2.00	1.92	96	80 - 120	2012-10-11
Toluene		1	mg/kg	2.00	1.91	96	80 - 120	2012-10-11
Ethylbenzene		1	mg/kg	2.00	1.79	90	80 - 120	2012-10-11
Xylene		1	mg/kg	6.00	5.64	94	80 - 120	2012-10-11

Standard (CCV-1)

QC Batch: 95682 | Date Analyzed: 2012-10-11 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	20.0	18.6	93	80 - 120	2012-10-11

Standard (CCV-2)

QC Batch: 95682 | Date Analyzed: 2012-10-11 | Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	20.0	23.5	118	80 - 120	2012-10-11

Standard (CCV-1)

QC Batch: 95757 Date Analyzed: 2012-10-16 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-10-16

Standard (CCV-2)

QC Batch: 95757 Date Analyzed: 2012-10-16 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-10-16

Standard (CCV-1)

QC Batch: 95758 Date Analyzed: 2012-10-16 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	100	100	85 - 115	2012-10-16

Standard (CCV-2)

QC Batch: 95758 Date Analyzed: 2012-10-16 Analyzed By: AR

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Chloride			mg/Kg	100	99.8	100	85 - 115	2012-10-16

Standard (CCV-1)

QC Batch: 95773 Date Analyzed: 2012-10-17 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	278	111	80 - 120	2012-10-17

Standard (CCV-2)

QC Batch: 95773 Date Analyzed: 2012-10-17 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	233	93	80 - 120	2012-10-17

Standard (CCV-3)

QC Batch: 95773 Date Analyzed: 2012-10-17 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	209	84	80 - 120	2012-10-17

Standard (CCV-4)

QC Batch: 95773 Date Analyzed: 2012-10-17 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	211	84	80 - 120	2012-10-17

Standard (CCV-1)

QC Batch: 95818 Date Analyzed: 2012-10-17 Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.948	95	80 - 120	2012-10-17

Standard (CCV-2)

QC Batch: 95818 Date Analyzed: 2012-10-17 Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.968	97	80 - 120	2012-10-17

Standard (CCV-3)

QC Batch: 95818 Date Analyzed: 2012-10-17 Analyzed By: YG

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		1	mg/Kg	1.00	0.990	99	80 - 120	2012-10-17

Standard (CCV-1)

QC Batch: 95844 Date Analyzed: 2012-10-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	257	103	80 - 120	2012-10-18

Standard (CCV-2)

QC Batch: 95844 Date Analyzed: 2012-10-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	217	87	80 - 120	2012-10-18

Standard (CCV-3)

QC Batch: 95844 Date Analyzed: 2012-10-18 Analyzed By: CW

Param	Flag	Cert	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		1	mg/Kg	250	214	86	80 - 120	2012-10-18

Appendix

Report Definitions

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

Laboratory Certifications

C	Certifying Authority	Certification Number	Laboratory Location
-	NCTRCA	WFWB384444Y0909	TraceAnalysis
-	DBE	VN 20657	TraceAnalysis
-	HUB	1752439743100-86536	TraceAnalysis
-	WBE	237019	TraceAnalysis
1	NELAP	T104704392-12-4	Midland

Standard Flags

F	Description
B	Analyte detected in the corresponding method blank above the method detection limit
H	Analyzed out of hold time
J	Estimated concentration
Jb	The analyte is positively identified and the value is approximated between the SDL and MQL. Sample contains less then ten times the concentration found in the method blank. The result should be considered non-detect to the SDL.
Je	Estimated concentration exceeding calibration range.
Qc	Calibration check outside of laboratory limits.
Qr	RPD outside of laboratory limits
Qs	Spike recovery outside of laboratory limits.
Qsr	Surrogate recovery outside of laboratory limits.
U	The analyte is not detected above the SDL

Attachments

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

12101038

Analysis Request of Chain of Custody Record

PAGE: 1 OF: 1

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

CLIENT NAME: NMR Energy LLC
SITE MANAGER: Ike Tavarez
PROJECT NO.: 114-6401374
PROJECT NAME: Barnhill Tank Battery Lea Co NM

