AP - 12

STAGE 2 REPORT

Date 10-5-12

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MOBILE DUAL PHASE EXTRACTION REPORT
TNM 98-05A PIPELINE RELEASE
LEA COUNTY, NEW MEXICO
SRS # TNM 98-05A
NMOCD ID# AP-12
TALON/LPE PROJECT # 700376.145.01

PREPARED FOR:

PLAINS MARKETING, L.P.
333 CLAY STREET
SUITE 1600
HOUSTON, TEXAS 77002

PREPARED BY:

TALON/LPE
921 N. BIVINS
AMARILLO, TEXAS 79107

10/8/12

TALON/LPE (F-6802)

DISTRIBUTION:

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OCTOBER 5, 2012

TABLE OF CONTENTS

Section Page

Attachments:

I. MDPE SUMMARY REPORT AND WASTE DISPOSITION

A. MDPE Results

The following report summarizes data collected during the 12-hour High Vacuum Multi-Phase Extraction (MDPE) event conducted on August 7th, 2012 at the TNM 98-05A Pipeline release site, located in Lea County, New Mexico. The objective of the MDPE treatment was to remove both vapor and liquid phase separated hydrocarbons (PSH) from onsite groundwater wells. Talon/LPE utilized an MDPE unit which consisted of an SVE extraction pump capable of generating vacuum up to 25" hg. Off gas vapors extracted from the extraction wells were destroyed using a propane-fired 1000-SCFM thermal oxidizer capable of processing 172.96 lbs/hr of gasoline.

A total of 12 hours (0.5 days) of PSH recovery was performed. (MW-10 for 12 hours)

Prior to and immediately following the event, the groundwater wells were gauged for groundwater elevation and PSH. Depth to groundwater ranges were measured in feet below the top of casing. Refer to Attachment 1 for a summary of data collected during the MDPE event.

The volume of PSH removed during the MDPE event is shown to reflect the portions of PSH in the liquid phase and as off-gas vapor. Air removal rates were calculated from velocity measurements recorded at the influent manifold prior to entry into the MDPE unit. PSH recovery and air flow data has been detailed and is contained in Table 1. Two influent air samples were collected over the course of the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. Both influent samples were tested for Total-Gas Analysis (Hydrocarbon Composition) by ASTM method D 1945. Laboratory analytical results can be found in Attachment 2.

Based on a combination of field vapor screening and collected laboratory samples, a combined estimated total of **23.44 equivalent gallons of hydrocarbons (Total)** were removed during the event. The combined volume of hydrocarbons were comprised of approximately **3 gallons of PSH (liquid phase)** and approximately **20.44 gallons as off-gas vapor**. The calculations used to estimate the off-gas vapor mass recovered reflect the mass of total hydrocarbons recovered and does not necessarily equate to an equal mass of the product released. The mass recovery calculations may be affected by variations in the specific gravity of hydrocarbon released, age of release, activity of aerobic and/or anaerobic processes, and site specific geochemical factors.

The cumulative air flow measurements for the MDPE event were calculated using a combination of field data measurements and Preso® B+ manufacturer provided formulas. **Air flow rates extracted from the recovery wells averaged 154.74 SCFM** during the event.

A portion of the extracted air flow rates measured is attributable to compressed air, which was "injected" into the extraction wells. This "injected" air is introduced into the extraction wells for the purpose of enhancing liquid recovery rates.

B. Air Quality

Two influent air samples were collected during the event. These samples were submitted for laboratory testing in order to compare the predicted vapor concentrations (based on field-screening or calculated based on fuel consumption) to the actual vapor concentrations. The maximum concentration in air influent was recorded as 13,946 ppmv for Hydrocarbon Composition. Laboratory analytical results can be found in Attachment 2.

C. Waste Management and Disposition

A cumulative total of 259 gallons of fluid were generated during this event. The fluids were transferred to an on-site storage tank prior to being hauled to an authorized disposal facility. A copy of the disposal ticket can be found in Attachment 4.

