

#### Volume Justification

Carbon Valley 25 Federal #001 (30-015-30953)  
nMLB1020852567 6/28/2010

The reported volume of diesel fuel lost was 385 gallons (9.1 bbls) based on volume lost from tank when it was knocked over.



McNabb Partners, LLC  
Hobbs • Carlsbad • Midland  
575.397.0050  
www.mcnabbpartnersllc.com

September 6, 2024

NM Oil Conservation Division  
Environmental Bureau  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

RE: Revised Remediation Plan  
Incident ID: nMLB1020852567  
Carbon Valley 25 Federal #001  
Unit Letter I; Sec. 25; T16S.R27E. Eddy County  
32.8899966, -104.2261540

NMOCD:

McNabb Partners LLC submits this remediation and restoration plan on behalf of Murchison Oil & Gas, LLC. This report presents a revision to the remediation report submitted by 1.) D&H Petroleum & Environmental Services in November 2010 and 2.) R.T. Hicks Consultants in February 2019.

We relied on relevant portions of the D&H and Hicks Consultants' reports to summarize prior remedial activities. Appendix B contains these reports.

- 02/25/2019 – Hicks Consultants resubmits the 11/19/2010 D&H corrective action report to NMOCD and requests closure which includes:
  - 06/28/2010 – 385 gallons of diesel fuel released from an above ground storage tank powering the pumpjack generator.
  - 06/28-29/2010 - Initial remedial activities included the removal of 12 cu. yds. of impacted soil for off-site disposal.
  - 07/08/2010 – Initial soil sampling by D&H.
  - 08/18/2010 – An additional 5 cu. yds. of impacted soil removed off-site for proper disposal. Confirmation samples collected by D&H.

Email correspondence in early 2024 between Hicks Consultants and NMOCD discussing additional delineation and closure requirements is presented in Appendix A (Communications), as summarized:

- 04/24/2024 – Hicks Consultants performs additional delineation soil sampling.
- 06/12/2024 – Murchison asks McNabb Partners to resolve the open regulatory file.
- 06/27/2024 & 08/13/2024 - McNabb Partners performs additional horizontal and vertical delineation soil sampling to evaluate remedial options.



## 1. Characterization

The following sections address items as described in 19.15.29.11.A, paragraphs 1- 4. Please refer to the digital reporting tables, below, for additional setback criteria and verification.

### 1.1. Site Map

Plate 1 is a revised site map showing sample locations that exceed the most stringent Closure Criteria relative to the diesel tank release extent extrapolated from the Hicks Consultants and D&H reports. Sample locations are limited to the 2024 delineation events, where

- S-1 and S-4 collected during the 04/24/2024 sampling event.
- CS-01 through CS-07 collected during the 06/27/2024 sampling event.
- CS-05 (for vertical delineation) and CS-08 collected during the 08/3/2024 sampling event.

### 1.2. Depth to Ground Water

Estimated depth-to-water is 62-feet below ground surface (Plate 2 and accounting for an increase in surface elevation). A livestock water well is mapped at a lower surface elevation relative to the release extent, approximately 0.43-miles southwest of the release extent. The depth to water was measured at 55-feet below ground surface in 2016. The well is identified as RA-12455(POD1). The well log is presented in Appendix C.

### 1.3. Wellhead Protection Area

Plate 3 shows that the release extent is:

- Not within incorporated municipal boundaries or within a defined municipal fresh water well field.
- Within ½-mile of a documented water sources (wells and springs). The water well is listed as a stock well located 0.43-miles southwest of the release extent. This is the same well identified on Plate 2.
- Not within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes.
- Not within 1000 feet of any other freshwater wells or springs.

### 1.4. Distance to Nearest Significant Water Course

Plate 4 shows the release extent is:

- Within ½ mile of a significant water courses.
- Not within 300 feet of a continuously flowing watercourse or any other significant watercourse.
- Not within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark).



### 1.5. Soil/Waste Characteristics

The USDA Natural Resources Conservation Service (NRCS) soil survey<sup>1</sup> describes the upper 5-feet of lithology as:

0 to 3% slopes with a composition of:

- H1 - 0 to 8 inches: loam
- H2 - 8 to 60 inches: bedrock

Sampling events for site characterization were completed by R T Hicks Consultants and McNabb Partners. Soil samples were analyzed for chloride, TPH, Benzene, and BTEX.

- Summary of analytical is presented on Table 1.
- Plate 1 shows sample point locations that either 1) meet Closure Criteria or 2) exceeds Closure Criteria.
- Table 1 is a summary of analytical.
- Certificates of analysis are included in Appendix D.
- Appendix A contains the notifications of sampling.

Soil samples at S-1 and S-4 exhibit hydrocarbon impacts to a depth of 5-6-feet below ground surface (bgs). CS-05 exhibit chloride impact to at least 9.5-feet bgs. Vertical delineation will occur at the time of remediation. A suspect secondary release may exist west of the subject diesel release extent as observed by the chloride impacted soil at CS-05. The observed chloride impacted soils will be remediated as discussed in Section 2 (Remediation and Restoration).

Samples CS-02, CS-03, CS-04, CS-06, CS-07, and CS-08 provide horizontal delineation.

Site Characterization		
What is the shallowest depth to groundwater (ft bgs)	Section 1.2	62 ft bgs
What measure was used to determine this?		OSE database
Did this release impact ground or surface water?		No
<b>What is the minimum distance, between the closest lateral extents of the release and the following surface areas:</b>		
• A continuously flowing watercourse or any other significant watercourse. Plate 4		Intermittent stream 0.36-miles south
• Any lakebed, sinkhole or playa lake (measured from the ordinary high-water mark). Plate 4		Lake/Pond 0.58-miles NNW
• An occupied permanent residence, school, hospital, institution or church. Plate 5		Residence 5 miles to the SW
• A spring or private domestic fresh water well used by less than five households for domestic or stock watering purposes. Plate 3		Stock well 0.43-miles SW

<sup>1</sup> NRCS Field Guide and the NRCS web survey tool (<https://websoilsurvey.nrcs.usda.gov/app/>)



• Any other fresh water well or spring. <b>Plate 3</b>	Stock well 0.43-miles SW
• Incorporated municipal boundaries or a defined municipal fresh water well field.	>5 miles
• A wetland. <b>Plate 6</b>	Riverine wetland 0.35-miles south
• A subsurface mine. <b>Plate 7</b>	>5 miles
• A (non-karst) unstable area.	>5 miles
• Categorize the risk of this well/site being in a karst geology. <b>Plate 8</b>	High
• A 100-year floodplain. <b>Plate 9</b>	0.34-miles NW
Did the release impact areas not on an exploration, development, production, or storage site?	No

The release is within high karst potential, therefore, remediation will be to the most stringent Closure Criteria per Table 1 of 19.15.29 NMAC and as discussed in Section 2.

## 2. Remediation & Restoration Workplan

Murchison proposes to excavate the area within 1.) the subject diesel release extent and 2.) the suspect secondary release until all bases and walls meet the most stringent Closure Criteria per Table 1 of 19.15.29 NMAC, as the release is within a High Karst Potential area:

- Chloride < 600 mg/kg
- TPH (GRO + DRO + MRO) < 100 mg/kg
- BTEX < 50 mg/kg
- Benzene < 10 mg/kg

Confirmation soil samples (5 point composite) will be obtained from the bases and walls of the excavation for laboratory analysis to meet Closure Criteria of the above listed constituents. Base and wall samples will represent an area no greater than 200 sq. ft.

Remediation Plan	
Requesting a remediation plan approval with this submission?	Yes
Have the lateral and vertical extents of the contamination been fully delineated ( <i>attach report demonstrating lateral and vertical extents</i> )?	Yes Will occur at the time of remediation.
Was this release entirely contained within a lined containment area?	No
<b>Soil Contamination Sampling (Highest observable value for each in mg/kg)</b>	



nMLB1020852567  
Carbon Valley 25 Federal #001

• Chloride	3,200
• TPH (DRO+GRO+MRO)	<2270
• GRO+DRO	<2260
• BTEX	<0.3
• Benzene	<0.05
On what estimated date will the remediation commence	10/15/2024
On what date will (or did) the final sampling or liner inspection occur	10/29/2024
On what date will (or was) the remediation completed	10/29/2024
What is the estimated surface area (in square feet) that will be reclaimed	570
What is the estimated volume (in cubic yards) that will be reclaimed	211
What is the estimated surface area (in square ft) that will be remediated	570
What is the estimated volume (in cubic yards) that will be remediated	211
The remediation will (or is expected to) utilize the following processes to remediate/reduce contaminants:	
• Excavation and off-site disposal	Northern Delaware Basin Landfill (OWL - fJEG1635837366)

Based on available analytical data, the depth of excavation is estimated at 10 ft below ground surface.

An estimated 211 cubic yards of material will be excavated and hauled off-site to Northern Delaware Basin Landfill for proper disposal. Remediation will begin within 45-days of workplan approval. Anticipate that project will be completed within 15 days thereafter. Upon confirmation horizontal and vertical delineation soil samples meeting the above closure criteria, we will submit a closure report within 30-days of laboratory results.

The area will be backfilled to contain non-waste containing, uncontaminated, earthen material with chloride concentrations less than 600 mg/kg as analyzed by EPA Method 300.0, or other test methods approved by the division.

The remediation area will be restored as an active production site per 19.15.29.13.A-C NMAC. When the production site is no longer in-use for oil and gas operations, the production site will be reclaimed per 19.15.29.13.D-E NMAC.



nMLB1020852567  
Carbon Valley 25 Federal #001

Please contact us with any questions.

