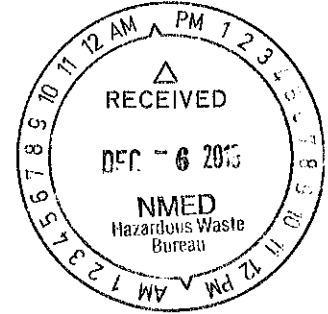




**Marathon  
Petroleum Company LP**

 ENTERED



December 2, 2019

Mr. John E. Kieling, Chief  
New Mexico Environmental Department  
2905 Rodeo Park Drive East, Bldg. 1  
Santa Fe, NM 87505-6303

**RE: Response to Approval with Modifications – Comment No. 6  
[Revised] Investigation Report North Drainage Ditch and OW-29 & OW-30 Areas  
Marathon Petroleum Company LP, Gallup Refinery  
(dba Western Refining Southwest, Inc.)  
EPA ID# NMD000333211  
HWB-WRG-18-008**

Dear Mr. Kieling:

Marathon Petroleum Company LP (dba Western Refining Southwest, Inc.) Gallup Refinery is submitting the chemical analyses of our crude oil per your Comment No. 6 in the referenced Approval with Modifications dated June 24, 2019. You will note there are two samples, Hospah East Pipeline and Bisti West Pipeline. While there are two pipelines, the crude oil in both pipelines originates from the San Juan Basin.

**NMED Comment 6:**

The Permittee's response to NMED Disapproval Comment 24 states, "[t]here is no information known to be available regarding the manganese concentrations in crude oil stored at the site." The manganese concentrations in crude oil must be evaluated to determine whether the elevated soil concentrations are related to crude oil. Collect crude oil samples and conduct metals analysis. Provide an analytical report that presents the results of the analysis no later than **December 31, 2019.**

If there are any questions, please call Brian Moore at 505-726-9745.

Mr. John Kieling  
December 2, 2019

Certification

*I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.*

Sincerely,  
**Marathon Petroleum Company LP, Gallup Refinery**



Robert S. Hanks  
Refinery General Manager

Enclosure

cc K. Van Horn NMED  
C. Chavez NMOCD  
B. Moore Marathon Gallup Refinery



*Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)*

November 26, 2019

Brian Moore  
Marathon  
92 Giant Crossing Rd  
Gallup, NM 87301  
TEL: (505) 722-3833  
FAX:

RE: Crude Oil Metals

OrderNo.: 1910C18

Dear Brian Moore:

Hall Environmental Analysis Laboratory received 2 sample(s) on 10/22/2019 for the analyses presented in the following report.

This report is a revised report and it replaces the original report issued November 12, 2019.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. 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. All samples are reported as received unless otherwise indicated.

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

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



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# ANALYTICAL SUMMARY REPORT

November 22, 2019

Hall Environmental  
4901 Hawkins St NE Ste D  
Albuquerque, NM 87109-4372

Work Order: B19102348

Project Name: Not Indicated

Energy Laboratories Inc Billings MT received the following 2 samples for Hall Environmental on 10/25/2019 for analysis.

Lab ID	Client Sample ID	Collect Date	Receive Date	Matrix	Test
B19102348-001	1910C18-001A, Hospah East Pipeline	10/21/19 12:48	10/25/19	Oil	Metals by ICP/ICPMS, Total or Soluble Mercury in Solid By CVAA Total Metals Digestion by SW3050B Mercury Digestion by SW7471B
B19102348-002	1910C18-002A, BISTI West Pipeline	10/21/19 12:50	10/25/19	Oil	Same As Above

The analyses presented in this report were performed by Energy Laboratories, Inc., 1120 S 27th St., Billings, MT 59101, unless otherwise noted. Any exceptions or problems with the analyses are noted in the Laboratory Analytical Report, the QA/QC Summary Report, or the Case Narrative. Any issues encountered during sample receipt are documented in the Work Order Receipt Checklist.

