Pace Analytical®
National Center for Testing & Innovation

ANALYTICAL REPORT

October 08, 2019

Laramie Energy - Grand Junction, CO

Sample Delivery Group:	L1145188
Samples Received:	10/02/2019
Project Number:	
Description:	Kobe Flange - Ditch

Report To: Matt Kasten
760 Horizon Dr., Ste. 101
Grand Junction, CO 81506

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

TABLE OF CONTENTS

KOBE FLANGE POR (1) L1145188-01 GW

Collected by: Matt Kasten | Collected date/time: 10/01/19 09:10 | Received date/time: 10/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1355997	1	10/02/19 15:16	10/02/19 15:43	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1355896	10	10/03/19 02:14	10/03/19 02:14	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1355896	5	10/02/19 21:08	10/02/19 21:08	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1358178	1	10/06/19 02:15	10/06/19 02:15	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1358163	1	10/06/19 19:23	10/06/19 19:23	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1356184	1	10/02/19 21:26	10/05/19 03:36	SHG	Mt. Juliet, TN

KOBE FLANGE (2) L1145188-02 GW

Collected by: Matt Kasten | Collected date/time: 10/01/19 09:15 | Received date/time: 10/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1355997	1	10/02/19 15:16	10/02/19 15:43	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1356017	1	10/02/19 20:19	10/02/19 20:19	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1356017	10	10/02/19 20:36	10/02/19 20:36	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1358178	1	10/06/19 02:35	10/06/19 02:35	BMB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1358163	1	10/06/19 19:47	10/06/19 19:47	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1356184	1	10/02/19 21:26	10/05/19 03:59	SHG	Mt. Juliet, TN

KOBE FLANGE DOWN (3) L1145188-03 GW

Collected by: Matt Kasten | Collected date/time: 10/01/19 12:45 | Received date/time: 10/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1355997	1	10/02/19 15:16	10/02/19 15:43	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1356017	1	10/02/19 20:52	10/02/19 20:52	ST	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1356017	10	10/02/19 21:08	10/02/19 21:08	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1358227	1	10/06/19 03:39	10/06/19 03:39	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1358163	1	10/06/19 20:12	10/06/19 20:12	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1356184	1	10/02/19 21:26	10/05/19 04:22	SHG	Mt. Juliet, TN

KOBE FLANGE DITCH BOX L1145188-04 GW

Collected by: Matt Kasten | Collected date/time: 10/01/19 14:00 | Received date/time: 10/02/19 08:45

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Gravimetric Analysis by Method 2540 C-2011	WG1355997	1	10/02/19 15:16	10/02/19 15:43	TH	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1356017	10	10/02/19 21:25	10/02/19 21:25	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1358227	1	10/06/19 04:02	10/06/19 04:02	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1358163	1	10/06/19 20:36	10/06/19 20:36	JHH	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 3511/8015	WG1356184	1	10/02/19 21:26	10/05/19 04:45	SHG	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.

Chris Ward
Project Manager

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1260		20.0	1	10/02/2019 15:43	WG1355997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	19.9		5.00	5	10/02/2019 21:08	WG1355896
Sulfate	591		50.0	10	10/03/2019 02:14	WG1355896

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	10/06/2019 02:15	WG1358178
(S) a,a,a-Trifluorotoluene(FID)	*100*		*78.0-120*		*10/06/2019 02:15*	WG1358178

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	10/06/2019 19:23	WG1358163
Toluene	ND		0.00100	1	10/06/2019 19:23	WG1358163
Ethylbenzene	ND		0.00100	1	10/06/2019 19:23	WG1358163
Total Xylenes	ND		0.00300	1	10/06/2019 19:23	WG1358163
(S) Toluene-d8	*110*		*80.0-120*		*10/06/2019 19:23*	WG1358163
(S) 4-Bromofluorobenzene	*106*		*77.0-126*		*10/06/2019 19:23*	WG1358163
(S) 1,2-Dichloroethane-d4	*101*		*70.0-130*		*10/06/2019 19:23*	WG1358163