Sincerely,

Andrew Parker  
Environmental Manager  
McNabb Partners  
c: (970) 570-9535

Copy: Greg Boans, Murchison Oil & Gas, LLC  
BLM - Carlsbad Field Office, NM

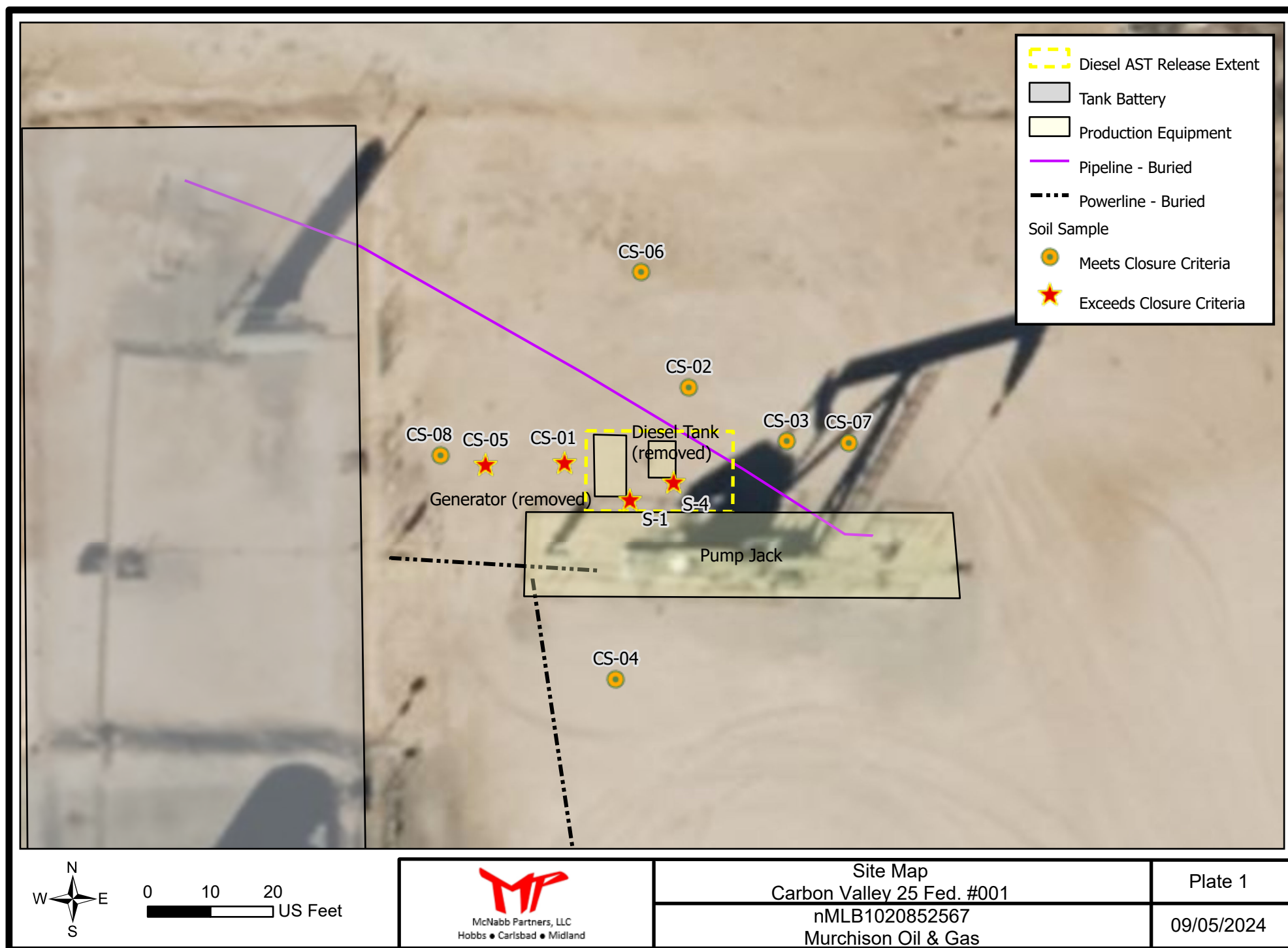
September 6, 2024

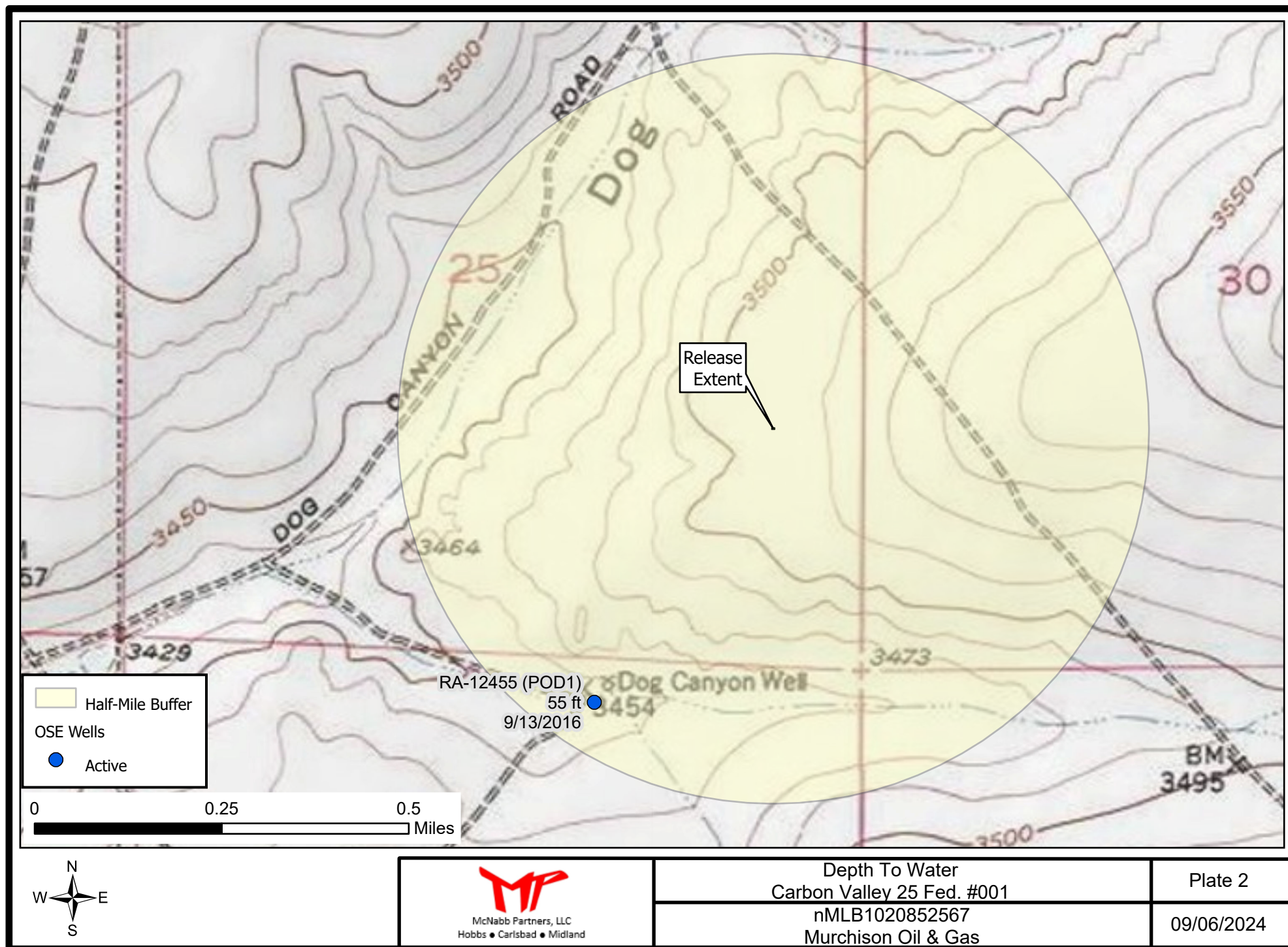
Page 6 of 6

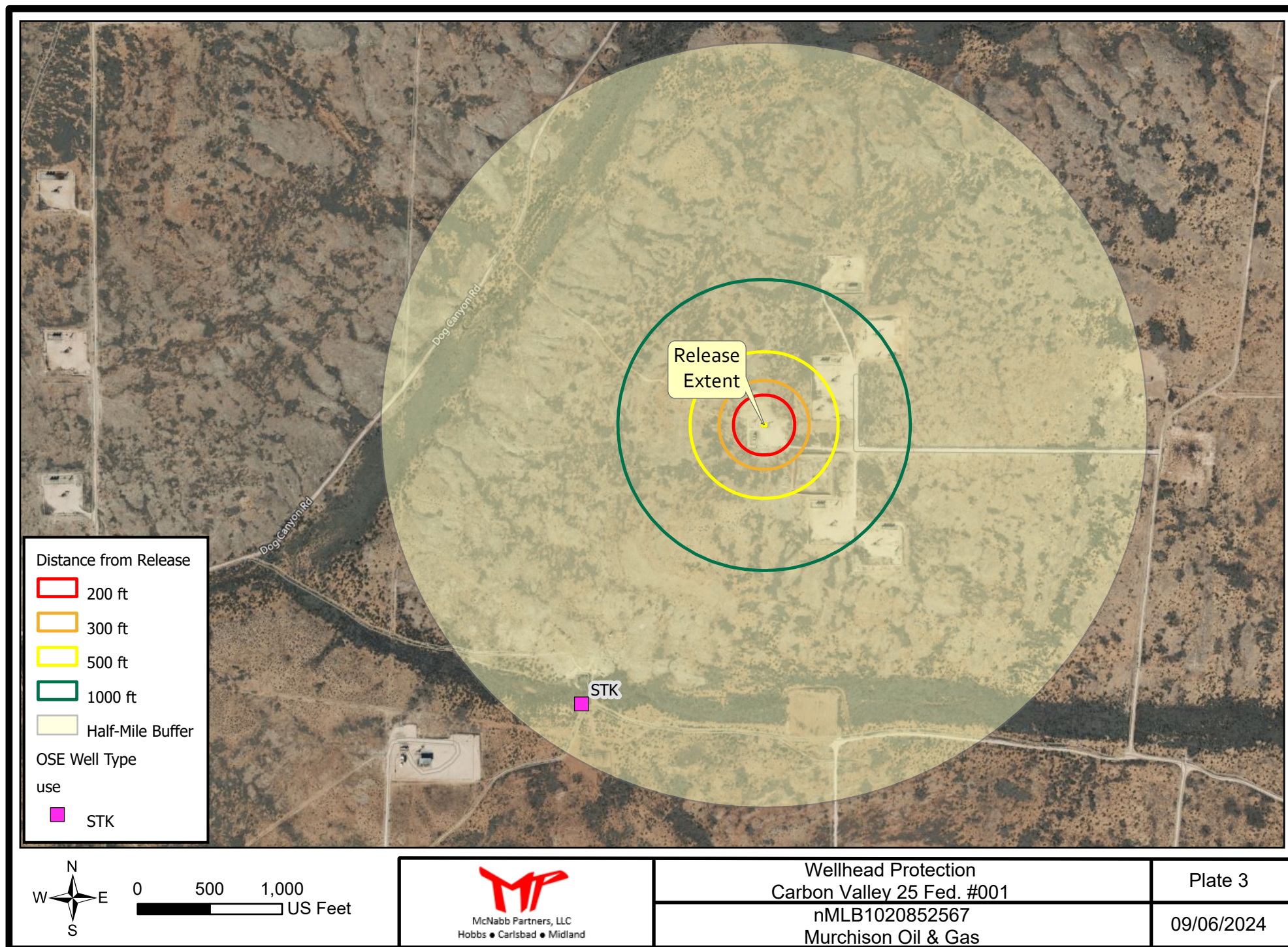
# Plates

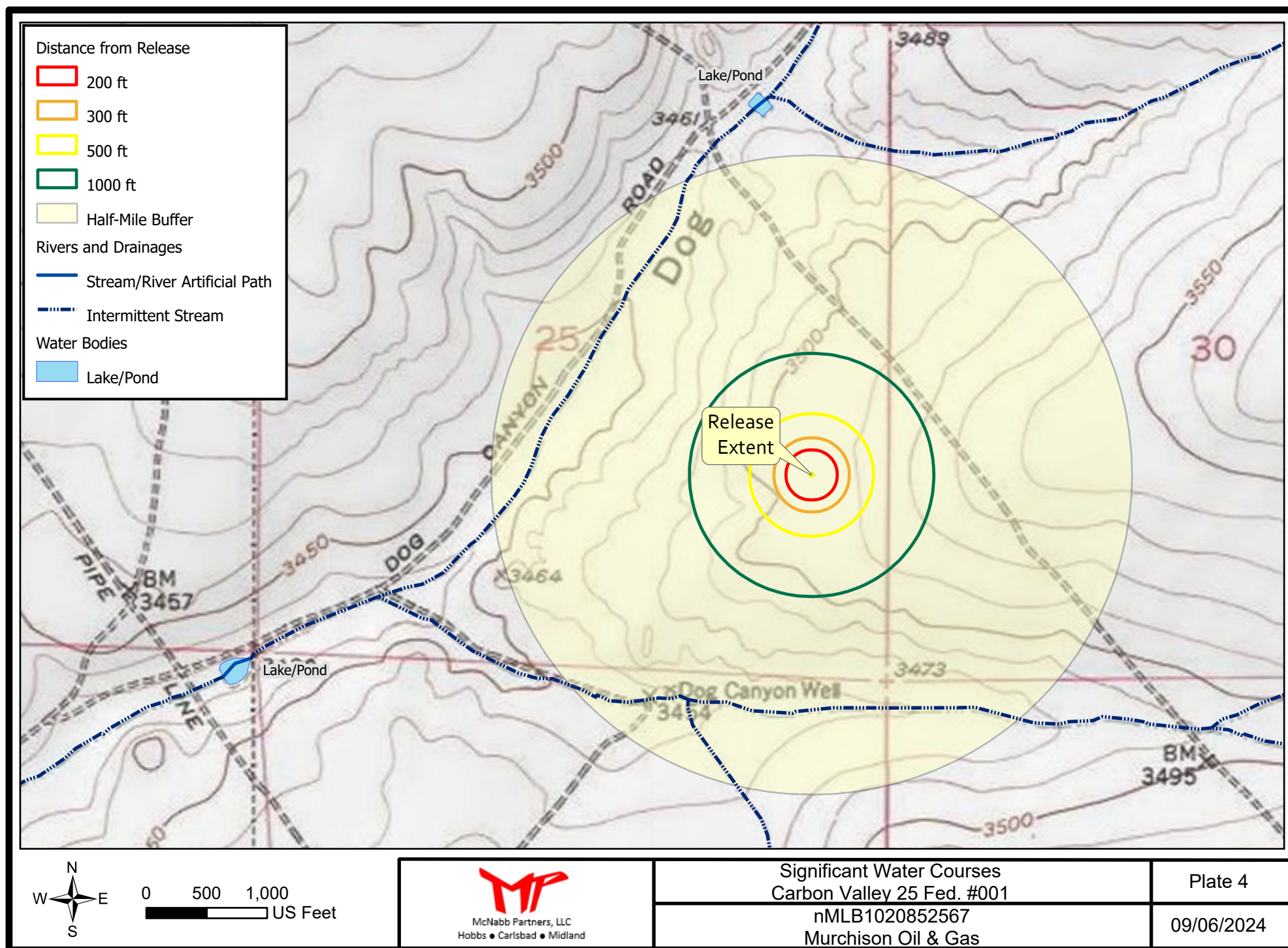


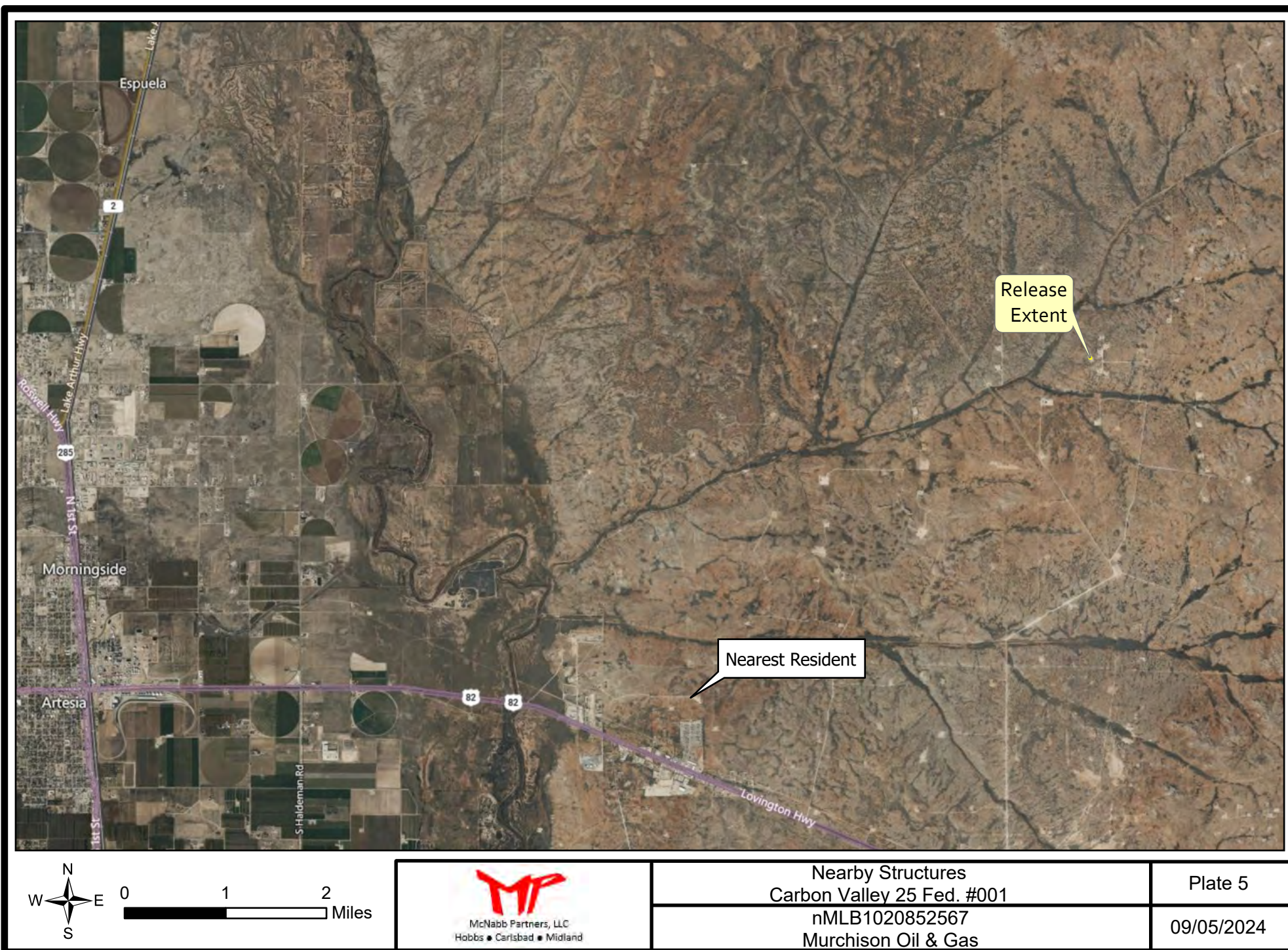
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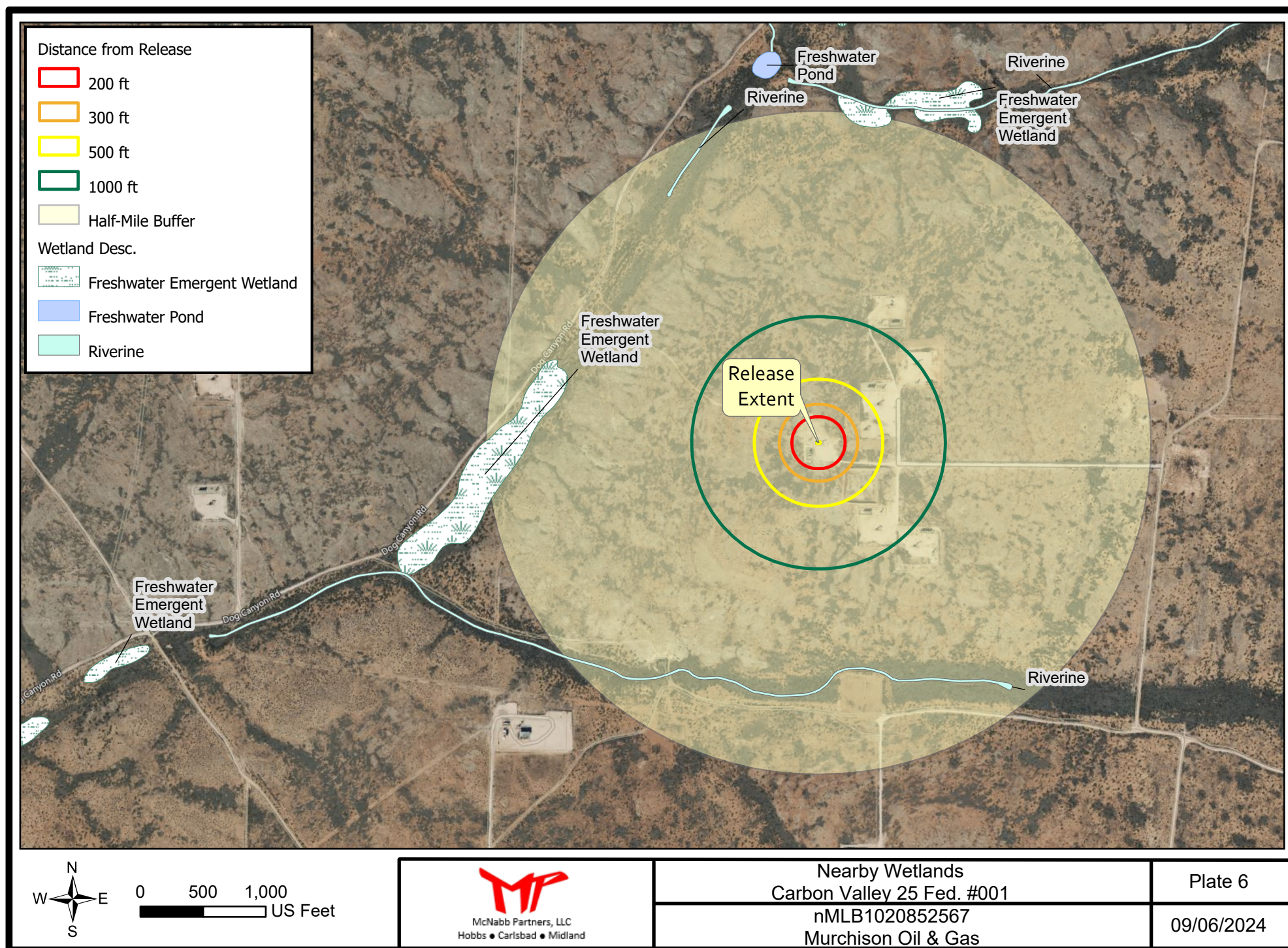


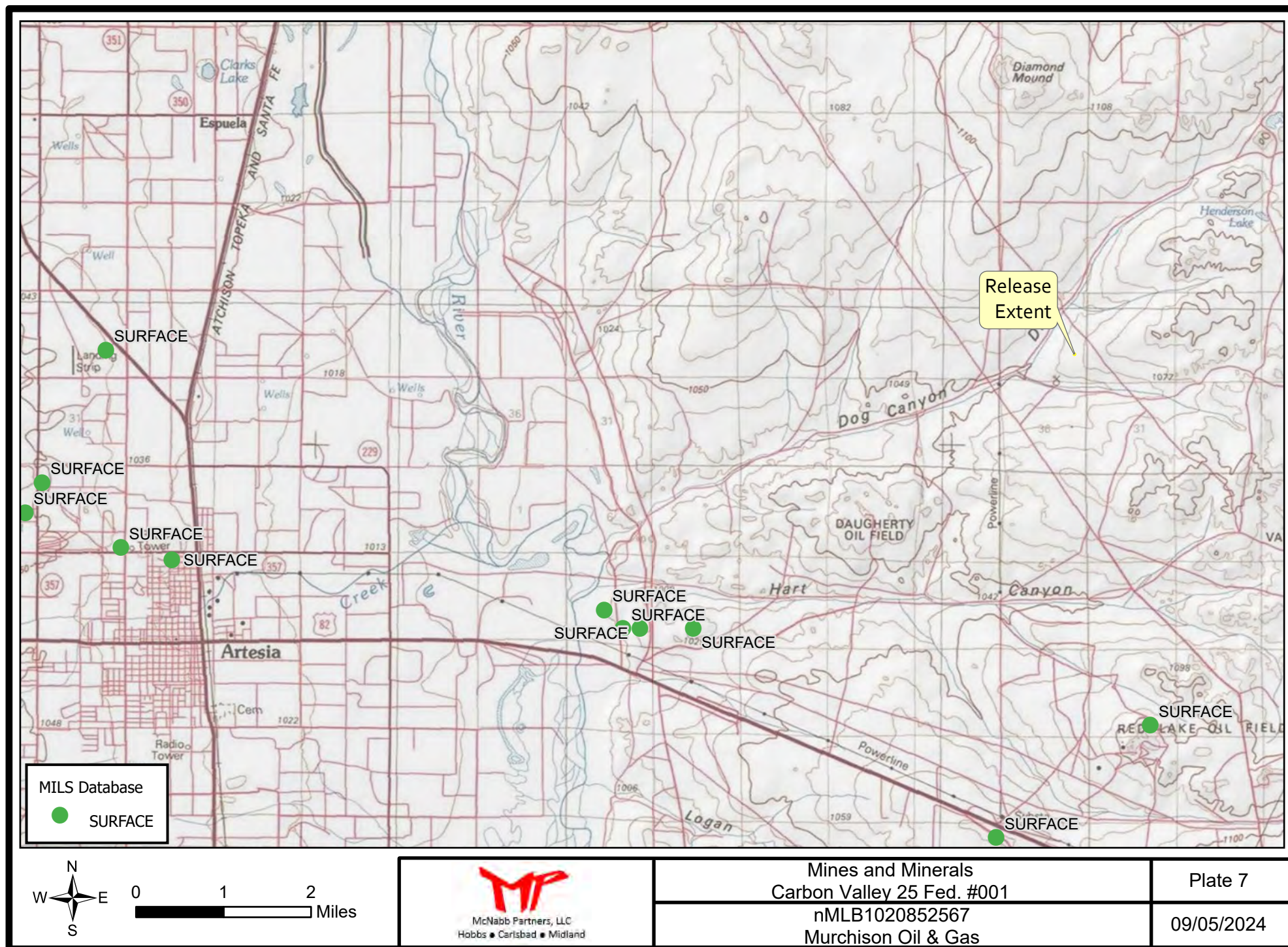


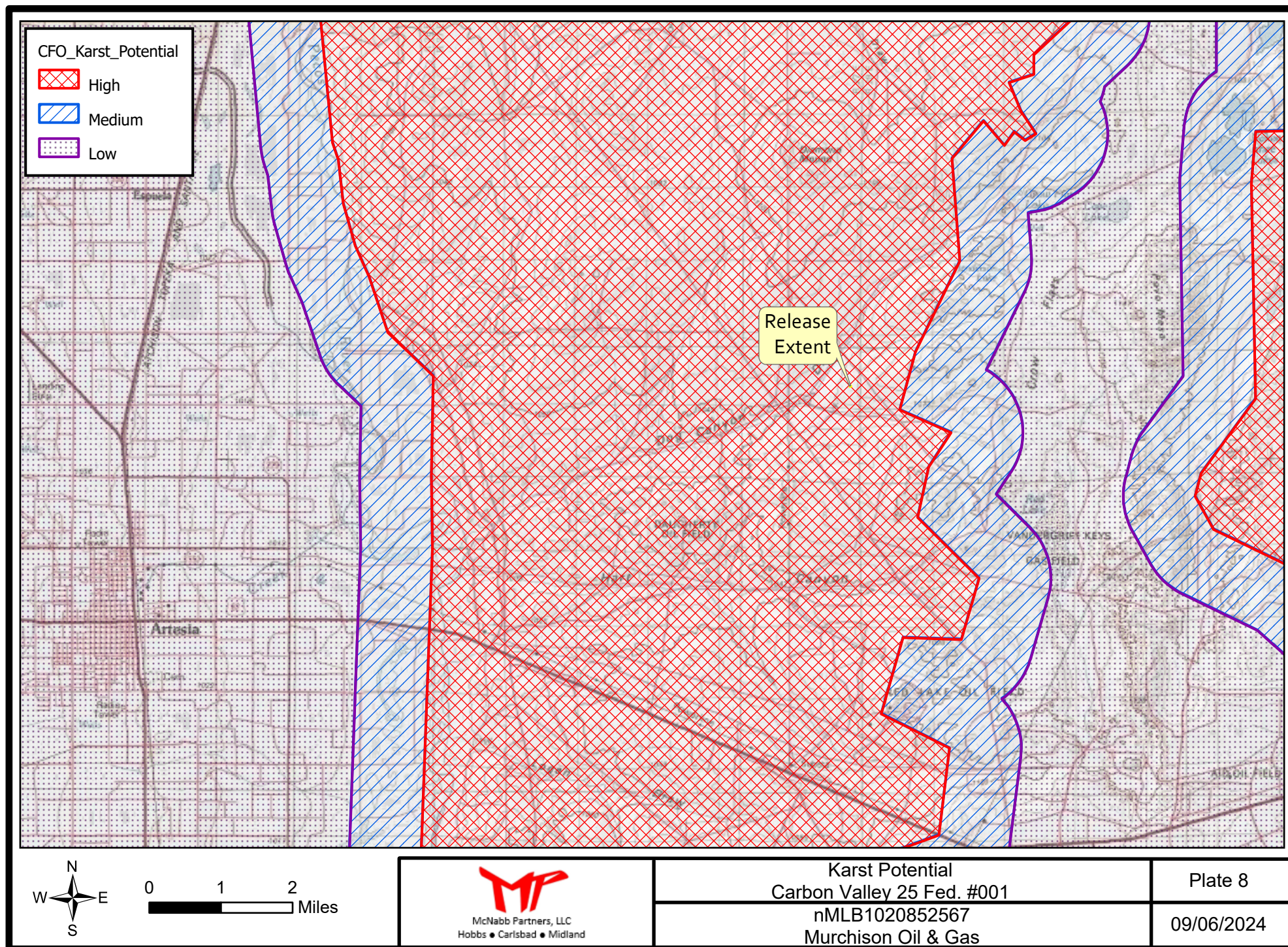


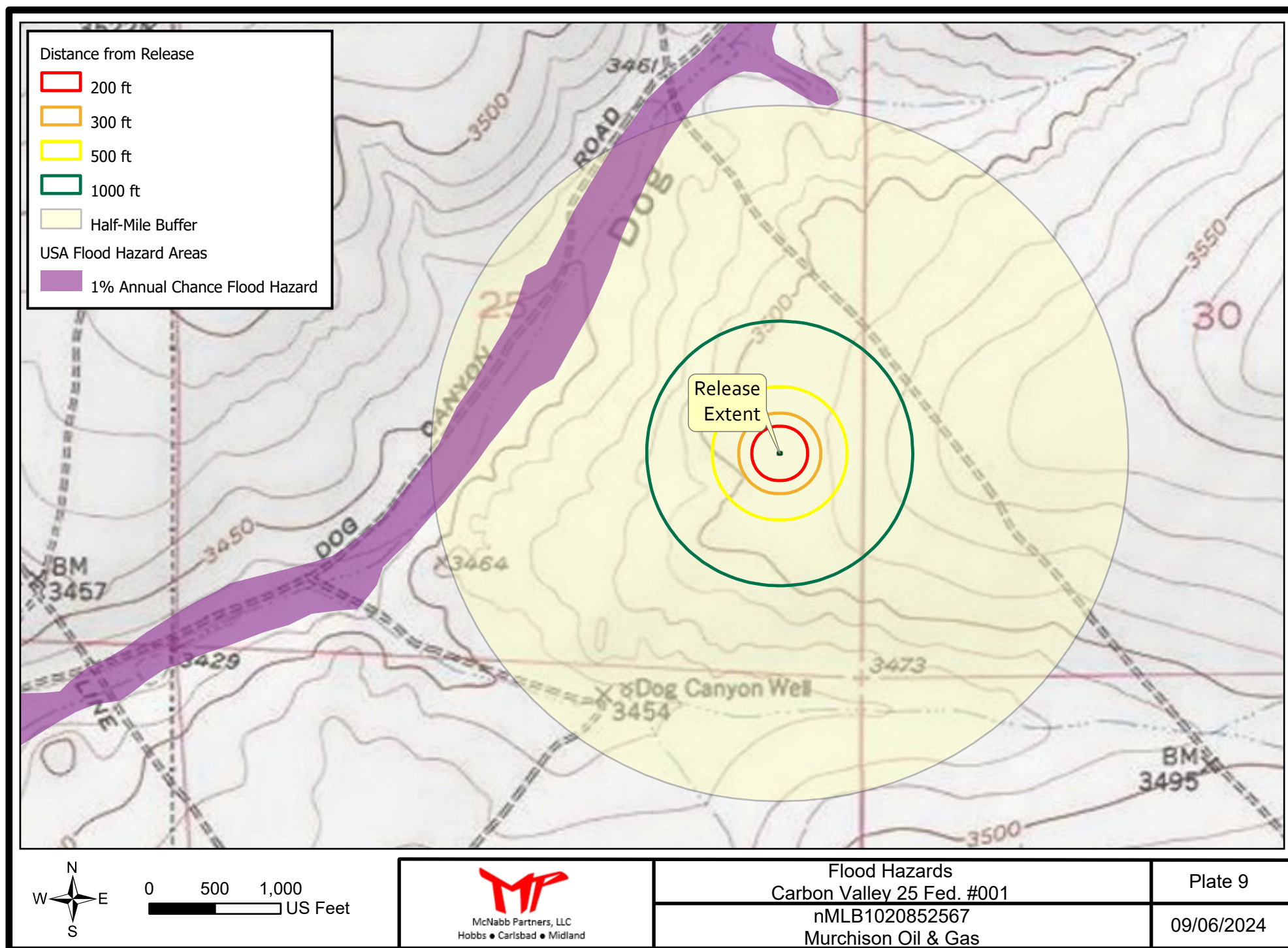












# Tables



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Table 1. Analytical Summary  
Carbon Valley 25-1

Sample ID	Date	Discrete Depth (Feet)	Top Depth (Feet)	Bottom Depth (Feet)	Chloride (mg/kg)	GRO+DRO (mg/kg)	TPH Ext. (mg/kg)	Benzene (mg/kg)	BTEX (mg/kg)	Lab (Hall/Cardinal)	Lab #
NMOCD Closure Criteria					600	--	100	10	50		
S-1	4/24/2024		0	4	208	<126	<136	<0.05	<0.3	Cardinal	H242211
S-1	4/24/2024		4	5	224	<230	<240	<0.05	<0.3	Cardinal	H242211
S-1	4/24/2024		5	6	208	<245	<255	<0.05	<0.3	Cardinal	H242211
S-1	4/24/2024		6	7	400	<20	<30	<0.05	<0.3	Cardinal	H242211
S-1	4/24/2024		7	8	368	<20	<30	<0.05	<0.3	Cardinal	H242211
S-4	4/24/2024		0	4	208	<140	<180.1	<0.05	<0.3	Cardinal	H242211
S-4	4/24/2024		4	5	192	<116	<149.3	<0.05	<0.3	Cardinal	H242211
S-4	4/24/2024		5	6	112	<45.6	<57.4	<0.05	<0.3	Cardinal	H242211
S-4	4/24/2024		6	7	96	<20	<30	<0.05	<0.3	Cardinal	H242211
S-4	4/24/2024		7	8	144	<20	<30	<0.05	<0.3	Cardinal	H242211
CS-01	6/27/2024		0	2	64	<2260	<2270	<0.05	<0.3	Cardinal	H243879
CS-01	6/27/2024		2	4	336	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-01	6/27/2024	5			336	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-01	6/27/2024	6			240	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-01	6/27/2024	8			128	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-02	6/27/2024		0	2	112	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-02	6/27/2024		2	3.5	96	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-03	6/27/2024		0	2	208	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-03	6/27/2024	2.5			384	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-04	6/27/2024		0	2	320	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-04	6/27/2024		2	3	512	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-04	6/27/2024	3.5			64	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-05	6/27/2024		0	2	480	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-05	6/27/2024		2	3.7	880	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-05	8/13/2024	4			3200	<20	<30	<0.05	<0.3	Cardinal	H244991
CS-05	8/13/2024	6			2640	<20	<30	<0.05	<0.3	Cardinal	H244991
CS-05	8/13/2024	8			1090	<20	<30	<0.05	<0.3	Cardinal	H244991
CS-05	8/13/2024	9.5			1020	<20	<30	<0.05	<0.3	Cardinal	H244991
CS-06	6/27/2024		0	2	32	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-06	6/27/2024		2	3.5	32	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-06	6/27/2024	4			48	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-07	6/27/2024		0	2	160	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-07	6/27/2024		2	3	208	<20	<30	<0.05	<0.3	Cardinal	H243879
CS-08	8/13/2024	0.5			128	<20	<30	<0.05	<0.3	Cardinal	H244991
CS-08	8/13/2024	2			64	<20	<30	<0.05	<0.3	Cardinal	H244991
CS-08	8/13/2024	4			64	<20	<30	<0.05	<0.3	Cardinal	H244991
Sample exceeds NMOCD Closure Criteria											

# Appendix A

## Communications



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**Cindy Cottrell**

---

**From:** Kristin Pope <kristin@rthicksconsult.com>  
**Sent:** Friday, April 19, 2024 2:56 PM  
**To:** jamos@blm.gov  
**Cc:** 'Randall Hicks'; Cindy Cottrell; 'Bratcher, Michael, EMNRD'; Greg Boans  
**Subject:** RE: [EXTERNAL] RE: UNRESOLVED RELEASE: Murchison - Carbon Valley 25 Fed #1 (2RP-421; nMLB1020852567)  
**Attachments:** SamplingPlan-Notice\_CarbonValleyRelease.pdf

Jim,

On behalf of Murchison Oil and Gas, LLC, please find the attached sampling plan for the Carbon Valley 25 Fed #1 release. This release was addressed in 2010 under the previous release rule by excavating and replacing impacted material to 4 ft BGS. We will return to the two excavations on Wednesday, April 24, 2024, at approximately 1:00 p.m. MST to resample for constituents included in the 2018 Release Rule. Please contact me if you have any questions.

Kristin Pope  
R.T. Hicks Consultants  
575-302-6755

---

**From:** Bratcher, Michael, EMNRD <mike.bratcher@emnrd.nm.gov>  
**Sent:** Friday, April 5, 2024 2:42 PM  
**To:** Kristin Pope <kristin@rthicksconsult.com>  
**Cc:** 'Randall Hicks' <r@rthicksconsult.com>; 'Cindy Cottrell' <ccottrell@jdmii.com>  
**Subject:** RE: [EXTERNAL] RE: UNRESOLVED RELEASE: Murchison - Carbon Valley 25 Fed #1 (2RP-421; nMLB1020852567)

Kristen,

Since this site does not have a remediation proposal approval prior to August 2018, it will need to be delineated and remediated to meet all requirements of the current rules and guidance. From what I can tell, all of the documentation OCD has available is located in the RP file. There is some analytical data obtained in July 2010 but samples were only analyzed for the 6" interval, so since the site was not fully delineated that I can tell, it likely would not have been approved earlier. I do not dispute that a report may have been submitted to me in 2010 and again to Mr. Billings in 2019, but obviously neither one of us was able to get to it for review, so I do not recall this one being a dig/haul as I did not review the submittal.

Hopefully this helps clarify some but I am available until 3:30 today or can carve out some time to discuss next week.

Thank you,

**Mike Bratcher** • Incident Supervisor  
Environmental Bureau  
EMNRD - Oil Conservation Division  
506 W. Texas Ave | Artesia, NM 88210  
(575) 626-0857 | [mike.bratcher@emnrd.nm.gov](mailto:mike.bratcher@emnrd.nm.gov)  
<http://www.emnrd.nm.gov/ocd>



---

**From:** Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)>  
**Sent:** Thursday, April 4, 2024 4:41 PM  
**To:** Bratcher, Michael, EMNRD <[mike.bratcher@emnrd.nm.gov](mailto:mike.bratcher@emnrd.nm.gov)>  
**Cc:** 'Randall Hicks' <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>; 'Cindy Cottrell' <[ccottrell@jdmii.com](mailto:ccottrell@jdmii.com)>  
**Subject:** [EXTERNAL] RE: UNRESOLVED RELEASE: Murchison - Carbon Valley 25 Fed #1 (2RP-421; nMLB1020852567)

CAUTION: This email originated outside of our organization. Exercise caution prior to clicking on links or opening attachments.

Mike,

I have equipment ready to re-sample this unresolved release and I'm working on a closure sampling plan to submit for OCD approval. Before I submit/notify, can we discuss what Murchison needs to obtain a closure for this one? When is a good day/time I can call?

You'll recall that this one was a dig/haul in 2010 but chloride was not analyzed; thus, the re-sample.

Thanks for your help.

Kristin Pope  
R.T. Hicks Consultants  
575-302-6755

---

**From:** Cindy Cottrell <[ccottrell@jdmii.com](mailto:ccottrell@jdmii.com)>  
**Sent:** Monday, February 5, 2024 10:48 AM  
**To:** Bratcher, Michael, EMNRD <[mike.bratcher@emnrd.nm.gov](mailto:mike.bratcher@emnrd.nm.gov)>; Hamlet, Robert, EMNRD <[Robert.Hamlet@emnrd.nm.gov](mailto:Robert.Hamlet@emnrd.nm.gov)>  
**Cc:** Greg Boans <[gboans@jdmii.com](mailto:gboans@jdmii.com)>; Rusty Cooper <[rcooper@jdmii.com](mailto:rcooper@jdmii.com)>; [kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com); [r@rthicksconsult.com](mailto:r@rthicksconsult.com)  
**Subject:** FW: UNRESOLVED RELEASE: Murchison - Carbon Valley 25 Fed #1 (2RP-421; nMLB1020852567)

Mike,

The remediation report/closure request was submitted to your attention by D&H Petroleum & Environmental Services on November 29, 2010. We attempted to get these old incidents resolved in 2019 and emailed the attached report to Bradford Billings on February 25, 2019. Please review the report and let us know if anything else is needed in order to approve closure of this incident.

Thank you!

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**From:** Kristin Pope <[kristin@rthicksconsult.com](mailto:kristin@rthicksconsult.com)>  
**Sent:** Monday, February 25, 2019 2:00 PM  
**To:** 'Billings, Bradford, EMNRD' <[Bradford.Billings@state.nm.us](mailto:Bradford.Billings@state.nm.us)>  
**Cc:** [stucker@blm.gov](mailto:stucker@blm.gov); Cindy Cottrell <[ccottrell@jdmii.com](mailto:ccottrell@jdmii.com)>; Greg Boans <[gboans@jdmii.com](mailto:gboans@jdmii.com)>; 'Andrew Parker' <[andrew@rthicksconsult.com](mailto:andrew@rthicksconsult.com)>; Randy Hicks <[r@rthicksconsult.com](mailto:r@rthicksconsult.com)>  
**Subject:** UNRESOLVED RELEASE: Murchison - Carbon Valley 25 Fed #1

Mr. Billings,

Please find the attached letter and previously-submitted remediation report for the unresolved Carbon Valley 25 Fed #1 release (2RP-421). Murchison's corporate office recently located this report by the consultants D&H Petroleum & Environmental Services submitted to NMOCD in November 2010. We hope this satisfies requirements to close the regulatory file for this release.

Please contact me with any questions. Thank you.