The results as reported relate only to the item(s) submitted for testing. This report shall be used or copied only in its entirety. Energy Laboratories, Inc. is not responsible for the consequences arising from the use of a partial report.

If you have any questions regarding these test results, please contact your Project Manager.

Report Approved By:

Vice President - Director of Laboratory Operations

Digitally signed by

Lisa Bradley

Date: 2019.11.22 10:36:07 -07:00



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**CLIENT:** Hall Environmental  
**Project:** Not Indicated  
**Work Order:** B19102348

**Revised Date:** 11/22/19  
**Report Date:** 11/11/19

## **CASE NARRATIVE**

---

Revised Date: 11/22/2019

On 11/21/2019 a request was received from Andy Freeman at Hall Environmental to revise this workorder by adding Total Manganese to both samples.

The report has been revised and replaces any previously issued report in its entirety.



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### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental  
Project: Not Indicated  
Lab ID: B19102348-001  
Client Sample ID: 1910C18-001A, Hospah East Pipeline

Revised Date: 11/22/19  
Report Date: 11/11/19  
Collection Date: 10/21/19 12:48  
Date Received: 10/25/19  
Matrix: Oil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL - EPA SW846</b>							
Antimony	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Arsenic	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Barium	ND	mg/kg		1		SW6010B	11/01/19 05:27 / rlh
Beryllium	ND	mg/kg		1		SW6010B	11/01/19 05:27 / rlh
Cadmium	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Chromium	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Cobalt	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Lead	ND	mg/kg		1		SW6020	11/06/19 19:00 / pap
Manganese	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Mercury	ND	mg/kg		1		SW7471B	11/05/19 10:48 / jag
Nickel	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Selenium	ND	mg/kg		1		SW6020	11/01/19 21:09 / car
Silver	ND	mg/kg		1		SW6020	11/04/19 20:37 / car
Vanadium	ND	mg/kg	D	2		SW6020	11/04/19 20:37 / car
Zinc	2	mg/kg		1		SW6020	11/01/19 21:09 / car

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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### LABORATORY ANALYTICAL REPORT

Prepared by Billings, MT Branch

Client: Hall Environmental  
Project: Not Indicated  
Lab ID: B19102348-002  
Client Sample ID: 1910C18-002A, BISTI West Pipeline

Revised Date: 11/22/19  
Report Date: 11/11/19  
Collection Date: 10/21/19 12:50  
Date Received: 10/25/19  
Matrix: Oil

Analyses	Result	Units	Qualifiers	RL	MCL/ QCL	Method	Analysis Date / By
<b>METALS, TOTAL - EPA SW846</b>							
Antimony	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Arsenic	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Barium	2	mg/kg		1		SW6010B	11/01/19 05:31 / r/h
Beryllium	ND	mg/kg		1		SW6010B	11/01/19 05:31 / r/h
Cadmium	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Chromium	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Cobalt	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Lead	ND	mg/kg		1		SW6020	11/04/19 21:01 / car
Manganese	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Mercury	ND	mg/kg		1		SW7471B	11/05/19 10:49 / jag
Nickel	ND	mg/kg		1		SW6020	11/01/19 21:13 / car
Selenium	ND	mg/kg		1		SW6020	11/04/19 21:01 / car
Silver	ND	mg/kg		1		SW6020	11/04/19 21:01 / car
Vanadium	ND	mg/kg	D	2		SW6020	11/04/19 21:01 / car
Zinc	2	mg/kg		1		SW6020	11/01/19 21:13 / car

Report Definitions: RL - Analyte reporting limit.  
QCL - Quality control limit.  
D - RL increased due to sample matrix.

MCL - Maximum contaminant level.  
ND - Not detected at the reporting limit.