II. SYSTEM OPERATION DATA AND MASS RECOVERY CALCULATIONS

Formulae:

$$\text{Concentration (C\_mg/l)} = \frac{\text{C\_ppmv x Mol. wt. in mg(estimated) x 1000 x 0.000001}}{\text{0.0821 x Temp (K)}}$$

$$\text{Recovery Rate (lbs/hr)} = \frac{\text{(C\_mg/l) x 2.2 x (Flowrate) x 60 x 28.32}}{\text{1,000,000}}$$

Recovery (lbs) = (lbs/hr) x (hrs)

$$\text{Correction Factor (CF)} = \frac{\text{PID Reading(ppmv)}}{\text{PID Reading at Time of Laboratory Analysis}}$$

$$\frac{\text{8.34 lbs}}{\text{gallon water}} \times \text{0.82 average specific gravity of light crude (estimated)} = \frac{\text{6.84 lbs light crude}}{\text{gallon}}$$

Table 1
System Operation Data and Mass Recovery Calculations

Time	Period (hours)	Influent Temp. (°f)	Vacuum (In. hg)	Vacuum (In. h20)	Differential pressure (In. h20)	Flow (SCFM)	PID Readings (ppmv)	Lab Result (ppmv)	Assigned Lab Result (ppmv)	Correction Factor (CF)	Adjusted Lab Result (ppmv)	Adjusted Lab Result (mg/L)	Recovery (lbs/hr)	Recovery in Period (lbs)	Total Recovery (lbs)
10:00	0.5	90	17.5	238.16	44.1	146.94	291.8	-	13946.00	0.92	12765	22.44	12.32	6.16	6.16
10:30	0.5	92	17.5	238.16	44.7	147.67	318.8	13946.00	13946.00	1.00	13946	24.42	13.48	6.74	12.90
11:30	1	94	17.5	238.16	47.3	151.63	211.3	-	13946.00	0.66	9243	16.13	9.14	9.14	22.05
12:30	1	96	17.5	238.16	49.6	154.99	69.1	-	13946.00	0.22	3023	5.26	3.05	3.05	25.09
13:30	1	98	17.5	238.16	49.1	153.93	1256	-	13946.00	3.94	54944	95.19	54.78	54.78	79.87
14:30	1	99	17.5	238.16	50.6	156.13	218.4	-	13946.00	0.69	9554	16.52	9.64	9.64	89.51
15:30	1	100	17.5	238.16	51	156.60	147.1	-	13946.00	0.46	6435	11.11	6.50	6.50	96.01
16:30	1	101	17.5	238.16	50.3	155.39	214.2	-	6782.00	1.01	6869	14.16	8.23	8.23	104.24
17:30	1	100	17.5	238.16	50.9	156.45	171.5	-	6782.00	0.81	5499	11.36	6.64	6.64	110.88
18:30	1	100	17.5	238.16	51.2	156.91	203.3	-	6782.00	0.96	6519	13.47	7.90	7.90	118.78
19:30	1	96	17.5	238.16	49.9	155.46	144	-	6782.00	0.68	4618	9.61	5.58	5.58	124.37
20:30	1	90	17.5	238.16	50.9	157.87	211.5	6782.00	6782.00	1.00	6782	14.26	8.42	8.42	132.78
21:30	1	88	17.5	238.16	53.2	161.69	171.9	-	6782.00	0.81	5512	11.64	7.03	7.03	139.82
Averages:		95.69	17.50	238.16	49.45	154.74	279.15						Total	139.82	

PSH Mass Recovered in Vapor Phase = 20.44 gallons

PID maximum Concentration = 15,000 PPM

Ex: Conversion from ppmv to mg/L (influent 1)

Measured Conc.	Molecular Wt.	Pressure	Gas Constant	Temp.	Temp.	Conc.
(C_ppmv)	(Grams)	(atm)	(atm.liter/K.mole)	(F)	(K)	(C_mg/l)
12765	44.04553851	1	0.0821	90	305.2222222	22.43671403

Inputs are the green values.
Calculated values are yellow.
Constants are purple values.
Outpus are the blue values.

Liquid-phase Hydrocarbon Recovery

(assumes gasoline product)

$\prod * r^2 * h$ = volume

Gallons removed determined at time of pick up

PSH Volume in Gallons=	3
PSH Mass in Pounds=	20.52

Total Hydrocarbon Recovery

PSH Mass Recovered in Vapor Phase =	139.82	lbs
	20.44	gallons
PSH Mass Recovered in Liquid Phase =	20.52	lbs
	3.00	gallons
TOTAL =	**160.34**	**lbs**
	23.44	**gallons**