LAB I.D. NUMBER	DATE 2012	TIME	MATRIX	COMP.	GRAB	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	FILTERED (Y/N)	PRESERVATIVE METHOD: HCL	HNO3	ICE	NONE	BTEX 8021B	TPH TX1005 (Ext. to C35) / 8015 MOD.	PAH 8270	RCRA Metals Ag As Ba Cd Cr Pb Hg Se	TCLP Metals Ag As Ba Cd Vr Pd Hg Se	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC.MS Vol. 8240/8260/624	GC.MS Semi. Vol. 8270/625	PCB's 8080/608	Pest. 808/608	Chloride	Gamma Spec.	Alpha Beta (Air)	PLM (Asbestos)	Major Anions/Cations, pH, TDS
311453	10-9		S	X		T-1 (0-1')	1	N			X	X	X	X											X				
454					X	T-1 (2')																							
455					X	T-1 (4')																							
456					X	T-1 (5')																							
457				X		T-2 (0-1')							X	X															
458					X	T-2 (2')																							
459					X	T-2 (4')																							
460	10-9		S		X	T-2 (6')	1	N			X	X													X				

ANALYSIS REQUEST (Circle or Specify Method No.)

RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:
			Jeanne Fitch	10-10-12	1000
RELINQUISHED BY: (Signature) Jeanne Fitch	Date: 10-10-12	Time: 1335	RECEIVED BY: (Signature)	Date: 10-10-12	Time: 13:35
RELINQUISHED BY: (Signature)	Date:	Time:	RECEIVED BY: (Signature)	Date:	Time:

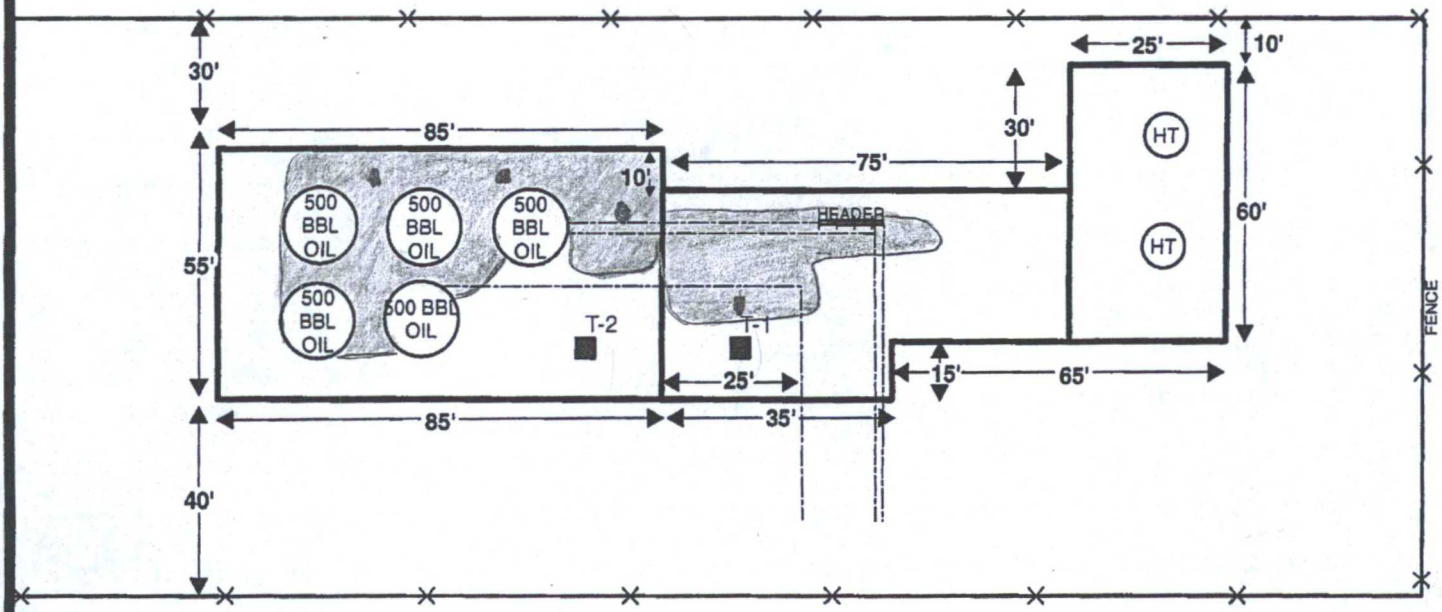
SAMPLED BY: (Print & Initial) James — Date: 10-9-12 Time:
SAMPLE SHIPPED BY: (Circle) FEDEX BUS HAND DELIVERED UPS — AIRBILL #: — OTHER:
TETRA TECH CONTACT PERSON: IKE Tavarez — Results by:
RUSH Charges Authorized: Yes No

