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March 24, 2023

Nelson Velez
ENMRD OCD
1000 Rio Brazos Road
Aztec, New Mexico 87410

Subject: **2022 Annual Groundwater Report, Maverik Country Stores (Former Caribou Refinery), Kirtland, New Mexico**

Dear Mr. Velez

This report provides the results of the 2022 Site activities for the Maverik Country Stores site (former Caribou Refinery) in Kirtland, New Mexico (**Figure 1**). These activities were completed during the 2022 calendar year to meet the annual monitoring requirements for the site. The scope of work completed included:

- Annual fluid level measurements of 14 on-site wells;
- Annual low-flow groundwater sampling of 6 on-site wells;
- Annual analytical evaluation of volatile organic compounds (VOCs) and dissolved sulfate in groundwater samples from 4 on-site wells along with analytical evaluation of VOCs only from 2 on-site wells.

Field methods, results, and the conclusions from the 2022 field events are discussed below.

Annual Groundwater Sampling

Annual groundwater sampling activities were conducted on December 28, 2022. Prior to well sampling, site-wide fluid levels were measured using an oil/water interface probe (**Table 1**) for compilation of the site potentiometric surface map (**Figure 2**). Fluid levels were not obtainable from the following site wells:

- MW-01: The monitoring well has a blockage approximately 2 feet below ground surface that prevented collection of a fluid level measurement.
- MW-20: The monitoring well could not be located due to recent soil regrading at the site.
- MW-21: The monitoring well could not be located due to recent soil regrading at the site

None of the monitoring wells contained measurable thicknesses of LNAPL during this event. Based on the December 2022 groundwater elevations, the groundwater flow direction is to the south-southwest across the site toward the San Juan River. This flow direction is consistent

with past monitoring events. The average of horizontal gradient calculations at the site was 0.007 ft/ft (**Figure 2**).

Two monitoring wells and the four injection wells were sampled as part of the regular annual groundwater sampling event. All wells were sampled utilizing a peristaltic pump and flow-through cell. Groundwater field parameters pH, temperature, conductivity, dissolved oxygen (DO), and oxidation reduction potential (ORP) were measured using a flow through cell and YSI 556 MPS during groundwater sampling. Groundwater samples were sent to Pace Analytical in Mount Juliet, Tennessee under chain-of-custody (COC) protocol and analyzed for volatile organic compounds (VOCs) using EPA Method 8260C. In addition, the groundwater samples collected from the four injection wells (INJ-North, INJ-South, INJ-East, and INJ-West) were analyzed for dissolved sulfate using EPA Method 300.0. Laboratory deliverables are provided in **Attachment A**. The results show that there was one exceedance of constituent of concern 1,2-Dichloroethane (1,2-DCA) (**Figure 3**). 1,2-DCA exceeded the New Mexico Groundwater Standard of 10 µg/L at down-gradient well MW-22 with a concentration of 17.6 µg/L. Results of the groundwater sampling are summarized in **Table 2**. There were no exceedances of the New Mexico Groundwater Standard for dissolved sulfate during the 2022 annual groundwater sampling event.

Plug and Abandon MW-1

Monitoring well MW-1 has a blockage approximately 2 feet below ground surface that prevents collection of a fluid level measurement. The well has been damaged since 2016. MW-1 serves as an upgradient well and is currently used to collect fluid level measurements. Maverik proposes to plug and abandon MW-1 in accordance with the State of New Mexico guidelines and utilize MW-18 as the upgradient well for the site.

Summary and Conclusions

The annual groundwater sampling was completed during the week of December 28, 2022. Fluid levels were measured in 14 wells to establish groundwater flow conditions. Across the site, groundwater flow is to the south-southwest, toward the San Juan River. Groundwater results were below the New Mexico Groundwater Standards for all 8260 VOCs and dissolved sulfate inside of the slurry wall impoundment area.

The groundwater sampling data suggest that the In Situ Chemical Oxidation (ISCO) injections were successful in decreasing the concentrations of VOCs within the slurry wall. Overall, the slurry wall impoundment is functioning as designed and no off-site migration of constituents of concern is occurring.

Sincerely,

TRC Environmental Corporation

Kiana Eldredge
Environmental Scientist

Jason Jayroe
Project Manager

Tables

Table 1 – Groundwater Elevation Table
Table 2 – Analytical Results Table

Figures

Figure 1 – Site Location Map
Figure 2 – Potentiometric Surface Map, December 2022
Figure 3 – BTEX Concentration Map, December 2022

Attachments

Attachment A – Laboratory Data

Table 1
Monitoring Well Construction Summary and November 2022 Fluid Levels, Maverik Country Stores, Inc. (Former Caribou Refinery)

