



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
TEL: 505-345-3975 FAX: 505-345-4107
Website: www.hallenvironmental.com

June 21, 2016

Amber Griffin

Yates Petroleum Corporation

105 South Fourth Street

Artesia, NM 88210

TEL: (575) 748-4195

FAX

RE: Satchmo SWD State 1

OrderNo.: 1606764

Dear Amber Griffin:

Hall Environmental Analysis Laboratory received 5 sample(s) on 6/14/2016 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to www.hallenvironmental.com or the state specific web sites. In order to properly interpret your results it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0190

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written over a horizontal line.

Andy Freeman

Laboratory Manager

4901 Hawkins NE

Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1606764**

Date Reported: **6/21/2016**

CLIENT: Yates Petroleum Corporation

Client Sample ID: Off Pad-2'

Project: Satchmo SWD State 1

Collection Date: 6/9/2016 12:30:00 PM

Lab ID: 1606764-001

Matrix: SOIL

Received Date: 6/14/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.1		mg/Kg	1	6/16/2016 1:09:02 PM	25855
Surr: DNOP	85.8	70-130		%Rec	1	6/16/2016 1:09:02 PM	25855
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/17/2016 2:11:29 AM	25868
Surr: BFB	105	80-120		%Rec	1	6/17/2016 2:11:29 AM	25868
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	6/17/2016 2:11:29 AM	25868
Toluene	ND	0.048		mg/Kg	1	6/17/2016 2:11:29 AM	25868
Ethylbenzene	ND	0.048		mg/Kg	1	6/17/2016 2:11:29 AM	25868
Xylenes, Total	ND	0.097		mg/Kg	1	6/17/2016 2:11:29 AM	25868
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	6/17/2016 2:11:29 AM	25868

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1606764**

Date Reported: **6/21/2016**

CLIENT: Yates Petroleum Corporation

Client Sample ID: Off Pad-3'

Project: Satchmo SWD State 1

Collection Date: 6/9/2016 12:35:00 PM

Lab ID: 1606764-002

Matrix: SOIL

Received Date: 6/14/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	ND	9.9		mg/Kg	1	6/16/2016 7:30:59 PM	25855
Surr: DNOP	89.1	70-130		%Rec	1	6/16/2016 7:30:59 PM	25855
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	6/17/2016 2:34:54 AM	25868
Surr: BFB	107	80-120		%Rec	1	6/17/2016 2:34:54 AM	25868
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	6/17/2016 2:34:54 AM	25868
Toluene	ND	0.048		mg/Kg	1	6/17/2016 2:34:54 AM	25868
Ethylbenzene	ND	0.048		mg/Kg	1	6/17/2016 2:34:54 AM	25868
Xylenes, Total	ND	0.096		mg/Kg	1	6/17/2016 2:34:54 AM	25868
Surr: 4-Bromofluorobenzene	104	80-120		%Rec	1	6/17/2016 2:34:54 AM	25868

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1606764**

Date Reported: **6/21/2016**

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pad 1-Surface

Project: Satchmo SWD State 1

Collection Date: 6/9/2016 12:42:00 PM

Lab ID: 1606764-003

Matrix: SOIL

Received Date: 6/14/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	42	9.9		mg/Kg	1	6/16/2016 7:59:46 PM	25855
Surr: DNOP	86.2	70-130		%Rec	1	6/16/2016 7:59:46 PM	25855
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.7		mg/Kg	1	6/17/2016 2:58:26 AM	25868
Surr: BFB	107	80-120		%Rec	1	6/17/2016 2:58:26 AM	25868
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	6/17/2016 2:58:26 AM	25868
Toluene	ND	0.047		mg/Kg	1	6/17/2016 2:58:26 AM	25868
Ethylbenzene	ND	0.047		mg/Kg	1	6/17/2016 2:58:26 AM	25868
Xylenes, Total	ND	0.094		mg/Kg	1	6/17/2016 2:58:26 AM	25868
Surr: 4-Bromofluorobenzene	102	80-120		%Rec	1	6/17/2016 2:58:26 AM	25868

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1606764**

Date Reported: **6/21/2016**

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pad 2-Surface

Project: Satchmo SWD State 1

Collection Date: 6/9/2016 12:44:00 PM

Lab ID: 1606764-004

Matrix: SOIL

Received Date: 6/14/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	62	10		mg/Kg	1	6/16/2016 8:28:09 PM	25855
Surr: DNOP	110	70-130		%Rec	1	6/16/2016 8:28:09 PM	25855
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.6		mg/Kg	1	6/17/2016 4:32:26 AM	25868
Surr: BFB	107	80-120		%Rec	1	6/17/2016 4:32:26 AM	25868
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.023		mg/Kg	1	6/17/2016 4:32:26 AM	25868
Toluene	ND	0.046		mg/Kg	1	6/17/2016 4:32:26 AM	25868
Ethylbenzene	ND	0.046		mg/Kg	1	6/17/2016 4:32:26 AM	25868
Xylenes, Total	ND	0.093		mg/Kg	1	6/17/2016 4:32:26 AM	25868
Surr: 4-Bromofluorobenzene	101	80-120		%Rec	1	6/17/2016 4:32:26 AM	25868