% Total Hydrocarbon to mg/m³ to ppmv - Influent 1

Compound	Molecular Weight (g/mol)	% total	=	ppmv
Methane (CH4)	16.04	0.7261		7261.00
Ethane (C2H6)	30.07	0.05		500.00
Propane (C3H8)	44.10	0.0383		383.00
Iso-Butane (C4H10)	58.12	0.0418		418.00
N-Butane (C4H10)	58.12	0.0438		438.00
Iso-Pentane (C4H12)	72.15	0.0387		387.00
N-Pentane (C5H12)	72.15	0.0335		335.00
Hexane+ (C6H14)	86.18	0.4224		4224.00
			Total	**13946.00**

Molecular Weight Calculations

Total Hydrocarbon %=	1.3946
g of Methane (CH4) =	8.351243367
g of Ethane (C2H6) =	1.078086907
g of Propane (C3H8) =	1.211121469
g of Iso-Butane (C4H10) =	1.742016349
g of N-Butane (C4H10) =	1.825366413
g of Iso-Pentane (C4H12) =	2.00215474
g of N-Pentane (C5H12) =	1.733131364
g of Hexane+ (C6H14) =	26.1024179
Calculated MW (Grams)	**44.04553851**

% Total Hydrocarbon to mg/m³ to ppmv - Influent 2

Compound	Molecular Weight (g/mol)	% total	=	ppmv
Methane (CH4)	16.04	0.2871		2871.00
Ethane (C2H6)	30.07	0.01		100.00
Propane (C3H8)	44.10	0.0072		72.00
Iso-Butane (C4H10)	58.12	0.025		250.00
N-Butane (C4H10)	58.12	0.0152		152.00
Iso-Pentane (C4H12)	72.15	0.0227		227.00
N-Pentane (C5H12)	72.15	0.0183		183.00
Hexane+ (C6H14)	86.18	0.2927		2927.00
			Total	**6782.00**

Molecular Weight Calculations

Total Hydrocarbon %=	0.6782
g of Methane (CH4) =	6.790156296
g of Ethane (C2H6) =	0.443379534
g of Propane (C3H8) =	0.468180478
g of Iso-Butane (C4H10) =	2.14243586
g of N-Butane (C4H10) =	1.302601003
g of Iso-Pentane (C4H12) =	2.414929224
g of N-Pentane (C5H12) =	1.946837216
g of Hexane+ (C6H14) =	37.19387496
Calculated MW (Grams)	**52.70239457**

ATTACHMENT 1

MDPE Field Logs

MDPE FIELD NOTES					
Site Name:	TNM 98-05A			Event #:	1
Location:	N. of Eunice, NM			Arrive at site:	8/7/2012 8:30
Date:	8/7/2012				
Job#:	700376.145.01	SRS:	TNM 98-05A	Start Vac:	8/7/2012 9:30
Phase:	MDPE1	Unit:	1107	Stop Vac:	8/7/2012 21:30
Onsite Personnel:	L. Bridges & B. Huntington			Leave Site:	8/7/2012 22:15

GAUGING DATA

WELL#	BEFORE			AFTER			COMMENTS
	PSH	GW	PSH-T	PSH	GW	PSH-T	
MW-10	48.41	49.96	1.55	-	49.88	-	Stinger set @ 50'
MW-2	-	48.29	-	Not Gauged			
MW-6	-	48.91	-	Not Gauged			
MW-7	-	48.81	-	Not Gauged			
MW-9	-	48.72	-	Not Gauged			
MW-1	-	48.72	-	Not Gauged			
MW-3	-	48.21	-	Not Gauged			
WASTE:	H2O:	256		PSH:	3		TOTAL (GAL): 259

Sample Name	Analysis	Date:	Time:	Comments:
INFLUENT	ASTM D1945	7-Aug-12	10:30	PID = 318.8 ppm
INFLUENT	ASTM D1945	7-Aug-12	20:30	PID = 211.5 ppm
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Notes:
Tank #1 - Total 10" - PSH at 9 7/8" = Total 259 gallons with 3 gallons PSH