Well ID	Completion Date	Total Depth (ft. BGS)	Well Diameter (in.)	Top of Steel Casing Elevation (ft. AMSL)	Top of PVC Casing Elevation (ft. AMSL)	Ground Surface Elevation (ft. AMSL)	Top of Screen (ft. BGS)	Bottom of Screen (ft. BGS)	Screen Length (ft.)	Top of Screen Elevation (ft. AMSL)	Bottom of Screen Elevation (ft. AMSL)	Depth to Groundwater (ft.) November 2021	Product Thickness (ft.)	Groundwater Elevation (ft. AMSL)	Comments
MW-1	1987	21.5	2	5207.79	5207.24	5205.75	11.5	21.5	10	5194.25	5184.25	NA	NA	NA	Well damaged
MW-2	1987	15	2	5197.10	5196.93	5195.25	5	15	10	5190.25	5180.25	7.93	NA	5189.00	
MW-10	1987	12.5	2	5189.80	5189.30	5187.47	2.5	12.5	10	5184.97	5174.97	5.41	NA	5183.89	
MW-17	1993	15	2	5196.49	5195.91	5193.43	5	15	10	5188.43	5178.43	8.84	NA	5187.07	
MW-18	1993	15	2	5202.27	5201.75	5199.14	5	15	10	5194.14	5184.14	12.02	NA	5189.73	
MW-19	1990	12.5	2	NA	5189.54	5188.28	2.5	12.5	10	5185.78	5175.78	3.91	NA	5185.63	
MW-20	1990	12	2	NA	5191.05	5190.10	2	12	10	5188.10	5178.10	NA	NA	NA	Well not found
MW-21	1990	13	2	NA	5194.81	5193.62	3	13	10	5190.62	5180.62	NA	NA	NA	Well not found
MW-22	1990	13	2	NA	5195.86	5194.58	3	13	10	5191.58	5181.58	8.97	NA	5186.89	
P-1	1993	8	2	NA	5197.66	5195.74	3	8	5	5192.74	5187.74	8.57	NA	5189.09	
P-2	1993	8	2	NA	5192.32	5190.50	3	8	5	5187.50	5182.50	5.81	NA	5186.51	
P-3	1993	8	2	NA	5193.21	5191.44	3	8	5	5188.44	5183.44	6.23	NA	5186.98	
P-4	1993	8	2	NA	5198.82	5197.06	3	8	5	5194.06	5189.06	10.06	NA	5188.76	
INJ-N	2012	15	2	NA	NA	NA	5	15	10	NA	NA	8.19	NA	NA	
INJ-E	2012	15	2	NA	NA	NA	5	15	10	NA	NA	8.46	NA	NA	
INJ-S	2012	15	2	NA	NA	NA	5	15	10	NA	NA	8.71	NA	NA	
INJ-W	2012	15	2	NA	NA	NA	5	15	10	NA	NA	8.92	NA	NA	

Notes:

AMSL = Above mean sea level
BGS = Below ground surface
NM = Not Measured
NA = Not Applicable
ft = feet
in = inches

TABLE 2
SUMMARY OF GROUNDWATER QUALITY DATA

WELL IDENTIFICATION	DATE	ANALYTE CONCENTRATIONS (µg/L)					
		BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	1,2-DCA	DIS. SULFATE
NM Groundwater Standard		**10**	**750**	**750**	**100**	**10**	**6,000,000**
MW-9	12/07/14	<1	<1	<1	<1	<1	NS
MW-9	12/10/15	<1	<1	<1	<1	<1	NS
MW-9	12/28/16	<1	<1	<1	<1	<1	NS
MW-9	12/27/17	<1	<1	<1	<1	<1	NS
MW-10	12/07/14	<1	<1	<1	<1	<1	NS
MW-10	12/10/15	<1	<1	<1	<1	<1	NS
MW-10	12/27/16	<1	<1	<1	<1	<1	NS
MW-10	12/27/17	<1	<1	<1	<1	<1	NS
MW-16	12/07/14	<1	<1	<1	<1	<1	NS
MW-16	12/10/15	<1	<1	<1	<1	<1	NS
MW-16	12/28/16	<1	<1	<1	<1	<1	NS
MW-16	12/27/17	<1	<1	<1	<1	<1	NS
MW-17	12/07/14	<1	<1	<1	<1	<1	**355,000**
MW-17	12/11/15	**290**	**11**	**151**	**227**	<1	**2,914,000**
MW-17	12/27/16	**1.1**	<1	**3.4**	**13.2**	**0.44**	**4,400,000**
MW-17	12/28/17	**2.7**	<1	**0.35**	**1.4**	<1	**3,300,000**
MW-17	11/21/18	<1	<1	<1	<1	<1	**5,600,000**
MW-17	12/02/19	**1.2**	<1	<1	**0.57 J**	**0.26 J**	**5,900,000**
MW-17	12/14/20	**1.7**	<1	<1	<1	<1	**15,000,000**
MW-17	03/27/21	**37**	0.64	2.8	1.1	0.57	**8,500**
MW-17	11/22/21	**0.59 J**	<1	<1	<1	<1	**2,800,000**
MW-17	03/31/22	**420**	**4.6**	**6.2**	**5.3**	<1	**8,000**
MW-17	12/28/22	<1	<1	<1	<1	**5.8**	NS
MW-18	12/07/14	<1	<1	<1	<1	<1	NS
MW-18	12/10/15	<1	<1	<1	<1	<1	NS
MW-18	12/27/16	<1	<1	<1	<1	<1	NS
MW-19	12/07/14	<1	<1	<1	<1	<1	NS
MW-19	12/10/15	<1	<1	<1	<1	<1	NS
MW-19	12/27/16	<1	<1	<1	<1	<1	NS
MW-19	12/27/17	<1	<1	<1	<1	<1	NS
MW-20	12/07/14	<1	<1	<1	<1	<1	NS
MW-20	12/10/15	<1	<1	<1	<1	<1	NS
MW-20	12/27/16	<1	<1	<1	<1	<1	NS
MW-20	12/27/17	<1	<1	<1	<1	<1	NS