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order **1606764**

Date Reported: **6/21/2016**

CLIENT: Yates Petroleum Corporation

Client Sample ID: Pad 3-Surface

Project: Satchmo SWD State 1

Collection Date: 6/9/2016 12:46:00 PM

Lab ID: 1606764-005

Matrix: SOIL

Received Date: 6/14/2016 10:00:00 AM

Analyses	Result	PQL	Qual	Units	DF	Date Analyzed	Batch
EPA METHOD 8015M/D: DIESEL RANGE ORGANICS							Analyst: JME
Diesel Range Organics (DRO)	670	99		mg/Kg	10	6/17/2016 8:59:05 AM	25855
Surr: DNOP	0	70-130	S	%Rec	10	6/17/2016 8:59:05 AM	25855
EPA METHOD 8015D: GASOLINE RANGE							Analyst: NSB
Gasoline Range Organics (GRO)	ND	4.9		mg/Kg	1	6/17/2016 4:55:55 AM	25868
Surr: BFB	123	80-120	S	%Rec	1	6/17/2016 4:55:55 AM	25868
EPA METHOD 8021B: VOLATILES							Analyst: NSB
Benzene	ND	0.024		mg/Kg	1	6/17/2016 4:55:55 AM	25868
Toluene	ND	0.049		mg/Kg	1	6/17/2016 4:55:55 AM	25868
Ethylbenzene	ND	0.049		mg/Kg	1	6/17/2016 4:55:55 AM	25868
Xylenes, Total	ND	0.097		mg/Kg	1	6/17/2016 4:55:55 AM	25868
Surr: 4-Bromofluorobenzene	105	80-120		%Rec	1	6/17/2016 4:55:55 AM	25868

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

Qualifiers:	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	R	RPD outside accepted recovery limits	RL	Reporting Detection Limit
	S	% Recovery outside of range due to dilution or matrix	W	Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1606764

21-Jun-16

Client: Yates Petroleum Corporation

Project: Satchmo SWD State 1

Sample ID	MB-25855		SampType:	MBLK		TestCode:	EPA Method 8015M/D: Diesel Range Organics				
Client ID:	PBS		Batch ID:	25855		RunNo:	34958				
Prep Date:	6/15/2016		Analysis Date:	6/16/2016		SeqNo:	1080384		Units:	mg/Kg	
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual	
Diesel Range Organics (DRO)	ND	10									
Surr: DNOP	9.2		10.00		92.4	70	130				

Sample ID	LCS-25855		SampType: LCS		TestCode: EPA Method 8015M/D: Diesel Range Organics					
Client ID:	LCSS		Batch ID: 25855		RunNo: 34958					
Prep Date:	6/15/2016		Analysis Date: 6/16/2016		SeqNo: 1080386		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	47	10	50.00	0	93.0	62.6	124			
Surr: DNOP	4.2		5.000		84.9	70	130			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1606764

21-Jun-16

Client: Yates Petroleum Corporation

Project: Satchmo SWD State 1

Sample ID	MB-25868		SampType: MBLK		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	PBS		Batch ID: 25868		RunNo: 34963					
Prep Date:	6/15/2016		Analysis Date: 6/16/2016		SeqNo: 1080626		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	1100		1000		106	80	120			

Sample ID	LCS-25868		SampType: LCS		TestCode: EPA Method 8015D: Gasoline Range					
Client ID:	LCSS		Batch ID: 25868		RunNo: 34963					
Prep Date:	6/15/2016		Analysis Date: 6/16/2016		SeqNo: 1080627		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	25	5.0	25.00	0	98.8	80	120			
Surr: BFB	1200		1000		117	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.
D Sample Diluted Due to Matrix
H Holding times for preparation or analysis exceeded
ND Not Detected at the Reporting Limit
R RPD outside accepted recovery limits
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank
E Value above quantitation range
J Analyte detected below quantitation limits
P Sample pH Not In Range
RL Reporting Detection Limit
W Sample container temperature is out of limit as specified

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1606764

21-Jun-16

Client: Yates Petroleum Corporation

Project: Satchmo SWD State 1

Sample ID	MB-25868		SampType: MBLK		TestCode: EPA Method 8021B: Volatiles					
Client ID:	PBS		Batch ID: 25868		RunNo: 34963					
Prep Date:	6/15/2016		Analysis Date: 6/16/2016		SeqNo: 1080654		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.0		1.000		102	80	120			