Kristin Pope  
R.T. Hicks Consultants  
Carlsbad Field Office  
575.302.6755

## R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

April 19, 2024

Mr. Jim Amos  
Bureau of Land Management  
via email to [jamos@blm.gov](mailto:jamos@blm.gov)

RE: Carbon Valley 25 Fed #1 release (2RP-421; nMLB1020852567)  
Re-sampling Plan

Mr. Amos:

On behalf of Murchison Oil & Gas, LLC, R.T. Hicks Consultants provides BLM with this Sampling Plan for the confirmation of past remediation activities at the release location referenced above. D&H Petroleum & Environmental Services submitted a remediation report/closure request to NMOCD District II on November 29, 2010. The report detailed the following actions regarding remediation of the June 28, 2010 release of 9 barrels of diesel fuel:

- 12 cubic yards of material were removed from the affected location surface to a disposal facility on the day of the release.
- Soil samples collected on July 8, 2010, were analyzed to direct any remaining excavation required.
- 5 additional cubic yards from two excavation areas (4 feet deep) were removed to disposal.
- On August 18, 2010, final sampling of the two excavated areas at 4 feet BGS confirmed target concentrations were met and closure was requested.

This 2010 work was completed and submitted before the enactment of the 2018 Spill Rule and was addressed in accordance with contemporary NMOCD guidelines. Hicks Consultants resubmitted the closure request report to NMOCD on February 25, 2019, and Murchison inquired about the status on February 5, 2024. NMOCD responded by directing Murchison to re-submit the request on the NMOCD Online Portal. Before resubmitting on the Portal, we have elected to resample the excavation areas for constituents consistent with the 2018 Spill Rule (Rule 29) using the enclosed protocol. **The sampling will begin on April 24, 2024, at approximately 1:00 p.m. MST; this transmission serves as notice of possible closure sampling.** Notice was submitted to NMOCD on the Online Portal on April 18, 2024.

We believe depth to groundwater to be approximately 112 feet at this location, in the Yates Formation. This release is located on surface mapped by BLM as "high karst potential."

Murchison looks forward to resolving this release and is willing to comply with the current Spill

Sampling Plan  
Page 2

Rule to obtain closure of the regulatory file. In the event of unexpected analyses that are not consistent with the Table 1 targets, Hicks Consultants will inform NMOCD and submit a Remediation Plan to address this release; otherwise, a complete closure report/request will follow. BLM will be copied on all submissions to NMOCD.

Regards,

R.T. Hicks Consultants

Kristin Pope  
Sr. Project Geologist

Copy: Murchison, NMOCD



3/27/2010 satellite image showing generator and fuel tank in relation to pumping unit.

Approximate re-sample locations marked in red:

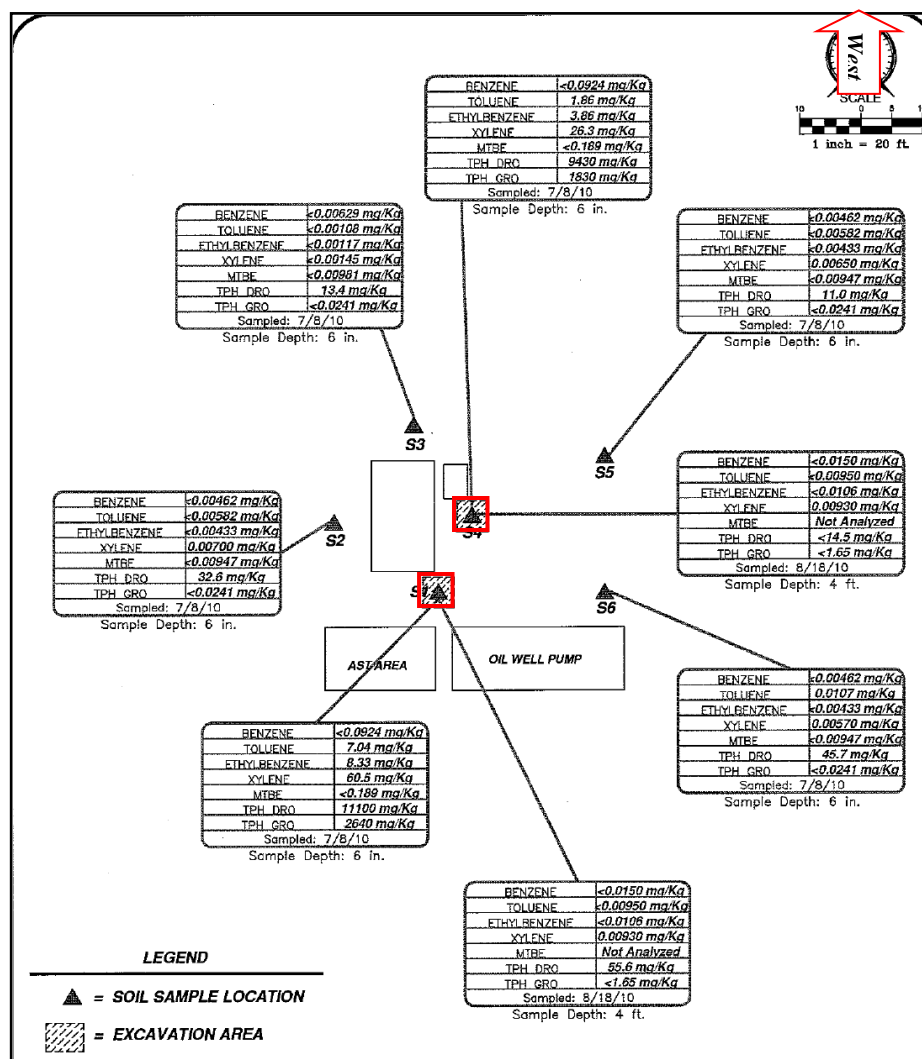
S1	32.889982, -104.226181
S4	32.889996, -104.226156

Sampling Plan  
Page 3

## Sampling Plan: Murchison – Carbon Valley 25 Fed #001 release

Guided by the 2010 sampling and analysis provided by D&H, we will return to the two excavation locations shown on the map (Fig. 1) below and repeat the protocol at each sample point.

1. Using an auger extension mounted on a skid-steer, collect samples from the following depth intervals below the surface:
  - a. 0-4 feet interval  
(excavated/filled area)
  - b. 5 feet
  - c. 6 feet
  - d. 7 feet
  - e. 8 feet



**Figure 1:**

Cropped from 2010 D&H Petroleum & Environmental Services; Re-sample locations (S1, S4) added in red by Hicks Consultants.

--Note that the original map orientation was incorrect and is corrected here.

The 7/8/2010 samples were collected *after* 6 inches of material was removed from the affected surface.

The 8/18/2010 samples were collected from the floor of the two 4 x 5 x 4-ft-deep excavations. The material from these two excavations was transported to a disposal facility and replaced with clean fill.

2. Prepare and preserve all samples appropriately and submit to Cardinal Laboratories for analysis of Table 1 constituents of Table 1 (chloride, TPH [8015M], and BTEX).
3. Record all sample locations with photograph(s) and GPS coordinates.

*Field conditions may cause adjustments to this Plan.*

OCD Permitting

[NOTIFY] Notification Of Sampling (C-141N) Application

Submission Information

Submission ID:	334114	Districts:	Artesia
Operator:	<a href="#">[15363]</a> Murchison Oil and Gas, LLC	Counties:	Eddy
Description:	Murchison Oil and Gas, LLC [15363] , nMLB1020852567		
Status:	APPROVED		
Status Date:	04/18/2024		
References (2):	30-015-30953, nMLB1020852567		

Forms

This application type does not have attachments.

Questions

Prerequisites

Incident ID (n#)	nMLB1020852567
Incident Name	NMLB1020852567 2010 MINOR AIA SPL @ 30-015-30953
Incident Type	Release Other
Incident Status	Initial C-141 Approved
Incident Well	[30-015-30953] CARBON VALLEY 25 FEDERAL #001

Location of Release Source

Site Name	Unavailable.
Date Release Discovered	06/28/2010
Surface Owner	Federal

Sampling Event General Information

Please answer all the questions in this group.

What is the sampling surface area in square feet	40
What is the estimated number of samples that will be gathered	10
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	04/24/2024
Time sampling will commence	01:00 PM
Please provide any information necessary for observers to contact samplers	575-302-6755
Please provide any information necessary for navigation to sampling site	Travel east on State Hwy 82 from Artesia towards Loco Hills for 9 miles and turn North on CR 202. Follow road for 4.5 miles and turn West at pipe line station and go 1/10th mile. Turn North and travel 1 mile and turn West for 1/10 mile. Turn North for 2 miles and turn West for 3/10 mile to location.

Acknowledgments

This submission type does not have acknowledgments, at this time.

Conditions

Summary: ccottrell (4/18/2024), Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.

Reasons

No reasons found for this submission.

Fees

No fees found for this submission.

Go Back

**From:** [Andrew Parker](#)  
**To:** [blm\\_nm\\_cfo\\_spill@blm.gov](mailto:blm_nm_cfo_spill@blm.gov)  
**Cc:** [Amos, James](#); [Cindy Cottrell](#); [Laura Parker](#); [Greg Boans](#)  
**Subject:** Incident ID nMLB1020852567 Sampling Notice Carbon Valley 25 Fed #1  
**Date:** Saturday, June 22, 2024 8:53:49 AM

---

BLM,

Please accept this email as sampling notice for the above referenced incident. Soil sampling is for further horizontal and vertical delineation. Some of the samples may be used for confirmation during closure reporting. Below is a copy of the notification submitted to NMOCD.

Please contact us with any questions.

Regards,

Andrew Parker  
Environmental Manager  
McNabb Partners  
c: (970) 570-9535



---

**From:** OCDOnline@state.nm.us <OCDOnline@state.nm.us>  
**Sent:** Friday, June 21, 2024 8:53 AM  
**To:** Andrew Parker <Andrew@mcnabbpartners.com>  
**Subject:** The Oil Conservation Division (OCD) has accepted the application, Application ID: 356527

To whom it may concern (c/o Andrew Parker for Murchison Oil and Gas, LLC),

The OCD has received the submitted *Notification for (Final) Sampling of a Release (C-141N)*, for incident ID (n#) nMLB1020852567.

The sampling event is expected to take place:

**When:** 06/27/2024 @ 08:00

**Where:** I-25-16S-27E 1650 FSL 660 FEL (32.8899155,-104.2260437)

**Additional Information:** Please contact [dimitry@mcnabbpartners.com](mailto:dimitry@mcnabbpartners.com) if needed. 917-497-6890 or [andrew@mcnabbpartners.com](mailto:andrew@mcnabbpartners.com) 970-570-9535

**Additional Instructions:** GPS Coordinates: 32.8899901, -104.2261548

An OCD representative may be available onsite at the date and time reported. In the absence or presence of an OCD representative, sampling pursuant to 19.15.29.12.D NMAC is required. Sampling must be performed following an approved sampling plan or pursuant to 19.15.29.12.D.(1).(c) NMAC. Should there be a change in the scheduled date and time of the

sampling event, then another notification should be resubmitted through OCD permitting as soon as possible.

- **Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.**

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

**New Mexico Energy, Minerals and Natural Resources Department**  
1220 South St. Francis Drive  
Santa Fe, NM 87505

**From:** [OCDOnline@state.nm.us](mailto:OCDOnline@state.nm.us)  
**To:** [Andrew Parker](#)  
**Subject:** The Oil Conservation Division (OCD) has accepted the application, Application ID: 372124  
**Date:** Thursday, August 8, 2024 4:48:35 PM

---

To whom it may concern (c/o Andrew Parker for Murchison Oil and Gas, LLC),

The OCD has received the submitted *Notification for (Final) Sampling of a Release* (C-141N), for incident ID (n#) nMLB1020852567.

The sampling event is expected to take place:

**When:** 08/13/2024 @ 08:00

**Where:** I-25-16S-27E 1650 FSL 660 FEL (32.8899155,-104.2260437)

**Additional Information:** Please contact [dimitry@mcnabbpartners.com](mailto:dimitry@mcnabbpartners.com) if needed. 917-497-6890

**Additional Instructions:** GPS coordinates: 32.889996, -104.226265

An OCD representative may be available onsite at the date and time reported. In the absence or presence of an OCD representative, sampling pursuant to 19.15.29.12.D NMAC is required. Sampling must be performed following an approved sampling plan or pursuant to 19.15.29.12.D.(1).(c) NMAC. Should there be a change in the scheduled date and time of the sampling event, then another notification should be resubmitted through OCD permitting as soon as possible.

- **Failure to notify the OCD of sampling events including any changes in date/time per the requirements of 19.15.29.12.D.(1).(a) NMAC, may result in the remediation closure samples not being accepted.**

If you have any questions regarding this application, or don't know why you have received this email, please contact us.

**New Mexico Energy, Minerals and Natural Resources Department**

1220 South St. Francis Drive

Santa Fe, NM 87505

# Appendix B

## Prior Reports



McNabb Partners, LLC  
Hobbs • Carlsbad • Midland

## R. T. HICKS CONSULTANTS, LTD.

901 Rio Grande Blvd NW ▲ Suite F-142 ▲ Albuquerque, NM 87104 ▲ 505.266.5004 ▲ Fax: 505.266-0745

February 25, 2019

Bradford Billings  
Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505  
*VIA EMAIL*

RE: Murchison – Carbon Valley 25 Fed #001 Unresolved Release  
Remediation Report/Closure Request, #2RP-421  
Unit I, Section 25, T16S, R27E, Eddy County

Dear Mr. Billings:

On behalf of Murchison Oil and Gas, Inc., R. T. Hicks Consultants forwards the attached remediation report/closure request originally submitted to NMOCD District II by D&H Petroleum & Environmental Services on November 29, 2010 for the above-referenced release. The Report details the following actions regarding remediation of the June 28, 2010 release of 9 barrels of diesel fuel:

- 12 cubic yards of affected material were removed to a disposal facility on the day of the release.
- Soil samples were analyzed to direct any remaining excavation required.
- 5 additional cubic yards were removed to disposal.
- Final sampling confirmed target concentrations were met and closure was requested.

The pump at the location is now running on electricity and the generator and fuel tank is no longer on site. The surface has been restored to an active production pad. Current site conditions are exemplified in the adjacent photograph.

Please note a copy of this transmission is provided to BLM as this location is federal surface. Thank you for your consideration of this remediation report/closure request. We anticipate that it satisfies information required to close the regulatory file associated

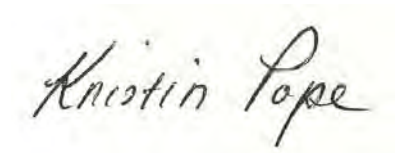


1/10/2019: view east

with this release.

Regards,

R.T. Hicks Consultants

A handwritten signature in black ink that reads "Kristin Pope". The signature is written in a cursive, flowing style. The letters are connected, and the overall appearance is that of a personal or professional signature on a document.

Kristin Pope  
Senior Project Geologist

Enclosure: as stated

Copy: Murchison, Shelly Tucker (BLM-email)



**Petroleum & Environmental Services**

November 29, 2010

Mr. Mike Bratcher  
NMOCD District 2  
1301 W. Grand Ave.  
Artesia, NM 88210

Re: Carbon Valley 25 Fed 001 API: 30-015-30953 I-25-16s-27e  
Eddy County, New Mexico  
OCD Reference Number: 2RP-421

Dear Mr. Bratcher:

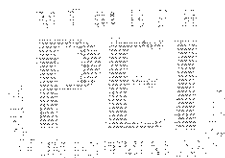
On behalf of Murchison Oil and Gas, Inc. enclosed is a corrective action report documenting the remediation activities for the above referenced site. The report is being submitted as requested in your letter dated July 28, 2010.

Should you have any questions on this matter, please do not hesitate to give us a call at (915) 859-8150.

Sincerely,

Rosalio Guillen, P.G.  
D&H Petroleum & Environmental  
Services

cc: Lourdes Fric, Corporate Risk Manager - C.L Thomas, Inc.



El Paso  
1221 Tower Trail  
P.O. Box 17969  
El Paso, Texas 79917  
Phone (915) 859-8150  
Fax: (915) 859-7229

Albuquerque  
4400 Anaheim  
P.O. Box 92407  
Albuquerque, NM 87113  
Phone (505) 342-2024  
Fax (505) 342-2109

Amarillo  
2401 Ridgemere Blvd.  
Amarillo, TX 799107  
Phone (806) 373-4251  
Fax: (806) 373-4252

Farmington  
907 South Hutton  
Farmington  
New Mexico, 87401  
Phone (505) 325-7400  
Fax: (505) 325-2309

Midland/Odessa  
4318 South County Road 1290  
Odessa, TX 79765  
Phone (432) 563-1132  
Fax (432) 563-1134

Lubbock  
2307 Clovis Rd.  
Lubbock, TX 79415  
Phone (806) 762-2428  
Fax: (806) 762-2426

# Corrective Action Report

for

## Murchison Oil and Gas, Inc.

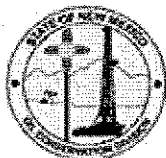
Lease: Carbon Valley 25 Fed 001

API: 30-015-30953

Section 25 T16S R27E

Eddy County, New Mexico

OCD Reference Number 2RP-421



Petroleum & Environmental Services

Prepared for:

New Mexico  
Oil Conservation Division  
District 2  
1301 W. Grand Ave.  
Artesia, NM 88210

Attn:

Mike Bratcher  
Project Manager

Prepared by:

D&H Petroleum & Environmental  
1221 Tower Trail  
P.O. Box 19917  
El Paso, Texas 79917

Prepared by:

Rosalio Guillen, P.G.  
Project Manager

November 29, 2010

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County Road 202, Artesia, NM  
Corrective Action Report

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## LIST OF ATTACHMENTS

<b>Attachment 1</b>	Laboratory Analysis Summary Tables
<b>Attachment 2</b>	Site Plan & Soil COC Map
<b>Attachment 3</b>	Laboratory Reports
<b>Attachment 4</b>	Photographic Documentation
<b>Attachment 5</b>	Water Well Survey
<b>Attachment 6</b>	Receptor Survey
<b>Attachment 7</b>	Copy of Waste Manifests

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

Page 3

## **LIST OF FIGURES**

1. Site Plan with Sampling Locations
2. Soil COC Map

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

Page 4

## Corrective Action Report for Murchison Oil County Road 202, Artesia, New Mexico

### Executive Summary

Murchison Oil was directed by the New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division (OCD) in a letter dated July 28, 2010 to prepare a Corrective Action Workplan for remediation, removal and/or cleanup of petroleum hydrocarbons from a spill which occurred on or about June 28, 2010. This report summarizes the completion of remedial activities taken to cleanup the petroleum hydrocarbons related to the spill.

On June 28, 2010, TNT Backhoe Services conducted the initial cleanup and abatement of the spill. A total of 12 yds were removed and transported to J&L Landfarm, Inc. D&H Petroleum and Environmental Services (D&H) was retained by Murchison Oil to provide corrective action services. On July 8, 2010, D&H mobilized to the site and collected twelve (12) soil samples from the affected area. On August 18, 2010, D&H returned to the site and conducted excavation activities from the affected area based on the sample results of July 8, 2010. Two additional soil samples were collected to confirm cleanup activities were completed. A total of 5 cubic yards of contaminated soils were excavated and transported to Gandy Marley Landfill in Roswell, New Mexico.

Based on the laboratory reports the spilled area was remediated to below the soil remediation action levels as recommended in OCD's Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993) Section IV.A.2.b. D&H believes this spill cleanup complies with New Mexico OCD requirements and requests case closure.

D & H Petroleum & Environmental Services

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

Page 5

## 1. CHRONOLOGY OF EVENTS

June 28, 2010	New Mexico Oil Conservation Division District 2 Office (OCD) receives an initial report Form C 141 reporting a diesel release at or near the well site API 30-015-30953.
June 28-29, 2010	TNT Backhoe conducts the initial abatement and cleanup of the spill. A total of 12 yds is removed and transported to J&L Landfarm, Inc.
July 8, 2010	D&H mobilized to the site and conducted initial sampling activities and collects 12 soil samples for the analysis of BTEX and TPH at the affected spill area.
July 28, 2010	OCD letter requesting a corrective action plan for remediation, removal and/or cleanup of the spill.
August 18, 2010	D&H mobilizes to the site and conducts excavation activities by removing approximately 5 cubic yards of contaminated soils and collects two (2) confirmation soil samples.
October 2010	D&H prepares a corrective action report summarizing the remedial activities and actions taken to remove and/or cleanup the spill.

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

Page 6

## 2. BACKGROUND

### 2.1. Site Description

The Murchison Oil site consists of land lease Carbon Valley 25 Fed #1 located in Eddy County, New Mexico. The site contains an oil well API 30-015-30953, diesel tank, and a generator.

Diesel is stored inside the above ground storage tank on the property. The yard area is generally covered with gravel and is unpaved.

## 3. SITE REMEDIATION

### 3.1. Description of Assessment and Remediation Activities

On June 28 and 29, 2010, TNT Backhoe Services conducted the initial cleanup and abatement of the spill. A total of 12 yds were removed and transported to J&L Landfarm, Inc. On July 8, 2010, D&H personnel mobilized to the site and conducted an initial site assessment of the spill. A total of 12 soil samples were collected to delineate the extent of affected area. Soil sample procedures were followed as described in OCD's document *Guidelines for Remediation of Leaks, Spills and Releases* Section V.B. The soil samples were analyzed using EPA method 8020 for BTEX and EPA Method 8015 for TPH in accordance to Section V.B.2.b. of the OCD's guidance document. After reviewing laboratory reports it was determined that additional soil removal was required.

D&H returned to the site and conducted the remediation activities to remove and/or cleanup the hydrocarbon contamination based on the results of the July 8, 2010 sampling activities. After removing an additional 5 cy of affected soil, two additional soil samples were collected for confirmation of the cleanup efforts to below the soil remediation action levels as recommended in OCD's *Guidelines for Remediation of Leaks, Spills and Releases* (August 13, 1993) Section IV.A.2.b.

A total of 5 cubic yards of contaminated soils were excavated and transported to Gandy Marley Landfill in Roswell, New Mexico. Attachment 7 contains copies of the waste manifests.

### 3.2. Water Well Survey

A water well search was conducted within a five (5) mile radius of the spill area. The New Mexico State Engineer's water well database was queried and no water wells were identified in the query database. The water well search was extended to five miles and four (4) wells were identified. Based on the database well search the average depth to groundwater was reported at 47 ft.

D & H Petroleum & Environmental Services

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

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### 3.3. Receptor Survey

A receptor survey was also conducted of sites within 1,000 feet of the facility. The receptor survey identified undeveloped parcels of land. Results of the receptor search are provided in Attachment 6.

### 3.4. Soil Remediation Action Levels

OCD's guidance document *Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)* Section IV.A.2.b. was used to determine the appropriate soil remediation action levels for this site. Soils which are contaminated by petroleum constituents were scored according to the ranking criteria in Section IV.A.2. to determine their relative threat to public health, fresh waters and the environment.

The depth to groundwater was determined at 47ft which translate to a ranking score of 20. There are no wellhead protection areas identified within 2000 ft. which translate to a ranking score of zero, and the distance to the nearest surface water body is over 1000 ft. This translates to a ranking score of zero. Based on this information the total ranking score was determined at 20. Using the ranking criteria in Section IV.A.2.b. documented in *Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)*, the degree of remediation was determined as follows: Benzene (ppm) = 10, BTEX (ppm) = 50, and TPH (ppm) = 100.

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

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#### **4. RESULTS AND CONCLUSIONS**

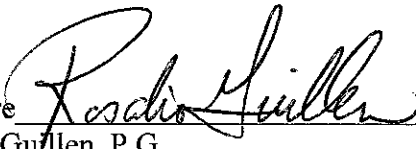
Site remediation activities and confirmation sampling showed soil impacts were removed and/or remediated to below the soil remediation action levels as described in Section 3 of this report. Approximately 17 cubic yards of affected soil was excavated and transported to J&L Landfarm, Inc. and to Gandy Marley landfarm in Roswell, New Mexico. Based on the laboratory reports, field screening, and results of this assessment, no further corrective action is required.

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

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## 5. SIGNATURE PAGE

This report was prepared under my supervision and I, the undersigned, am personally familiar with the information submitted in this report and the attached documents and attest that it is true and complete.

Signature   
Rosalio Guillen, P.G.  
Environmental Project Manager

Affiliation: D&H Petroleum & Environmental Services

Date: 11-29-2018

D & H Petroleum & Environmental Services

Murchison Oil  
County Road 202, Artesia, NM  
Corrective Action Report

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## 6. REFERENCES

New Mexico Oil Conservation Division document *Guidelines for Remediation of Leaks, Spills and Releases (August 13, 1993)*.

NMED 20.6.3 NMAC Ground and Surface Water Protection Regulations.

**ATTACHMENT 1**

**Laboratory Analysis Summary Tables**

Table #1

## Summary of BTEX/TPH Soil Analysis

Murchison Oil  
County Road 202  
Artesia, New Mexico

Sample ID.	Sample Date	Benzene (mg/Kg)	Toluene (mg/Kg)	Ethylbenzene (mg/Kg)	Xylene (mg/Kg)	BTEX (mg/Kg)	MTBE (mg/Kg)	TPH DRO (mg/Kg)	TPH GRO (mg/Kg)
S1 6 in.	07/08/10	<0.0924 U	7.04	8.33	60.5	75.87	<0.189 U	11100	2640
Sample Location 1 at 4 ft	08/18/10	<0.0150 U	<0.00950 U	<0.0106 U	<0.00930 U	ND	N/A	55.6	<1.65 U
S2 6 in.	07/08/10	<0.00462 U	<0.00582 U	<0.00433 U	0.00700 J	0.007	<0.00947 U	32.6 J	<0.241 U
S3 6 in.	07/08/10	<0.00629 U	<0.00108 U	<0.00117 U	<0.00145 U	ND	<0.00981 U	13.4 J	<0.241 U
S4 6 in.	07/08/10	<0.0924 U	1.86	3.86	26.3	32.02	<0.189 U	9430	1810
Sample Location 4 at 4 ft	08/18/10	<0.0150 U	<0.00950 U	<0.0106 U	<0.00930 U	ND	N/A	<14.5 U	<1.65 U
S5 6 in.	07/08/10	<0.00462 U	<0.00582 U	<0.00433 U	0.00650 J	0.0065	<0.00947 U	11.0 J	<0.241 U
S6 6 in.	07/08/10	<0.00462 U	0.0107 J	<0.00433 U	0.00570 J	0.0164	<0.00947 U	45.7 J	<0.241 U
Soil Remediation Action Levels		10				50		100	100

Note:

U - Not detected. The analyte is not detected above the SDL.

J - Estimated. The analyte is positively identified and the value is approximated between SDL and MQL.

