



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

December 31, 2019

Vernon Marcum
MARATHON
92 Giant Crossing Rd
Gallup, NM 87301
TEL:
FAX

RE: Carbon Canister

OrderNo.: 1912884

Dear Vernon Marcum:

Hall Environmental Analysis Laboratory received 1 sample(s) on 12/17/2019 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 #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read 'Andy Freeman', is written in a cursive style.

Andy Freeman
Laboratory Manager
4901 Hawkins NE
Albuquerque, NM 87109

Hall Environmental Analysis Laboratory, Inc.

Analytical Report

Lab Order 1912884

Date Reported: 12/31/2019

CLIENT: MARATHON

Client Sample ID: South Carbon Canister

Project: Carbon Canister

Collection Date: 12/17/2019 6:40:00 AM

Lab ID: 1912884-001

Matrix: AQUEOUS

Received Date: 12/17/2019 2:00:00 PM

Analyses	Result	MDL	RL	Qual	Units	DF	Date Analyzed	Batch ID
EPA METHOD 8015M/D: DIESEL RANGE								
							Analyst: BRM	
Diesel Range Organics (DRO)	2.0	0.71	1.0		mg/L	1	12/19/2019 9:33:35 PM	49407
Motor Oil Range Organics (MRO)	ND	5.0	5.0		mg/L	1	12/19/2019 9:33:35 PM	49407
Surr: DNOP	106	0	70-130		%Rec	1	12/19/2019 9:33:35 PM	49407
EPA METHOD 300.0: ANIONS								
							Analyst: MRA	
Fluoride	16	2.3	10	*	mg/L	100	12/19/2019 2:42:15 AM	R6527E
Chloride	200	2.5	5.0		mg/L	10	12/19/2019 2:17:26 AM	R6527E
Nitrogen, Nitrite (As N)	ND	0.11	1.0		mg/L	10	12/19/2019 2:17:26 AM	R6527E
Bromide	ND	0.50	1.0		mg/L	10	12/19/2019 2:17:26 AM	R6527E
Nitrogen, Nitrate (As N)	ND	0.23	1.0		mg/L	10	12/19/2019 2:17:26 AM	R6527E
Phosphorus, Orthophosphate (As P)	ND	2.5	5.0		mg/L	10	12/19/2019 2:17:26 AM	R6527E
Sulfate	430	2.5	5.0	*	mg/L	10	12/19/2019 2:17:26 AM	R6527E
EPA METHOD 200.7: METALS								
							Analyst: bcv	
Calcium	39	0.062	1.0		mg/L	1	12/23/2019 3:04:34 PM	49451
Magnesium	9.1	0.050	1.0		mg/L	1	12/23/2019 3:04:34 PM	49451
Potassium	18	0.16	1.0		mg/L	1	12/23/2019 3:04:34 PM	49451
Sodium	450	4.7	10		mg/L	10	12/23/2019 3:06:15 PM	49451
EPA METHOD 8260: VOLATILES SHORT LIST								
							Analyst: CCM	
Benzene	ND	3.3	10		µg/L	20	12/17/2019 8:01:00 PM	SL_652
Toluene	ND	7.0	20		µg/L	20	12/17/2019 8:01:00 PM	SL_652
Ethylbenzene	ND	2.6	20		µg/L	20	12/17/2019 8:01:00 PM	SL_652
Methyl tert-butyl ether (MTBE)	ND	9.1	20		µg/L	20	12/17/2019 8:01:00 PM	SL_652
Xylenes, Total	ND	9.1	30		µg/L	20	12/17/2019 8:01:00 PM	SL_652
Surr: 1,2-Dichloroethane-d4	100	0	70-130		%Rec	20	12/17/2019 8:01:00 PM	SL_652
Surr: 4-Bromofluorobenzene	99.2	0	70-130		%Rec	20	12/17/2019 8:01:00 PM	SL_652
Surr: Dibromofluoromethane	98.6	0	70-130		%Rec	20	12/17/2019 8:01:00 PM	SL_652
Surr: Toluene-d8	97.2	0	70-130		%Rec	20	12/17/2019 8:01:00 PM	SL_652
SM2510B: SPECIFIC CONDUCTANCE								
							Analyst: JRR	
Conductivity	3100	5.0	5.0		µmhos/c	1	12/18/2019 10:56:37 A	R6527E
SM4500-H+B / 9040C: PH								
							Analyst: JRR	
pH	8.57			*H	pH units	1	12/18/2019 10:56:37 A	R6527E

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
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912884