Start Date: 7-Aug-12

MDPE FIELD DATA

		Well Flow						Well Data				
TIME	SAMPLE TAKEN *	Inflent temp. (°f)	Diff. Pressure (INH20) 2" Preso	Vac (In.Hg)	PID Composite (PPM)	Propane Tank (%-size) 500 Gal.	EXHAUST TEMP F	COMMENTS:				
								MW-10				
								VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)	VAC (INH2O)
10:00		90	44.1	17.5	291.8	80	1409	19.6				
10:30	*	92	44.7	17.5	318.8	78	1412	18.5				
11:30		94	47.3	17.5	211.3	75	1410	13.8				
12:30		96	49.6	17.5	69.1	73	1414	9.2				
13:30		98	49.1	17.5	1256	71	1409	18.3				
14:30		99	50.6	17.5	218.4	70	1406	17.9				
15:30		100	51	17.5	147.1	68	1411	15.6				
16:30		101	50.3	17.5	214.2	66	1409	14.3				
17:30		100	50.9	17.5	171.5	64	1408	18				
18:30		100	51.2	17.5	203.3	62	1408	18.7				
19:30		96	49.9	17.5	144	60	1407	18.7				
20:30	*	90	50.9	17.5	211.5	57	1409	18.3				
21:30		88	53.2	17.5	171.9	55	1410	18.9				

Soil Vacuum Influence

Observation Well	MW-2
Extraction Well (EW)	MW-10
Time:	In.H2O
10:30	0.4
20:30	0.2

ATTACHMENT 2

Laboratory Analytical Results

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

Simon Walshe
Talon LPE-Amarillo
921 North Bivins
Amarillo, TX, 79107

Report Date: August 21, 2012

Work Order: 12081309

Project Location: N. of Eunice, NM
Project Name: TNM 98-05A
Project Number: 700376.145.01
SRS #: TNM-98-05A

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
306606	Influent #1	air	2012-08-07	10:30	2012-08-11

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.

This report consists of a total of 5 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

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

Report Contents

Case Narrative

Samples for project TNM 98-05A were received by TraceAnalysis, Inc. on 2012-08-11 and assigned to work order 12081309. Samples for work order 12081309 were received intact at a temperature of 25.4 C.

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

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 12081309 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

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	T104704219-12-8	Lubbock

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.

LAB Order ID # 12081309

Page 1 of 1

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
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Tel (432) 689-6301
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200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: Talon LPE
Phone #: 8646705607
Address: (Street, City, Zip) 921 N. Bivins Amarillo Tx
Fax #:
Contact Person: Simon Walshe
E-mail:
Invoice to: (if different from above) Plains (Jason Henry) SRS# TNM-98-05A
Project #: 700376.145.01
Project Name: TNM 98-05A
Project Location (including state): N of Eunice, NM
Sampler Signature:

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
30dd06	Effluent #1	1	1			✓							✓	8-7-12	1030
607	Effluent #2	1	1			✓							✓	8-7-12	2030

MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	Na, Ca, Mg, K, TDS, EC	ASTM D 1945				Turn Around Time if different from standard	Hold
																			✓					
																			✓					

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
	Talon	8-10-12						INST ____ OBS ____ °C COR ____ °C
								INST ____ OBS ____ °C COR ____ °C
				Brenda Ward	Trac Lubbock	8/11/12	10:20	INST LK-2 OBS 25.4 °C COR 25.4 °C

LAB USE ONLY
Intact Y / N
Headspace Y / N NA
Log-in-Review BK

REMARKS:

- ☐ Dry Weight Basis Required
- ☐ TRRP Report Required
- ☐ Check If Special Reporting Limits Are Needed

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier # LBW UPS 4554959476

Office: 806-665-0750
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

The following analytical results were produced using the strictest quality control and most current methods:

COC #: N/A

Lab #: 13186-13187

Quality Control #: 2145

Approved by:

Neil Ray

Neil Ray

Date: 8/17/12

Office: 806-665-0750
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent Air #1
Trace: 306606-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 8/07/12 Time: N/A
Sampled By: N/A
Analysis Date: 8/16/12
Analysis By: Neil Ray

Lab #: 13186
Quality Control Report: 2145

Analytical Results

Gas Composition					
	Mol %	GPM	Vol %	ppm vol.	Wt. %
Nitrogen (N2):	94.2179	10.3110	90.9887	909887	91.4726
Carbon Dioxide (CO2):	5.0847	0.8575	7.6168	76168	7.7387
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**		**Wt. %**
Methane (CH4):	0.4877	0.0828	0.7261	7261	0.2705
Ethane (C2H6):	0.0213	0.0057	0.0500	500	0.0221
Propane (C3H8):	0.0158	0.0043	0.0383	383	0.0241
Iso-Butane (C4H10):	0.0146	0.0047	0.0418	418	0.0293
N-Butane (C4H10):	0.0158	0.0050	0.0438	438	0.0318
Iso-Pentane (C5H12):	0.0121	0.0044	0.0387	387	0.0300
N-Pentane (C5H12):	0.0105	0.0038	0.0335	335	0.0262
Hexanes+ (C6H14):	0.1196	0.0516	0.4224	4224	0.3546
Totals	100.000	11.3308	100.000		100.000