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	ND		0.100	1	10/05/2019 03:36	WG1356184
(S) o-Terphenyl	*58.9*		*31.0-160*		*10/05/2019 03:36*	WG1356184

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	432		10.0	1	10/02/2019 15:43	WG1355997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	18.9		1.00	1	10/02/2019 20:19	WG1356017
Sulfate	580		50.0	10	10/02/2019 20:36	WG1356017

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	10/06/2019 02:35	WG1358178
(S) a,a,a-Trifluorotoluene(FID)	*101*		*78.0-120*		*10/06/2019 02:35*	WG1358178

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	10/06/2019 19:47	WG1358163
Toluene	ND		0.00100	1	10/06/2019 19:47	WG1358163
Ethylbenzene	ND		0.00100	1	10/06/2019 19:47	WG1358163
Total Xylenes	ND		0.00300	1	10/06/2019 19:47	WG1358163
(S) Toluene-d8	*111*		*80.0-120*		*10/06/2019 19:47*	WG1358163
(S) 4-Bromofluorobenzene	*104*		*77.0-126*		*10/06/2019 19:47*	WG1358163
(S) 1,2-Dichloroethane-d4	*115*		*70.0-130*		*10/06/2019 19:47*	WG1358163

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	ND		0.100	1	10/05/2019 03:59	WG1356184
(S) o-Terphenyl	*60.5*		*31.0-160*		*10/05/2019 03:59*	WG1356184

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	1270		20.0	1	10/02/2019 15:43	WG1355997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	19.2		1.00	1	10/02/2019 20:52	WG1356017
Sulfate	584		50.0	10	10/02/2019 21:08	WG1356017

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	10/06/2019 03:39	WG1358227
(S) a,a,a-Trifluorotoluene(FID)	*110*		*78.0-120*		*10/06/2019 03:39*	WG1358227

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	10/06/2019 20:12	WG1358163
Toluene	ND		0.00100	1	10/06/2019 20:12	WG1358163
Ethylbenzene	ND		0.00100	1	10/06/2019 20:12	WG1358163
Total Xylenes	ND		0.00300	1	10/06/2019 20:12	WG1358163
(S) Toluene-d8	*110*		*80.0-120*		*10/06/2019 20:12*	WG1358163
(S) 4-Bromofluorobenzene	*112*		*77.0-126*		*10/06/2019 20:12*	WG1358163
(S) 1,2-Dichloroethane-d4	*99.8*		*70.0-130*		*10/06/2019 20:12*	WG1358163

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	ND		0.100	1	10/05/2019 04:22	WG1356184
(S) o-Terphenyl	*60.0*		*31.0-160*		*10/05/2019 04:22*	WG1356184

Gravimetric Analysis by Method 2540 C-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Dissolved Solids	2160		50.0	1	10/02/2019 15:43	WG1355997

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Chloride	529		10.0	10	10/02/2019 21:25	WG1356017
Sulfate	544		50.0	10	10/02/2019 21:25	WG1356017

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) Low Fraction	ND		0.100	1	10/06/2019 04:02	WG1358227
(S) a,a,a-Trifluorotoluene(FID)	*110*		*78.0-120*		*10/06/2019 04:02*	WG1358227

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	ND		0.00100	1	10/06/2019 20:36	WG1358163
Toluene	ND		0.00100	1	10/06/2019 20:36	WG1358163
Ethylbenzene	ND		0.00100	1	10/06/2019 20:36	WG1358163
Total Xylenes	ND		0.00300	1	10/06/2019 20:36	WG1358163
(S) Toluene-d8	*110*		*80.0-120*		*10/06/2019 20:36*	WG1358163
(S) 4-Bromofluorobenzene	*102*		*77.0-126*		*10/06/2019 20:36*	WG1358163
(S) 1,2-Dichloroethane-d4	*112*		*70.0-130*		*10/06/2019 20:36*	WG1358163

Semi-Volatile Organic Compounds (GC) by Method 3511/8015

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
TPH (GC/FID) High Fraction	ND		0.100	1	10/05/2019 04:45	WG1356184
(S) o-Terphenyl	*63.7*		*31.0-160*		*10/05/2019 04:45*	WG1356184

Method Blank (MB)

(MB) R3457346-1 10/02/19 15:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Dissolved Solids	U		2.82	10.0

L1143075-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1143075-06 10/02/19 15:43 • (DUP) R3457346-3 10/02/19 15:43

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Dissolved Solids	844	760	1	10.5	J3	5

Sample Narrative:

OS: T8 used due to sample matrix issue.