Notes:

* Groundwater Standards based on the New Mexico Administrative Code Section 20.6.2.3103

NS - Not sampled

J - Estimated result. Result is less than Reporting Limit

U - Undetected at the reporting limit or at the reported concentration; result is considered to be a false positive

Bold - Detected result

Highlighted - Result Exceeds New Mexico Groundwater Standard

TABLE 2
SUMMARY OF GROUNDWATER QUALITY DATA

WELL IDENTIFICATION	DATE	ANALYTE CONCENTRATIONS (µg/L)					
		BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	1,2-DCA	DIS. SULFATE
NM Groundwater Standard		**10**	**750**	**750**	**100**	**10**	**6,000,000**
MW-21	12/07/14	<1	<1	<1	<1	<1	NS
MW-21	12/10/15	<1	<1	<1	<1	<1	NS
MW-21	12/27/16	<1	<1	<1	<1	<1	NS
MW-21	12/27/17	<1	<1	<1	<1	<1	NS
MW-22	12/07/14	**4**	<1	<1	<1	<1	NS
MW-22	12/27/16	**2.5**	<1	**0.67**	**7.12**	**1.7**	NS
MW-22	11/21/18	**1.3**	<1	<1	<1	**36**	NS
MW-22	12/02/19	**0.52 J**	<1	<1	<1	**18**	NS
MW-22	12/14/20	<1	<1	<1	<1	<1	NS
MW-22	03/27/21	**140**	**20**	**11**	**70**	<1	NS
MW-22	11/22/21	<1	<1	<1	<1	<1	NS
MW-22	03/31/22	**46**	**2.6**	**1.1**	**1.3**	**0.69**	NS
MW-22	12/28/22	**2.9**	<1	<1	<1	**17.6**	NS
Injection North	12/07/14	1	<1	<1	<1	**18**	**1,275,000**
Injection North	12/11/15	**370**	**229**	**402**	**2,270**	<1	**5,815,000**
Injection North	12/27/16	**48**	**19**	**10**	**1,070**	<1	**3,100,000**
Injection North	12/28/17	**58**	**2.3**	**2.6**	**56**	<1	**2,800,000**
Injection North	11/21/18	**0.36 J**	<1	<1	<1	<1	**4,200,000**
Injection North	12/02/19	**0.53 J**	<1	<1	**0.4 J**	**0.98 J**	**14,000,000**
Injection North	12/14/20	<1	<1	<1	<1	<1	**19,000,000**
Injection North	03/27/21	**32**	**3.6**	**2.9**	**55.5**	**1.6**	**19,000**
Injection North	11/22/21	**0.45 J**	<1	<1	<1	<1	**4,000,000**
Injection North	03/31/22	**120**	**4.9**	**5.8**	**67.1**	<1	**11,000**
Injection North	12/28/22	<1	<1	<1	<1	<1	**11,000**
Injection West	12/07/14	<1	<1	<1	<1	<1	**675,000**
Injection West	12/11/15	<1	<1	<1	<1	<1	**5,423,000**
Injection West	12/27/16	<1	<1	<1	<1	<1	**4,400,000**
Injection West	12/28/17	<1	<1	<1	<1	<1	**2,700,000**
Injection West	11/21/18	<1	<1	<1	<1	<1	**2,000,000**
Injection West	12/02/19	<1	<1	<1	<1	<1	**15,000,000**
Injection West	12/14/20	<1	<1	<1	<1	<1	**18,000,000**
Injection West	03/27/21	**0.41**	<1	<1	<1	<1	**6,900**
Injection West	11/22/21	**0.52 J**	<1	<1	<1	<1	**4,100,000**
Injection West	03/31/22	<1	<1	<1	<1	<1	**5,300**
Injection West	12/28/22	<1	<1	<1	<3	**8.8**	**3,040**
Injection South	12/07/14	<1	<1	<1	<1	<1	**295,000**
Injection South	12/11/15	<1	<1	<1	<1	<1	**2,305,000**
Injection South	12/27/16	<1	<1	<1	**0.33**	<1	**1,900,000**
Injection South	12/27/17	<1	<1	<1	<1	<1	**1,800,000**
Injection South	11/21/18	<1	<1	<1	<1	<1	**2,300,000**
Injection South	12/02/19	<1	<1	<1	<1	<1	**5,800,000**
Injection South	12/14/20	<1	<1	<1	<1	<1	**16,000,000**
Injection South	03/27/21	<1	<1	<1	<1	<1	**7,200**
Injection South	11/22/21	<1	<1	<1	<1	<1	**1,600,000**
Injection South	03/31/22	**0.44**	<1	<1	<1	<1	**7,700**
Injection South	12/28/22	<1	<1	<1	<3	<1	**1,550**
Injection East	12/07/14	<1	<1	<1	<1	<1	**295,000**
Injection East	12/11/15	<1	<1	<1	<1	<1	**3,002,000**
Injection East	12/27/16	<1	<1	<1	<1	<1	**1,600,000**
Injection East	12/27/17	<1	<1	<1	<1	<1	**1,800,000**