Comments - Additional Data

BTU -dry (BTU/ft^3):	13.7	Z-Comp. Factor-dry:	0.99958
BTU -water vapor sat.(BTU/ft^3):	14.4	Z-Comp. Factor-water vapor sat.:	0.99476
Specific Gravity -dry:	0.9968	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9951		

Office: 806-665-0790
Fax: 806-665-0745

MIDWEST PRECISION TESTING, L.L.C.

615 N. Price Rd.
Pampa, TX 79065

Sample Matrix: Gas
Sample Type: Spot
Preservative: N/A
Sample Container: Tedlar Bag

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Client: Trace Analysis, Inc.
Project Location: N/A

Sample Id.: Influent Air #2
Trace: 306607-1
Sample Temp.: N/A
Atmospheric Temp.: N/A
Pressure: N/A
Field Data: N/A
Sample Date: 8/07/12 Time: N/A
Sampled By: N/A
Analysis Date: 8/16/12
Analysis By: Neil Ray

Lab #: 13187
Quality Control Report: 2145

Analytical Results

Gas Composition					
	Mol %	GPM	Vol %	ppm vol.	Wt. %
Nitrogen (N2):	95.4638	10.4471	92.9362	929362	93.1135
Carbon Dioxide (CO2):	4.2287	0.7131	6.3856	63856	6.4658
Hydrocarbon Composition	**Mol %**	**GPM**	**Vol. %**		**Wt. %**
Methane (CH4):	0.1913	0.0325	0.2871	2871	0.1066
Ethane (C2H6):	0.0042	0.0011	0.0100	100	0.0044
Propane (C3H8):	0.0029	0.0008	0.0072	72	0.0045
Iso-Butane (C4H10):	0.0086	0.0028	0.0250	250	0.0174
N-Butane (C4H10):	0.0055	0.0017	0.0152	152	0.0110
Iso-Pentane (C5H12):	0.0070	0.0025	0.0227	227	0.0175
N-Pentane (C5H12):	0.0057	0.0021	0.0183	183	0.0143
Hexanes+ (C6H14):	0.0822	0.0355	0.2927	2927	0.2449
Totals	100.000	11.2392	100.000		100.000

Comments - Additional Data

BTU -dry (BTU/ft^3):	7.2	Z-Comp. Factor-dry:	0.99961
BTU -water vapor sat.(BTU/ft^3):	8.0	Z-Comp. Factor-water vapor sat.:	0.99496
Specific Gravity -dry:	0.9920	14.65 psi Pressure Base	
Specific Gravity-water vapor sat.:	0.9902		

Office: 806-665-0790
Fax: 806-665-0745

MIDWEST PRECISION TESTING, LLC.

615 N. Price Rd.
Pampa, TX 79065

Sample Type: Standard
Preservative: N/A
Sample Container: Industrial Cylinder

Sample Id.: DCG
Reference Std. 53619AW
Sample Temp.: 120° F
Analysis Date: 8/15/12
Analysis By: Neil Ray

Method(s): ASTM D 1945
Gas Analysis by Gas Chromatography

Quality Control Report#: 2145

Analytical Results

RESULTS	ACTUAL	ANALYSIS			
Gas Composition			**MDL**	**RL**	**% Deviation**
	Mol %	**Mol %**	**Mol %**	**ppm mol**	**(90-100%)**
Nitrogen (N2):	4.918	4.9306	0.0010	10	99.7
Carbon Dioxide (CO2):	1.499	1.4890	0.0010	10	99.3
			MDL	**RL**	**% Deviation**
Hydrocarbon Composition	**Mol %**	**Mol %**	**Mol %**	**ppm mol**	**(90-100%)**
Methane (CH4):	69.891	69.8312	0.0001	1	99.9
Ethane (C2H6):	9.111	9.1379	0.0001	1	99.7
Propane (C3H8):	5.984	5.9888	0.0001	1	99.9
Iso-Butane (C4H10):	3.024	2.9980	0.0001	1	99.1
N-Butane (C4H10):	3.040	3.0928	0.0001	1	98.3
Iso-Pentane (C5H12):	1.012	1.0635	0.0001	1	94.9
N-Pentane (C5H12):	1.018	1.0077	0.0001	1	99.0
Hexane+ (C6H14):	0.503	0.4605	0.0001	1	91.6
Totals	100.000	100.000			