N/A - Not Analyzed

Soil Remediation Action Levels determined using OCD's Guidelines for Remediation of Leaks, Spills, and Releases (August 13, 1993)

**ATTACHMENT 2**  
**Site Plan & COC Map**

## LOCATION MAP

Murchison Oil  
County Road 202  
Artesia, New Mexico

0 1600 m  
4800 ft

Diamond Mound

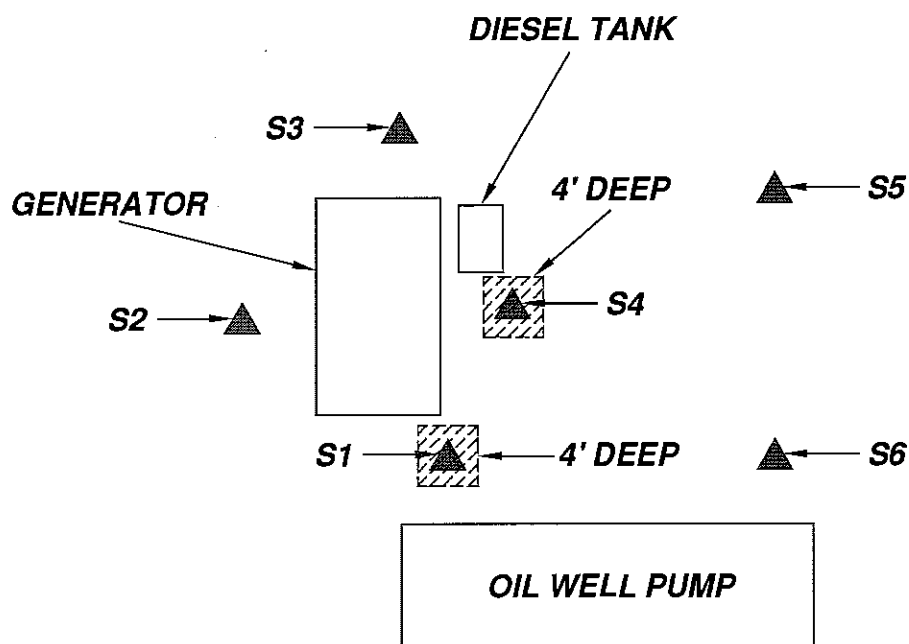
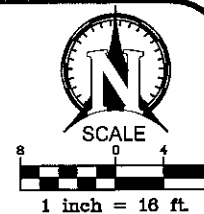
Pavo Mesa



mapquest

Riverside

©2010 MapQuest Portions ©2010 NAVTEQ, Intermap



### LEGEND

▲ = SOIL SAMPLE LOCATION

▨ = ADDITIONAL EXCAVATION AREA

Project No.

328001

Date: 9/1/10

Scale: 1" = 16'

Dwg. by: J. Castro

Designed by:

N/A

### Murchison Oil

Lease: Carbon Valley 25 Fed 001

Eddy County, New Mexico

### Site Plan with Sample Locations

Scale is approximate



PETROLEUM &  
ENVIRONMENTAL  
SERVICES

1221 TOWER TRAIL LANE  
EL PASO, TEXAS 79907  
MAIN: (915) 859-8150  
FAX: (915) 859-7229

Sheet No.

1 OF 1



SCALE  
10 0 10  
1 inch = 20 ft.

BENZENE	<0.0924 mg/Kg
TOLUENE	1.86 mg/Kg
ETHYLBENZENE	3.86 mg/Kg
XYLENE	26.3 mg/Kg
MTBE	<0.189 mg/Kg
TPH DRO	9430 mg/Kg
TPH GRO	1830 mg/Kg
Sampled: 7/8/10	

Sample Depth: 6 in.

BENZENE	<0.00629 mg/Kg
TOLUENE	<0.00108 mg/Kg
ETHYLBENZENE	<0.00117 mg/Kg
XYLENE	<0.00145 mg/Kg
MTBE	<0.00981 mg/Kg
TPH DRO	13.4 mg/Kg
TPH GRO	<0.0241 mg/Kg
Sampled: 7/8/10	

Sample Depth: 6 in.

BENZENE	<0.00462 mg/Kg
TOLUENE	<0.00582 mg/Kg
ETHYLBENZENE	<0.00433 mg/Kg
XYLENE	0.00650 mg/Kg
MTBE	<0.00947 mg/Kg
TPH DRO	11.0 mg/Kg
TPH GRO	<0.0241 mg/Kg
Sampled: 7/8/10	

Sample Depth: 6 in.

BENZENE	<0.00462 mg/Kg
TOLUENE	<0.00582 mg/Kg
ETHYLBENZENE	<0.00433 mg/Kg
XYLENE	0.00700 mg/Kg
MTBE	<0.00947 mg/Kg
TPH DRO	32.6 mg/Kg
TPH GRO	<0.0241 mg/Kg
Sampled: 7/8/10	

Sample Depth: 6 in.

BENZENE	<0.0150 mg/Kg
TOLUENE	<0.00950 mg/Kg
ETHYLBENZENE	<0.0106 mg/Kg
XYLENE	0.00930 mg/Kg
MTBE	Not Analyzed
TPH DRO	<14.5 mg/Kg
TPH GRO	<1.65 mg/Kg
Sampled: 8/18/10	

Sample Depth: 4 ft.

AST AREA

OIL WELL PUMP

BENZENE	<0.0924 mg/Kg
TOLUENE	7.04 mg/Kg
ETHYLBENZENE	8.33 mg/Kg
XYLENE	60.5 mg/Kg
MTBE	<0.189 mg/Kg
TPH DRO	11100 mg/Kg
TPH GRO	2640 mg/Kg
Sampled: 7/8/10	

Sample Depth: 6 in.

BENZENE	<0.00462 mg/Kg
TOLUENE	0.0107 mg/Kg
ETHYLBENZENE	<0.00433 mg/Kg
XYLENE	0.00570 mg/Kg
MTBE	<0.00947 mg/Kg
TPH DRO	45.7 mg/Kg
TPH GRO	<0.0241 mg/Kg
Sampled: 7/8/10	

Sample Depth: 6 in.

BENZENE	<0.0150 mg/Kg
TOLUENE	<0.00950 mg/Kg
ETHYLBENZENE	<0.0106 mg/Kg
XYLENE	0.00930 mg/Kg
MTBE	Not Analyzed
TPH DRO	55.6 mg/Kg
TPH GRO	<1.65 mg/Kg
Sampled: 8/18/10	

Sample Depth: 4 ft.

### LEGEND

▲ = SOIL SAMPLE LOCATION

▨ = EXCAVATION AREA

Project No.

328001

Date: 7/21/10

Scale: 1" = 20'

Dwg. by: J. Castro

Designed by:

N/A

## Murchison Oil

Lease: Carbon Valley 25 Fed 001

Eddy County, New Mexico

### Soil COC Map

Scale is approximate



PETROLEUM &  
ENVIRONMENTAL  
SERVICES

1221 TOWER TRAIL LANE  
EL PASO, TEXAS 79907  
MAIN: (915) 859-8150  
FAX: (915) 859-7229

Sheet No.

1 OF 1

## **ATTACHMENT 3**

### Laboratory Reports



6701 Aberdeen Avenue, Suite 9 Lubbock, Texas 79424 800•378•1296 806•794•1296 FAX 806•794•1298  
 200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•585•3443 FAX 915•585•4944  
 5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260  
 E-Mail: lab@traceanalysis.com

## Certifications

WBENC: 237019

HUB: 1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

## NELAP Certifications

Lubbock: T104704219-08-TX

El Paso: T104704221-08-TX

Midland: T104704392-08-TX

LELAP-02003

LELAP-02002

Kansas E-10317

## Analytical and Quality Control Report

Victor Ayala  
 D & H Petroleum and Environmental  
 1221 Tower Trail  
 P.O. Box 17969  
 El Paso, TX, 79907

Report Date: August 26, 2010

Work Order: 10082010



Project Location: Artesia Carbon Valley 25  
 Project Name: Murchison Oil & Gas Inc.

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
241968	Sample 4	soil	2010-08-18	13:58	2010-08-19
241970	Sample 1	soil	2010-08-18	14:51	2010-08-19

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 15 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

Notes:

*For inorganic analyses, the term MQL should actually read PQL.*

**Standard Flags**

- U** - Not detected. The analyte is not detected above the SDL.
- J** - Estimated. The analyte is positively identified and the value is approximated between the SDL and MQL.
- B** - The sample contains less than ten times the concentration found in the method blank.
- JB** - The analyte is positively identified and the value is approximated between the SDL and MQL.  
The sample contains less than ten times the concentration found in the method blank.  
The result should be considered non-detect to the SDL.



---

Dr. Blair Leftwich, Director  
Dr. Michael Abel, Project Manager

## Case Narrative

Samples for project Murchison Oil & Gas Inc. were received by TraceAnalysis, Inc. on 2010-08-19 and assigned to work order 10082010. Samples for work order 10082010 were received intact at a temperature of 4.0 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	62501	2010-08-24 at 15:00	72904	2010-08-24 at 19:56
BTEX	S 8021B	62544	2010-08-25 at 11:00	72948	2010-08-25 at 15:27
TPH DRO - NEW	S 8015 D	62460	2010-08-23 at 15:02	72851	2010-08-23 at 15:02
TPH GRO	S 8015 D	62501	2010-08-24 at 15:00	72905	2010-08-24 at 20:23
TPH GRO	S 8015 D	62544	2010-08-25 at 11:00	72956	2010-08-25 at 15:55

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10082010 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 4 of 15  
Artesia Carbon Valley 25

## Analytical Report

### Sample: 241968 - Sample 4

Laboratory: Midland

Analysis: BTEX

QC Batch: 72904

Prep Batch: 62501

Analytical Method: S 8021B

Date Analyzed: 2010-08-24

Sample Preparation: 2010-08-24

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	SDL Based Result	SQL Based Result	Method Blank Result	Units	Dilution	SDL	SQL (Unadjusted)	MDL (Unadjusted)
Benzene	U	<0.0150	<0.0200	<0.0150	mg/Kg	1	0.0150	0.02	0.015
Toluene	U	<0.00950	<0.0200	<0.00950	mg/Kg	1	0.00950	0.02	0.0095
Ethylbenzene	U	<0.0106	<0.0200	<0.0106	mg/Kg	1	0.0106	0.02	0.0106
Xylene	U	<0.00930	<0.0200	<0.00930	mg/Kg	1	0.00930	0.02	0.0093

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.85	mg/Kg	1	2.00	92	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.33	mg/Kg	1	2.00	66	38.4 - 157

### Sample: 241968 - Sample 4

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 72851

Prep Batch: 62460

Analytical Method: S 8015 D

Date Analyzed: 2010-08-23

Sample Preparation: 2010-08-23

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	SDL Based Result	SQL Based Result	Method Blank Result	Units	Dilution	SDL	SQL (Unadjusted)	MDL (Unadjusted)
DRO	U	<14.5	<50.0	<14.5	mg/Kg	1	14.5	50	14.5

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		101	mg/Kg	1	100	101	70 - 130

### Sample: 241968 - Sample 4

Laboratory: Midland

Analysis: TPH GRO

QC Batch: 72905

Prep Batch: 62501

Analytical Method: S 8015 D

Date Analyzed: 2010-08-24

Sample Preparation: 2010-08-24

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 5 of 15  
Artesia Carbon Valley 25

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO	U	<1.65	<2.00	<1.65	mg/Kg	1	1.65	2	1.65

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.07	mg/Kg	1	2.00	104	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.43	mg/Kg	1	2.00	72	42 - 159

**Sample: 241970 - Sample 1**

Laboratory: Midland

Analysis: BTEX

QC Batch: 72948

Prep Batch: 62544

Analytical Method: S 8021B

Date Analyzed: 2010-08-25

Sample Preparation: 2010-08-25

Prep Method: S 5035

Analyzed By: AG

Prepared By: AG

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
Benzene	U	<0.0150	<0.0200	<0.0150	mg/Kg	1	0.0150	0.02	0.015
Toluene	U	<0.00950	<0.0200	<0.00950	mg/Kg	1	0.00950	0.02	0.0095
Ethylbenzene	U	<0.0106	<0.0200	<0.0106	mg/Kg	1	0.0106	0.02	0.0106
Xylene	U	<0.00930	<0.0200	<0.00930	mg/Kg	1	0.00930	0.02	0.0093

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.17	mg/Kg	1	2.00	108	52.8 - 137
4-Bromofluorobenzene (4-BFB)		1.71	mg/Kg	1	2.00	86	38.4 - 157

**Sample: 241970 - Sample 1**

Laboratory: Midland

Analysis: TPH DRO - NEW

QC Batch: 72851

Prep Batch: 62460

Analytical Method: S 8015 D

Date Analyzed: 2010-08-23

Sample Preparation: 2010-08-23

Prep Method: N/A

Analyzed By: kg

Prepared By: kg

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO		55.6	55.6	<14.5	mg/Kg	1	14.5	50	14.5

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		101	mg/Kg	1	100	101	70 - 130

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 6 of 15  
Artesia Carbon Valley 25**Sample: 241970 - Sample 1**Laboratory: Midland  
Analysis: TPH GRO  
QC Batch: 72956  
Prep Batch: 62544Analytical Method: S 8015 D  
Date Analyzed: 2010-08-25  
Sample Preparation: 2010-08-25Prep Method: S 5035  
Analyzed By: AG  
Prepared By: AG

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO	U	<1.65	<2.00	<1.65	mg/Kg	1	1.65	2	1.65

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.46	mg/Kg	1	2.00	123	48.5 - 152
4-Bromofluorobenzene (4-BFB)		1.87	mg/Kg	1	2.00	94	42 - 159

**Method Blank (1)**QC Batch: 72851  
Prep Batch: 62460Date Analyzed: 2010-08-23  
QC Preparation: 2010-08-23Analyzed By: kg  
Prepared By: kg

Parameter	Flag	Result	Units	Reporting Limits
DRO		<14.5	mg/Kg	14.5

Snrrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		88.1	mg/Kg	1	100	88	70 - 130

**Method Blank (1)**QC Batch: 72904  
Prep Batch: 62501Date Analyzed: 2010-08-24  
QC Preparation: 2010-08-24Analyzed By: AG  
Prepared By: AG

Parameter	Flag	Result	Units	Reporting Limits
Benzene		<0.0150	mg/Kg	0.015
Toluene		<0.00950	mg/Kg	0.0095
Ethylbenzene		<0.0106	mg/Kg	0.0106
Xylene		<0.00930	mg/Kg	0.0093

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.92	mg/Kg	1	2.00	96	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.38	mg/Kg	1	2.00	69	55.4 - 132

Report Date: August 26, 2010

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Murchison Oil & Gas Inc.Page Number: 7 of 15  
Artesia Carbon Valley 25**Method Blank (1)**

QC Batch: 72905      Date Analyzed: 2010-08-24      Analyzed By: AG  
 Prep Batch: 62501      QC Preparation: 2010-08-24      Prepared By: AG

Parameter	Flag	Result	Units	Reporting Limits
GRO		<1.65	mg/Kg	1.65

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.19	mg/Kg	1	2.00	110	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.49	mg/Kg	1	2.00	74	52.4 - 130

**Method Blank (1)**

QC Batch: 72948      Date Analyzed: 2010-08-25      Analyzed By: AG  
 Prep Batch: 62544      QC Preparation: 2010-08-25      Prepared By: AG

Parameter	Flag	Result	Units	Reporting Limits
Benzene		<0.0150	mg/Kg	0.015
Toluene		<0.00950	mg/Kg	0.0095
Ethylbenzene		<0.0106	mg/Kg	0.0106
Xylene		<0.00930	mg/Kg	0.0093

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.04	mg/Kg	1	2.00	102	66.6 - 122
4-Bromofluorobenzene (4-BFB)		1.23	mg/Kg	1	2.00	62	55.4 - 132

**Method Blank (1)**

QC Batch: 72956      Date Analyzed: 2010-08-25      Analyzed By: AG  
 Prep Batch: 62544      QC Preparation: 2010-08-25      Prepared By: AG

Parameter	Flag	Result	Units	Reporting Limits
GRO		<1.65	mg/Kg	1.65

Snrrogate	Flag	Result	Units	Dilution	Spike Amonnt	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.34	mg/Kg	1	2.00	117	67.6 - 150
4-Bromofluorobenzene (4-BFB)		1.34	mg/Kg	1	2.00	67	52.4 - 130

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 8 of 15  
Artesia Carbon Valley 25**Laboratory Control Spike (LCS-1)**

QC Batch: 72851 Date Analyzed: 2010-08-23 Analyzed By: kg  
 Prep Batch: 62460 QC Preparation: 2010-08-23 Prepared By: kg

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	221	mg/Kg	1	250	<14.5	88	57.4 - 133.4

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	218	mg/Kg	1	250	<14.5	87	57.4 - 133.4	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	100	98.1	mg/Kg	1	100	100	98	70 - 130

**Laboratory Control Spike (LCS-1)**

QC Batch: 72904 Date Analyzed: 2010-08-24 Analyzed By: AG  
 Prep Batch: 62501 QC Preparation: 2010-08-24 Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.04	mg/Kg	1	2.00	<0.0150	102	81.9 - 108
Toluene	1.92	mg/Kg	1	2.00	<0.00950	96	81.9 - 107
Ethylbenzene	1.77	mg/Kg	1	2.00	<0.0106	88	78.4 - 107
Xylene	5.30	mg/Kg	1	6.00	<0.00930	88	79.1 - 107

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.09	mg/Kg	1	2.00	<0.0150	104	81.9 - 108	2	20
Toluene	1.98	mg/Kg	1	2.00	<0.00950	99	81.9 - 107	3	20
Ethylbenzene	1.82	mg/Kg	1	2.00	<0.0106	91	78.4 - 107	3	20
Xylene	5.42	mg/Kg	1	6.00	<0.00930	90	79.1 - 107	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.90	mg/Kg	1	2.00	97	95	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.64	1.57	mg/Kg	1	2.00	82	78	69.8 - 121

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 9 of 15  
Artesia Carbon Valley 25**Laboratory Control Spike (LCS-1)**

QC Batch: 72905 Date Analyzed: 2010-08-24 Analyzed By: AG  
 Prep Batch: 62501 QC Preparation: 2010-08-24 Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.8	mg/Kg	1	20.0	<1.65	74	69.9 - 95.4

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.0	mg/Kg	1	20.0	<1.65	75	69.9 - 95.4	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.21	2.19	mg/Kg	1	2.00	110	110	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.62	1.58	mg/Kg	1	2.00	81	79	68.2 - 132

**Laboratory Control Spike (LCS-1)**

QC Batch: 72948 Date Analyzed: 2010-08-25 Analyzed By: AG  
 Prep Batch: 62544 QC Preparation: 2010-08-25 Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.04	mg/Kg	1	2.00	<0.0150	102	81.9 - 108
Toluene	1.93	mg/Kg	1	2.00	<0.00950	96	81.9 - 107
Ethylbenzene	1.77	mg/Kg	1	2.00	<0.0106	88	78.4 - 107
Xylene	5.25	mg/Kg	1	6.00	<0.00930	88	79.1 - 107

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.07	mg/Kg	1	2.00	<0.0150	104	81.9 - 108	1	20
Toluene	1.96	mg/Kg	1	2.00	<0.00950	98	81.9 - 107	2	20
Ethylbenzene	1.81	mg/Kg	1	2.00	<0.0106	90	78.4 - 107	2	20
Xylene	5.38	mg/Kg	1	6.00	<0.00930	90	79.1 - 107	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.95	1.93	mg/Kg	1	2.00	98	96	70.2 - 114
4-Bromofluorobenzene (4-BFB)	1.53	1.51	mg/Kg	1	2.00	76	76	69.8 - 121

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 10 of 15  
Artesia Carbon Valley 25**Laboratory Control Spike (LCS-1)**

QC Batch: 72956 Date Analyzed: 2010-08-25 Analyzed By: AG  
 Prep Batch: 62544 QC Preparation: 2010-08-25 Prepared By: AG

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	14.7	mg/Kg	1	20.0	<1.65	74	69.9 - 95.4

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	15.0	mg/Kg	1	20.0	<1.65	75	69.9 - 95.4	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.16	2.19	mg/Kg	1	2.00	108	110	61.9 - 142
4-Bromofluorobenzene (4-BFB)	1.47	1.45	mg/Kg	1	2.00	74	72	68.2 - 132

**Matrix Spike (MS-1)** Spiked Sample: 242100

QC Batch: 72851 Date Analyzed: 2010-08-23 Analyzed By: kg  
 Prep Batch: 62460 QC Preparation: 2010-08-23 Prepared By: kg

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	234	mg/Kg	1	250	<14.5	94	35.2 - 167.1

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	237	mg/Kg	1	250	<14.5	95	35.2 - 167.1	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	93.2	93.1	mg/Kg	1	100	93	93	70 - 130

**Matrix Spike (MS-1)** Spiked Sample: 241968

QC Batch: 72904 Date Analyzed: 2010-08-24 Analyzed By: AG  
 Prep Batch: 62501 QC Preparation: 2010-08-24 Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	2.11	mg/Kg	1	2.00	<0.0150	106	80.5 - 112

*continued ...*

Report Date: August 26, 2010

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Artesia Carbon Valley 25

matrix spikes continued ...

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene	2.07	mg/Kg	1	2.00	<0.00950	104	82.4 - 113
Ethylbenzene	2.02	mg/Kg	1	2.00	<0.0106	101	83.9 - 114
Xylene	5.97	mg/Kg	1	6.00	<0.00930	100	84 - 114

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.31	mg/Kg	1	2.00	<0.0150	116	80.5 - 112	9	20
Toluene	2.27	mg/Kg	1	2.00	<0.00950	114	82.4 - 113	9	20
Ethylbenzene	2.22	mg/Kg	1	2.00	<0.0106	111	83.9 - 114	9	20
Xylene	6.55	mg/Kg	1	6.00	<0.00930	109	84 - 114	9	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.06	2.06	mg/Kg	1	2	103	103	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1.65	1.67	mg/Kg	1	2	82	84	35.5 - 129

**Matrix Spike (MS-1)** Spiked Sample: 241842QC Batch: 72905  
Prep Batch: 62501Date Analyzed: 2010-08-24  
QC Preparation: 2010-08-24Analyzed By: AG  
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	18.4	mg/Kg	1	20.0	<1.65	92	61.8 - 114

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	18.3	mg/Kg	1	20.0	<1.65	92	61.8 - 114	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.26	2.22	mg/Kg	1	2	113	111	50 - 162
4-Bromofluorobenzene (4-BFB)	1.78	1.72	mg/Kg	1	2	89	86	50 - 162

**Matrix Spike (MS-1)** Spiked Sample: 242010QC Batch: 72948  
Prep Batch: 62544Date Analyzed: 2010-08-25  
QC Preparation: 2010-08-25Analyzed By: AG  
Prepared By: AG<sup>1</sup>MSD analyte out of range. MS/MSD has a RPD within limits. Therefore, MS shows extraction occurred properly.

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 12 of 15  
Artesia Carbon Valley 25

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Benzene	<sup>2</sup> 2.31	mg/Kg	1	2.00	<0.0150	116	80.5 - 112
Toluene	2.25	mg/Kg	1	2.00	<0.00950	112	82.4 - 113
Ethylbenzene	2.18	mg/Kg	1	2.00	<0.0106	109	83.9 - 114
Xylene	6.44	mg/Kg	1	6.00	<0.00930	107	84 - 114

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	2.18	mg/Kg	1	2.00	<0.0150	109	80.5 - 112	6	20
Toluene	2.13	mg/Kg	1	2.00	<0.00950	106	82.4 - 113	6	20
Ethylbenzene	2.08	mg/Kg	1	2.00	<0.0106	104	83.9 - 114	5	20
Xylene	6.14	mg/Kg	1	6.00	<0.00930	102	84 - 114	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.21	2.06	mg/Kg	1	2	110	103	41.3 - 117
4-Bromofluorobenzene (4-BFB)	1.76	1.64	mg/Kg	1	2	88	82	35.5 - 129

**Matrix Spike (MS-1)** Spiked Sample: 242104QC Batch: 72956  
Prep Batch: 62544Date Analyzed: 2010-08-25  
QC Preparation: 2010-08-25Analyzed By: AG  
Prepared By: AG

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.5	mg/Kg	1	20.0	<1.65	82	61.8 - 114

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	16.8	mg/Kg	1	20.0	<1.65	84	61.8 - 114	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.52	2.09	mg/Kg	1	2	126	104	50 - 162
4-Bromofluorobenzene (4-BFB)	1.89	1.61	mg/Kg	1	2	94	80	50 - 162

**Standard (CCV-1)**

QC Batch: 72851

Date Analyzed: 2010-08-23

Analyzed By: kg

<sup>2</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: August 26, 2010

Work Order: 10082010  
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Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	209	84	80 - 120	2010-08-23

**Standard (CCV-2)**

QC Batch: 72851

Date Analyzed: 2010-08-23

Analyzed By: kg

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	240	96	80 - 120	2010-08-23

**Standard (CCV-2)**

QC Batch: 72904

Date Analyzed: 2010-08-24

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.104	104	80 - 120	2010-08-24
Toluene		mg/Kg	0.100	0.0997	100	80 - 120	2010-08-24
Ethylbenzene		mg/Kg	0.100	0.0894	89	80 - 120	2010-08-24
Xylene		mg/Kg	0.300	0.265	88	80 - 120	2010-08-24

**Standard (CCV-3)**

QC Batch: 72904

Date Analyzed: 2010-08-24

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.102	102	80 - 120	2010-08-24
Toluene		mg/Kg	0.100	0.0958	96	80 - 120	2010-08-24
Ethylbenzene		mg/Kg	0.100	0.0859	86	80 - 120	2010-08-24
Xylene		mg/Kg	0.300	0.257	86	80 - 120	2010-08-24

**Standard (CCV-2)**

QC Batch: 72905

Date Analyzed: 2010-08-24

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.890	89	80 - 120	2010-08-24

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.Page Number: 14 of 15  
Artesia Carbon Valley 25**Standard (CCV-3)**

QC Batch: 72905

Date Analyzed: 2010-08-24

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.907	91	80 - 120	2010-08-24

**Standard (CCV-1)**

QC Batch: 72948

Date Analyzed: 2010-08-25

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.100	100	80 - 120	2010-08-25
Toluene		mg/Kg	0.100	0.0945	94	80 - 120	2010-08-25
Ethylbenzene		mg/Kg	0.100	0.0846	85	80 - 120	2010-08-25
Xylene		mg/Kg	0.300	0.254	85	80 - 120	2010-08-25

**Standard (CCV-2)**

QC Batch: 72948

Date Analyzed: 2010-08-25

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
Benzene		mg/Kg	0.100	0.104	104	80 - 120	2010-08-25
Toluene		mg/Kg	0.100	0.0988	99	80 - 120	2010-08-25
Ethylbenzene		mg/Kg	0.100	0.0906	91	80 - 120	2010-08-25
Xylene		mg/Kg	0.300	0.266	89	80 - 120	2010-08-25

**Standard (CCV-1)**

QC Batch: 72956

Date Analyzed: 2010-08-25

Analyzed By: AG

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.956	96	80 - 120	2010-08-25

**Standard (CCV-2)**

QC Batch: 72956

Date Analyzed: 2010-08-25

Analyzed By: AG

Report Date: August 26, 2010

Work Order: 10082010  
Murchison Oil & Gas Inc.