Laboratory Control Sample (LCS)

(LCS) R3457346-2 10/02/19 15:43

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Dissolved Solids	8800	8540	97.0	85.0-115	

Method Blank (MB)

(MB) R3457098-1 10/02/19 09:31

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.0519	1.00
Sulfate	U		0.0774	5.00

L1145120-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1145120-01 10/02/19 14:49 • (DUP) R3457098-3 10/02/19 15:02

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	18.2	18.2	1	0.0522		15

L1145146-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1145146-01 10/02/19 18:45 • (DUP) R3457098-6 10/02/19 18:58

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	151	152	5	0.540		15
Sulfate	10.2	10.3	5	1.04	J	15

L1145120-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1145120-01 10/02/19 22:14 • (DUP) R3457098-8 10/02/19 22:27

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Sulfate	216	218	5	0.762		15

Laboratory Control Sample (LCS)

(LCS) R3457098-2 10/02/19 09:44

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.6	80.0-120	
Sulfate	40.0	39.4	98.4	80.0-120	

L1145120-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1145120-02 10/02/19 15:15 • (MS) R3457098-4 10/02/19 15:29 • (MSD) R3457098-5 10/02/19 15:42

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	18.2	67.3	67.1	98.2	97.7	1	80.0-120			0.314	15
Sulfate	50.0	ND	51.2	51.0	98.5	98.0	1	80.0-120			0.479	15

L1145149-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1145149-01 10/02/19 19:50 • (MS) R3457098-7 10/02/19 20:03

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	50.2	97.2	94.1	1	80.0-120	
Sulfate	50.0	38.9	86.7	95.5	1	80.0-120	

Method Blank (MB)

(MB) R3457099-1 10/02/19 10:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chloride	U		0.0519	1.00
Sulfate	U		0.0774	5.00

L1145178-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1145178-01 10/02/19 15:41 • (DUP) R3457099-3 10/02/19 15:56

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	230	229	1	0.251	E	15
Sulfate	17.6	17.6	1	0.243		15

L1145188-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1145188-04 10/02/19 21:25 • (DUP) R3457099-6 10/02/19 21:41

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	529	525	10	0.645		15
Sulfate	544	541	10	0.505		15

Laboratory Control Sample (LCS)

(LCS) R3457099-2 10/02/19 10:21

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	40.0	39.0	97.6	80.0-120	
Sulfate	40.0	39.8	99.5	80.0-120	

L1145178-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1145178-06 10/02/19 18:24 • (MS) R3457099-4 10/02/19 18:41 • (MSD) R3457099-5 10/02/19 18:57

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	50.0	174	215	215	81.9	80.7	1	80.0-120	E	E	0.269	15
Sulfate	50.0	610	620	618	19.5	16.2	1	80.0-120	E V	E V	0.271	15

L1145265-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1145265-01 10/03/19 00:09 • (MS) R3457099-7 10/03/19 00:25

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Chloride	50.0	8.47	58.3	99.6	1	80.0-120	
Sulfate	50.0	11.3	61.1	99.6	1	80.0-120	

Method Blank (MB)

(MB) R3458093-2 10/05/19 19:23

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	U		0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*101*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3458093-1 10/05/19 18:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.74	104	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*106*	*78.0-120*	

L1145063-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1145063-01 10/06/19 02:56 • (MS) R3458093-3 10/06/19 03:17 • (MSD) R3458093-4 10/06/19 03:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	ND	6.36	6.78	116	123	1	10.0-160			6.39	22
(S) a,a,a-Trifluorotoluene(FID)					*110*	*111*		*78.0-120*				

Method Blank (MB)