Comments - Additional Data

ACTUAL		ANALYSIS	
BTU -dry (BTU/ft3):	1324.0	BTU -dry (BTU/ft^3):	1324.4
BTU -water vapor sat. (BTU/ft3):	1318.4	BTU -water vapor sat. (BTU/ft^3):	1318.7
Specific Gravity -dry:	0.8349	Specific Gravity -dry:	0.8351
Specific Gravity -water vapor sat.:	0.8419	Specific Gravity -water vapor sat.:	0.8420
Z-Comp. Factor -dry:	0.99564	Z-Comp. Factor -dry:	0.99564
Z-Comp. Factor -water vapor sat.:	0.98306	Z-Comp. Factor -water vapor sat.:	0.98306

LAB Order ID #_____ Page_____ of _____

TraceAnalysis, Inc.

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9
Lubbock, Texas 79424
Tel (806) 794-1296
Fax (806) 794-1298
1 (800) 378-1296

5002 Basin Street, Suite A1
Midland, Texas 79703
Tel (432) 689-6301
Fax (432) 689-6313

200 East Sunset Rd., Suite E
El Paso, Texas 79922
Tel (915) 585-3443
Fax (915) 585-4944
1 (888) 588-3443

BioAquatic Testing
2501 Mayes Rd., Ste 100
Carrollton, Texas 75006
Tel (972) 242-7750

Company Name: _____ **Phone #:** _____

Address: (Street, City, Zip) _____ **Fax #:** _____

Contact Person: _____ **E-mail:** _____

Invoice to: _____
(If different from above)

Project #: _____ **Project Name:** _____

Project Location (including state): _____ **Sampler Signature:** _____

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX: WATER	SOIL	AIR	SLUDGE	PRESERVATIVE METHOD: HCl	HNO_3	H_2SO_4	NaOH	ICE	NONE	SAMPLING: DATE	TIME
13186	306606	1				X								8/7/12	10:30
13187	306607	1				X								1	20:30

MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ext(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCB's 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, SO_4, NO_3-N, NO_2-N, PO_4-P, Alkalinity	Na, Ca, Mg, K, TDS, EC	ASTM D 1945				Turn Around Time if different from standard	Hold
																			X					
																			X					

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	
								INST_____ °C OBS_____ °C COR_____ °C
								INST_____ °C OBS_____ °C COR_____ °C
								INST_____ °C OBS_____ °C COR_____ °C

LAB USE ONLY

Intact Y / N

Headspace Y / N / NA

Log-in-Review_____

REMARKS:

B081309

Mid West

- ☐ Dry Weight Basis Required
- ☐ TRRP Report Required
- ☐ Check If Special Reporting Limits Are Needed