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Artesia Carbon Valley 25

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.884	88	80 - 120	2010-08-25

200 East Sunset Rd., Suite E  
El Paso, Texas 79922  
Tel (915) 585-3443  
Fax (915) 585-4844  
1 (888) 588-3443

**Sampler Signature:**

ANALYSIS REQUEST  
(Circle or Specify Method No.)[illegible][illegible]

**Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.**

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 200 East Sunset Road, Suite E El Paso, Texas 79922 888•588•3443 915•588•3443 FAX 915•588•4944  
 5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•6301 FAX 432•689•6313  
 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•5260  
 E-Mail: lab@traceanalysis.com

## Certifications

WBENC: 237019

HUB: 1752439743100-86536  
 NCTRCA WFWB38444Y0909

DBE: VN 20657

## NELAP Certifications

Lubbock: T104704219-08-TX  
 LELAP-02003  
 Kansas E-10317

El Paso: T104704221-08-TX  
 LELAP-02002

Midland: T104704392-08-TX

## Analytical and Quality Control Report

Victor Ayala  
 D & H Petroleum and Environmental  
 1221 Tower Trail  
 P.O. Box 17969  
 El Paso, TX, 79907

Report Date: July 29, 2010

Work Order: 10071425



Project Location: Artesia Carbon Valley 25  
 Project Name: Murchison Oil & Gas Inc.  
 Project Number: Murchison Oil & Gas Inc.

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
237490	S1 6 in.	soil	2010-07-08	10:10	2010-07-14

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 4 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.



---

Dr. Blair Leftwich, Director  
Dr. Michael Abel, Project Manager

**Standard Flags**

B - The sample contains less than ten times the concentration found in the method blank.

Case Narrative

Samples for project Murchison Oil & Gas Inc. were received by TraceAnalysis, Inc. on 2010-07-14 and assigned to work order 10071425. Samples for work order 10071425 were received intact at a temperature of 3.6 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
Ignitability	SW-846 Ch. 7.1	61831	2010-07-29 at 09:30	72149	2010-07-29 at 11:05

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10071425 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: July 29, 2010  
Murchison Oil & Gas Inc.

Work Order: 10071425  
Murchison Oil & Gas Inc.

Page Number: 4 of 4  
Artesia Carbon Valley 25

Analytical Report

Sample: 237490 - S1 6 in.

Laboratory:	Lubbock		
Analysis:	Ignitability	Analytical Method:	SW-846 Ch. 7.1
QC Batch:	72149	Date Analyzed:	2010-07-29
Prep Batch:	61831	Sample Preparation:	2010-07-29
		Prep Method:	N/A
		Analyzed By:	RD
		Prepared By:	RD

Parameter	Flag	RL Result	Units	Dilution	RL
Ignitability		non-ignitable		1	0.00

Duplicates (1)    Duplicated Sample: 238251

QC Batch:	72149	Date Analyzed:	2010-07-29	Analyzed By:	RD
Prep Batch:	61831	QC Preparation:	2010-07-29	Prepared By:	RD

Param	Duplicate Result	Sample Result	Units	Dilution	RPD	RPD Limit
Ignitability	non-ignitable	non-ignitable		1	0	20







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 5002 Basin Street, Suite A1 Midland, Texas 79703 432•689•8301 FAX 432•689•6913  
 6015 Harris Parkway, Suite 110 Ft. Worth, Texas 76132 817•201•6260  
 E-Mail: lab@traceanalysis.com

## Certifications

WBENC: 237019

HUB: 1752439743100-86536

DBE: VN 20657

NCTRCA WFWB38444Y0909

## NELAP Certifications

Lubbock: T104704219-08-TX  
 LELAP-02003  
 Kansas E-10317

El Paso: T104704221-08-TX  
 LELAP-02002

Midland: T104704392-08-TX

## Analytical and Quality Control Report

Victor Ayala  
 D & H Petroleum and Environmental  
 1221 Tower Trail  
 P.O. Box 17969  
 El Paso, TX, 79907

Report Date: July 19, 2010

Work Order: 10071425



Project Location: Artesia Carbon Valley 25  
 Project Name: Murchison Oil & Gas Inc.

Enclosed are the Analytical Report and Quality Control Report for the following sample(s) submitted to TraceAnalysis, Inc.

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
237484	S1 Surface	soil	2010-07-08	09:50	2010-07-14
237485	S2 Surface	soil	2010-07-08	09:53	2010-07-14
237486	S3 Surface	soil	2010-07-08	09:55	2010-07-14
237487	S4 Surface	soil	2010-07-08	10:01	2010-07-14
237488	S5 Surface	soil	2010-07-08	10:04	2010-07-14
237489	S6 Surface	soil	2010-07-08	10:07	2010-07-14
237490	S1 6 in.	soil	2010-07-08	10:10	2010-07-14
237491	S2 6 in.	soil	2010-07-08	10:15	2010-07-14
237492	S3 6 in.	soil	2010-07-08	10:20	2010-07-14
237493	S4 6 in.	soil	2010-07-08	10:30	2010-07-14

Sample	Description	Matrix	Date Taken	Time Taken	Date Received
237494	S5 6 in.	soil	2010-07-08	10:40	2010-07-14
237495	S6 6 in.	soil	2010-07-08	10:45	2010-07-14

These results represent only the samples received in the laboratory. The Quality Control Report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

This report consists of a total of 20 pages and shall not be reproduced except in its entirety, without written approval of TraceAnalysis, Inc.

**Notes:**

*For inorganic analyses, the term MQL should actually read PQL.*

**Standard Flags**

- U** - Not detected. The analyte is not detected above the SDL.
- J** - Estimated. The analyte is positively identified and the value is approximated between the SDL and MQL.
- B** - The sample contains less than ten times the concentration found in the method blank.
- JB** - The analyte is positively identified and the value is approximated between the SDL and MQL.  
The sample contains less than ten times the concentration found in the method blank.  
The result should be considered non-detect to the SDL.



Dr. Blair Leftwich, Director  
Dr. Michael Abel, Project Manager

## Case Narrative

Samples for project Murchison Oil & Gas Inc. were received by TraceAnalysis, Inc. on 2010-07-14 and assigned to work order 10071425. Samples for work order 10071425 were received intact at a temperature of 3.6 C.

Samples were analyzed for the following tests using their respective methods.

Test	Method	Prep Batch	Prep Date	QC Batch	Analysis Date
BTEX	S 8021B	61444	2010-07-14 at 16:27	71716	2010-07-14 at 16:27
BTEX	S 8021B	61549	2010-07-16 at 15:42	71830	2010-07-16 at 15:42
MTBE	S 8021B	61444	2010-07-14 at 16:27	71716	2010-07-14 at 16:27
MTBE	S 8021B	61549	2010-07-16 at 15:42	71830	2010-07-16 at 15:42
TPH DRO - NEW	S 8015 D	61466	2010-07-14 at 15:00	71737	2010-07-14 at 19:00
TPH DRO - NEW	S 8015 D	61511	2010-07-15 at 15:00	71784	2010-07-15 at 18:00
TPH GRO	S 8015 D	61444	2010-07-14 at 16:27	71717	2010-07-14 at 16:27

Results for these samples are reported on a wet weight basis unless data package indicates otherwise.

A matrix spike (MS) and matrix spike duplicate (MSD) sample is chosen at random from each preparation batch. The MS and MSD will indicate if a site specific matrix problem is occurring, however, it may not pertain to the samples for work order 10071425 since the sample was chosen at random. Therefore, the validity of the analytical data reported has been determined by the laboratory control sample (LCS) and the method blank (MB). These quality control measures are performed with each preparation batch to ensure data integrity.

All other exceptions associated with this report have been footnoted on the appropriate analytical page to assist in general data comprehension. Please contact the laboratory directly if there are any questions regarding this project.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 4 of 20  
Artesia Carbon Valley 25

## Analytical Report

Sample: 237490 - S1 6 in.

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 71716

Prep Batch: 61444

Analytical Method: S 8021B

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

Prepared By: ER

Parameter	Flag	SDL Based Result	SQL Based Result	Method Blank Result	Units	Dilution	SDL	SQL (Unadjusted)	MDL (Unadjusted)
MTBE	<sup>U</sup>	<0.189	<0.400	<0.189	mg/Kg	20	0.189	0.02	0.00947
Benzene	<sup>1 U</sup>	<0.0924	<0.400	<0.0924	mg/Kg	20	0.0924	0.02	0.00462
Toluene		<b>7.04</b>	<b>7.04</b>	<0.116	mg/Kg	20	0.116	0.02	0.00582
Ethylbenzene		<b>8.33</b>	<b>8.33</b>	<0.0866	mg/Kg	20	0.0866	0.02	0.00433
Xylene		<b>60.5</b>	<b>60.5</b>	<0.0766	mg/Kg	20	0.0766	0.02	0.00383

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.61	mg/Kg	20	2.00	80	76.3 - 110
4-Bromofluorobenzene (4-BFB)		1.97	mg/Kg	20	2.00	98	73.8 - 112

Sample: 237490 - S1 6 in.

Laboratory: Lubbock

Analysis: TPH DRO - NEW

QC Batch: 71784

Prep Batch: 61511

Analytical Method: S 8015 D

Date Analyzed: 2010-07-15

Sample Preparation: 2010-07-15

Prep Method: N/A

Analyzed By: AW

Prepared By: AW

Parameter	Flag	SDL Based Result	SQL Based Result	Method Blank Result	Units	Dilution	SDL	SQL (Unadjusted)	MDL (Unadjusted)
DRO		<b>11100</b>	<b>11100</b>	<74.6	mg/Kg	10	74.6	50	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	<sup>2</sup>	375	mg/Kg	10	100	375	55.5 - 151

Sample: 237490 - S1 6 in.

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 71717

Prep Batch: 61444

Analytical Method: S 8015 D

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

Prepared By: ER

<sup>1</sup> Sample ran at dilution due to hydrocarbons with a retention time greater than xylene.<sup>2</sup> High surrogate recovery due to peak interference.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 5 of 20  
Artesia Carbon Valley 25

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO		2640	2640	<4.82	mg/Kg	20	4.82	2	0.241

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.96	mg/Kg	20	2.00	98	84.8 - 114
4-Bromofluorobenzene (4-BFB)	<sup>3</sup>	21.8	mg/Kg	20	2.00	1090	70.8 - 113

Sample: 237491 - S2 6 in.

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 71716

Prep Batch: 61444

Analytical Method: S 8021B

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
MTBE	U	<0.00947	<0.0200	<0.00947	mg/Kg	1	0.00947	0.02	0.00947
Benzene	U	<0.00462	<0.0200	<0.00462	mg/Kg	1	0.00462	0.02	0.00462
Toluene	U	<0.00582	<0.0200	<0.00582	mg/Kg	1	0.00582	0.02	0.00582
Ethylbenzene	U	<0.00433	<0.0200	<0.00433	mg/Kg	1	0.00433	0.02	0.00433
Xylene	J	0.00700	<0.0200	<0.00383	mg/Kg	1	0.00383	0.02	0.00383

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.52	mg/Kg	1	2.00	76	76.3 - 110
4-Bromofluorobenzene (4-BFB)		1.69	mg/Kg	1	2.00	84	73.8 - 112

Sample: 237491 - S2 6 in.

Laboratory: Lubbock

Analysis: TPH DRO - NEW

QC Batch: 71737

Prep Batch: 61466

Analytical Method: S 8015 D

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: N/A

Analyzed By: AW

Prepared By: AW

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO	J	32.6	<50.0	<7.46	mg/Kg	1	7.46	50	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		125	mg/Kg	1	100	125	55.5 - 151

<sup>3</sup>High surrogate recovery due to peak interference.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 6 of 20  
Artesia Carbon Valley 25**Sample: 237491 - S2 6 in.**Laboratory: Lubbock  
Analysis: TPH GRO  
QC Batch: 71717  
Prep Batch: 61444Analytical Method: S 8015 D  
Date Analyzed: 2010-07-14  
Sample Preparation: 2010-07-14Prep Method: S 5035  
Analyzed By: ER  
Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO	U	<0.241	<2.00	<0.241	mg/Kg	1	0.241	2	0.241

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.82	mg/Kg	1	2.00	91	84.8 - 114
4-Bromofluorobenzene (4-BFB)		1.98	mg/Kg	1	2.00	99	70.8 - 113

**Sample: 237492 - S3 6 in.**Laboratory: Lubbock  
Analysis: BTEX  
QC Batch: 71830  
Prep Batch: 61549Analytical Method: S 8021B  
Date Analyzed: 2010-07-16  
Sample Preparation: 2010-07-16Prep Method: S 5035  
Analyzed By: ER  
Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
MTBE	U	<0.00981	<0.0200	<0.00981	mg/Kg	1	0.00981	0.02	0.00981
Benzene	U	<0.00629	<0.0200	<0.00629	mg/Kg	1	0.00629	0.02	0.00629
Toluene	U	<0.0108	<0.0200	<0.0108	mg/Kg	1	0.0108	0.02	0.0108
Ethylbenzene	U	<0.0117	<0.0200	<0.0117	mg/Kg	1	0.0117	0.02	0.0117
Xylene	U	<0.0145	<0.0200	<0.0145	mg/Kg	1	0.0145	0.02	0.0145

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.90	mg/Kg	1	2.00	95	75.5 - 105
4-Bromofluorobenzene (4-BFB)		1.81	mg/Kg	1	2.00	90	76.7 - 106

**Sample: 237492 - S3 6 in.**Laboratory: Lubbock  
Analysis: TPH DRO - NEW  
QC Batch: 71737  
Prep Batch: 61466Analytical Method: S 8015 D  
Date Analyzed: 2010-07-14  
Sample Preparation: 2010-07-14Prep Method: N/A  
Analyzed By: AW  
Prepared By: AW*continued ...*

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sample 237492 continued ...

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
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Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO	J	13.4	<50.0	<7.46	mg/Kg	1	7.46	50	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		121	mg/Kg	1	100	121	55.5 - 151

Sample: 237492 - S3 6 in.

Laboratory: Lubbock  
Analysis: TPH GRO  
QC Batch: 71717  
Prep Batch: 61444Analytical Method: S 8015 D  
Date Analyzed: 2010-07-14  
Sample Preparation: 2010-07-14Prep Method: S 5035  
Analyzed By: ER  
Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO	U	<0.241	<2.00	<0.241	mg/Kg	1	0.241	2	0.241

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.73	mg/Kg	1	2.00	86	84.8 - 114
4-Bromofluorobenzene (4-BFB)		1.82	mg/Kg	1	2.00	91	70.8 - 113

Sample: 237493 - S4 6 in.

Laboratory: Lubbock  
Analysis: BTEX  
QC Batch: 71716  
Prep Batch: 61444Analytical Method: S 8021B  
Date Analyzed: 2010-07-14  
Sample Preparation: 2010-07-14Prep Method: S 5035  
Analyzed By: ER  
Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
MTBE	U	<0.189	<0.400	<0.189	mg/Kg	20	0.189	0.02	0.00947
Benzene	4 U	<0.0924	<0.400	<0.0924	mg/Kg	20	0.0924	0.02	0.00462
Toluene		1.86	1.86	<0.116	mg/Kg	20	0.116	0.02	0.00582
Ethylbenzene		3.86	3.86	<0.0866	mg/Kg	20	0.0866	0.02	0.00433

continued ...

<sup>4</sup>Sample ran at dilution due to hydrocarbons with a retention time greater than xylene.

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sample 237493 continued ...

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
Xylene		26.3	26.3	<0.0766	mg/Kg	20	0.0766	0.02	0.00383

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.09	mg/Kg	20	2.00	104	76.3 - 110
4-Bromofluorobenzene (4-BFB)		1.62	mg/Kg	20	2.00	81	73.8 - 112

Sample: 237493 - S4 6 in.

Laboratory: Lubbock  
Analysis: TPH DRO - NEW  
QC Batch: 71784  
Prep Batch: 61511Analytical Method: S 8015 D  
Date Analyzed: 2010-07-15  
Sample Preparation: 2010-07-15Prep Method: N/A  
Analyzed By: AW  
Prepared By: AW

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO		9430	9430	<7.46	mg/Kg	1	7.46	50	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane	<sup>5</sup>	423	mg/Kg	10	100	423	55.5 - 151

Sample: 237493 - S4 6 in.

Laboratory: Lubbock  
Analysis: TPH GRO  
QC Batch: 71717  
Prep Batch: 61444Analytical Method: S 8015 D  
Date Analyzed: 2010-07-14  
Sample Preparation: 2010-07-14Prep Method: S 5035  
Analyzed By: ER  
Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO	<sup>6</sup>	1810	1810	<4.82	mg/Kg	20	4.82	2	0.241

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)	<sup>7</sup>	1.46	mg/Kg	20	2.00	73	84.8 - 114
4-Bromofluorobenzene (4-BFB)	<sup>8</sup>	9.90	mg/Kg	20	2.00	495	70.8 - 113

<sup>5</sup>High surrogate recovery due to peak interference.<sup>6</sup>Sample ran at dilution due to hydrocarbons with a retention time greater than xylene.<sup>7</sup>Surrogate recovery out due to dilution caused by hydrocarbons in the sample.<sup>8</sup>High surrogate recovery due to peak interference.

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Sample: 237494 - S5 6 in.

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 71716

Prep Batch: 61444

Analytical Method: S 8021B

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
MTBE	U	<0.00947	<0.0200	<0.00947	mg/Kg	1	0.00947	0.02	0.00947
Benzene	U	<0.00462	<0.0200	<0.00462	mg/Kg	1	0.00462	0.02	0.00462
Toluene	U	<0.00582	<0.0200	<0.00582	mg/Kg	1	0.00582	0.02	0.00582
Ethylbenzene	U	<0.00433	<0.0200	<0.00433	mg/Kg	1	0.00433	0.02	0.00433
Xylene	J	0.00650	<0.0200	<0.00383	mg/Kg	1	0.00383	0.02	0.00383

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.71	mg/Kg	1	2.00	86	76.3 - 110
4-Bromofluorobenzene (4-BFB)		1.88	mg/Kg	1	2.00	94	73.8 - 112

Sample: 237494 - S5 6 in.

Laboratory: Lubbock

Analysis: TPH DRO - NEW

QC Batch: 71737

Prep Batch: 61466

Analytical Method: S 8015 D

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: N/A

Analyzed By: AW

Prepared By: AW

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO	J	11.0	<50.0	<7.46	mg/Kg	1	7.46	50	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		124	mg/Kg	1	100	124	55.5 - 151

Sample: 237494 - S5 6 in.

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 71717

Prep Batch: 61444

Analytical Method: S 8015 D

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
GRO	U	<0.241	<2.00	<0.241	mg/Kg	1	0.241	2	0.241

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Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		2.03	mg/Kg	1	2.00	102	84.8 - 114
4-Bromofluorobenzene (4-BFB)		2.19	mg/Kg	1	2.00	110	70.8 - 113

Sample: 237495 - S6 6 in.

Laboratory: Lubbock

Analysis: BTEX

QC Batch: 71716

Prep Batch: 61444

Analytical Method: S 8021B

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

Prepared By: ER

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
MTBE	U	<0.00947	<0.0200	<0.00947	mg/Kg	1	0.00947	0.02	0.00947
Benzene	U	<0.00462	<0.0200	<0.00462	mg/Kg	1	0.00462	0.02	0.00462
Toluene	J	0.0107	<0.0200	<0.00582	mg/Kg	1	0.00582	0.02	0.00582
Ethylbenzene	U	<0.00433	<0.0200	<0.00433	mg/Kg	1	0.00433	0.02	0.00433
Xylene	J	0.00570	<0.0200	<0.00383	mg/Kg	1	0.00383	0.02	0.00383

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.54	mg/Kg	1	2.00	77	76.3 - 110
4-Bromofluorobenzene (4-BFB)		1.62	mg/Kg	1	2.00	81	73.8 - 112

Sample: 237495 - S6 6 in.

Laboratory: Lubbock

Analysis: TPH DRO - NEW

QC Batch: 71737

Prep Batch: 61466

Analytical Method: S 8015 D

Date Analyzed: 2010-07-14

Sample Preparation: 2010-07-14

Prep Method: N/A

Analyzed By: AW

Prepared By: AW

Parameter	Flag	SDL Based Result	MQL Based Result	Method Blank Result	Units	Dilution	SDL	MQL (Unadjusted)	MDL (Unadjusted)
DRO	J	45.7	<50.0	<7.46	mg/Kg	1	7.46	50	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		129	mg/Kg	1	100	129	55.5 - 151

Sample: 237495 - S6 6 in.

Laboratory: Lubbock

Analysis: TPH GRO

QC Batch: 71717

Analytical Method: S 8015 D

Date Analyzed: 2010-07-14

Prep Method: S 5035

Analyzed By: ER

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Prep Batch: 61444

Sample Preparation: 2010-07-14

Prepared By: ER

Parameter	Flag	SDL Based Result	SQL Based Result	Method Blank Result	Units	Dilution	SDL	SQL (Unadjusted)	MDL (Unadjusted)
GRO	U	<0.241	<2.00	<0.241	mg/Kg	1	0.241	2	0.241

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.83	mg/Kg	1	2.00	92	84.8 - 114
4-Bromofluorobenzene (4-BFB)		1.88	mg/Kg	1	2.00	94	70.8 - 113

## Method Blank (1)

QC Batch: 71716  
Prep Batch: 61444Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: ER  
Prepared By: ER

Parameter	Flag	Result	Units	Reporting Limits
MTBE		<0.00947	mg/Kg	0.00947
Benzene		<0.00462	mg/Kg	0.00462
Toluene		<0.00582	mg/Kg	0.00582
Ethylbenzene		<0.00433	mg/Kg	0.00433
Xylene		<0.00383	mg/Kg	0.00383

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.57	mg/Kg	1	2.00	78	76.3 - 110
4-Bromofluorobenzene (4-BFB)		1.60	mg/Kg	1	2.00	80	73.8 - 112

## Method Blank (1)

QC Batch: 71717  
Prep Batch: 61444Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: ER  
Prepared By: ER

Parameter	Flag	Result	Units	Reporting Limits
GRO		<0.241	mg/Kg	0.241

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.94	mg/Kg	1	2.00	97	84.8 - 114
4-Bromofluorobenzene (4-BFB)		1.90	mg/Kg	1	2.00	95	70.8 - 113

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Artesia Carbon Valley 25**Method Blank (1)**QC Batch: 71737  
Prep Batch: 61466Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: AW  
Prepared By: AW

Parameter	Flag	Result	Units	Reporting Limits
DRO		<7.46	mg/Kg	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		112	mg/Kg	1	100	112	55.5 - 151

**Method Blank (1)**QC Batch: 71784  
Prep Batch: 61511Date Analyzed: 2010-07-15  
QC Preparation: 2010-07-15Analyzed By: AW  
Prepared By: AW

Parameter	Flag	Result	Units	Reporting Limits
DRO		<7.46	mg/Kg	7.46

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
n-Tricosane		110	mg/Kg	1	100	110	55.5 - 151

**Method Blank (1)**QC Batch: 71830  
Prep Batch: 61549Date Analyzed: 2010-07-16  
QC Preparation: 2010-07-16Analyzed By: ER  
Prepared By: ER

Parameter	Flag	Result	Units	Reporting Limits
MTBE		<0.00981	mg/Kg	0.00981
Benzene		<0.00629	mg/Kg	0.00629
Toluene		<0.0108	mg/Kg	0.0108
Ethylbenzene		<0.0117	mg/Kg	0.0117
Xylene		<0.0145	mg/Kg	0.0145

Surrogate	Flag	Result	Units	Dilution	Spike Amount	Percent Recovery	Recovery Limits
Trifluorotoluene (TFT)		1.83	mg/Kg	1	2.00	92	75.5 - 105
4-Bromofluorobenzene (4-BFB)		1.90	mg/Kg	1	2.00	95	76.7 - 106

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Artesia Carbon Valley 25**Laboratory Control Spike (LCS-1)**QC Batch: 71716  
Prep Batch: 61444Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: ER  
Prepared By: ER

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
MTBE	1.66	mg/Kg	1	2.00	<0.00947	83	74.6 - 119
Benzene	1.70	mg/Kg	1	2.00	<0.00462	85	80.6 - 112
Toluene	1.77	mg/Kg	1	2.00	<0.00582	88	80.7 - 113
Ethylbenzene	1.68	mg/Kg	1	2.00	<0.00433	84	79.2 - 110
Xylene	5.10	mg/Kg	1	6.00	<0.00383	85	79.8 - 113

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
MTBE	1.59	mg/Kg	1	2.00	<0.00947	80	74.6 - 119	4	20
Benzene	1.68	mg/Kg	1	2.00	<0.00462	84	80.6 - 112	1	20
Toluene	1.73	mg/Kg	1	2.00	<0.00582	86	80.7 - 113	2	20
Ethylbenzene	1.64	mg/Kg	1	2.00	<0.00433	82	79.2 - 110	2	20
Xylene	5.00	mg/Kg	1	6.00	<0.00383	83	79.8 - 113	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.65	1.59	mg/Kg	1	2.00	82	80	79.5 - 109
4-Bromofluorobenzene (4-BFB)	1.63	1.58	mg/Kg	1	2.00	82	79	77.7 - 113

**Laboratory Control Spike (LCS-1)**QC Batch: 71717  
Prep Batch: 61444Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: ER  
Prepared By: ER

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	20.2	mg/Kg	1	20.0	<0.241	101	78.5 - 118

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	20.2	mg/Kg	1	20.0	<0.241	101	78.5 - 118	0	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.80	1.81	mg/Kg	1	2.00	90	90	81.9 - 111
4-Bromofluorobenzene (4-BFB)	1.93	1.91	mg/Kg	1	2.00	96	96	78.2 - 117

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Artesia Carbon Valley 25**Laboratory Control Spike (LCS-1)**QC Batch: 71737  
Prep Batch: 61466Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: AW  
Prepared By: AW

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	265	mg/Kg	1	250	<7.46	106	76 - 157

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	267	mg/Kg	1	250	<7.46	107	76 - 157	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	126	128	mg/Kg	1	100	126	128	55.5 - 151

**Laboratory Control Spike (LCS-1)**QC Batch: 71784  
Prep Batch: 61511Date Analyzed: 2010-07-15  
QC Preparation: 2010-07-15Analyzed By: AW  
Prepared By: AW

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	249	mg/Kg	1	250	<7.46	100	76 - 157

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	264	mg/Kg	1	250	<7.46	106	76 - 157	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
n-Tricosane	115	125	mg/Kg	1	100	115	125	55.5 - 151