Sample ID	LCS-25868		SampType: LCS		TestCode: EPA Method 8021B: Volatiles					
Client ID:	LCSS		Batch ID: 25868		RunNo: 34963					
Prep Date:	6/15/2016		Analysis Date: 6/16/2016		SeqNo: 1080655		Units: mg/Kg			
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	1.0	0.025	1.000	0	102	75.3	123			
Toluene	0.93	0.050	1.000	0	93.1	80	124			
Ethylbenzene	0.90	0.050	1.000	0	89.8	82.8	121			
Xylenes, Total	2.7	0.10	3.000	0	89.8	83.9	122			
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Qualifiers:

* Value exceeds Maximum Contaminant Level.	B Analyte detected in the associated Method Blank
D Sample Diluted Due to Matrix	E Value above quantitation range
H Holding times for preparation or analysis exceeded	J Analyte detected below quantitation limits
ND Not Detected at the Reporting Limit	P Sample pH Not In Range
R RPD outside accepted recovery limits	RL Reporting Detection Limit
S % Recovery outside of range due to dilution or matrix	W Sample container temperature is out of limit as specified



Hall Environmental Analysis Laboratory
4901 Hawkins NE
Albuquerque, NM 87109
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Website: www.hallenvironmental.com

Sample Log-In Check List

Client Name: Yates Petroleum Corporat

Work Order Number: 1606764

RcptNo: 1

Received by/date:

Logged By: Lindsay Mangin

6/14/2016 10:00:00 AM

Completed By: Lindsay Mangin

6/14/2016 3:13:22 PM

Reviewed By:

Chain of Custody

1. Custody seals intact on sample bottles? Yes ☒ No ☐ Not Present ☐
2. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
3. How was the sample delivered? Courier

Log In

4. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
5. Were all samples received at a temperature of $>0^{\circ}\text{C}$ to 6.0°C ? Yes ☒ No ☐ NA ☐
6. Sample(s) in proper container(s)? Yes ☒ No ☐
7. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
8. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
9. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
10. VOA vials have zero headspace? Yes ☐ No ☐ No VOA Vials ☒
11. Were any sample containers received broken? Yes ☐ No ☒
12. Does paperwork match bottle labels?
(Note discrepancies on chain of custody) Yes ☒ No ☐
13. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
14. Is it clear what analyses were requested? Yes ☒ No ☐
15. Were all holding times able to be met?
(If no, notify customer for authorization.) Yes ☒ No ☐
of preserved bottles checked for pH:
(<2 or >12 unless noted)
Adjusted?
Checked by:

Special Handling (if applicable)

16. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified:

Date:

By Whom:

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding:

Client Instructions:

17. Additional remarks:

18. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.7	Good	Yes			

Chain-of-Custody Record

Client: Yates Petroleum Corporation

Vailing Address:

105 South 4th Street Artesia, NM 88210

Phone #: 575-513-8799 or 575-748-4111

Email or Fax#: agriffin@yatespetroleum.com

QA/QC Package:

☐ Standard ☐ Level 4 (Full Validation)

Accreditation:

☐ NELAP ☐ Other

☐ EDD (Type)

Turn-Around Time:

☐ Standard ☐ Rush

Project Name:

Satchmo SWD State #1

Project #:

6/3/2016 Release

Project Manager:

Amber Griffin
PO # 205-2020

Sampler:

Amber Griffin

On Ice: ☒ Yes ☐ No

Sample Temperature: 1.7

Date	Time	Matrix	Sample Request ID
6/9/2016	12:30	Soil	Off Pad - 2'
6/9/2016	12:35	Soil	Off Pad - 3'
6/9/2016	12:42	Soil	Pad 1 - Surface
6/9/2016	12:44	Soil	Pad 2 - Surface
6/9/2016	12:46	Soil	Pad 3 - Surface

Container Type and #	Preservative Type	HEAL No.
1 - 4 oz.	Ice	16067601
1 - 4 oz.	Ice	-001
1 - 4 oz.	Ice	-002
1 - 4 oz.	Ice	-003
1 - 4 oz.	Ice	-004
1 - 4 oz.	Ice	-005

Date: 6/13/16

Time: 10:10

Relinquished by: Amber Griffin

Date: 6/13/16

Time: 10:10

Relinquished by:

Received by: J.E. but

Date: 6/14/16

Time: 1000

Received by:



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109

Tel. 505-345-3975 Fax 505-345-4107

Analysis Request

BTEX + MTBE + TMB's (8021)	BTEX + MTBE + TPH (Gas only)	TPH Method 8015B (Gas/Diesel)	TPH (Method 418.1)	EDB (Method 504.1)	8310 (PNA or PAH)	RCRA 8 Metals	Anions (F, Cl, NO ₃ , NO ₂ , PO ₄ , SO ₄)	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	Air Bubbles (Y or N)
X	X	X					X				
X	X	X					X				
X	X	X					X				
X	X	X					X				
X	X	X					X				

Remarks: TPH: 8015B, BTEX: 8021B. Please show BTEX results as mg/kg. Anions: Chloride only, please show on a separate report.

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.