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# Work Order Receipt Checklist

Hall Environmental

B19102348

Login completed by: Richard L. Shular

Date Received: 10/25/2019

Reviewed by: BL2000\darcy

Received by: sso

Reviewed Date: 10/28/2019

Carrier name: Return-UPS NDA

Shipping container/cooler in good condition?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	Not Present <input type="checkbox"/>
Custody seals intact on all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Custody seals intact on all sample bottles?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Present <input checked="" type="checkbox"/>
Chain of custody present?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody signed when relinquished and received?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Chain of custody agrees with sample labels?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Samples in proper container/bottle?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sample containers intact?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Sufficient sample volume for indicated test?	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
All samples received within holding time? (Exclude analyses that are considered field parameters such as pH, DO, Res Cl, Sulfite, Ferrrous Iron, etc.)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Temp Blank received in all shipping container(s)/cooler(s)?	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	Not Applicable <input type="checkbox"/>
Container/Temp Blank temperature:	1.8°C Blue Ice		
Water - VOA vials have zero headspace?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	No VOA vials submitted <input checked="" type="checkbox"/>
Water - pH acceptable upon receipt?	Yes <input type="checkbox"/>	No <input type="checkbox"/>	Not Applicable <input checked="" type="checkbox"/>

## Standard Reporting Procedures:

Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH, Dissolved Oxygen and Residual Chlorine, are qualified as being analyzed outside of recommended holding time.

Solid/soil samples are reported on a wet weight basis (as received) unless specifically indicated. If moisture corrected, data units are typically noted as -dry. For agricultural and mining soil parameters/characteristics, all samples are dried and ground prior to sample analysis.

## Contact and Corrective Action Comments:

None





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### QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B19102348

Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6010B Analytical Run: ICP203-B_191031A										
Lab ID: QCS	2	Initial Calibration Verification Standard								10/31/19 10:47
Barium		0.807	mg/L	0.10	101	90	110			
Beryllium		0.404	mg/L	0.010	101	90	110			
Lab ID: ICSA	2	Interference Check Sample A								10/31/19 10:51
Barium		0.000100	mg/L	0.10						
Beryllium		0.000300	mg/L	0.010						
Lab ID: ICSAB	2	Interference Check Sample AB								10/31/19 10:55
Barium		0.467	mg/L	0.10	93	80	120			
Beryllium		0.461	mg/L	0.010	92	80	120			
Method: SW6010B Batch: 138618										
Lab ID: MB-138618	2	Method Blank								Run: ICP203-B_191031A 11/01/19 05:18
Barium		ND	mg/kg	0.1						
Beryllium		ND	mg/kg	0.03						
Lab ID: SRM2-138618	2	Standard Reference Material								Run: ICP203-B_191031A 11/01/19 05:23
Barium		96.7	mg/kg	1.0	97	70	130			
Beryllium		0.0786	mg/kg	1.0						
Lab ID: B19102348-002ADIL	2	Serial Dilution								Run: ICP203-B_191031A 11/01/19 05:35
Barium		2.23	mg/kg	1.0						N
Beryllium		ND	mg/kg	1.0						10
Lab ID: B19102348-002APDS	2	Post Digestion/Distillation Spike								Run: ICP203-B_191031A 11/01/19 05:40
Barium		87.7	mg/kg	1.0	89	75	125			
Beryllium		42.4	mg/kg	1.0	88	75	125			
Lab ID: B19102348-002AMS3	2	Sample Matrix Spike								Run: ICP203-B_191031A 11/01/19 05:44
Barium		93.3	mg/kg	1.0	93	75	125			
Beryllium		45.0	mg/kg	1.0	92	75	125			
Lab ID: B19102348-002AMSD3	2	Sample Matrix Spike Duplicate								Run: ICP203-B_191031A 11/01/19 05:48
Barium		94.6	mg/kg	1.0	93	75	125	1.4	20	
Beryllium		45.8	mg/kg	1.0	92	75	125	1.7	20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

N - The analyte concentration was not sufficiently high to calculate a RPD for the serial dilution test.