(MB) R3458737-3 10/05/19 21:54

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) Low Fraction	0.0616	J	0.0314	0.100
(S) a,a,a-Trifluorotoluene(FID)	*110*			*78.0-120*

Laboratory Control Sample (LCS)

(LCS) R3458737-2 10/05/19 20:56

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.81	87.5	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			*92.7*	*78.0-120*	

Method Blank (MB)

(MB) R3458773-2 10/06/19 12:07

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	0.000385	J	0.000331	0.00100
Ethylbenzene	0.000698	J	0.000384	0.00100
Toluene	0.00465		0.000412	0.00100
Xylenes, Total	0.00267	J	0.00106	0.00300
(S) Toluene-d8	*111*			*80.0-120*
(S) 4-Bromofluorobenzene	*112*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*101*			*70.0-130*

Laboratory Control Sample (LCS)

(LCS) R3458773-1 10/06/19 14:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.0250	0.0242	96.8	70.0-123	
Ethylbenzene	0.0250	0.0247	98.8	79.0-123	
Toluene	0.0250	0.0252	101	79.0-120	
Xylenes, Total	0.0750	0.0770	103	79.0-123	
(S) Toluene-d8			*108*	*80.0-120*	
(S) 4-Bromofluorobenzene			*111*	*77.0-126*	
(S) 1,2-Dichloroethane-d4			*99.6*	*70.0-130*	

Method Blank (MB)

(MB) R3457652-1 10/04/19 01:32

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
TPH (GC/FID) High Fraction	U		0.0247	0.100
(S) o-Terphenyl	*62.5*			*31.0-160*

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3457652-2 10/04/19 01:55 • (LCSD) R3457652-3 10/04/19 02:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) High Fraction	1.50	1.54	1.54	103	103	50.0-150			0.000	20
(S) o-Terphenyl				*100*	*97.0*	*31.0-160*				

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state “ND” (Not Detected) or “BDL” (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
V	The sample concentration is too high to evaluate accurate spike recoveries.

Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.
* Not all certifications held by the laboratory are applicable to the results reported in the attached report.
* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina [1]	DW21704
Georgia	NELAP	North Carolina [3]	41
Georgia [1]	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LAO00356
Kentucky [1 6]	90010	South Carolina	84004
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana [1]	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas [5]	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

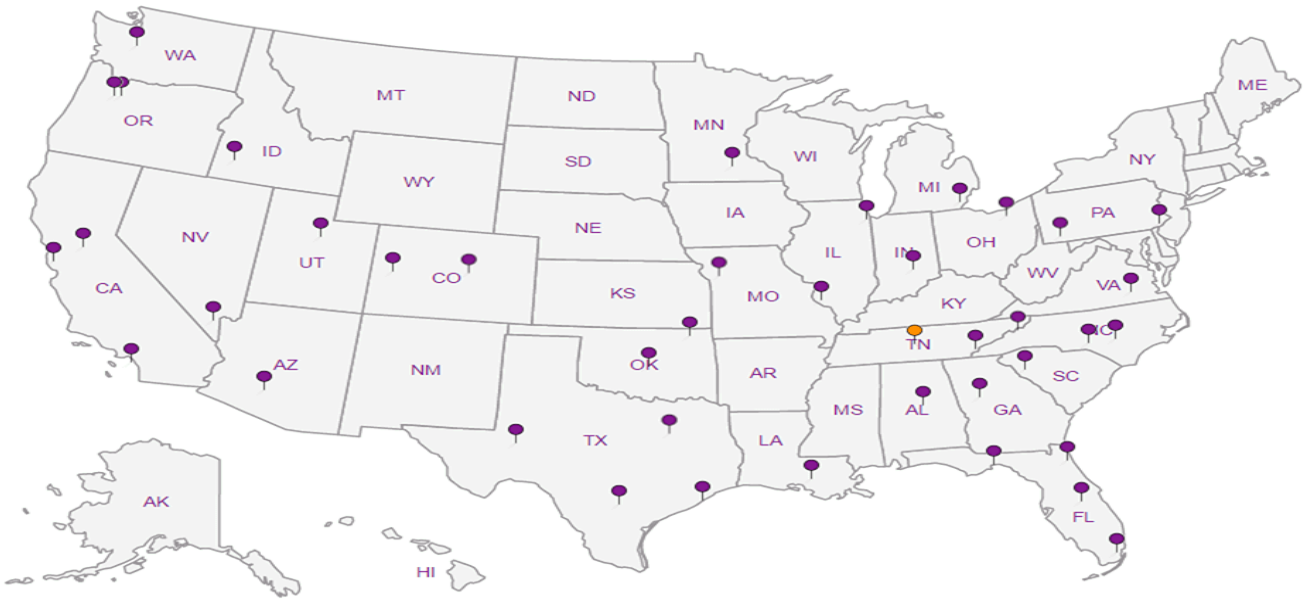
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 [5]	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