TABLE 2
SUMMARY OF GROUNDWATER QUALITY DATA

WELL IDENTIFICATION	DATE	ANALYTE CONCENTRATIONS (µg/L)					
		BENZENE	TOLUENE	ETHYL-BENZENE	TOTAL XYLENES	1,2-DCA	DIS. SULFATE
NM Groundwater Standard		**10**	**750**	**750**	**100**	**10**	**6,000,000**
Injection East	11/21/18	<1	<1	<1	<1	<1	**1,900,000**
Injection East	12/02/19	<1	<1	<1	<1	<1	**3,300,000**
Injection East	12/14/20	<1	<1	<1	<1	<1	**8,900,000**
Injection East	03/27/21	<1	<1	<1	<1	<1	**8,700**
Injection East	11/22/21	<1	<1	<1	<1	**0.50 J**	**1,200,000**
Injection East	03/31/22	**0.35**	<1	<1	<1	<1	**7,600**
Injection East	12/28/22	<1	<1	<1	<3	<1	**1,020**

Notes:

* Groundwater Standards based on the New Mexico Administrative Code Section 20.6.2.3103

NS - Not sampled

J - Estimated result. Result is less than Reporting Limit

U - Undetected at the reporting limit or at the reported concentration; result is considered to be a false positive

Bold - Detected result

Highlighted - Result Exceeds New Mexico Groundwater Standard

LEGEND

- MW-2 — MONITORING WELL
- MW-7 — PLUG AND ABANDONED WELL
- P1 — PIEZOMETER
- E. Gray — PRIVATE WELL
- SLURRY WALL
- MAVERIK CARIBOU FORMER REFINERY BOUNDARY
- WESTSIDE IRRIGATION DITCH FILLED IN LOCATION

Co. Road 6261

Co. Road 6257

O. Curley

I. Hull

Co. Road D 6255

E. Mclemore

E. Gray

J.L. Flack

R. Neff

Co. Road D 6259

Co. Road D 6263

MW-15

(Out of Service)

MW-3

G. Nelson

R. Jackson

A. Jackson

Ryan

MW-4

Co. Road D 6271

MW-8

M. Stone

WM. H. Walker

MW-5

CO. Road 6100

MW-7

DITCH IS FILLED IN AT THIS LOCATION

MW-2

MW-1

Road

MW-21

MW-20

P4

P3

MW-22

MW-10

MW-18

MW-17

P2

P1

MW-19

MW-16

MW-14

MW-9

WESTSIDE IRRIGATION DITCH

MURRAY PROPERTY DITCH

DITCH IS FILLED IN AT THIS LOCATION

FARMER'S MUTUAL IRRIGATION DITCH

U.S. Highway 64

100 0 200

SCALE IN FEET

DRAWING NAME: T:\1-PROJECTS\Maverik\8-AUTOCAD\ Figure 1 - Site Location Map_Dec2022.dwg — PLOT DATE: March 14, 2023 - 1:23PM — LAYOUT: FIGURE 1

TRC

2022 ANNUAL GROUNDWATER REPORT
MAVERIK CARIBOU FORMER REFINERY
KIRTLAND, NEW MEXICO

DATE: 03-14-23 | DRWN: R.COLLINS

SITE LOCATION MAP
DECEMBER 2022

FIGURE 1

LEGEND

- MW-2 — MONITORING WELL
- MW-7 — PLUG AND ABANDONED WELL
- P1 — PIEZOMETER
- E. Gray — PRIVATE WELL
- SLURRY WALL
- MAVERIK CARIBOU FORMER REFINERY BOUNDARY
- GROUNDWATER ELEVATION CONTOURS
- WESTSIDE IRRIGATION DITCH FILLED IN LOCATION

R. Madrid
C. Hill
W.O. York Jr.
Co. Road 6257
O. Curley
I. Hull
E. Mclemore
Co. Road D 6255
E. Gray
J.L. Flack
R. Neff
Co. Road D 6259
Co. Road 6261
MW-2 5189.00
Road
MW-21 NA
MW-1 NA
MW-20 NA
MW-10 5183.89
P4 5188.76
MW-22 5186.89
P3 5186.98
MW-18 5189.73
P1 5189.09
MW-17 5187.07
P2 5186.51
MW-19 5185.63
MW-15
DITCH IS FILLED IN AT THIS LOCATION
Co. Road D 6263
G. Nelson
MW-3
(Out of Service)
MW-16
MW-14
MW-9
MW-7
DITCH IS FILLED IN AT THIS LOCATION
R. Jackson
Ryan
A. Jackson
MW-4
Co. Road D 6271
MW-8
M. Stone
WM. H. Walker
Road 6100
U.S. Highway 64
WESTSIDE IRRIGATION DITCH
FARMER'S MUTUAL IRRIGATION DITCH
MURRAY PROPERTY DITCH
5189
5188
5187
5186
5185
5184

100 0 200
SCALE IN FEET

DRAWING NAME: T:\1-PROJECTS\Maverik\8-AUTOCAD\ Figure 2 - Potentiometric Surface Map_Dec2022.dwg — PLOT DATE: March 24, 2023 - 9:45AM — LAYOUT: FIGURE 2