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: **MB-49451** SampType: **MBLK** TestCode: **EPA Method 200.7: Metals**
 Client ID: **PBW** Batch ID: **49451** RunNo: **65373**
 Prep Date: **12/19/2019** Analysis Date: **12/23/2019** SeqNo: **2245512** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	ND	1.0								
Magnesium	ND	1.0								
Potassium	ND	1.0								
Sodium	ND	1.0								

Sample ID: **LLCS-49451** SampType: **LCSLL** TestCode: **EPA Method 200.7: Metals**
 Client ID: **BatchQC** Batch ID: **49451** RunNo: **65373**
 Prep Date: **12/19/2019** Analysis Date: **12/23/2019** SeqNo: **2245514** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	0.52	1.0	0.5000	0	103	50	150			J
Magnesium	0.51	1.0	0.5000	0	102	50	150			J
Potassium	0.46	1.0	0.5000	0	91.8	50	150			J
Sodium	0.48	1.0	0.5000	0	97.0	50	150			J

Sample ID: **LCS-49451** SampType: **LCS** TestCode: **EPA Method 200.7: Metals**
 Client ID: **LCSW** Batch ID: **49451** RunNo: **65373**
 Prep Date: **12/19/2019** Analysis Date: **12/23/2019** SeqNo: **2245516** Units: **mg/L**

Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Calcium	50	1.0	50.00	0	99.9	85	115			
Magnesium	50	1.0	50.00	0	100	85	115			
Potassium	49	1.0	50.00	0	98.1	85	115			
Sodium	50	1.0	50.00	0	99.1	85	115			

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
- PQL Practical Quantitative Limit
- 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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912884

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: MB	SampType: mblk	TestCode: EPA Method 300.0: Anions								
Client ID: PBW	Batch ID: R65278	RunNo: 65278								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2241860	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	ND	0.10								
Chloride	ND	0.50								
Nitrogen, Nitrite (As N)	ND	0.10								
Bromide	ND	0.10								
Nitrogen, Nitrate (As N)	ND	0.10								
Phosphorus, Orthophosphate (As P)	ND	0.50								
Sulfate	ND	0.50								

Sample ID: LCS	SampType: ics	TestCode: EPA Method 300.0: Anions								
Client ID: LCSW	Batch ID: R65278	RunNo: 65278								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2241861	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Fluoride	0.51	0.10	0.5000	0	103	90	110			
Chloride	4.8	0.50	5.000	0	96.2	90	110			
Nitrogen, Nitrite (As N)	0.95	0.10	1.000	0	95.0	90	110			
Bromide	2.5	0.10	2.500	0	98.5	90	110			
Nitrogen, Nitrate (As N)	2.5	0.10	2.500	0	101	90	110			
Phosphorus, Orthophosphate (As P)	4.7	0.50	5.000	0	93.9	90	110			
Sulfate	9.8	0.50	10.00	0	97.6	90	110			

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 |
| PQL Practical Quantitative Limit | RL Reporting Limit |
| S % Recovery outside of range due to dilution or matrix | |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912884

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: LCS-49407	SampType: LCS	TestCode: EPA Method 8015M/D: Diesel Range								
Client ID: LCSW	Batch ID: 49407	RunNo: 65281								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243140	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	5.5	1.0	5.000	0	111	71.8	135			
Surr: DNOP	0.49		0.5000		97.4	70	130			

Sample ID: MB-49407	SampType: MBLK	TestCode: EPA Method 8015M/D: Diesel Range								
Client ID: PBW	Batch ID: 49407	RunNo: 65281								
Prep Date: 12/18/2019	Analysis Date: 12/19/2019	SeqNo: 2243141	Units: mg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	1.0								
Motor Oil Range Organics (MRO)	ND	5.0								
Surr: DNOP	1.1		1.000		109	70	130			

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 |
| PQL Practical Quantitative Limit | RL Reporting Limit |
| S % Recovery outside of range due to dilution or matrix | |

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912884

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: 100ng lcs	SampType: LCS	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: LCSW	Batch ID: SL_65226	RunNo: 65226								
Prep Date:	Analysis Date: 12/17/2019	SeqNo: 2240274	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	20	1.0	20.00	0	101	70	130			
Toluene	19	1.0	20.00	0	97.4	70	130			
Surr: 1,2-Dichloroethane-d4	10		10.00		101	70	130			
Surr: 4-Bromofluorobenzene	10		10.00		102	70	130			
Surr: Dibromofluoromethane	9.9		10.00		99.0	70	130			
Surr: Toluene-d8	9.7		10.00		97.3	70	130			

Sample ID: rb	SampType: MBLK	TestCode: EPA Method 8260: Volatiles Short List								
Client ID: PBW	Batch ID: SL_65226	RunNo: 65226								
Prep Date:	Analysis Date: 12/17/2019	SeqNo: 2240275	Units: µg/L							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	1.0								
Toluene	ND	1.0								
Ethylbenzene	ND	1.0								
Methyl tert-butyl ether (MTBE)	ND	1.0								
Xylenes, Total	ND	1.5								
Surr: 1,2-Dichloroethane-d4	9.7		10.00		97.3	70	130			
Surr: 4-Bromofluorobenzene	11		10.00		107	70	130			
Surr: Dibromofluoromethane	10		10.00		100	70	130			
Surr: Toluene-d8	9.8		10.00		97.8	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
- PQL Practical Quantitative Limit
- 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 Limit

QC SUMMARY REPORT

Hall Environmental Analysis Laboratory, Inc.