[1] Drinking Water [2] Underground Storage Tanks [3] Aquatic Toxicity [4] Chemical/Microbiological [5] Mold [6] Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Company Name/Address:
Entrada Consulting Group
330 Grand Avenue, Suite C
Grand Junction, CO 81501

Billing Information:
☆ LARAMIE OIL & GAS

Report to: **Matt Kasten**

Email To: **mkasten@entradainc.com**

Project Description: KOBE FLANGE - DITCH

City/State Collected:

Phone: **(970) 901-9007**
Fax:

Client Project #

Lab Project #

Collected by (print): Matt Kasten

Site/Facility ID #

P.O. #

Collected by (signature):
Immediately Packed on Ice N ___ Y ✓

Rush? (Lab MUST Be Notified)
___ Same Day 200%
___ Next Day 100%
___ Two Day 50%
___ Three Day 25%

Date Results Needed

Email? ___No ✓Yes
FAX? ✓No ___Yes

Analysis / Container / Preservative

Chain of Custody Page 1 of 1

ESC LABORATORY SCIENCES
YOUR LAB OF CHOICE
12065 Lebanon Rd
Mount Juliet, TN 37122
Phone: 615-758-5858
Phone: 800-767-5859
Fax: 615-758-5859

L# 1145188
Table 1034
Acctnum: UXMO
Template:
Prelogin:
TSR:
Cooler:
Shipped Via:

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	BTEX / GRO	DRO	PAH	SAR, Specific Conductivity, pH	RCRA8 Metals + Cu, Ni,	Cr3, Cr6	Arsenic	CHLORIDES, SULFATES, TDS			Rem./Contaminant	Sample # (lab only)
KOBE FLANGE POR (1)	GRAB	GW	—	10/1/19	910	8	x	x						x				-01
KOBE FLANGE UP (2)					915	8	x	x						x				-02
KOBE FLANGE (3) DOWN					1245	8	x	x						x				-03
KOBE FLANGE DITCH BOX					200	8	x	x						x				-04

* Matrix: **SS** - Soil **GW** - Groundwater **WW** - WasteWater **DW** - Drinking Water **OT** - Other ___

Remarks: RAD SCREEN: <0.5 mR/hr

pH ___ Temp ___
Flow ___ Other ___

Hold #

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	10/1/19	1800	
Relinquished by : (Signature)	Date: 10/1/19	Time: 1928	Received by: (Signature)
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Samples returned via: ☐ UPS ☒ FedEx ☐ Courier ☐ ___
Temp: 4.5 -.2 = 4.3 °C AR AS Bottles Received: 32
Date: 10/2/19 Time: 8:45

Condition: (lab use only)
COC Seal Intact: ___Y ___N ✓NA
pH Checked: NCF:

451016634370

Pace Analytical National Center for Testing & Innovation
Cooler Receipt Form

Client:	L1145188	
Cooler Received/Opened On: 10/02/19 Temperature:	4.3	
Received By: Paul Minnich		
Signature:		

Receipt Check List	NP	Yes	No
COC Seal Present / Intact?	✓		
COC Signed / Accurate?		✓	
Bottles arrive intact?		✓	
Correct bottles used?		✓	
Sufficient volume sent?		✓	
If Applicable			
VOA Zero headspace?		✓	
Preservation Correct / Checked?			