TRC

2022 ANNUAL GROUNDWATER REPORT
MAVERIK CARIBOU FORMER REFINERY
KIRTLAND, NEW MEXICO

DATE: 03-14-23 | DRWN: R.COLLINS

POTENTIOMETRIC SURFACE MAP
DECEMBER 2022

FIGURE 2

LEGEND

- MW-2 — MONITORING WELL
- MW-7 — PLUG AND ABANDONED WELL
- P1 — PIEZOMETER
- INJ-W — INJECTION WELLS
- E. Gray — PRIVATE WELL
- SLURRY WALL
- MAVERIK CARIBOU FORMER REFINERY BOUNDARY
- WESTSIDE IRRIGATION DITCH FILLED IN LOCATION

ALL RESULTS ARE IN MICROGRAMS PER LITER (µg/L)

Co. Road 6257

Co. Road 6261

O. Curley

I. Hull

E. Mclemore

E. Gray

J.L. Flack

R. Neff

Co. Road D 6259

Co. Road D 6263

G. Nelson

MW-15

MW-3

U.S. Highway 64

Road

INJ-E (Within Slurry Wall)	12/28/22
Benzene	<1
Toluene	<1
Ethylbenzene	<1
Total Xylenes	<3
1,2-DCA	<1

MW-17 (Within Slurry Wall)	12/28/22
Benzene	<1
Toluene	<1
Ethylbenzene	<1
Total Xylenes	<1
1,2-DCA	5.8

MW-22 (On-Site)	12/28/22
Benzene	2.9
Toluene	<1
Ethylbenzene	<1
Total Xylenes	<1
1,2-DCA	17.6

MW-1 MW-2 MW-21 MW-20 MW-22 MW-18 MW-10 MW-19 P1 P2 P3 P4 INJ-E INJ-W INJ-N INJ-S MW-17

WESTSIDE IRRIGATION DITCH

FARMER'S MUTUAL IRRIGATION DITCH

MW-16 MW-14 MW-9

INJ-N (Within Slurry Wall)	12/28/22
Benzene	<1
Toluene	<1
Ethylbenzene	<1
Total Xylenes	<1
1,2-DCA	<1

INJ-W (Within Slurry Wall)	12/28/22
Benzene	<1
Toluene	<1
Ethylbenzene	<1
Total Xylenes	<3
1,2-DCA	8.8

MURRAY PROPERTY DITCH

DITCH IS FILLED IN AT THIS LOCATION

SW13

SW12

• (Out of Service)

INJ-S (Within Slurry Wall)	12/28/22
Benzene	<1
Toluene	<1
Ethylbenzene	<1
Total Xylenes	<3
1,2-DCA	<1

DITCH IS FILLED IN AT THIS LOCATION

MW-7

R. Jackson

A. Jackson

Ryan

MW-4

Co. Road D 6271

MW-8

M. Stone

WM. H. Walker

CO. Road 6100

MW-5

100 0 200

SCALE IN FEET

DRAWING NAME: T:\1-PROJECTS\Maverik\8-AUTOCAD\ Figure 3 - BTEX Map_Dec2022.dwg — PLOT DATE: March 24, 2023 - 9:44AM — LAYOUT: FIGURE 3

TRC

2022 ANNUAL GROUNDWATER REPORT
MAVERIK CARIBOU FORMER REFINERY
KIRTLAND, NEW MEXICO

DATE: 03-14-23 | DRWN: R.COLLINS

BTEX CONCENTRATION MAP
DECEMBER 2022

FIGURE 3

ANALYTICAL REPORT

January 06, 2023

TRC - Ft. Collins, CO

Sample Delivery Group:	L1571495
Samples Received:	12/29/2022
Project Number:	500118.0000.0000
Description:	Maverik- Caribou Refinery 2022

Report To:

Kiana Eldredge
1526 Cole Blvd Bldg 3
Ste 150
Lakewood, CO 80401

Entire Report Reviewed By: Chris Ward

Chris Ward
Project Manager

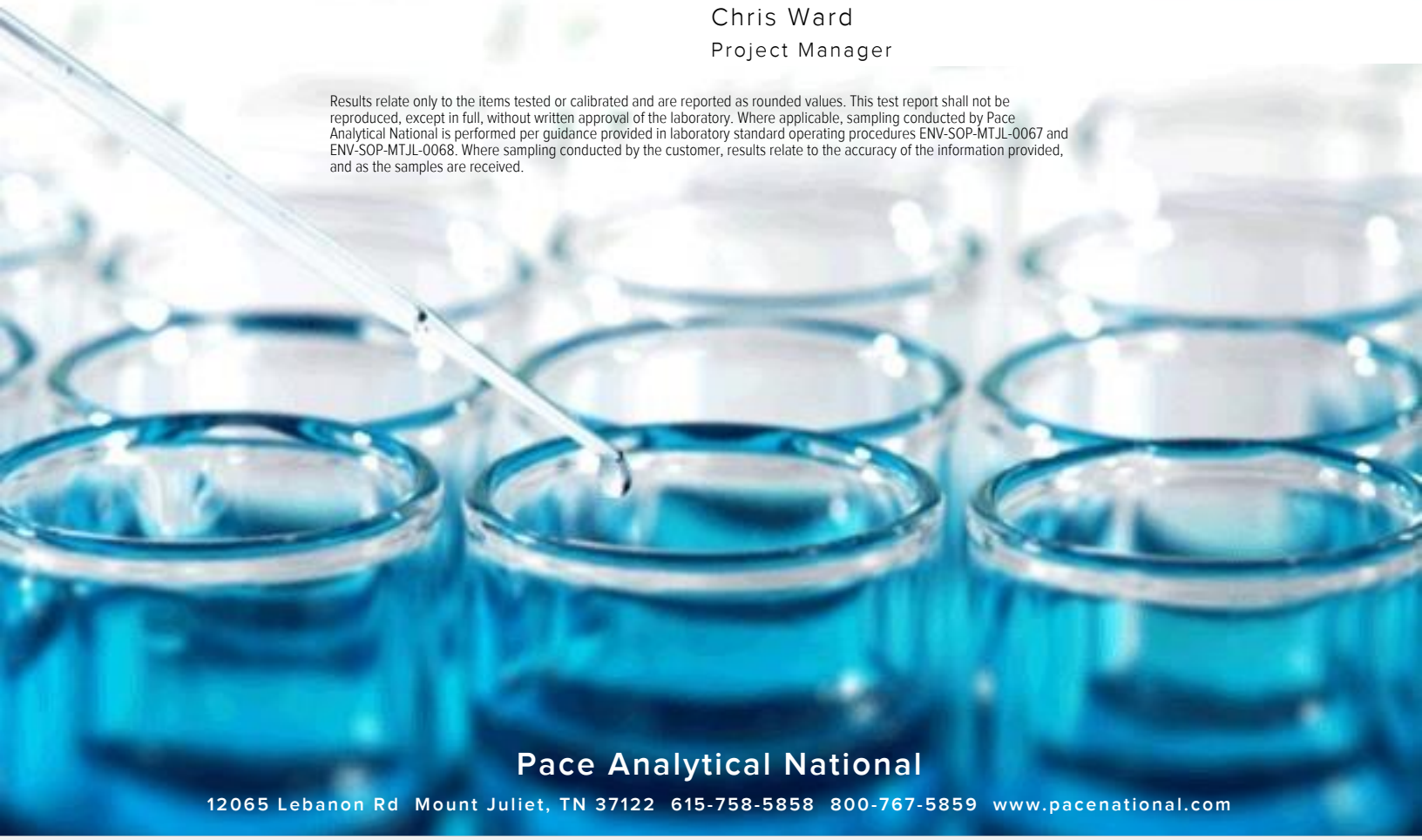


TABLE OF CONTENTS

INJ-W L1571495-01 GW

Collected by: KE | Collected date/time: 12/28/22 10:53 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1981682	100	12/30/22 15:56	12/30/22 15:56	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 17:19	01/04/23 17:19	BAM	Mt. Juliet, TN

INJ-S L1571495-02 GW

Collected by: KE | Collected date/time: 12/28/22 11:11 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1981682	100	12/30/22 16:09	12/30/22 16:09	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 17:38	01/04/23 17:38	BAM	Mt. Juliet, TN

MW-17 L1571495-03 GW

Collected by: KE | Collected date/time: 12/28/22 12:02 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 17:58	01/04/23 17:58	BAM	Mt. Juliet, TN

INJ-N L1571495-04 GW

Collected by: KE | Collected date/time: 12/28/22 12:37 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1981682	100	12/30/22 16:21	12/30/22 16:21	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 18:17	01/04/23 18:17	BAM	Mt. Juliet, TN

INJ-E L1571495-05 GW

Collected by: KE | Collected date/time: 12/28/22 13:31 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Wet Chemistry by Method 9056A	WG1981682	100	12/30/22 16:34	12/30/22 16:34	GEB	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 18:36	01/04/23 18:36	BAM	Mt. Juliet, TN

MW-22 L1571495-06 GW

Collected by: KE | Collected date/time: 12/28/22 14:21 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 18:55	01/04/23 18:55	BAM	Mt. Juliet, TN

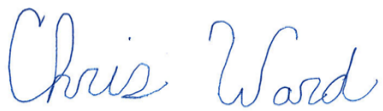
DUP-1 L1571495-07 GW

Collected by: KE | Collected date/time: 12/28/22 00:00 | Received date/time: 12/29/22 09:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1983231	1	01/04/23 19:14	01/04/23 19:14	BAM	Mt. Juliet, TN

CASE NARRATIVE

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

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Sulfate, Dissolved	3040		500	100	12/30/2022 15:56	WG1981682

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	01/04/2023 17:19	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 17:19	WG1983231
Toluene	ND		0.00100	1	01/04/2023 17:19	WG1983231
Xylenes, Total	ND		0.00300	1	01/04/2023 17:19	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 17:19	WG1983231
1,2-Dichloroethane	0.00882		0.00100	1	01/04/2023 17:19	WG1983231
(S) Toluene-d8	*103*		*80.0-120*		*01/04/2023 17:19*	WG1983231
(S) 4-Bromofluorobenzene	*109*		*77.0-126*		*01/04/2023 17:19*	WG1983231
(S) 1,2-Dichloroethane-d4	*111*		*70.0-130*		*01/04/2023 17:19*	WG1983231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Sulfate, Dissolved	1550		500	100	12/30/2022 16:09	WG1981682