**Laboratory Control Spike (LCS-1)**QC Batch: 71830  
Prep Batch: 61549Date Analyzed: 2010-07-16  
QC Preparation: 2010-07-16Analyzed By: ER  
Prepared By: ER

Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
MTBE	1.82	mg/Kg	1	2.00	<0.00981	91	78.4 - 103
Benzene	1.91	mg/Kg	1	2.00	<0.00629	96	84.9 - 109

*continued ...*

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Param	LCS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
Toluene	1.88	mg/Kg	1	2.00	<0.0108	94	83.8 - 109
Ethylbenzene	1.91	mg/Kg	1	2.00	<0.0117	96	83.8 - 109
Xylene	5.78	mg/Kg	1	6.00	<0.0145	96	84.6 - 113

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	LCSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
MTBE	1.81	mg/Kg	1	2.00	<0.00981	90	78.4 - 103	1	20
Benzene	1.94	mg/Kg	1	2.00	<0.00629	97	84.9 - 109	2	20
Toluene	1.92	mg/Kg	1	2.00	<0.0108	96	83.8 - 109	2	20
Ethylbenzene	1.95	mg/Kg	1	2.00	<0.0117	98	83.8 - 109	2	20
Xylene	5.91	mg/Kg	1	6.00	<0.0145	98	84.6 - 113	2	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	LCS Result	LCSD Result	Units	Dil.	Spike Amount	LCS Rec.	LCSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	2.03	1.99	mg/Kg	1	2.00	102	100	77.1 - 114
4-Bromofluorobenzene (4-BFB)	1.88	1.92	mg/Kg	1	2.00	94	96	75.6 - 112

**Matrix Spike (MS-1) Spiked Sample: 237491**QC Batch: 71716  
Prep Batch: 61444Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: ER  
Prepared By: ER

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
MTBE	1.77	mg/Kg	1	2.00	<0.00947	88	51.2 - 121
Benzene	1.46	mg/Kg	1	2.00	<0.00462	73	61.7 - 127
Toluene	1.64	mg/Kg	1	2.00	<0.00582	82	60.8 - 136
Ethylbenzene	1.62	mg/Kg	1	2.00	<0.00433	81	70.3 - 132
Xylene	4.95	mg/Kg	1	6.00	0.007	82	69.7 - 139

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
MTBE	1.75	mg/Kg	1	2.00	<0.00947	88	51.2 - 121	1	20
Benzene	1.46	mg/Kg	1	2.00	<0.00462	73	61.7 - 127	0	20
Toluene	1.64	mg/Kg	1	2.00	<0.00582	82	60.8 - 136	0	20
Ethylbenzene	1.63	mg/Kg	1	2.00	<0.00433	82	70.3 - 132	1	20
Xylene	5.01	mg/Kg	1	6.00	0.007	83	69.7 - 139	1	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

*continued ...*<sup>9</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 16 of 20  
Artesia Carbon Valley 25*matrix spikes continued ...*

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.46	1.49	mg/Kg	1	2	73	74	64 - 129
4-Bromofluorobenzene (4-BFB)	1.58	1.64	mg/Kg	1	2	79	82	71.8 - 133

**Matrix Spike (MS-1)** Spiked Sample: 237492QC Batch: 71717  
Prep Batch: 61444Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: ER  
Prepared By: ER

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
GRO	16.6	mg/Kg	1	20.0	<0.241	83	59.9 - 133

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
GRO	19.5	mg/Kg	1	20.0	<0.241	98	59.9 - 133	16	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.60	1.67	mg/Kg	1	2	80	84	69.3 - 122
4-Bromofluorobenzene (4-BFB)	1.87	1.98	mg/Kg	1	2	94	99	72.2 - 135

**Matrix Spike (MS-1)** Spiked Sample: 237491QC Batch: 71737  
Prep Batch: 61466Date Analyzed: 2010-07-14  
QC Preparation: 2010-07-14Analyzed By: AW  
Prepared By: AW

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	268	mg/Kg	1	250	32.6	94	76 - 157

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	281	mg/Kg	1	250	32.6	99	76 - 157	5	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

<sup>10</sup>Matrix spike recovery out of control limits due to matrix interference. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 17 of 20  
Artesia Carbon Valley 25

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	114	120	mg/Kg	1	100	114	120	55.1 - 151

Matrix Spike (MS-1) Spiked Sample: 237490

QC Batch: 71784  
Prep Batch: 61511Date Analyzed: 2010-07-15  
QC Preparation: 2010-07-15Analyzed By: AW  
Prepared By: AW

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
DRO	11400	mg/Kg	10	250	11100	120	76 - 157

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
DRO	<sup>11</sup> 12100	mg/Kg	10	250	11100	400	76 - 157	6	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
n-Tricosane	<sup>12,13</sup> 362	382	mg/Kg	10	100	362	382	55.1 - 151

Matrix Spike (MS-1) Spiked Sample: 237492

QC Batch: 71830  
Prep Batch: 61549Date Analyzed: 2010-07-16  
QC Preparation: 2010-07-16Analyzed By: ER  
Prepared By: ER

Param	MS Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit
MTBE	0.979	mg/Kg	1	2.00	<0.00981	49	10 - 93.9
Benzene	<sup>14</sup> 1.03	mg/Kg	1	2.00	<0.00629	52	59.5 - 110
Toluene	<sup>15</sup> 1.06	mg/Kg	1	2.00	<0.0108	53	62.2 - 116
Ethylbenzene	<sup>16</sup> 1.10	mg/Kg	1	2.00	<0.0117	55	64.6 - 124
Xylene	<sup>17</sup> 3.28	mg/Kg	1	6.00	<0.0145	55	68.2 - 132

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
MTBE	1.04	mg/Kg	1	2.00	<0.00981	52	10 - 93.9	6	20

*continued ...*<sup>11</sup>Matrix spike recovery out of control limits due to peak interference. Use LCS/LCSD to demonstrate analysis is under control.<sup>12</sup>High surrogate recovery due to peak interference.<sup>13</sup>High surrogate recovery due to peak interference.<sup>14</sup>Matrix spike recovery out of control limits. Use LCS/LCSD to demonstrate analysis is under control.<sup>15</sup>Matrix spike recovery out of control limits. Use LCS/LCSD to demonstrate analysis is under control.<sup>16</sup>Matrix spike recovery out of control limits. Use LCS/LCSD to demonstrate analysis is under control.<sup>17</sup>Matrix spike recovery out of control limits. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 18 of 20  
Artesia Carbon Valley 25

matrix spikes continued ...

Param	MSD Result	Units	Dil.	Spike Amount	Matrix Result	Rec.	Rec. Limit	RPD	RPD Limit
Benzene	<sup>18</sup> 1.60	mg/Kg	1	2.00	<0.00629	80	59.5 - 110	43	20
Toluene	<sup>19</sup> 1.68	mg/Kg	1	2.00	<0.0108	84	62.2 - 116	45	20
Ethylbenzene	<sup>20</sup> 1.82	mg/Kg	1	2.00	<0.0117	91	64.6 - 124	49	20
Xylene	<sup>21</sup> 5.40	mg/Kg	1	6.00	<0.0145	90	68.2 - 132	49	20

Percent recovery is based on the spike result. RPD is based on the spike and spike duplicate result.

Surrogate	MS Result	MSD Result	Units	Dil.	Spike Amount	MS Rec.	MSD Rec.	Rec. Limit
Trifluorotoluene (TFT)	1.94	1.96	mg/Kg	1	2	97	98	79.9 - 123
4-Bromofluorobenzene (4-BFB)	1.81	1.82	mg/Kg	1	2	90	91	73.1 - 128

## Standard (CCV-1)

QC Batch: 71716

Date Analyzed: 2010-07-14

Analyzed By: ER

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.100	0.0848	85	80 - 120	2010-07-14
Benzene		mg/Kg	0.100	0.0863	86	80 - 120	2010-07-14
Toluene		mg/Kg	0.100	0.0901	90	80 - 120	2010-07-14
Ethylbenzene		mg/Kg	0.100	0.0864	86	80 - 120	2010-07-14
Xylene		mg/Kg	0.300	0.263	88	80 - 120	2010-07-14

## Standard (CCV-2)

QC Batch: 71716

Date Analyzed: 2010-07-14

Analyzed By: ER

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.100	0.0898	90	80 - 120	2010-07-14
Benzene		mg/Kg	0.100	0.0861	86	80 - 120	2010-07-14
Toluene		mg/Kg	0.100	0.0892	89	80 - 120	2010-07-14
Ethylbenzene		mg/Kg	0.100	0.0803	80	80 - 120	2010-07-14
Xylene		mg/Kg	0.300	0.249	83	80 - 120	2010-07-14

## Standard (CCV-1)

QC Batch: 71717

Date Analyzed: 2010-07-14

Analyzed By: ER

<sup>18</sup>MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.<sup>19</sup>MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.<sup>20</sup>MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.<sup>21</sup>MS/MSD RPD out of RPD Limits. Use LCS/LCSD to demonstrate analysis is under control.

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 19 of 20  
Artesia Carbon Valley 25

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	0.986	99	80 - 120	2010-07-14

## Standard (CCV-2)

QC Batch: 71717

Date Analyzed: 2010-07-14

Analyzed By: ER

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
GRO		mg/Kg	1.00	1.04	104	80 - 120	2010-07-14

## Standard (CCV-1)

QC Batch: 71737

Date Analyzed: 2010-07-14

Analyzed By: AW

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	261	104	80 - 120	2010-07-14

## Standard (CCV-2)

QC Batch: 71737

Date Analyzed: 2010-07-14

Analyzed By: AW

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	253	101	80 - 120	2010-07-14

## Standard (CCV-1)

QC Batch: 71784

Date Analyzed: 2010-07-15

Analyzed By: AW

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	264	106	80 - 120	2010-07-15

## Standard (CCV-2)

QC Batch: 71784

Date Analyzed: 2010-07-15

Analyzed By: AW

Report Date: July 19, 2010

Work Order: 10071425  
Murchison Oil & Gas Inc.Page Number: 20 of 20  
Artesia Carbon Valley 25

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
DRO		mg/Kg	250	249	100	80 - 120	2010-07-15

## Standard (CCV-1)

QC Batch: 71830

Date Analyzed: 2010-07-16

Analyzed By: ER

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.100	0.0896	90	80 - 120	2010-07-16
Benzene		mg/Kg	0.100	0.0957	96	80 - 120	2010-07-16
Toluene		mg/Kg	0.100	0.0945	94	80 - 120	2010-07-16
Ethylbenzene		mg/Kg	0.100	0.0959	96	80 - 120	2010-07-16
Xylene		mg/Kg	0.300	0.290	97	80 - 120	2010-07-16

## Standard (CCV-2)

QC Batch: 71830

Date Analyzed: 2010-07-16

Analyzed By: ER

Param	Flag	Units	CCVs True Conc.	CCVs Found Conc.	CCVs Percent Recovery	Percent Recovery Limits	Date Analyzed
MTBE		mg/Kg	0.100	0.0960	96	80 - 120	2010-07-16
Benzene		mg/Kg	0.100	0.102	102	80 - 120	2010-07-16
Toluene		mg/Kg	0.100	0.100	100	80 - 120	2010-07-16
Ethylbenzene		mg/Kg	0.100	0.102	102	80 - 120	2010-07-16
Xylene		mg/Kg	0.300	0.307	102	80 - 120	2010-07-16

LAB Order ID # 10071425

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**TraceAnalysis, Inc.**

email: lab@traceanalysis.com

6701 Aberdeen Avenue, Suite 9  
Lubbock, Texas 79424  
Tel (806) 794-1296  
Fax (806) 794-1298  
1 (800) 378-1296

200 East Sunset Rd., Suite E  
El Paso, Texas 79922  
Tel (915) 585-3443  
Fax (915) 585-4944  
1 (888) 588-3443

BioAquatic Testing  
2501 Mayes Rd., Ste 100  
Carrollton, Texas 75006  
Tel (972) 242-7750

Company Name: <u>DEH Petroleum &amp; Environmental</u>		Phone #: <u>915 954 8150</u>	
Address: <u>1211 Tower Trail El Paso TX 79907</u>		Fax #: _____	
Contact Person: <u>Victor Ayala</u>		E-mail: _____	
Invoice to: _____		(If different from above)	
Project #:		Project Name: <u>Purchase oil &amp; gas law</u>	
Project Location (including state): <u>Artesia Cañon Valley 25</u>		Sampler Signature: _____	

LAB # (LAB USE ONLY)	FIELD CODE	# CONTAINERS	Volume / Amount	MATRIX				PRESERVATIVE METHOD					SAMPLING		TIME	DATE	Turn Around Time if different from standard
				WATER	SOIL	AIR	SLUDGE	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	ICE	NONE	DATE			
237484	S1 Surface	1	402	X											7-8-10 9:50		X
485	S2 Surface														9:53		X
486	S3 Surface														9:55		X
487	S4 Surface														10:01		X
488	S5 Surface														10:04		X
489	S6 Surface														10:07		X
490	S1 6 inch														10:10		X
491	S2 6 inch														10:15		X
492	S3 6 inch														10:20		X
493	S4 6 inch														10:30		X
494	S5 6 inch	1	402	X											7-8-10 10:40	X	

ANALYSIS REQUEST (Circle or Specify Method No.)																		
MTBE 8021 / 602 / 8260 / 624	BTEX 8021 / 602 / 8260 / 624	TPH 418.1 / TX1005 / TX1005 Ex(C35)	TPH 8015 GRO / DRO / TVHC	PAH 8270 / 625	Total Metals Ag As Ba Cd Cr Pb Se Hg 6010/200.7	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	TCLP Pesticides	RCI	GC/MS Vol. 8260 / 624	GC/MS Semi. Vol. 8270 / 625	PCBs 8082 / 608	Pesticides 8081 / 608	BOD, TSS, pH	Moisture Content	Cl, F, S, SO <sub>4</sub> , NO <sub>3</sub> , NO <sub>2</sub> , Alkalinity	Na, Ca, Mg, K, TDS, EC

LAB USE ONLY		REMARKS:	
Relinquished by: <u>Flamingo DTH</u>	Date: <u>7-13-10</u>	Time: <u>10:35</u>	Company: <u>DTH 7-13-10 10:35</u>
Relinquished by: <u>Victor Ayala</u>	Date: <u>7-13-10</u>	Time: <u>18:00</u>	Company: <u>Conduct For Trace</u>
Relinquished by: _____	Date: _____	Time: _____	Company: _____

LAB USE ONLY		REMARKS:	
Intact <input checked="" type="checkbox"/>	Headspace <input checked="" type="checkbox"/>	Dry Weight Basis Required <input type="checkbox"/>	TRRP Report Required <input type="checkbox"/>
Log-In-Review <input checked="" type="checkbox"/>	Check if Special Reporting Limits Are Needed <input type="checkbox"/>		

Carrier # Fed 81681 514 5650

Submital of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Page 2 of 2

email: [lab@traceanalysis.com](mailto:lab@traceanalysis.com)

200 East Sunset Rd., Suite E  
El Paso, Texas 79922  
Tel (915) 585-3443  
Fax (915) 585-4944  
1 (888) 588-3443

**BioAquatic Testing**  
2501 Mayes Rd., Ste 100  
Carrollton, Texas 75006  
Tel (972) 242-7750

Sampler Signature: 

Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	INST
Plumbing	DH H	7-13-10	10:35	Wendy	DH H	7-13-10	10:35	OBS
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	COR
Wendy	DH H	7-13-10	18:00	Carol Fox	Trace	7-14-10	9:30	INST 13
Relinquished by:	Company:	Date:	Time:	Received by:	Company:	Date:	Time:	OBS 312
								AMCOR 316
								INST
								OBS
								COR

Submittal of samples constitutes agreement to Terms and Conditions listed on reverse side of C. O. C.

Carrier # Fed 81081 5144 5650

Released to Imaging: 9/9/2024 3:05:29 PM

**ATTACHMENT 4**  
Photographic Documentation

## PHOTOGRAPHIC DOCUMENTATION

**Location:** Murchison Oil, County Road 202

**Date:** 7/8/10

**City, County, State:** Artesia, Eddy, NM

**Subject:** Sampling Report

---

**Photograph:** 1

**Description:** View facing west, showing the spill clean-up area.



**Photograph:** 2

**Description:** View facing south, showing the spill clean-up area.



## PHOTOGRAPHIC DOCUMENTATION

**Location:** Murchison Oil, County Road 202

**Date:** 7/8/10

**City, County, State:** Artesia, Eddy, NM

**Subject:** Sampling Report

---

**Photograph:** 3

**Description:** View facing north, showing the spill clean-up area.



**Photograph:** 4

**Description:** View facing northeast, showing the spill clean-up area.



## PHOTOGRAPHIC DOCUMENTATION

**Location:** Murchison Oil, County Road 202

**Date:** 7/8/10

**City, County, State:** Artesia, Eddy, NM

**Subject:** Sampling Report

---

**Photograph:** 5

**Description:** View facing southwest, showing the spill clean-up area.



**Photograph:** 6

**Description:** View facing southwest, showing the spill clean-up area.



## PHOTOGRAPHIC DOCUMENTATION

**Location:** Murchison Oil, County Road 202

**Date:** 7/8/10

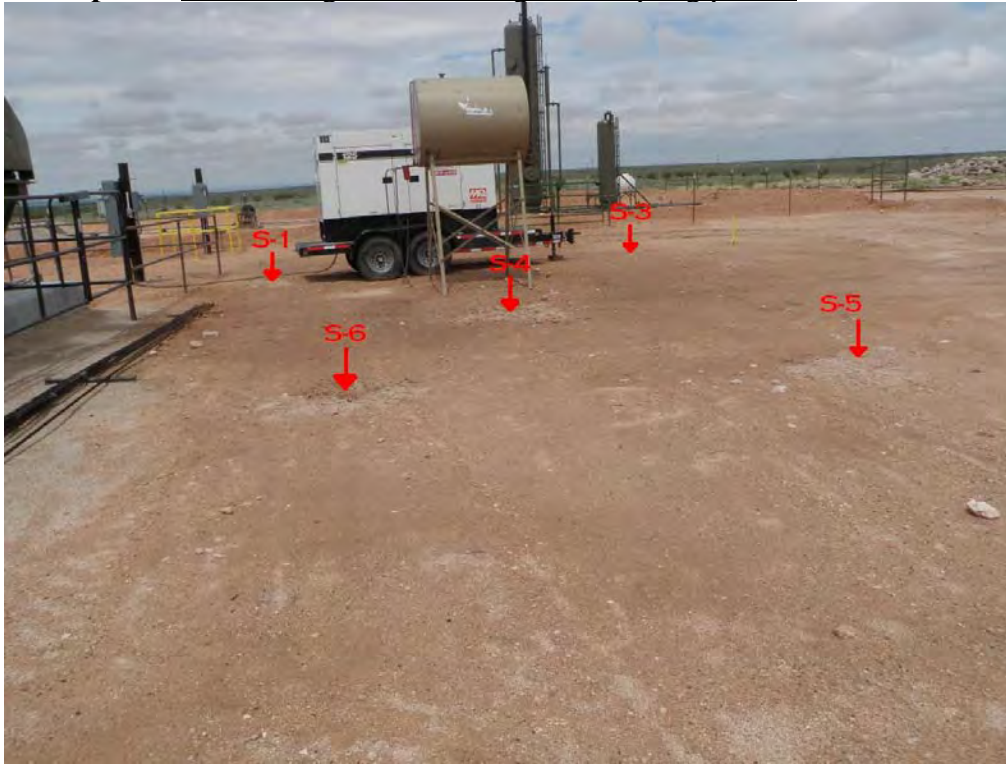
**City, County, State:** Artesia, Eddy, NM

**Subject:** Sampling Report

---

**Photograph:** 7

**Description:** View facing west, showing the sampling points.



**Photograph:** 8

**Description:** View facing southwest, showing the sampling points.



## PHOTOGRAPHIC DOCUMENTATION

**Location:** Murchison Oil, County Road 202

**Date:** 7/8/10

**City, County, State:** Artesia, Eddy, NM

**Subject:** Sampling Report

---

**Photograph:** 9

**Description:** View facing west, showing the sampling points.



**Photograph:** 10

**Description:** View facing south, showing the sampling points.



## PHOTOGRAPHIC DOCUMENTATION

**Location:** Murchison Oil, County Road 202

**Date:** 7/8/10

**City, County, State:** Artesia, Eddy, NM

**Subject:** Sampling Report

---

**Photograph:** 11

**Description:** View facing southeast, showing the sampling points.



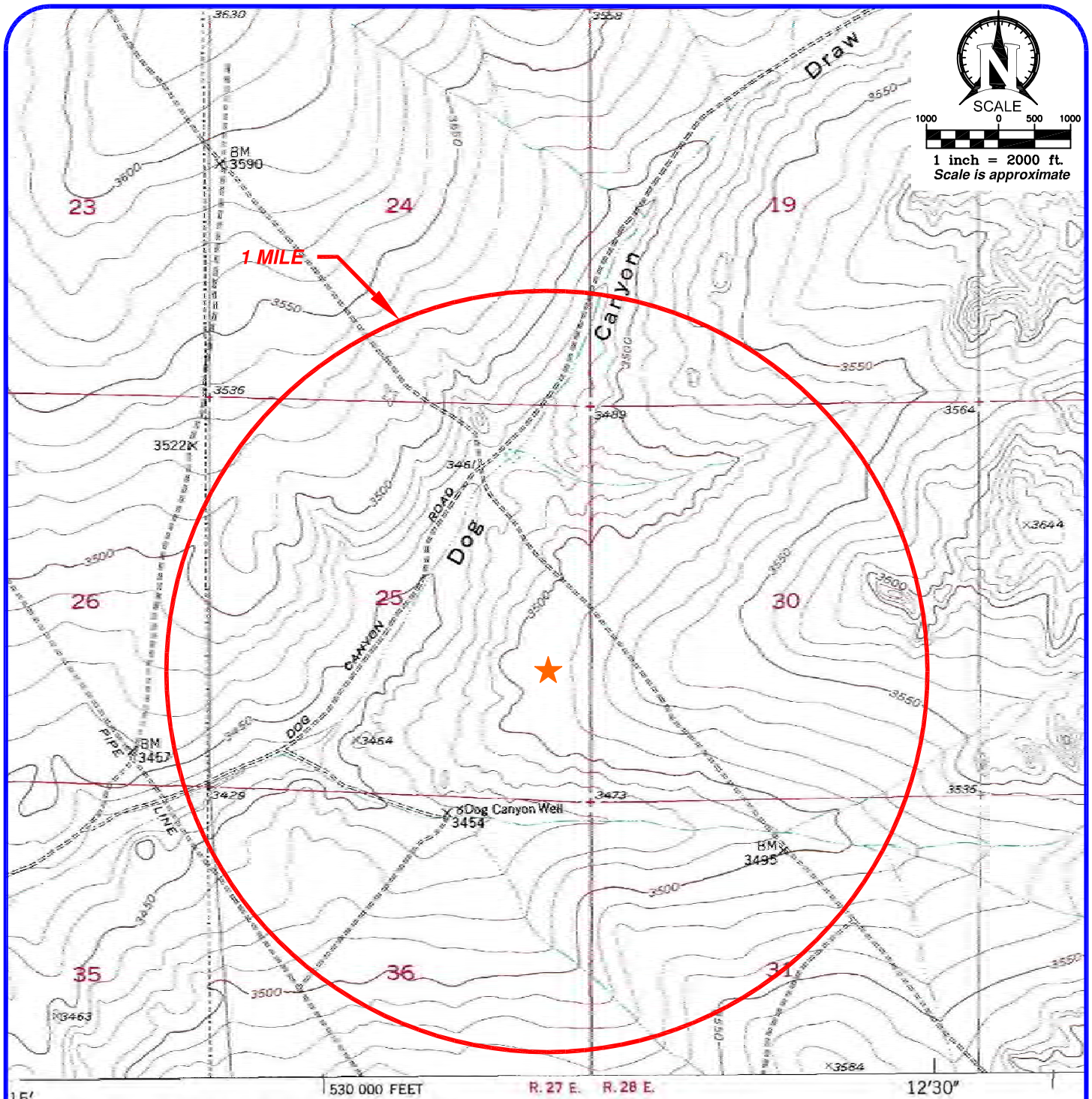
**Photograph:** 12

**Description:** View facing east, showing the sampling points.



**ATTACHMENT 5**

**Water Well Survey**



15'  
Mapped, edited, and published by the Geological Survey  
Control by USGS and USC&GS

**NOTE:**  
MAP TAKEN FROM DIAMOND  
ROUND QUADRANGLE NEW  
MEXICO.

Compiled from  
1951

12 3/4"  
TH  
RTH

Project No.

329543

Date: 8/30/10

Scale: 1" = 2000'

Dwg. by: J. Castro  
Designed by:

N/A

## Murchison Oil

Lease: Carbon Valley 25 Fed 001

Eddy County, New Mexico

## Water Well Map

Scale is approximate



PETROLEUM &  
ENVIRONMENTAL  
SERVICES

1221 TOWER TRAIL LANE  
EL PASO, TEXAS 79907  
MAIN: (915) 859-8150  
FAX: (915) 859-7229

Sheet No.

1 OF 1

## **ATTACHMENT 6**

### Receptor Survey



**NOTE**

**R = RESIDENTIAL**  
**C = COMERCIAL**

Project No.

329543

Date: 8/30/10

Scale: 1" = 300'

Dwg. by: J. Castro  
Designed by:

N/A

**Murchison Oil**

Lease: Carbon Valley 25 Fed 001 Eddy County, New Mexico

**Receptor Survey Map**

Scale is approximate



**PETROLEUM &  
ENVIRONMENTAL  
SERVICES**

1221 TOWER TRAIL LANE  
EL PASO, TEXAS 79907  
MAIN: (915) 859-8150  
FAX: (915) 859-7229

Sheet No.