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### QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B19102348

Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW6020										Analytical Run: ICPMS206-B_191104A	
Lab ID: ICSA	4	Interference Check Sample A							11/04/19 14:06		
Lead		0.0000782	mg/L	0.0010							
Selenium		0.00114	mg/L	0.0010							
Silver		8.86E-06	mg/L	0.0010							
Vanadium		-0.00188	mg/L	0.0012							
Lab ID: ICSAB	4	Interference Check Sample AB							11/04/19 14:11		
Lead		0.0000794	mg/L	0.0010							
Selenium		0.0111	mg/L	0.0010	111	80	120				
Silver		0.00457	mg/L	0.0010	91	80	120				
Vanadium		0.0188	mg/L	0.0012	94	80	120				
Lab ID: QCS	4	Initial Calibration Verification Standard							11/04/19 17:58		
Lead		0.0481	mg/L	0.0010	96	90	110				
Selenium		0.0500	mg/L	0.0010	100	90	110				
Silver		0.0243	mg/L	0.0010	97	90	110				
Vanadium		0.0492	mg/L	0.0012	98	90	110				
Method: SW6020										Batch: 138618	
Lab ID: MB-138618	4	Method Blank							Run: ICPMS206-B_191104A 11/04/19 20:23		
Lead		ND	mg/kg	0.2							
Selenium		ND	mg/kg	0.5							
Silver		ND	mg/kg	0.04							
Vanadium		ND	mg/kg	1							
Lab ID: SRM2-138618	4	Standard Reference Material							Run: ICPMS206-B_191104A 11/04/19 20:28		
Lead		82.1	mg/kg	1.0	82	70	130				
Selenium		87.0	mg/kg	1.0		0	0				
Silver		77.9	mg/kg	1.0	78	70	130				
Vanadium		79.7	mg/kg	2.1	80	70	130				
Lab ID: B19102348-002ADIL	4	Serial Dilution							Run: ICPMS206-B_191104A 11/04/19 21:05		
Lead		ND	mg/kg	2.1						10	
Selenium		ND	mg/kg	4.8						10	
Silver		ND	mg/kg	1.0						10	
Vanadium		ND	mg/kg	9.8						10	
Lab ID: B19102348-002APDS1	4	Post Digestion/Distillation Spike							Run: ICPMS206-B_191104A 11/04/19 21:10		
Lead		3.88	mg/kg	1.0	81	75	125				
Selenium		4.18	mg/kg	1.0	88	75	125				
Silver		1.45	mg/kg	1.0	76	75	125				
Vanadium		4.14	mg/kg	2.0	87	75	125				
Lab ID: B19102348-002AMS3	4	Sample Matrix Spike							Run: ICPMS206-B_191104A 11/04/19 21:15		
Lead		94.4	mg/kg	2.2	96	75	125				
Selenium		99.9	mg/kg	5.0	102	75	125				
Silver		35.5	mg/kg	1.0	72	75	125			S	
Vanadium		93.4	mg/kg	10	95	75	125				

#### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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### QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B19102348

Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method: SW6020										Batch: 138618
Lab ID: B19102348-002AMSD3	4	Sample Matrix Spike Duplicate					Run: ICPMS206-B_191104A			11/04/19 21:19
Lead		94.3	mg/kg	2.2	95	75	125	0.2		20
Selenium		101	mg/kg	5.1	101	75	125	0.7		20
Silver		35.0	mg/kg	1.0	70	75	125	1.5		20 S
Vanadium		94.7	mg/kg	10	95	75	125	1.3		20
Lab ID: MB-138618	4	Method Blank					Run: ICPMS206-B_191104A			11/04/19 20:23
Lead		ND	mg/kg	0.2						
Selenium		ND	mg/kg	0.5						
Silver		ND	mg/kg	0.04						
Vanadium		ND	mg/kg	1						
Lab ID: SRM2-138618	4	Standard Reference Material					Run: ICPMS206-B_191104A			11/04/19 20:28
Lead		91.0	mg/kg	1.0	91	70	130			
Selenium		87.0	mg/kg	1.0		0	0			
Silver		77.9	mg/kg	1.0	78	70	130			
Vanadium		79.7	mg/kg	2.1	80	70	130			
Lab ID: B19102348-002ADIL	4	Serial Dilution					Run: ICPMS206-B_191104A			11/04/19 21:05
Lead		ND	mg/kg	2.1						10
Selenium		ND	mg/kg	4.8						10
Silver		ND	mg/kg	1.0						10
Vanadium		ND	mg/kg	9.8						10
Lab ID: B19102348-002APDS1	4	Post Digestion/Distillation Spike					Run: ICPMS206-B_191104A			11/04/19 21:10
Lead		4.16	mg/kg	1.0	87	75	125			
Selenium		4.18	mg/kg	1.0	88	75	125			
Silver		1.45	mg/kg	1.0	76	75	125			
Vanadium		4.14	mg/kg	2.0	87	75	125			
Lab ID: B19102348-002AMS3	4	Sample Matrix Spike					Run: ICPMS206-B_191104A			11/04/19 21:15
Lead		103	mg/kg	2.2	105	75	125			
Selenium		99.9	mg/kg	5.0	102	75	125			
Silver		35.5	mg/kg	1.0	72	75	125			S
Vanadium		93.4	mg/kg	10	95	75	125			
Lab ID: B19102348-002AMSD3	4	Sample Matrix Spike Duplicate					Run: ICPMS206-B_191104A			11/04/19 21:19
Antimony		129	mg/kg	1.0	129	75	125	1.7		20 S
Barium		99.3	mg/kg	1.0	98	75	125	1.3		20
Beryllium		37.1	mg/kg	1.0	74	75	125	0.9		20 S
Boron		77.0	mg/kg	1.4	77	75	125	0.0		20

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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### QA/QC Summary Report

Prepared by Billings, MT Branch

Client: Hall Environmental

Work Order: B19102348

Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW7471B								Analytical Run: HGCV202-B_191105A			
Lab ID:	ICV	Initial Calibration Verification Standard						11/05/19 10:39			
Mercury		0.00199	mg/kg	1.0	100	90	110				
Method: SW7471B								Batch: 138820			
Lab ID:	MB-138820	Method Blank						Run: HGCV202-B_191105A 11/05/19 10:44			
Mercury		0.010	mg/kg	0.005							
Lab ID:	LCS3-138820	Laboratory Control Sample						Run: HGCV202-B_191105A 11/05/19 10:46			
Mercury		0.203	mg/kg	1.0	102	80	120				
Lab ID:	B19102623-001BDIL	Serial Dilution						Run: HGCV202-B_191105A 11/05/19 11:03			
Mercury		0.378	mg/kg	1.0						10	
Lab ID:	B19102623-001BMS3	Sample Matrix Spike						Run: HGCV202-B_191105A 11/05/19 11:05			
Mercury		0.543	mg/kg	1.0	88	80	120				
Lab ID:	B19102623-001BMSD	Sample Matrix Spike Duplicate						Run: HGCV202-B_191105A 11/05/19 11:26			
Mercury		0.542	mg/kg	1.0	84	80	120			20	

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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### QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 11/22/19