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

SAMPLE CONDITION WHEN RECEIVED: -0.6 intact

REMARKS: If Benzene > 10 mg/kg OR Total BTEX > 50 mg/kg Run deeper sample, If Total ~~TPH~~ > 1,000 TPH > 1,000 mg/kg Run deeper Sample

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



EXPLANATION

■ BACKHOE TRENCH LOCATIONS

N

SCALE: 1 IN = 42 FEET

Feet 0 20 40

NMR ENERGY

Figure 3

Barnhill & Post TB

Trench Location Map

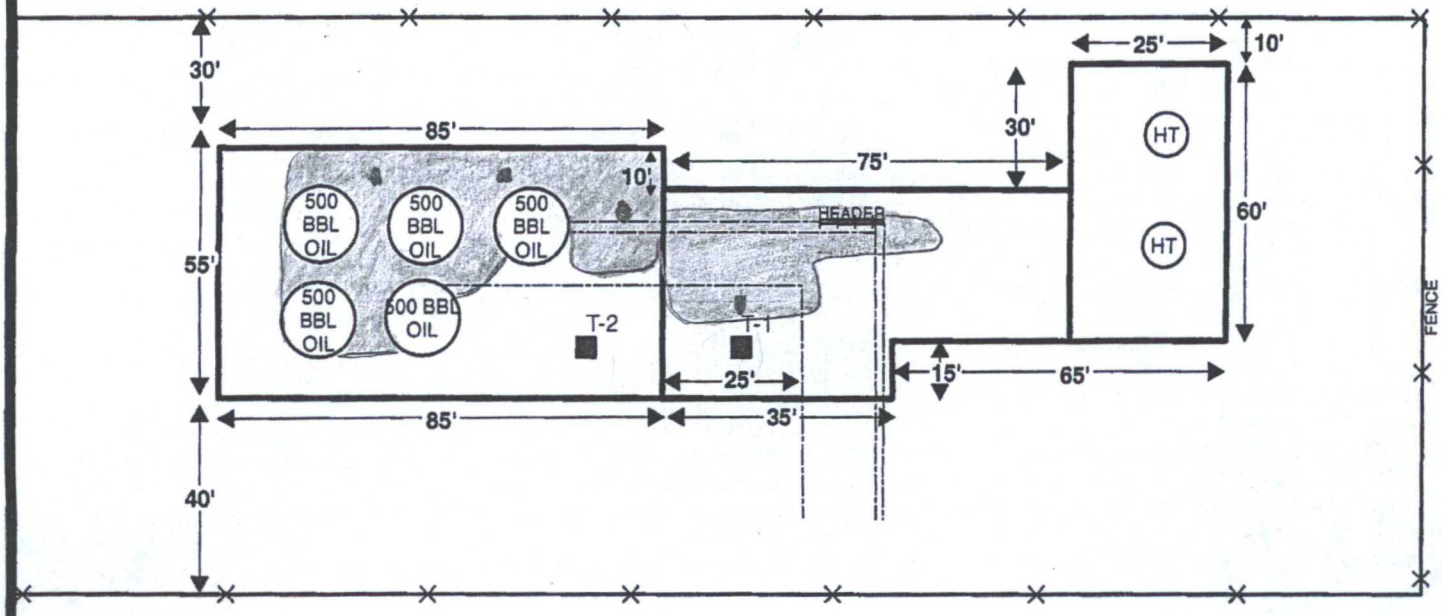
Lea County, New Mexico

Project : 114-6401374

Date : 7/31/2012

File : H:\GIS\6401374

Drawn By: Isabel Marmolejo



EXPLANATION

■ BACKHOE TRENCH LOCATIONS

N

SCALE: 1 IN = 42 FEET

Feet 0 20 40

NMR ENERGY

Figure 3

Barnhill & Post TB

Trench Location Map

Lea County, New Mexico

Project : 114-6401374

Date : 7/31/2012

File : H:\GIS\6401374

Drawn By: Isabel Marmolejo

Leking, Geoffrey R, EMNRD

From: Leking, Geoffrey R, EMNRD
Sent: Monday, April 15, 2013 10:50 AM
To: 'Tavarez, Ike'
Cc: 'hlamb@helmsoil.com'; dbaker@tumbleweedllc.com
Subject: RE: NMR Energy - Barnhill and Post TB and Post #3 Well - Sampling Data and Figures

Ike

Delineation is still needed at both sites for chlorides. Remediation for TPH at the Tank Battery and chlorides at both sites. Apparently hydrocarbons were not a significant problem?

Talk about the details tomorrow.

Thank you.