**1 OF 1**

**ATTACHMENT 7**  
Waste Manifests

<b>NON-HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number		2. Page 1 of 1		3. Emergency Response Phone 915-567		4. Waste Tracking Number 81910-1	
5. Generator's Name and Mailing Address C.L. Thomas, Inc. 361.582.5139 PO Box 1876 Victoria, TX 77902				Generator's Site Address (if different than mailing address) Murchison Oil CR 202 Artesia, NM					
6. Transporter 1 Company Name D&H Petroleum & Enviro Services 1221 TOWER TRAIL LN., EL PASO, TX 79907 915.859.8150				U.S. EPA ID Number TXR000033753					
7. Transporter 2 Company Name				U.S. EPA ID Number					
8. Designated Facility Name and Site Address Gandy Marley, Inc. Contaminated Soils Landfarm 575.398.0107 7200 East Second Street PO Box 1658 Roswell, NM 88201				U.S. EPA ID Number					
9. Waste Shipping Name and Description 1047 1. Non-hazardous Hydrocarbon Contaminated Soil Non-DOT Regulated				10. Containers No. Type		11. Total Quantity		12. Unit WT/Vol.	
				DT		5		kg	
2.									
3.									
4.									
13. Special Handling Instructions and Additional Information  W04 329543									
14. GENERATOR'S CERTIFICATION: I certify the materials described above on this manifest are not subject to federal regulations for reporting proper disposal of Hazardous Waste.									
Generator's/Officer's Printed/Typed Name Victor Ayala on behalf of C.L. Thomas				Signature Victor Ayala		Month 8		Day 18	
15. International Shipments <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.				Port of entry/exit: Date leaving U.S.:					
16. Transporter Acknowledgment of Receipt of Materials									
Transporter 1 Printed/Typed Name Javier Miera				Signature Javier Miera		Month 8		Day 18	
Transporter 2 Printed/Typed Name				Signature		Month		Day	
17. Discrepancy									
17a. Discrepancy Indication Space <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection				Manifest Reference Number:					
17b. Alternate Facility (or Generator)				U.S. EPA ID Number					
Facility's Phone:									
17c. Signature of Alternate Facility (or Generator)						Month		Day	
18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in item 17a									
Printed/Typed Name J TOLTON				Signature J Tolton		Month 08		Day 19	
						Year 10			

Aug 25 2010 12:10PM HP LASERJET FAX

P.6

2010-08-24 10:04 ARTESIA MEDICAL SUPP 5757461885 >>

P 6/6

**CALL**  
**1311**  
**1311**

**J. L. LANDREAU**  
J. L. LANDREAU  
J. L. LANDREAU  
J. L. LANDREAU  
J. L. LANDREAU

**1311**

**Contract** Buckhorn oil field  
**Address** Carbon Valley 35 P. 10 N  
**Product** TNT Backfill  
**Quantity** 1000 lbs  
**Unit Price** 1.42  
**Estimated** 12/1/10  
**Time** See T-1  
**Notes** See T-1  
**Signature** [Signature]  
**DATE** 6-30-10

# Appendix C

## Well Logs



McNabb Partners, LLC  
Hobbs • Carlsbad • Midland



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

[www.ose.state.nm.us](http://www.ose.state.nm.us)

					OSE FILE NUMBER(S) RA 12455		
WELL OWNER NAME(S) KEY LIVESTOCK, LLC					PHONE (OPTIONAL)		
WELL OWNER MAILING ADDRESS 1012 E 2ND ST					CITY ROSWELL	STATE NM	ZIP 88201
WELL LOCATION (FROM GPS)	DEGREES		MINUTES	SECONDS	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84		
	LATITUDE	32	53	04.88			
	LONGITUDE	104	13	49.001	W		
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE							

LICENSE NUMBER WD-1058		NAME OF LICENSED DRILLER DON KUEHN III		NAME OF WELL DRILLING COMPANY KEYS DRILLING & PUMP SERVICE INC.			
DRILLING STARTED 09-12-16	DRILLING ENDED 09-13-16	DEPTH OF COMPLETED WELL (FT) 200	BORE HOLE DEPTH (FT) 200	DEPTH WATER FIRST ENCOUNTERED (FT) 55			
COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) 55		
DRILLING FLUID: <input type="checkbox"/> AIR <input checked="" type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:							
DRILLING METHOD: <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER - SPECIFY:							

DEPTH (feet bgl)		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
FROM	TO						
-2	20	12-3/4	STEEL		8"	1/4"	
-2	160	7-7/8"	PVC	SPLINE	4-1/2"	SCH40	
160	200	7-7/8"	PVC	SPLINE	4-1/2"	SCH40	.030

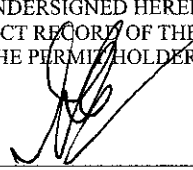
  

DEPTH (feet bgl)		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT
FROM	TO				
0	20	12-3/4"	CEMENT		HAND
20	200	7-7/8"	VEALMORE PEA GRAVEL		HAND

FOR OSE INTERNAL USE

WR-20 WELL RECORD &amp; LOG (Version 06/08/2012)

FILE NUMBER	RA-12455	POD NUMBER	1	TRN NUMBER	592288
LOCATION	16S-27E-36		2.1.2	Don	PAGE 1 OF 2

4. HYDROGEOLOGIC LOG OF WELL	DEPTH (feet bgl)		THICKNESS (feet)	COLOR AND TYPE OF MATERIAL ENCOUNTERED - INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES (attach supplemental sheets to fully describe all units)	WATER BEARING? (YES / NO)	ESTIMATED YIELD FOR WATER- BEARING ZONES (gpm)
	FROM	TO				
	0	20	20	SURFACE	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	20	40	20	BROWN CLAY	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	40	50	10	GYPSON	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	50	55	5	SAND ZONE	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	55	65	10	GREY SANDSTONE	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
	65	70	5	SAND & GREY CLAY	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	70	80	10	SANDY BROWN CLAY	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	80	90	10	GYPSON	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
	90	130	40	RED SANDY CLAY	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	130	150	20	GYPSON	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	150	160	10	BROWN SANDY CLAY	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N	
	160	200	40	GYPSON	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
					<input type="checkbox"/> Y <input type="checkbox"/> N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input checked="" type="checkbox"/> PUMP					TOTAL ESTIMATED WELL YIELD (gpm): 17	
<input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:						
5. TEST; RIG SUPERVISION	WELL TEST	TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	MISCELLANEOUS INFORMATION:					
	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: DON KUEHN III					
6. SIGNATURE	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:  GARY KEY 09-27-16 SIGNATURE OF DRILLER / PRINT SIGNEE NAME DATE					

FOR OSE INTERNAL USE

WR-20 WELL RECORD &amp; LOG (Version 06/08/2012)

FILE NUMBER	RA-12455	POD NUMBER	TRN NUMBER	592288
LOCATION	16S-27E-36	2-1-2	20m	PAGE 2 OF 2

# Appendix D

## Certificate of Analysis



McNabb Partners, LLC  
Hobbs • Carlsbad • Midland



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

April 30, 2024

KRISTIN POPE

R T HICKS CONSULTANTS

901 RIO GRANDE BLVD SUITE F-142

ALBUQUERQUE, NM 87104

RE: CARBON VALLEY 25 FED #001

Enclosed are the results of analyses for samples received by the laboratory on 04/25/24 14:00.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-23-16. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received:	04/25/2024	Sampling Date:	04/24/2024
Reported:	04/30/2024	Sampling Type:	Soil
Project Name:	CARBON VALLEY 25 FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MURCHISON		

**Sample ID: S - 1 @ 0-4 FT (H242211-01)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58		
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45		
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18		
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10		
Total BTEX	<0.300	0.300	04/26/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 90.5 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	116	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 80.6 % 48.2-134

Surrogate: 1-Chlorooctadecane 85.3 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received:	04/25/2024	Sampling Date:	04/24/2024
Reported:	04/30/2024	Sampling Type:	Soil
Project Name:	CARBON VALLEY 25 FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MURCHISON		

**Sample ID: S - 1 @ 4-5 FT (H242211-02)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58		
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45		
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18		
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10		
Total BTEX	<0.300	0.300	04/26/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 90.5 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	224	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	220	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 74.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 79.2 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 1 @ 5-6 FT (H242211-03)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58	
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45	
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18	
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10	
Total BTEX	<0.300	0.300	04/26/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.3 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	235	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 85.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.7 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received:	04/25/2024	Sampling Date:	04/24/2024
Reported:	04/30/2024	Sampling Type:	Soil
Project Name:	CARBON VALLEY 25 FED #001	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	MURCHISON		

**Sample ID: S - 1 @ 6-7 FT (H242211-04)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58		
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45		
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18		
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10		
Total BTEX	<0.300	0.300	04/26/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 88.9 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	400	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	<10.0	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 108 % 48.2-134

Surrogate: 1-Chlorooctadecane 112 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 1 @ 7-8 FT (H242211-05)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58	
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45	
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18	
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10	
Total BTEX	<0.300	0.300	04/26/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.6 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	368	16.0	04/26/2024	ND	368	92.0	400	8.33	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	<10.0	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 94.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 96.5 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 4 @ 0-4 FT (H242211-06)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58	
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45	
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18	
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10	
Total BTEX	<0.300	0.300	04/26/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 89.1 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	208	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	130	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	40.1	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 95.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 103 % 49.1-148

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 4 @ 4-5 FT (H242211-07)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58		
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45		
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18		
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10		
Total BTEX	<0.300	0.300	04/26/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 90.2 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	192	16.0	04/26/2024	ND	368	92.0	400	8.33	

TPH 8015M		mg/kg	Analyzed By: MS						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	106	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	33.3	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 99.7 % 48.2-134

Surrogate: 1-Chlorooctadecane 104 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 4 @ 5-6 FT (H242211-08)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58	
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45	
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18	
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10	
Total BTEX	<0.300	0.300	04/26/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 91.1 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	112	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	35.6	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	11.7	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 80.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 82.0 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 4 @ 6-7 FT (H242211-09)****BTEX 8021B****mg/kg****Analyzed By: JH**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/26/2024	ND	1.81	90.4	2.00	5.58	
Toluene*	<0.050	0.050	04/26/2024	ND	1.76	88.1	2.00	5.45	
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.74	87.1	2.00	5.18	
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.10	85.0	6.00	5.10	
Total BTEX	<0.300	0.300	04/26/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 90.8 % 71.5-134

**Chloride, SM4500Cl-B****mg/kg****Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	96.0	16.0	04/26/2024	ND	368	92.0	400	8.33	

**TPH 8015M****mg/kg****Analyzed By: MS**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	<10.0	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 97.1 % 48.2-134

Surrogate: 1-Chlorooctadecane 101 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

R T HICKS CONSULTANTS  
KRISTIN POPE  
901 RIO GRANDE BLVD SUITE F-142  
ALBUQUERQUE NM, 87104  
Fax To: NONE

Received: 04/25/2024  
Reported: 04/30/2024  
Project Name: CARBON VALLEY 25 FED #001  
Project Number: NONE GIVEN  
Project Location: MURCHISON

Sampling Date: 04/24/2024  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: S - 4 @ 7-8 FT (H242211-10)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	04/26/2024	ND	1.77	88.5	2.00	7.81	
Toluene*	<0.050	0.050	04/26/2024	ND	1.80	89.8	2.00	7.92	
Ethylbenzene*	<0.050	0.050	04/26/2024	ND	1.78	89.1	2.00	7.93	
Total Xylenes*	<0.150	0.150	04/26/2024	ND	5.49	91.6	6.00	7.47	
Total BTEX	<0.300	0.300	04/26/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 106 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	144	16.0	04/26/2024	ND	368	92.0	400	8.33		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	04/26/2024	ND	187	93.7	200	3.62	
DRO >C10-C28*	<10.0	10.0	04/26/2024	ND	186	93.1	200	3.47	
EXT DRO >C28-C36	<10.0	10.0	04/26/2024	ND					

Surrogate: 1-Chlorooctane 95.5 % 48.2-134

Surrogate: 1-Chlorooctadecane 96.3 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- BS-3 Blank spike recovery outside of lab established statistical limits, but still within method limits. Data is not adversely affected.
- ND Analyte NOT DETECTED at or above the reporting limit
- RPD Relative Percent Difference
- \*\* Samples not received at proper temperature of 6°C or below.
- \*\*\* Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C  
Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

Company Name: <u>RT. Hicks Consultants</u>		P.O. #:		BILL TO		ANALYSIS REQUEST	
Project Manager: <u>Kristin Pope</u>							
Address: <u>901 Rio Grande Blvd NW</u>		Suite: <u>F-142</u>		Company: <u>RT Hicks</u>			
City: <u>Albuquerque</u>		State: <u>NM</u> Zip: <u>87104</u>		Attn: <u>Randy</u>			
Phone #: <u>505-466-5004</u>		Fax #:		Address:			
Project #:		Project Owner: <u>Murchison</u>		City:			
Project Name: <u>Carbon Valley 25 Fed #001</u>		State:		Zip:			
Project Location:		Phone #: <u>505-238-9515</u>		Fax #:			
Sampler Name: <u>Kristin Pope</u>							
FOR LAB USE ONLY							
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX		PRESERV.	SAMPLING
				GROUNDWATER			
				WASTEWATER			
				SOIL			
				OIL			
				SLUDGE			
				OTHER:			
				ACID/BASE:			
				ICE / COOL			
				OTHER:			
				DATE	TIME		
<u>1042311</u>	<u>1</u>	<u>SI @ 0-4 ft</u>	<u>1</u>	<u>4-24-24</u>	<u>1340</u>	<u>Chloride</u>	
	<u>2</u>	<u>SI @ 4-5 ft</u>	<u>1</u>		<u>1342</u>	<u>TPH 8015M</u>	
	<u>3</u>	<u>SI @ 5-6 ft</u>	<u>1</u>		<u>1347</u>	<u>BTEX</u>	
	<u>4</u>	<u>SI @ 6-7 ft</u>	<u>1</u>		<u>1350</u>		
	<u>5</u>	<u>SI @ 7-8 ft</u>	<u>1</u>		<u>1353</u>		
	<u>6</u>	<u>SI @ 0-4 ft</u>	<u>1</u>		<u>1325</u>		
	<u>7</u>	<u>SI @ 4-5 ft</u>	<u>1</u>		<u>1328</u>		
	<u>8</u>	<u>SI @ 5-6 ft</u>	<u>1</u>		<u>1332</u>		
	<u>9</u>	<u>SI @ 6-7 ft</u>	<u>1</u>		<u>1334</u>		
	<u>10</u>	<u>SI @ 7-8 ft</u>	<u>1</u>		<u>1336</u>		
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Relinquished By: <u>Kristin Pope</u>		Date: <u>4-25-24</u>		Received By: <u>Murchison</u>		Verbal Result: <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #:	
Time: <u>1400</u>				Received By: <u>Murchison</u>		All Results are emailed. Please provide Email address:	
Date: <u>4-25-24</u>				Time: <u>1400</u>		REMARKS:	
Time: <u>1400</u>							
Delivered By: (Circle One)		Observed Temp.: <u>36</u> °C		Sample Condition		CHECKED BY: (Initials)	
Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/>		Corrected Temp.: <u>36</u> °C		Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/>		Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Sampler - UPS - Bus - Other:							
Turnaround Time: <u>Standard</u>		Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/>		Bacteria (only) <input type="checkbox"/>		Sample Condition	
Thermometer ID: <u>442 #146</u>		Correction Factor: <u>0.0</u>		Cool <input checked="" type="checkbox"/> Intact <input type="checkbox"/>		Observed Temp.: <u>36</u> °C	
				Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		Corrected Temp.: <u>36</u> °C	

† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

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July 08, 2024

ANDREW PARKER  
MC NABB SERVICES  
P. O. BOX 5753  
HOBBS, NM 88240

RE: CARBON VALLEY 25 FED 1

Enclosed are the results of analyses for samples received by the laboratory on 06/27/24 16:24.

Cardinal Laboratories is accredited through Texas NELAP under certificate number TX-C24-00112. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/ga/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/ga/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Total Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Cardinal Laboratories is accredited through the State of New Mexico Environment Department for:

Method SM 9223-B	Total Coliform and E. coli (Colilert MMO-MUG)
Method EPA 524.2	Regulated VOCs and Total Trihalomethanes (TTHM)
Method EPA 552.2	Total Haloacetic Acids (HAA-5)

Accreditation applies to public drinking water matrices for State of Colorado and New Mexico.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Celey D. Keene  
Lab Director/Quality Manager



PHONE (575) 393-2326 • 101 E. MARLAND • HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
CS - 01 0-2 FT	H243879-01	Soil	27-Jun-24 09:10	27-Jun-24 16:24
CS - 01 2-4 FT	H243879-02	Soil	27-Jun-24 09:15	27-Jun-24 16:24
CS - 01 5 FT	H243879-03	Soil	27-Jun-24 09:20	27-Jun-24 16:24
CS - 01 6 FT	H243879-04	Soil	27-Jun-24 09:25	27-Jun-24 16:24
CS - 01 8 FT	H243879-05	Soil	27-Jun-24 09:30	27-Jun-24 16:24
CS - 02 0-2 FT	H243879-06	Soil	27-Jun-24 09:40	27-Jun-24 16:24
CS - 02 2-3.5 FT	H243879-07	Soil	27-Jun-24 09:45	27-Jun-24 16:24
CS - 03 0-2 FT	H243879-08	Soil	27-Jun-24 09:55	27-Jun-24 16:24
CS - 03 2.5 FT	H243879-09	Soil	27-Jun-24 10:00	27-Jun-24 16:24
CS - 04 0-2 FT	H243879-10	Soil	27-Jun-24 10:03	27-Jun-24 16:24
CS - 04 2-3 FT	H243879-11	Soil	27-Jun-24 10:06	27-Jun-24 16:24
CS - 04 3.5 FT	H243879-12	Soil	27-Jun-24 10:10	27-Jun-24 16:24
CS - 05 0-2 FT	H243879-13	Soil	27-Jun-24 10:20	27-Jun-24 16:24
CS - 05 2-3.7 FT	H243879-14	Soil	27-Jun-24 10:25	27-Jun-24 16:24
CS - 06 0-2 FT	H243879-15	Soil	27-Jun-24 10:35	27-Jun-24 16:24
CS - 06 2-3.5 FT	H243879-16	Soil	27-Jun-24 10:40	27-Jun-24 16:24
CS - 06 4 FT	H243879-17	Soil	27-Jun-24 10:45	27-Jun-24 16:24
CS - 07 0-2 FT	H243879-18	Soil	27-Jun-24 10:50	27-Jun-24 16:24
CS - 07 2-3 FT	H243879-19	Soil	27-Jun-24 10:55	27-Jun-24 16:24

07/08/24 - Client changed the sample ID on -14 (see COC). This is the revised report and will replace the one sent on 07/05/24.

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 01 0-2 FT**  
**H243879-01 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>64.0</b>		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)	106 %	71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID****S-04**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4063008	MS	03-Jul-24	8015B
DRO >C10-C28*	2250	10.0	mg/kg	1	4063008	MS	03-Jul-24	8015B
EXT DRO >C28-C36	10.0	10.0	mg/kg	1	4063008	MS	03-Jul-24	8015B

Surrogate: 1-Chlorooctane	123 %	48.2-134	4063008	MS	03-Jul-24	8015B
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Surrogate: 1-Chlorooctadecane	169 %	49.1-148	4063008	MS	03-Jul-24	8015B
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 01 2-4 FT****H243879-02 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	336		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			111 %		71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			120 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			128 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 01 5 FT**  
**H243879-03 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>336</b>		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			108 %	71.5-134		4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			114 %	48.2-134		4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			123 %	49.1-148		4063009	MS	03-Jul-24	8015B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 01 6 FT**  
**H243879-04 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>240</b>		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

<i>Surrogate: 4-Bromofluorobenzene (PID)</i>			108 %		71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

<i>Surrogate: 1-Chlorooctane</i>			122 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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<i>Surrogate: 1-Chlorooctadecane</i>			130 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 01 8 FT**  
**H243879-05 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	128		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 110 % 71.5-134 4070218 JH 03-Jul-24 8021B

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane 120 % 48.2-134 4063009 MS 03-Jul-24 8015B

Surrogate: 1-Chlorooctadecane 130 % 49.1-148 4063009 MS 03-Jul-24 8015B

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 02 0-2 FT****H243879-06 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>112</b>		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)	110 %	71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane	121 %	48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane	129 %	49.1-148	4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 02 2-3.5 FT****H243879-07 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	96.0		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			106 %	71.5-134		4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			105 %	48.2-134		4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			106 %	49.1-148		4063009	MS	03-Jul-24	8015B	
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 03 0-2 FT****H243879-08 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>208</b>		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 107 % 71.5-134 4070218 JH 03-Jul-24 8021B

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane 110 % 48.2-134 4063009 MS 03-Jul-24 8015B

Surrogate: 1-Chlorooctadecane 117 % 49.1-148 4063009 MS 03-Jul-24 8015B

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 03 2.5 FT****H243879-09 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>384</b>		16.0	mg/kg	4	4070330	AC	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)	105 %	71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane	121 %	48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane	125 %	49.1-148	4063009	MS	03-Jul-24	8015B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 04 0-2 FT****H243879-10 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>320</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			107 %		71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			108 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			112 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 04 2-3 FT**  
**H243879-11 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>512</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 105 % 71.5-134 4070218 JH 03-Jul-24 8021B

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane 113 % 48.2-134 4063009 MS 03-Jul-24 8015B

Surrogate: 1-Chlorooctadecane 123 % 49.1-148 4063009 MS 03-Jul-24 8015B

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 04 3.5 FT**  
**H243879-12 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>64.0</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			105 %	71.5-134		4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			113 %	48.2-134		4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			118 %	49.1-148		4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 05 0-2 FT****H243879-13 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	480		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID) 105 % 71.5-134 4070218 JH 03-Jul-24 8021B

**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane 119 % 48.2-134 4063009 MS 03-Jul-24 8015B

Surrogate: 1-Chlorooctadecane 123 % 49.1-148 4063009 MS 03-Jul-24 8015B

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 05 2-3.7 FT**  
**H243879-14 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>880</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4070218	JH	03-Jul-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4070218	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)	105 %	71.5-134	4070218	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane	115 %	48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane	119 %	49.1-148	4063009	MS	03-Jul-24	8015B	
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 06 0-2 FT****H243879-15 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>32.0</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050	0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Toluene*	<0.050	0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050	0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150	0.150	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total BTEX	<0.300	0.300	mg/kg	50	4070224	JH	03-Jul-24	8021B	

<i>Surrogate: 4-Bromofluorobenzene (PID)</i>		97.9 %		71.5-134	4070224	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0	10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

<i>Surrogate: 1-Chlorooctane</i>		116 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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<i>Surrogate: 1-Chlorooctadecane</i>		120 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 06 2-3.5 FT****H243879-16 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	32.0		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070224	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			97.7 %		71.5-134	4070224	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			93.0 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			96.6 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 06 4 FT**  
**H243879-17 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

Chloride	48.0		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070224	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			96.7 %	71.5-134		4070224	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			93.2 %	48.2-134		4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			99.1 %	49.1-148		4063009	MS	03-Jul-24	8015B	
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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 07 0-2 FT****H243879-18 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>160</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070224	JH	03-Jul-24	8021B	

Surrogate: 4-Bromofluorobenzene (PID)			98.6 %		71.5-134	4070224	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

Surrogate: 1-Chlorooctane			101 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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Surrogate: 1-Chlorooctadecane			102 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**CS - 07 2-3 FT**  
**H243879-19 (Soil)**

Analyte	Result	MDL	Reporting Limit	Units	Dilution	Batch	Analyst	Analyzed	Method	Notes
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**Cardinal Laboratories****Inorganic Compounds**

<b>Chloride</b>	<b>208</b>		16.0	mg/kg	4	4070332	CT	03-Jul-24	4500-Cl-B	
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**Volatile Organic Compounds by EPA Method 8021**

Benzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Toluene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Ethylbenzene*	<0.050		0.050	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total Xylenes*	<0.150		0.150	mg/kg	50	4070224	JH	03-Jul-24	8021B	
Total BTEX	<0.300		0.300	mg/kg	50	4070224	JH	03-Jul-24	8021B	

<i>Surrogate: 4-Bromofluorobenzene (PID)</i>			97.1 %		71.5-134	4070224	JH	03-Jul-24	8021B	
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**Petroleum Hydrocarbons by GC FID**

GRO C6-C10*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
DRO >C10-C28*	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	
EXT DRO >C28-C36	<10.0		10.0	mg/kg	1	4063009	MS	03-Jul-24	8015B	

<i>Surrogate: 1-Chlorooctane</i>			95.4 %		48.2-134	4063009	MS	03-Jul-24	8015B	
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<i>Surrogate: 1-Chlorooctadecane</i>			98.6 %		49.1-148	4063009	MS	03-Jul-24	8015B	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**Inorganic Compounds - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4070330 - 1:4 DI Water****Blank (4070330-BLK1)**

Prepared &amp; Analyzed: 03-Jul-24

Chloride	ND	16.0	mg/kg						
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**LCS (4070330-BS1)**

Prepared &amp; Analyzed: 03-Jul-24

Chloride	448	16.0	mg/kg	400	112	80-120			
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**LCS Dup (4070330-BSD1)**

Prepared &amp; Analyzed: 03-Jul-24

Chloride	448	16.0	mg/kg	400	112	80-120	0.00	20	
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**Batch 4070332 - 1:4 DI Water****Blank (4070332-BLK1)**

Prepared &amp; Analyzed: 03-Jul-24

Chloride	ND	16.0	mg/kg						
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**LCS (4070332-BS1)**

Prepared &amp; Analyzed: 03-Jul-24

Chloride	416	16.0	mg/kg	400	104	80-120			
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**LCS Dup (4070332-BSD1)**

Prepared &amp; Analyzed: 03-Jul-24

Chloride	432	16.0	mg/kg	400	108	80-120	3.77	20	
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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4070218 - Volatiles****Blank (4070218-BLK1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							
Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	0.0579		mg/kg	0.0500		116	71.5-134			

**LCS (4070218-BS1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Benzene	1.83	0.050	mg/kg	2.00		91.4	82.8-130			
Toluene	1.93	0.050	mg/kg	2.00		96.5	86-128			
Ethylbenzene	2.04	0.050	mg/kg	2.00		102	85.9-128			
m,p-Xylene	4.06	0.100	mg/kg	4.00		102	89-129			
o-Xylene	2.04	0.050	mg/kg	2.00		102	86.1-125			
Total Xylenes	6.10	0.150	mg/kg	6.00		102	88.2-128			
Surrogate: 4-Bromofluorobenzene (PID)	0.0538		mg/kg	0.0500		108	71.5-134			

**LCS Dup (4070218-BS1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Benzene	1.93	0.050	mg/kg	2.00		96.5	82.8-130	5.46	15.8	
Toluene	2.01	0.050	mg/kg	2.00		100	86-128	3.87	15.9	
Ethylbenzene	2.11	0.050	mg/kg	2.00		105	85.9-128	3.15	16	
m,p-Xylene	4.18	0.100	mg/kg	4.00		105	89-129	2.94	16.2	
o-Xylene	2.10	0.050	mg/kg	2.00		105	86.1-125	2.92	16.7	
Total Xylenes	6.29	0.150	mg/kg	6.00		105	88.2-128	2.93	16.3	
Surrogate: 4-Bromofluorobenzene (PID)	0.0536		mg/kg	0.0500		107	71.5-134			

**Batch 4070224 - Volatiles****Blank (4070224-BLK1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Benzene	ND	0.050	mg/kg							
Toluene	ND	0.050	mg/kg							
Ethylbenzene	ND	0.050	mg/kg							
Total Xylenes	ND	0.150	mg/kg							