Client: Hall Environmental

Work Order: B19102348

Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW6020										Analytical Run: ICPMS206-B_191101A	
Lab ID: QCS	9	Initial Calibration Verification Standard							11/01/19 18:33		
Antimony		0.0462	mg/L	0.0010	92	90	110				
Arsenic		0.0491	mg/L	0.0010	98	90	110				
Cadmium		0.0251	mg/L	0.0010	100	90	110				
Chromium		0.0507	mg/L	0.0010	101	90	110				
Cobalt		0.0522	mg/L	0.0010	104	90	110				
Manganese		0.246	mg/L	0.0010	98	90	110				
Nickel		0.0524	mg/L	0.0010	105	90	110				
Selenium		0.0507	mg/L	0.0010	101	90	110				
Zinc		0.0520	mg/L	0.0037	104	90	110				
Lab ID: ICSA	9	Interference Check Sample A							11/01/19 19:11		
Antimony		0.000841	mg/L	0.0010							
Arsenic		0.000883	mg/L	0.0010							
Cadmium		0.000229	mg/L	0.0010							
Chromium		0.000190	mg/L	0.0010							
Cobalt		0.000662	mg/L	0.0010							
Manganese		0.000376	mg/L	0.0010							
Nickel		-0.0000966	mg/L	0.0010							
Selenium		0.00288	mg/L	0.0010							
Zinc		-0.000814	mg/L	0.0037							
Lab ID: ICSAB	9	Interference Check Sample AB							11/01/19 19:26		
Antimony		-6.22E-06	mg/L	0.0010							
Arsenic		0.0103	mg/L	0.0010	103	80	120				
Cadmium		0.0100	mg/L	0.0010	100	80	120				
Chromium		0.0200	mg/L	0.0010	100	80	120				
Cobalt		0.0219	mg/L	0.0010	109	80	120				
Manganese		0.0210	mg/L	0.0010	105	80	120				
Nickel		0.0196	mg/L	0.0010	98	80	120				
Selenium		0.00921	mg/L	0.0010	92	80	120				
Zinc		0.00912	mg/L	0.0037	91	80	120				
Method: SW6020										Batch: 138618	
Lab ID: MB-138618	9	Method Blank							Run: ICPMS206-B_191101A		11/01/19 20:55
Antimony		0.07	mg/kg	0.04							
Arsenic		ND	mg/kg	0.3							
Cadmium		ND	mg/kg	0.01							
Chromium		ND	mg/kg	0.10							
Cobalt		ND	mg/kg	0.01							
Manganese		ND	mg/kg	0.2							
Nickel		ND	mg/kg	0.2							
Selenium		ND	mg/kg	0.5							
Zinc		0.6	mg/kg	0.3							
Lab ID: SRM2-138618	9	Standard Reference Material							Run: ICPMS206-B_191101A		11/01/19 20:59
Antimony		0.326	mg/kg	1.0		70	130				

#### Qualifiers:

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



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Giblette, WY 866.686.7175 • Helena, MT 877.472.0711

### QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 11/22/19

Client: Hall Environmental

Work Order: B19102348

Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual	
Method: SW6020 <span style="float:right">Batch: 138618</span>											
Lab ID: SRM2-138610	9	Standard Reference Material			Run: ICPMS206-B_191101A			11/01/19 20:59			
Arsenic		94.6	mg/kg	1.0	95	70	130				
Cadmium		107	mg/kg	1.0	107	70	130				
Chromium		88.4	mg/kg	1.0	88	70	130				
Cobalt		0.151	mg/kg	1.0		70	130				
Manganese		91.6	mg/kg	1.0	92	70	130				
Nickel		99.1	mg/kg	1.0	99	70	130				
Selenium		71.6	mg/kg	1.1		0	0				
Zinc		102	mg/kg	1.0	102	70	130				
Lab ID: B19102348-002ADIL	9	Serial Dilution			Run: ICPMS206-B_191101A			11/01/19 21:18			
Antimony		ND	mg/kg	1.0						10	
Arsenic		ND	mg/kg	3.0						10	
Cadmium		ND	mg/kg	1.0						10	
Chromium		ND	mg/kg	1.0						10	
Cobalt		ND	mg/kg	1.0						10	
Manganese		ND	mg/kg	2.0						10	
Nickel		ND	mg/kg	1.5						10	
Selenium		ND	mg/kg	4.8						10	
Zinc		ND	mg/kg	2.9						10	
Lab ID: B19102348-002APDS1	9	Post Digestion/Distillation Spike			Run: ICPMS206-B_191101A			11/01/19 21:23			
Antimony		4.49	mg/kg	1.0	94	75	125				
Arsenic		4.33	mg/kg	1.0	91	75	125				
Cadmium		3.64	mg/kg	1.0	76	75	125				
Chromium		4.12	mg/kg	1.0	86	75	125				
Cobalt		3.38	mg/kg	1.0	71	75	125			S	
Manganese		4.19	mg/kg	1.0	88	75	125				
Nickel		4.22	mg/kg	1.0	88	75	125				
Selenium		5.82	mg/kg	1.0	122	75	125				
Zinc		6.14	mg/kg	1.0	83	75	125				
Lab ID: B19102348-002AMS3	9	Sample Matrix Spike			Run: ICPMS206-B_191101A			11/01/19 21:27			
Antimony		107	mg/kg	1.0	109	75	125				
Arsenic		95.1	mg/kg	3.1	97	75	125				
Cadmium		44.4	mg/kg	1.0	91	75	125				
Chromium		97.4	mg/kg	1.0	99	75	125				
Cobalt		88.3	mg/kg	1.0	88	75	125				
Manganese		472	mg/kg	2.1	96	75	125				
Nickel		101	mg/kg	1.6	103	75	125				
Selenium		115	mg/kg	5.0	117	75	125				
Zinc		102	mg/kg	3.0	102	75	125				
Lab ID: B19102348-002AMSD	9	Sample Matrix Spike Duplicate			Run: ICPMS206-B_191101A			11/01/19 21:32			
Antimony		107	mg/kg	1.0	107	75	125	0.5		20	
Arsenic		98.9	mg/kg	3.2	99	75	125	4.0		20	
Cadmium		44.8	mg/kg	1.0	90	75	125	0.9		20	
Chromium		101	mg/kg	1.0	101	75	125	3.5		20	