Geoffrey Leking
Environmental Specialist
NMOCD-Hobbs
1625 N. French Drive
Hobbs, NM 88240
Office: (575) 393-6161 Ext. 113
Cell: (575) 399-2990
email: geoffreyr.leking@state.nm.us

From: Tavarez, Ike [mailto:Ike.Tavarez@tetratech.com]
Sent: Monday, April 15, 2013 9:26 AM
To: Leking, Geoffrey R, EMNRD
Cc: 'hlamb@helmsoil.com'; dbaker@tumbleweedllc.com
Subject: FW: NMR Energy - Barnhill and Post TB and Post #3 Well - Sampling Data and Figures

Geoffrey,

According to our last correspondence for the sites, I had sent you the data to review, but we did not get around to discussed data and remedial options for the sites.

As requested, Tetra Tech collected soil samples using a backhoe at both sites. Two (2) trenches were installed in the Barnhill and Post Tank Battery and three (3) trenches at the Post Well #3. I would like to discuss the data and proposed remediation for each site tomorrow. Let me know if you additional information, thanks

Ike Tavarez
Tetra Tech

From: Tavarez, Ike
Sent: Tuesday, December 04, 2012 2:47 PM
To: Leking, Geoffrey R, EMNRD

Cc: 'hlamb@helmsoil.com'; Kennedy, James
Subject: NMR Energy - Barnhill and Post TB and Post #3 Well - Sampling Data and Figures

Geoffrey,

As requested, the sampling data for the above referenced sites are attached for your review. Please call me to discuss the data, so we can move forward on these sites, thanks

Ike Tavarez, PG | Senior Project Manager

Main: 432.682.4559 | Fax: 432.682.3946 | Cell: 432.425.3878

Ike.Tavarez@tetratech.com

Tetra Tech | Complex World, Clear Solutions™

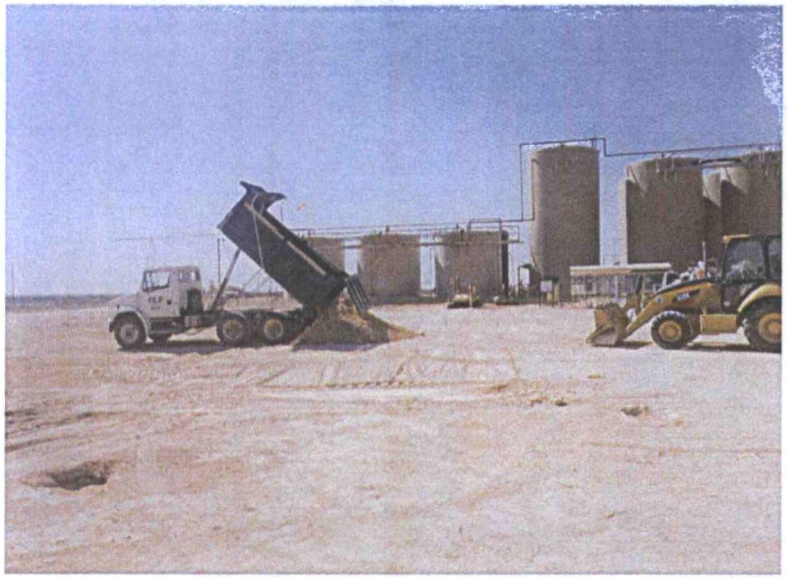
1910 North Big Spring | Midland, TX 79705 | www.tetratech.com

Chronology of Events

8/24/10	Tetra Tech install backhoe trenches to define extents
9/19/11	Tetra Tech installed boreholes to define extents
1/27/12	Tetra Tech submitted work plan to the NMOCD
9/20/12	Tetra Tech met with the NMOCD to review work plan. According to NMOCD the work plan had not been reviewed.
9/28/12	Tetra Tech resubmitted (email) work plan to the NMOCD.
10/17/12	Tetra Tech requested (email) to start the site remediation.
10/22/12	NMOCD response to work plan for additional delineation.

4/16/12.

NMR- POST #1- 4/30/13



Importing soil, facing south 4/4/13

Scrape completed to 1', facing southeast 4/19/13

Scrape completed to 1', facing southeast 4/19/13

Backfilling pad, facing southwest 4/4/13

5/2/13 NORTH AREA - HIST FOUND DURING RECENT SPILL REMED

Excavating pasture 6 more inches, facing southeast
4/15/13

Excavation completed in north area, facing northwest
4/15/13

Exporting soil, facing northeast 4/15/13

5/2/13 MTG NORTH AREA - HIST FOUND DURING RECENT SPILL REMED