WO#: 1912884

31-Dec-19

Client: MARATHON
Project: Carbon Canister

Sample ID: ics-1 99.9uS eC	SampType: ics	TestCode: SM2510B: Specific Conductance								
Client ID: LCSW	Batch ID: R65279	RunNo: 65279								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2242079	Units: µmhos/cm							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	97	5.0	99.90	0	97.2	85	115			

Sample ID: ics-2 99.9uS eC	SampType: ics	TestCode: SM2510B: Specific Conductance								
Client ID: LCSW	Batch ID: R65279	RunNo: 65279								
Prep Date:	Analysis Date: 12/18/2019	SeqNo: 2242105	Units: µmhos/cm							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Conductivity	100	5.0	99.90	0	103	85	115			

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 |
| PQL Practical Quantitative Limit | RL Reporting Limit |
| S % Recovery outside of range due to dilution or matrix | |

Sample Log-In Check List

Client Name: **MARATHON GALLUP**

Work Order Number: **1912884**

RcptNo: 1

Received By: **Desiree Dominguez** 12/17/2019 2:00:00 PM

DD

Completed By: **Leah Baca** 12/17/2019 2:14:44 PM

Leah Baca

Reviewed By: *LB* 12/17/19

Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes No Not Present
2. How was the sample delivered?

Log In

3. Was an attempt made to cool the samples? Yes No NA
4. Were all samples received at a temperature of >0° C to 6.0°C Yes No NA
5. Sample(s) in proper container(s)? Yes No
6. Sufficient sample volume for indicated test(s)? Yes No
7. Are samples (except VOA and ONG) properly preserved? Yes No
8. Was preservative added to bottles? Yes No NA
9. Received at least 1 vial with headspace <1/4" for AQ VOA? Yes No NA
10. Were any sample containers received broken? Yes No
11. Does paperwork match bottle labels?
 (Note discrepancies on chain of custody) Yes No
12. Are matrices correctly identified on Chain of Custody? Yes No
13. Is it clear what analyses were requested? Yes No
14. Were all holding times able to be met?
 (If no, notify customer for authorization.) Yes No

of preserved bottles checked for pH: 2
 (2 or >12 unless noted)
 Adjusted? NO
 Checked by: DAD 12/17/19

Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes No NA

Person Notified:	<input type="text"/>	Date:	<input type="text"/>
By Whom:	<input type="text"/>	Via:	<input type="checkbox"/> eMail <input type="checkbox"/> Phone <input type="checkbox"/> Fax <input type="checkbox"/> In Person
Regarding:	<input type="text"/>		
Client Instructions:	<input type="text"/>		

16. Additional remarks:

17. Cooler Information

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	1.5	Good	Yes			

Chain-of-Custody Record



HALL ENVIRONMENTAL ANALYSIS LABORATORY

www.hallenvironmental.com

4901 Hawkins NE - Albuquerque, NM 87109
Tel. 505-345-3975 Fax 505-345-4107

Turn-Around Time: X

Standard **Rush:** X

Project Name: **CARBON CANISTER**

CARBON CANISTER

Project #: **WWTP - BWON**

Project Manager: VMARCUM@MARATHONPETROLEUM.COM

Sampler: C JOHNSON

On Ice: Yes No

Sample Temperature: **1, 2 + 0.3 = 1.5°c**

Container Type and #

Preservative Type

HEAL No. **1912884 -001**

Date	Time	Matrix	Sample Request ID
12/17/19	0640	Aqueous	South carbon Canister
		Aqueous	Carbon Canister
		Aqueous	Carbon Canister
		Aqueous	Carbon Canister

Analysis Request						
8260+MTBE (SHORT LIST)	SPEC COND, Ph	8015B (DRO)	CATIONS	ANIONS	Air Bubbles (Y or N)	Remarks:
X	X	X	X	X		
X	X	X	X	X		
X	X	X	X	X		

Received by:

Date: **12/17/19**

Time: **14:00**

Received by: **Courier**

Date: _____

Time: _____

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.