**Qualifiers:**

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ND - Not detected at the reporting limit.

S - Spike recovery outside of advisory limits.



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Gillette, WY 866.686.7175 • Helena, MT 877.472.0711

### QA/QC Summary Report

Prepared by Billings, MT Branch

Revised Date: 11/22/19

Client: Hall Environmental

Work Order: B19102348

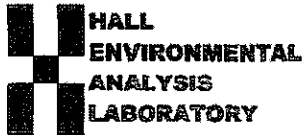
Report Date: 11/11/19

Analyte	Count	Result	Units	RL	%REC	Low Limit	High Limit	RPD	RPDLimit	Qual
Method:	SW6020									Batch: 138618
Lab ID:	B19102348-002AMSD	9	Sample Matrix Spike Duplicate				Run: ICPMS206-B_191101A			11/01/19 21:32
Cobalt		86.0	mg/kg	1.0	86	75	125	0.3		20
Manganese		489	mg/kg	2.1	98	75	125	3.5		20
Nickel		106	mg/kg	1.6	107	75	125	4.9		20
Selenium		119	mg/kg	5.1	119	75	125	3.7		20
Zinc		106	mg/kg	3.1	104	75	125	3.9		20

**Qualifiers:**

RL - Analyte reporting limit.

ND - Not detected at the reporting limit.



CHAIN OF CUSTODY RECORD

PAGE: 1 OF: 1

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

SUB CONTRACTOR: <b>Bi-Energy</b>		COMPANY: <b>Energy Laboratories</b>		PHONE: <b>(800) 735-4489</b>	FAX: <b>(406) 252-6069</b>		
ADDRESS: <b>1120 South 27th Street</b>				ACCOUNT #:	EMAIL:		
CITY, STATE, ZIP: <b>Billings, MT 59107</b>							
ITEM	SAMPLE	CLIENT SAMPLE ID	BOTTLE TYPE	MATRIX	COLLECTION DATE	# CONTAINERS	ANALYTICAL COMMENTS
1	1910C18-001A	Hospah East Pipeline <b>B1902348-001</b>	500HDPE	Oil	10/21/2019 12:48:00 PM	1	Skinner List Metals: Ba, Be, Cd, Cr, Co, Ni, Ag, V, Z, <i>Sb, As, Pb, Se, Hg</i>
2	1910C18-002A	BIST West Pipeline <b>-002</b>	500HDPE	Oil	10/21/2019 12:50:00 PM	1	Skinner List Metals: Ba, Be, Cd, Cr, Co, Ni, Ag, V, Z, <i>Sb, As, Pb, Se, Hg</i>

SPECIAL INSTRUCTIONS / COMMENTS:

Please include the LAB ID and the CLIENT SAMPLE ID on all final reports. Please e-mail results to lab@hallenvironmental.com. Please return all coolers and blue ice. Thank you.