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	01/04/2023 17:38	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 17:38	WG1983231
Toluene	ND		0.00100	1	01/04/2023 17:38	WG1983231
Xylenes, Total	ND		0.00300	1	01/04/2023 17:38	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 17:38	WG1983231
1,2-Dichloroethane	ND		0.00100	1	01/04/2023 17:38	WG1983231
(S) Toluene-d8	*109*		*80.0-120*		*01/04/2023 17:38*	WG1983231
(S) 4-Bromofluorobenzene	*106*		*77.0-126*		*01/04/2023 17:38*	WG1983231
(S) 1,2-Dichloroethane-d4	*108*		*70.0-130*		*01/04/2023 17:38*	WG1983231

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	01/04/2023 17:58	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 17:58	WG1983231
Toluene	ND		0.00100	1	01/04/2023 17:58	WG1983231
Xylenes, Total	ND		0.00300	1	01/04/2023 17:58	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 17:58	WG1983231
1,2-Dichloroethane	0.00580		0.00100	1	01/04/2023 17:58	WG1983231
(S) Toluene-d8	*107*		*80.0-120*		*01/04/2023 17:58*	WG1983231
(S) 4-Bromofluorobenzene	*98.6*		*77.0-126*		*01/04/2023 17:58*	WG1983231
(S) 1,2-Dichloroethane-d4	*109*		*70.0-130*		*01/04/2023 17:58*	WG1983231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Sulfate, Dissolved	6100		500	100	12/30/2022 16:21	WG1981682

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00543		0.00100	1	01/04/2023 18:17	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 18:17	WG1983231
Toluene	ND		0.00100	1	01/04/2023 18:17	WG1983231
Xylenes, Total	0.00312		0.00300	1	01/04/2023 18:17	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 18:17	WG1983231
1,2-Dichloroethane	0.0176		0.00100	1	01/04/2023 18:17	WG1983231
(S) Toluene-d8	*110*		*80.0-120*		*01/04/2023 18:17*	WG1983231
(S) 4-Bromofluorobenzene	*100*		*77.0-126*		*01/04/2023 18:17*	WG1983231
(S) 1,2-Dichloroethane-d4	*113*		*70.0-130*		*01/04/2023 18:17*	WG1983231

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Sulfate, Dissolved	1020		500	100	12/30/2022 16:34	WG1981682

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	01/04/2023 18:36	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 18:36	WG1983231
Toluene	ND		0.00100	1	01/04/2023 18:36	WG1983231
Xylenes, Total	ND		0.00300	1	01/04/2023 18:36	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 18:36	WG1983231
1,2-Dichloroethane	ND		0.00100	1	01/04/2023 18:36	WG1983231
(S) Toluene-d8	*110*		*80.0-120*		*01/04/2023 18:36*	WG1983231
(S) 4-Bromofluorobenzene	*99.9*		*77.0-126*		*01/04/2023 18:36*	WG1983231
(S) 1,2-Dichloroethane-d4	*108*		*70.0-130*		*01/04/2023 18:36*	WG1983231

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00290		0.00100	1	01/04/2023 18:55	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 18:55	WG1983231
Toluene	ND		0.00100	1	01/04/2023 18:55	WG1983231
Xylenes, Total	ND		0.00300	1	01/04/2023 18:55	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 18:55	WG1983231
1,2-Dichloroethane	0.0176		0.00100	1	01/04/2023 18:55	WG1983231
(S) Toluene-d8	*108*		*80.0-120*		*01/04/2023 18:55*	WG1983231
(S) 4-Bromofluorobenzene	*105*		*77.0-126*		*01/04/2023 18:55*	WG1983231
(S) 1,2-Dichloroethane-d4	*114*		*70.0-130*		*01/04/2023 18:55*	WG1983231

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

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Benzene	0.00281		0.00100	1	01/04/2023 19:14	WG1983231
Ethylbenzene	ND		0.00100	1	01/04/2023 19:14	WG1983231
Toluene	ND		0.00100	1	01/04/2023 19:14	WG1983231
Xylenes, Total	ND		0.00300	1	01/04/2023 19:14	WG1983231
Naphthalene	ND		0.00500	1	01/04/2023 19:14	WG1983231
1,2-Dichloroethane	0.0170		0.00100	1	01/04/2023 19:14	WG1983231
(S) Toluene-d8	*109*		*80.0-120*		*01/04/2023 19:14*	WG1983231
(S) 4-Bromofluorobenzene	*103*		*77.0-126*		*01/04/2023 19:14*	WG1983231
(S) 1,2-Dichloroethane-d4	*114*		*70.0-130*		*01/04/2023 19:14*	WG1983231

Method Blank (MB)

(MB) R3877148-1 12/30/22 09:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Sulfate, Dissolved	U		0.594	5.00

Laboratory Control Sample (LCS)

(LCS) R3877148-2 12/30/22 10:20

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate, Dissolved	40.0	41.1	103	90.0-110	

Method Blank (MB)