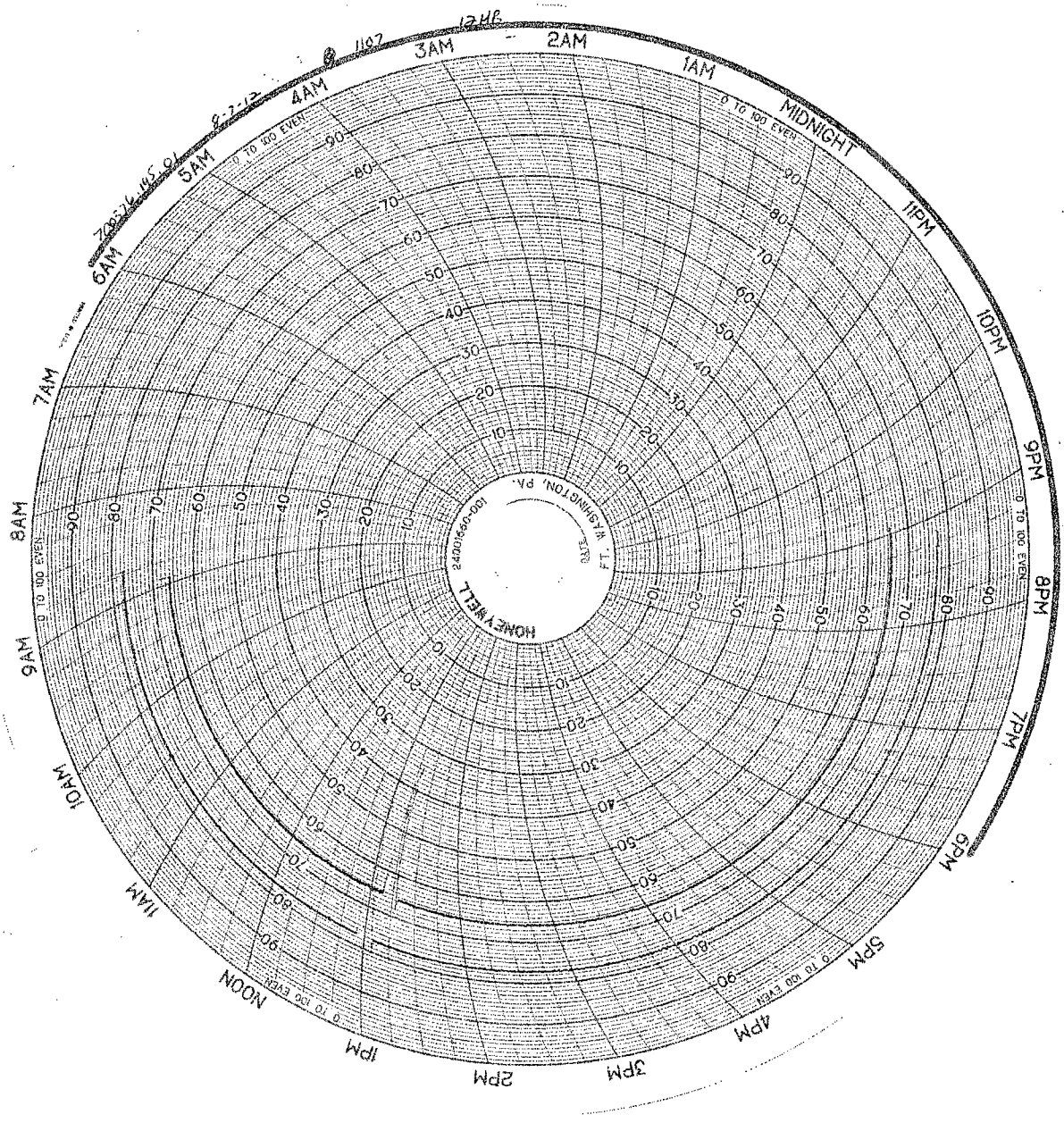
Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier # _____

ORIGINAL COPY

ATTACHMENT 3

Oxidizer Charts


MIDNIGHT
1AM
2AM
3AM
4AM
5AM
6AM
7AM
8AM
9AM
10AM
11AM
NOON
1PM
2PM
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4PM
5PM
6PM
7PM
8PM
9PM
10PM
11PM
12HR
0 TO 100 EVEN
HONEYWELL
WASHINGTON, PA.
FT.

ATTACHMENT 4

Waste Tickets

205446

24-HOUR SERVICE, CALL
LOVINGTON 396-4948
TATUM 398-4960

GANDY CORPORATION

KILL TRUCKS - VACUUM TRUCKS - WINCH TRUCKS
TANK CLEANING - ROUSTABOUTING
PRC #14225

P.O. BOX 2140
LOVINGTON, NEW MEXICO 88260

467245

Date 8-8-12 Truck No. 369

Company TNM-98-05-A Plains Pipeline Purchase Order No. _____ Invoice Number _____

From SRS # TNM-98-05-A Rig No. _____ Location _____

To Lease SPRINKLE Well No. _____ Location _____

Time Out _____ A.M. P.M. Time In _____ A.M. P.M.

Diesel Brine Water Fresh Water
Crude Oil Salt Water Acid Bbls. Hauled 6.5

	TIME	RATE	AMOUNT
		1.10	7.15
Driver, Operator or Pusher DENNIS HARBROVE	4.25	99.00	420.75
Helper			
Helper			
Helper			
Other Charges			

Description of Work: HAULED FLOWBACK TOOK TO DISPOSAL
Job ordered by Lonny w/ Talon (806) 674-2751

Sub Total	427.90
Sales Tax	23.53
TOTAL	451.43

Authorized by: _____

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