Relinquished By: <i>MS</i>	Date: <b>10/23/2019</b>	Time: <b>1:30 PM</b>	Received By:	Date:	Time:	REPORT TRANSMITTAL DESIRED: <input type="checkbox"/> HARDCOPY (extra cost) <input type="checkbox"/> FAX <input type="checkbox"/> EMAIL <input type="checkbox"/> ONLINE  FOR LAB USE ONLY  Temp of samples _____ C    Attempt to Cool? _____  Comments: _____
Relinquished By:	Date:	Time:	Received By:	Date:	Time:	
Relinquished By:	Date:	Time:	Received By: <i>Shane Dye</i>	Date: <b>10/23/19</b>	Time: <b>10:10</b>	
TAT: <u>Standard</u> <input type="checkbox"/> RUSH    Next BD <input type="checkbox"/> 2nd BD <input type="checkbox"/> 3rd BD <input type="checkbox"/>						



Client Name: **MARATHON GALLUP**

Work Order Number: **1910C18**

RcptNo: 1

Received By: *Jan Rojas* 10/22/2019 3:34:00 PM

Completed By: Leah Baca 10/22/2019 4:56:52 PM

Reviewed By: *LB* 10/23/19

*Leah Baca*

**Chain of Custody**

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

**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. VOA vials have zero headspace? Yes  No  No VOA Vials   
 10. Were any sample containers received broken? Yes  No   
 11. Does paperwork match bottle labels? Yes  No   
 (Note discrepancies on chain of custody)  
 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? Yes  No   
 (If no, notify customer for authorization.)

# of preserved bottles checked for pH: \_\_\_\_\_  
 (<2 or >12 unless noted)  
 Adjusted? \_\_\_\_\_  
 Checked by: *YB 10/23/19*

**Special Handling (if applicable)**

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

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

16. Additional remarks:

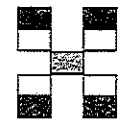
**Cooler Information**

Cooler No	Temp °C	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	0.1	Good	Yes			

# Chain-of-Custody Record

Client: MARATHON PET. CO. LP  
GALLUP REFINERY  
 Mailing Address: 92 GIANT CROSSING RD  
GALLUP NM 87301  
 Phone #: 505-726-9745  
 email or Fax#: BMOORE1@MARATHON  
PETROLEUM.COM  
 QA/QC Package:  
 Standard  Level 4 (Full Validation)  
 Accreditation  
 NELAP  Other \_\_\_\_\_  
 EDD (Type) EXCEL

Turn-Around Time:  
 Standard  Rush  
 Project Name: CRUDE OIL - METALS  
 Project #:  
 Project Manager: BRIAN MOORE  
 Sampler: TRACY PAYNE - 919-561-7055  
 On Ice:  Yes  No  
 Sample Temperature: 0.5 - 0.4 = 0.1



## 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 8015B (GRO / DRO / MRO)	TPH (Method 418.1)	EDB (Method 504.1)	PAH's (8310 or 8270 SIMS)	RCRA 8 Metals	Anions (F, Cl, NO <sub>3</sub> , NO <sub>2</sub> , PO <sub>4</sub> , SO <sub>4</sub> )	8081 Pesticides / 8082 PCB's	8260B (VOA)	8270 (Semi-VOA)	SKINNER LIST METALS	Air Bubbles (Y or N)
											X	
											X	

Date	Time	Matrix	Sample Request ID	Container Type and #	Preservative Type	HEAL No.
10/21/19	1248	OIL	HOSPAN EAST PIPELINE	500ML PLASTIC-1	NONE	1910018
10/21/19	1250	OIL	BISTI WEST PIPELINE	500ML PLASTIC-1	NONE	1910018

Date: 10/22/19 Time: 0700 Relinquished by: [Signature]  
 Received by: [Signature] Date: 10/22/19 Time: 3:45  
 Remarks:

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.