(MB) R3878405-3 01/04/23 15:05

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Benzene	U		0.0000941	0.00100
Ethylbenzene	U		0.000137	0.00100
Toluene	U		0.000278	0.00100
Xylenes, Total	U		0.000174	0.00300
Naphthalene	U		0.00100	0.00500
1,2-Dichloroethane	U		0.0000819	0.00100
(S) Toluene-d8	*109*			*80.0-120*
(S) 4-Bromofluorobenzene	*106*			*77.0-126*
(S) 1,2-Dichloroethane-d4	*109*			*70.0-130*

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

(LCS) R3878405-1 01/04/23 13:49 • (LCSD) R3878405-2 01/04/23 14:08

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 %
Benzene	0.00500	0.00423	0.00403	84.6	80.6	70.0-123			4.84	20
Ethylbenzene	0.00500	0.00431	0.00419	86.2	83.8	79.0-123			2.82	20
Toluene	0.00500	0.00438	0.00414	87.6	82.8	79.0-120			5.63	20
Xylenes, Total	0.0150	0.0126	0.0123	84.0	82.0	79.0-123			2.41	20
Naphthalene	0.00500	0.00411	0.00422	82.2	84.4	54.0-135			2.64	20
1,2-Dichloroethane	0.00500	0.00461	0.00449	92.2	89.8	70.0-128			2.64	20
(S) Toluene-d8				*105*	*104*	*80.0-120*				
(S) 4-Bromofluorobenzene				*105*	*103*	*77.0-126*				
(S) 1,2-Dichloroethane-d4				*112*	*111*	*70.0-130*				

GLOSSARY OF TERMS

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.
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
	The remainder of this page intentionally left blank, there are no qualifiers applied to this SDG.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico [1]	TN00003
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	LAO000356
Kentucky [1 6]	KY90010	South Carolina	84004002
Kentucky [2]	16	South Dakota	n/a
Louisiana	AI30792	Tennessee [1 4]	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas [5]	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
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

* 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 Analytical.

Company Name/Address:
TRC - Ft. Collins, CO
1526 Cole Blvd Bldg 3
Ste 150
Lakewood. CO 80401

Billing Information:
Accounts Payable
21 Griffin Road North
Windsor, CT 06095

Pres Chk

Report to: **Kiana Eldredge**

Email To: keldredge@trccompanies.com JJayroe@trccompanies.com

Project Description: **Maverik- Caribou Refinery 2022**

City/State Collected: Kirtland, NM

Please Circle: PT MT CT ET

Phone: **970-484-3263**

Client Project # 502118.0000.0000

Lab Project # **TRCCOLLCO-ELDREDGE**

Collected by (print): Kiana Eldredge

Site/Facility ID #

P.O. #

Collected by (signature): Kiana Eldredge

Immediately Packed on Ice N ___ Y X

Rush? (Lab MUST Be Notified)
___ Same Day ___ Five Day
___ Next Day ___ 5 Day (Rad Only)
___ Two Day ___ 10 Day (Rad Only)
___ Three Day

Quote #

Date Results Needed: Standard

Analysis / Container / Preservative

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	SULFATED 125mlHDPE-NoPres - Field Filtered	V8260BTEX 40mlAmb-HCl	V8260BTEXNDCA 40mlAmb-HCl	Remarks	Sample # (lab only)
~~INJ-N~~ INJ-W	Grab	GW	—	12/28/22	1053	4	X	X	X		-01
~~INJ-W~~ INJ-S	Grab	GW	—	12/28/22	1111	4	X	X	X		-02
MW-17	Grab	GW	—	12/28/22	1202	3	[illegible]	X	X		-03
~~INJ-E~~ INJ-N	Grab	GW	—	12/28/22	1237	4	X	X	X		-04
~~INJ-S~~ INJ-E	Grab	GW	—	12/28/22	1331	4	X	X	X		-05
MW-22	Grab	GW	—	12/28/22	1421	3		X	X		-06
Dup-1	Grab	GW	—	12/28/22	—	3		X	X		-07

Chain of Custody Page 1 of 1

Pace
PEOPLE ADVANCING SCIENCE

MT JULIET, TN
12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: https://info.pacelabs.com/hubfs/pas-standard-terms.pdf

SDG # 157495
E167

Acctnum: **TRCFCCO**
Template: **T221907**
Prelogin: **P971074**
PM: **824 - Chris Ward**
PB:

Shipped Via: **FedEX Ground**

* Matrix:
SS - Soil **AIR** - Air **F** - Filter
GW - Groundwater **B** - Bioassay
WW - WasteWater
DW - Drinking Water
OT - Other_____

Remarks:

pH _____ Temp _____
Flow _____ Other _____

Samples returned via: __ UPS X FedEx __ Courier _____

Tracking # 6094 5467 1210

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y X N
COC Signed/Accurate: X __N
Bottles arrive intact: X __N
Correct bottles used: X __N
Sufficient volume sent: X __N
If Applicable
VOA Zero Headspace: X Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: X __N

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR
Kiana Eldredge	12/28/22	1640		
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp °C Bottles Received: 5.8+0=5.8 25
				If preservation required by Login: Date/Time
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 12/29 Time: 0900
				Hold: Conditions NCF / OK