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**Volatile Organic Compounds by EPA Method 8021 - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4070224 - Volatiles****Blank (4070224-BLK1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Total BTEX	ND	0.300	mg/kg							
Surrogate: 4-Bromofluorobenzene (PID)	ND		mg/kg	0.0500		97.4	71.5-134			

**LCS (4070224-BS1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Benzene	1.98	0.050	mg/kg	2.00		99.1	82.8-130			
Toluene	1.95	0.050	mg/kg	2.00		97.7	86-128			
Ethylbenzene	1.96	0.050	mg/kg	2.00		98.2	85.9-128			
m,p-Xylene	3.87	0.100	mg/kg	4.00		96.7	89-129			
o-Xylene	1.91	0.050	mg/kg	2.00		95.6	86.1-125			
Total Xylenes	5.78	0.150	mg/kg	6.00		96.3	88.2-128			
Surrogate: 4-Bromofluorobenzene (PID)	0.0481		mg/kg	0.0500		96.2	71.5-134			

**LCS Dup (4070224-BS1)**

Prepared: 02-Jul-24 Analyzed: 03-Jul-24

Benzene	2.04	0.050	mg/kg	2.00		102	82.8-130	2.99	15.8	
Toluene	2.01	0.050	mg/kg	2.00		100	86-128	2.59	15.9	
Ethylbenzene	2.02	0.050	mg/kg	2.00		101	85.9-128	2.55	16	
m,p-Xylene	3.96	0.100	mg/kg	4.00		99.0	89-129	2.40	16.2	
o-Xylene	1.95	0.050	mg/kg	2.00		97.3	86.1-125	1.76	16.7	
Total Xylenes	5.91	0.150	mg/kg	6.00		98.4	88.2-128	2.18	16.3	
Surrogate: 4-Bromofluorobenzene (PID)	0.0486		mg/kg	0.0500		97.1	71.5-134			

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4063008 - General Prep - Organics****Blank (4063008-BLK1)**

Prepared: 30-Jun-24 Analyzed: 02-Jul-24

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	60.7		mg/kg	50.0		121	48.2-134			
Surrogate: 1-Chlorooctadecane	62.7		mg/kg	50.0		125	49.1-148			

**LCS (4063008-BS1)**

Prepared: 30-Jun-24 Analyzed: 02-Jul-24

GRO C6-C10	184	10.0	mg/kg	200		92.1	66.4-123			
DRO >C10-C28	176	10.0	mg/kg	200		87.8	66.5-118			
Total TPH C6-C28	360	10.0	mg/kg	400		90.0	77.6-123			
Surrogate: 1-Chlorooctane	64.0		mg/kg	50.0		128	48.2-134			
Surrogate: 1-Chlorooctadecane	64.8		mg/kg	50.0		130	49.1-148			

**LCS Dup (4063008-BS1)**

Prepared: 30-Jun-24 Analyzed: 02-Jul-24

GRO C6-C10	188	10.0	mg/kg	200		94.1	66.4-123	2.15	17.7	
DRO >C10-C28	181	10.0	mg/kg	200		90.7	66.5-118	3.17	21	
Total TPH C6-C28	370	10.0	mg/kg	400		92.4	77.6-123	2.65	18.5	
Surrogate: 1-Chlorooctane	64.1		mg/kg	50.0		128	48.2-134			
Surrogate: 1-Chlorooctadecane	64.8		mg/kg	50.0		130	49.1-148			

**Batch 4063009 - General Prep - Organics****Blank (4063009-BLK1)**

Prepared: 30-Jun-24 Analyzed: 03-Jul-24

GRO C6-C10	ND	10.0	mg/kg							
DRO >C10-C28	ND	10.0	mg/kg							
EXT DRO >C28-C36	ND	10.0	mg/kg							
Surrogate: 1-Chlorooctane	55.7		mg/kg	50.0		111	48.2-134			
Surrogate: 1-Chlorooctadecane	59.3		mg/kg	50.0		119	49.1-148			

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
P. O. BOX 5753  
HOBBS NM, 88240

Project: CARBON VALLEY 25 FED 1  
Project Number: CV- 25 - 1  
Project Manager: ANDREW PARKER  
Fax To: (575) 391-8484

Reported:  
08-Jul-24 16:48

**Petroleum Hydrocarbons by GC FID - Quality Control****Cardinal Laboratories**

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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**Batch 4063009 - General Prep - Organics****LCS (4063009-BS1)**

Prepared: 30-Jun-24 Analyzed: 02-Jul-24

GRO C6-C10	188	10.0	mg/kg	200		94.1	66.4-123			
DRO >C10-C28	176	10.0	mg/kg	200		87.8	66.5-118			
Total TPH C6-C28	364	10.0	mg/kg	400		91.0	77.6-123			
Surrogate: 1-Chlorooctane	58.4		mg/kg	50.0		117	48.2-134			
Surrogate: 1-Chlorooctadecane	58.1		mg/kg	50.0		116	49.1-148			

**LCS Dup (4063009-BSD1)**

Prepared: 30-Jun-24 Analyzed: 02-Jul-24

GRO C6-C10	196	10.0	mg/kg	200		98.0	66.4-123	4.08	17.7	
DRO >C10-C28	184	10.0	mg/kg	200		92.0	66.5-118	4.73	21	
Total TPH C6-C28	380	10.0	mg/kg	400		95.0	77.6-123	4.39	18.5	
Surrogate: 1-Chlorooctane	60.2		mg/kg	50.0		120	48.2-134			
Surrogate: 1-Chlorooctadecane	59.8		mg/kg	50.0		120	49.1-148			

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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Celey D. Keene, Lab Director/Quality Manager

101 East Marland, Hobbs, NM 88240  
(575) 393-2326 FAX (575) 393-2476

## ANALYSIS REQUEST

<b>Company Name:</b> McNabb Partners							<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>											
<b>Project Manager:</b> Andrew Parker							<b>P.O. #:</b>													
<b>Address:</b> on file							<b>Company:</b> McNabb Parks													
<b>City:</b>							<b>Attn:</b> Andrew Parker													
<b>State:</b>							<b>Address:</b>													
<b>Phone #:</b>							<b>City:</b>													
<b>Fax #:</b>							<b>State:</b>													
<b>Project #:</b>							<b>Zip:</b>													
<b>Project Name:</b> CV-25-1							<b>Phone #:</b>													
<b>Project Location:</b> Carbon Valley 25 Fed 1							<b>Fax #:</b>													
<b>Sample Name:</b> Andrew Parker																				
<small>FOR LAB USE ONLY</small>																				
<b>Lab I.D.</b>	<b>Sample I.D.</b>	(G)RAB OR (C)OMP	# CONTAINERS	MATRIX GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER :			PRESERV ACID/BASE: ICE / COOL OTHER :	SAMPLING												
H243879	CS-01 0-2 FT	G 1	1	X				DATE	TIME	TPH										
1	CS-01 2-4 FT							6/27	09:10	X	X	X								
2	CS-01 4-5 FT								09:15											
3	CS-01 6 FT								09:20											
4	CS-01 8 FT								09:25											
5	CS-02 0-2 FT								09:30											
6	CS-02 2-3.5 FT								09:40											
7	CS-03 0-2 FT								09:45											
8	CS-03 2.5 FT								09:55											
9	CS-04 0-2 FT								10:00											
									10:03											
<small>PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising from contact or test, shall be limited to the amount paid by the client for the analysis. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.</small>																				
<b>Relinquished By:</b>							<b>Received By:</b>							<b>Verbal Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Add'l Phone #:						
<i>[Signature]</i>							<i>[Signature]</i>							All Results are emailed. Please provide Email address:						
<b>Date:</b> 6-27-24							<b>Date:</b> 6-27-24													
<b>Time:</b> 10:24							<b>Time:</b> 10:24													
<b>Relinquished By:</b>							<b>Received By:</b>							<b>REMARKS:</b>						
<i>[Signature]</i>							<i>[Signature]</i>							Pg 1/2						
<b>Delivered By:</b> (Circle One)							<b>Observed Temp. °C</b>							<b>Corrected Temp. °C</b>						
Sampler - UPS - Bus - Other:							Cool Intact <input checked="" type="checkbox"/>							Bacteria (only) Sample Condition						
							Yes <input type="checkbox"/> No <input type="checkbox"/>							Cool Intact <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/>						
							Turnaround Time: 48 hrs							Standard Rush <input checked="" type="checkbox"/>						
							Thermometer ID: 447							Correction Factor: +0.1°C						
							Correction Factor: +0.1°C							Corrected Temp. °C						

\* Cardinal cannot accept verbal changes. Please email change to calvin@cardinal.com



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### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> Mc Nabbs Partners <b>Project Manager:</b> Andrew Parker <b>Address:</b> <b>City:</b> <b>State:</b> <b>Zip:</b> <b>Phone #:</b> <b>Fax #:</b> <b>Project #:</b> <b>Project Name:</b> <b>Project Location:</b> <b>Sample Name:</b>				<b>P.O. #:</b> <b>Company:</b> Mc Nabbs Partners <b>Attn:</b> Andrew Parker <b>Address:</b> <b>City:</b> <b>State:</b> <b>Zip:</b> <b>Phone #:</b> <b>Fax #:</b>				<b>BILL TO</b>				<b>ANALYSIS REQUEST</b>			
<b>FOR LAB USE ONLY</b>															
<b>Lab I.D.</b>		<b>Sample I.D.</b>		<b>(G)RAB OR (C)OMP.</b>		<b># CONTAINERS</b>		<b>MATRIX</b>		<b>PRESERV</b>		<b>SAMPLING</b>			
								GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER:		ACID/BASE: ICE / COOL OTHER:		DATE TIME			
11 12 13 14 15 16 17 18 19		CS-04 2-3 FT CS-04 3.5 FT CS-05 0-2 FT * CS-05 2-3.7 FT CS-06 0-2 FT CS-06 2-3.5 FT CS-06 4 FT CS-07 0-2 FT CS-07 2-3 FT		6 1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1		1 1 1 1 1 1 1 1		6/27 10:06 10:10 10:20 10:25 10:35 10:40 10:45 10:50 10:55		TPH (BRO AP) BTEX, Benzene CI			
<b>PLEASE NOTE:</b> Liability and Damages Cardinal's liability and client's exclusive remedy for any claim arising whether based in contract or tort, shall be limited to the amount paid by the client for the analysis. All claims including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within 30 days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise.															
<b>Relinquished By:</b> <i>Andrew Parker</i> <b>Date:</b> 10-27-24 <b>Time:</b> 10:24 <b>Received By:</b> <i>AP Parker</i> <b>Date:</b> 10-27-24 <b>Time:</b>				<b>Verbal Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Add'l Phone #:</b> <b>All Results are emailed. Please provide Email address:</b> <b>REMARKS:</b> * Customer requested Depth changes Pg 2/2 7/8/24				<b>Turnaround Time:</b> Standard <input checked="" type="checkbox"/> Rush <input type="checkbox"/> <b>Thermometer ID #113</b> <b>Correction Factor 4.8°C</b> <b>Bacteria (only) Sample Condition</b> <b>Cool Intact</b> <input type="checkbox"/> Yes <input type="checkbox"/> No <b>Observed Temp. °C</b>							
<b>Delivered By: (Circle One)</b> Sampler - UPS - Bus - Other:				<b>Observed Temp. °C</b> 2.8°C <b>Corrected Temp. °C</b>				<b>CHECKED BY:</b> <i>AP</i> <b>Sample Condition</b> <b>Cool Intact</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <b>Observed Temp. °C</b>							



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August 20, 2024

DIMITRY NIKANOROV

MC NABB SERVICES

P. O. BOX 5753

HOBBS, NM 88240

RE: CARBON VALLEY 25-1

Enclosed are the results of analyses for samples received by the laboratory on 08/16/24 12:05.

Cardinal Laboratories is accredited through Texas NELAP under certificate number TX-C24-00112. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene

Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
 DIMITRY NIKANOROV  
 P. O. BOX 5753  
 HOBBS NM, 88240  
 Fax To: (575) 391-8484

Received:	08/16/2024	Sampling Date:	08/13/2024
Reported:	08/20/2024	Sampling Type:	Soil
Project Name:	CARBON VALLEY 25-1	Sampling Condition:	Cool & Intact
Project Number:	NONE GIVEN	Sample Received By:	Alyssa Parras
Project Location:	MURCHISON - EDDY CO, NM		

**Sample ID: CS - 08 (0.5') (H244991-01)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41	
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14	
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93	
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14	
Total BTEX	<0.300	0.300	08/19/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 113 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	08/19/2024	ND	416	104	400	7.41	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 74.8 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.0 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

MC NABB SERVICES  
 DIMITRY NIKANOROV  
 P. O. BOX 5753  
 HOBBS NM, 88240  
 Fax To: (575) 391-8484

Received: 08/16/2024  
 Reported: 08/20/2024  
 Project Name: CARBON VALLEY 25-1  
 Project Number: NONE GIVEN  
 Project Location: MURCHISON - EDDY CO, NM

Sampling Date: 08/13/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: CS - 08 (2') (H244991-02)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41		
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14		
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93		
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14		
Total BTEX	<0.300	0.300	08/19/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 112 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	08/19/2024	ND	416	104	400	7.41		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 76.9 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

MC NABB SERVICES  
 DIMITRY NIKANOROV  
 P. O. BOX 5753  
 HOBBS NM, 88240  
 Fax To: (575) 391-8484

Received: 08/16/2024  
 Reported: 08/20/2024  
 Project Name: CARBON VALLEY 25-1  
 Project Number: NONE GIVEN  
 Project Location: MURCHISON - EDDY CO, NM

Sampling Date: 08/13/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: CS - 08 (4') (H244991-03)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41		
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14		
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93		
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14		
Total BTEX	<0.300	0.300	08/19/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 112 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: HM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	08/19/2024	ND	416	104	400	7.41		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 76.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 89.2 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

MC NABB SERVICES  
 DIMITRY NIKANOROV  
 P. O. BOX 5753  
 HOBBS NM, 88240  
 Fax To: (575) 391-8484

Received: 08/16/2024  
 Reported: 08/20/2024  
 Project Name: CARBON VALLEY 25-1  
 Project Number: NONE GIVEN  
 Project Location: MURCHISON - EDDY CO, NM

Sampling Date: 08/13/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: CS - 05 (4') (H244991-04)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41	
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14	
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93	
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14	
Total BTEX	<0.300	0.300	08/19/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 111 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	3200	16.0	08/19/2024	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 78.6 % 48.2-134

Surrogate: 1-Chlorooctadecane 92.4 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

MC NABB SERVICES  
 DIMITRY NIKANOROV  
 P. O. BOX 5753  
 HOBBS NM, 88240  
 Fax To: (575) 391-8484

Received: 08/16/2024  
 Reported: 08/20/2024  
 Project Name: CARBON VALLEY 25-1  
 Project Number: NONE GIVEN  
 Project Location: MURCHISON - EDDY CO, NM

Sampling Date: 08/13/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: CS - 05 (6') (H244991-05)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41	
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14	
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93	
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14	
Total BTEX	<0.300	0.300	08/19/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 110 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	2640	16.0	08/19/2024	ND	416	104	400	3.77	

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 81.4 % 48.2-134

Surrogate: 1-Chlorooctadecane 98.8 % 49.1-148

Cardinal Laboratories

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Celey D. Keene, Lab Director/Quality Manager



PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

**Analytical Results For:**

MC NABB SERVICES  
 DIMITRY NIKANOROV  
 P. O. BOX 5753  
 HOBBS NM, 88240  
 Fax To: (575) 391-8484

Received: 08/16/2024  
 Reported: 08/20/2024  
 Project Name: CARBON VALLEY 25-1  
 Project Number: NONE GIVEN  
 Project Location: MURCHISON - EDDY CO, NM

Sampling Date: 08/13/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: CS - 05 (8') (H244991-06)**

BTEx 8021B		mg/kg		Analyzed By: JH					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41	
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14	
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93	
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14	
Total BTEX	<0.300	0.300	08/19/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 112 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1090	16.0	08/19/2024	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 81.1 % 48.2-134

Surrogate: 1-Chlorooctadecane 99.2 % 49.1-148

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\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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Received: 08/16/2024  
 Reported: 08/20/2024  
 Project Name: CARBON VALLEY 25-1  
 Project Number: NONE GIVEN  
 Project Location: MURCHISON - EDDY CO, NM

Sampling Date: 08/13/2024  
 Sampling Type: Soil  
 Sampling Condition: Cool & Intact  
 Sample Received By: Alyssa Parras

**Sample ID: CS - 05 (9.5') (H244991-07)**

BTEx 8021B		mg/kg		Analyzed By: JH						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	08/19/2024	ND	2.21	111	2.00	6.41		
Toluene*	<0.050	0.050	08/19/2024	ND	2.33	116	2.00	4.14		
Ethylbenzene*	<0.050	0.050	08/19/2024	ND	2.44	122	2.00	1.93		
Total Xylenes*	<0.150	0.150	08/19/2024	ND	7.38	123	6.00	1.14		
Total BTEX	<0.300	0.300	08/19/2024	ND						

Surrogate: 4-Bromofluorobenzene (PID) 111 % 71.5-134

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	1020	16.0	08/19/2024	ND	416	104	400	3.77		

TPH 8015M		mg/kg		Analyzed By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	08/19/2024	ND	214	107	200	3.07	
DRO >C10-C28*	<10.0	10.0	08/19/2024	ND	221	110	200	2.77	
EXT DRO >C28-C36	<10.0	10.0	08/19/2024	ND					

Surrogate: 1-Chlorooctane 80.3 % 48.2-134

Surrogate: 1-Chlorooctadecane 97.3 % 49.1-148

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Celey D. Keene, Lab Director/Quality Manager



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Notes and Definitions

- QM-07      The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
- ND          Analyte NOT DETECTED at or above the reporting limit
- RPD        Relative Percent Difference
- \*\*          Samples not received at proper temperature of 6°C or below.
- \*\*\*        Insufficient time to reach temperature.
- Chloride by SM4500Cl-B does not require samples be received at or below 6°C
- Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene", written in a cursive style.

Celey D. Keene, Lab Director/Quality Manager



101 East Marland, Hobbs, NM 88240  
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## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

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**District IV**  
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State of New Mexico  
Energy, Minerals and Natural Resources  
Oil Conservation Division  
1220 S. St Francis Dr.  
Santa Fe, NM 87505

QUESTIONS  
  
Action 314472

QUESTIONS

Operator: Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:
	15363
	Action Number:
	314472
Action Type:	
[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

QUESTIONS

Prerequisites	
Incident ID (n#)	nMLB1020852567
Incident Name	NMLB1020852567 CARBON VALLEY 25 FED 1 @ 30-015-30953
Incident Type	Release Other
Incident Status	Remediation Plan Received
Incident Well	[30-015-30953] CARBON VALLEY 25 FEDERAL #001

Location of Release Source	
Please answer all the questions in this group.	
Site Name	Carbon Valley 25 Fed 1
Date Release Discovered	06/28/2010
Surface Owner	Federal

Incident Details	
Please answer all the questions in this group.	
Incident Type	Release Other
Did this release result in a fire or is the result of a fire	No
Did this release result in any injuries	No
Has this release reached or does it have a reasonable probability of reaching a watercourse	No
Has this release endangered or does it have a reasonable probability of endangering public health	No
Has this release substantially damaged or will it substantially damage property or the environment	No
Is this release of a volume that is or may with reasonable probability be detrimental to fresh water	No

Nature and Volume of Release	
Material(s) released, please answer all that apply below. Any calculations or specific justifications for the volumes provided should be attached to the follow-up C-141 submission.	
Crude Oil Released (bbls) Details	Not answered.
Produced Water Released (bbls) Details	Not answered.
Is the concentration of chloride in the produced water >10,000 mg/l	Not answered.
Condensate Released (bbls) Details	Not answered.
Natural Gas Vented (Mcf) Details	Not answered.
Natural Gas Flared (Mcf) Details	Not answered.
Other Released Details	Cause: Human Error   Tank (Any)   Diesel   Released: 385 GAL   Recovered: 0 GAL   Lost: 385 GAL.
Are there additional details for the questions above (i.e. any answer containing Other, Specify, Unknown, and/or Fire, or any negative lost amounts)	Not answered.

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QUESTIONS, Page 2

Action 314472

**QUESTIONS (continued)**

Operator: Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:
	15363
	Action Number:
	314472
Action Type:	
[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

**QUESTIONS**

Nature and Volume of Release (continued)	
Is this a gas only submission (i.e. only significant Mcf values reported)	No, according to supplied volumes this does not appear to be a "gas only" report.
Was this a major release as defined by Subsection A of 19.15.29.7 NMAC	No
Reasons why this would be considered a submission for a notification of a major release	Unavailable.
With the implementation of the 19.15.27 NMAC (05/25/2021), venting and/or flaring of natural gas (i.e. gas only) are to be submitted on the C-129 form.	

**Initial Response**

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury.

The source of the release has been stopped	True
The impacted area has been secured to protect human health and the environment	True
Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices	True
All free liquids and recoverable materials have been removed and managed appropriately	True
If all the actions described above have not been undertaken, explain why	Not answered.

Per Paragraph (4) of Subsection B of 19.15.29.8 NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please prepare and attach a narrative of actions to date in the follow-up C-141 submission. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see Subparagraph (a) of Paragraph (5) of Subsection A of 19.15.29.11 NMAC), please prepare and attach all information needed for closure evaluation in the follow-up C-141 submission.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Cindy Cottrell Title: Regulatory Coordinator Email: ccottrell@jdmii.com Date: 09/09/2024
--	---

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QUESTIONS, Page 3  
  
Action 314472

QUESTIONS (continued)

Operator:  Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:
	15363
	Action Number:
	314472
Action Type:	
[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

QUESTIONS

<b>Site Characterization</b>	
<i>Please answer all the questions in this group (only required when seeking remediation plan approval and beyond). This information must be provided to the appropriate district office no later than 90 days after the release discovery date.</i>	
What is the shallowest depth to groundwater beneath the area affected by the release in feet below ground surface (ft bgs)	Between 51 and 75 (ft.)
What method was used to determine the depth to ground water	NM OSE iWaters Database Search
Did this release impact groundwater or surface water	No
<b>What is the minimum distance, between the closest lateral extents of the release and the following surface areas:</b>	
A continuously flowing watercourse or any other significant watercourse	Between 1000 (ft.) and ½ (mi.)
Any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)	Between ½ and 1 (mi.)
An occupied permanent residence, school, hospital, institution, or church	Greater than 5 (mi.)
A spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes	Between 1000 (ft.) and ½ (mi.)
Any other fresh water well or spring	Between 1000 (ft.) and ½ (mi.)
Incorporated municipal boundaries or a defined municipal fresh water well field	Greater than 5 (mi.)
A wetland	Between 1000 (ft.) and ½ (mi.)
A subsurface mine	Greater than 5 (mi.)
An (non-karst) unstable area	Greater than 5 (mi.)
Categorize the risk of this well / site being in a karst geology	High
A 100-year floodplain	Between 1000 (ft.) and ½ (mi.)
Did the release impact areas not on an exploration, development, production, or storage site	No

<b>Remediation Plan</b>	
<i>Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.</i>	
Requesting a remediation plan approval with this submission	Yes
<i>Attach a comprehensive report demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined, pursuant to 19.15.29.11 NMAC and 19.15.29.13 NMAC.</i>	
Have the lateral and vertical extents of contamination been fully delineated	Yes
Was this release entirely contained within a lined containment area	No
<b>Soil Contamination Sampling:</b> (Provide the highest observable value for each, in milligrams per kilograms.)	
Chloride (EPA 300.0 or SM4500 Cl B)	3200
TPH (GRO+DRO+MRO) (EPA SW-846 Method 8015M)	2270
GRO+DRO (EPA SW-846 Method 8015M)	2260
BTEX (EPA SW-846 Method 8021B or 8260B)	0.3
Benzene (EPA SW-846 Method 8021B or 8260B)	0.1
<i>Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.</i>	
On what estimated date will the remediation commence	10/15/2024
On what date will (or did) the final sampling or liner inspection occur	10/29/2024
On what date will (or was) the remediation complete(d)	10/29/2024
What is the estimated surface area (in square feet) that will be reclaimed	570
What is the estimated volume (in cubic yards) that will be reclaimed	211
What is the estimated surface area (in square feet) that will be remediated	570
What is the estimated volume (in cubic yards) that will be remediated	211
<i>These estimated dates and measurements are recognized to be the best guess or calculation at the time of submission and may (be) change(d) over time as more remediation efforts are completed.</i>	
<i>The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.</i>	

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**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

QUESTIONS, Page 4

Action 314472

**QUESTIONS (continued)**

Operator: Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:	15363
	Action Number:	314472
	Action Type:	[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

**QUESTIONS****Remediation Plan (continued)**

Please answer all the questions that apply or are indicated. This information must be provided to the appropriate district office no later than 90 days after the release discovery date.

**This remediation will (or is expected to) utilize the following processes to remediate / reduce contaminants:**

(Select all answers below that apply.)

(Ex Situ) Excavation and <b>off-site</b> disposal (i.e. dig and haul, hydrovac, etc.)	Yes
Which OCD approved facility will be used for <b>off-site</b> disposal	OWL LANDFILL JAL [fJEG1635837366]
<b>OR</b> which OCD approved well (API) will be used for <b>off-site</b> disposal	Not answered.
<b>OR</b> is the <b>off-site</b> disposal site, to be used, out-of-state	Not answered.
<b>OR</b> is the <b>off-site</b> disposal site, to be used, an NMED facility	Not answered.
(Ex Situ) Excavation and <b>on-site</b> remediation (i.e. On-Site Land Farms)	Not answered.
(In Situ) Soil Vapor Extraction	Not answered.
(In Situ) Chemical processing (i.e. Soil Shredding, Potassium Permanganate, etc.)	Not answered.
(In Situ) Biological processing (i.e. Microbes / Fertilizer, etc.)	Not answered.
(In Situ) Physical processing (i.e. Soil Washing, Gypsum, Disking, etc.)	Not answered.
Ground Water Abatement pursuant to 19.15.30 NMAC	Not answered.
OTHER (Non-listed remedial process)	Not answered.

Per Subsection B of 19.15.29.11 NMAC unless the site characterization report includes completed efforts at remediation, the report must include a proposed remediation plan in accordance with 19.15.29.12 NMAC, which includes the anticipated timelines for beginning and completing the remediation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

I hereby agree and sign off to the above statement	Name: Cindy Cottrell Title: Regulatory Coordinator Email: ccottrell@jdmii.com Date: 09/09/2024
--	---

The OCD recognizes that proposed remediation measures may have to be minimally adjusted in accordance with the physical realities encountered during remediation. If the responsible party has any need to significantly deviate from the remediation plan proposed, then it should consult with the division to determine if another remediation plan submission is required.

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QUESTIONS, Page 5  
  
Action 314472

QUESTIONS (continued)

Operator:  Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:  15363
	Action Number:  314472
	Action Type:  [C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)

QUESTIONS

<b>Deferral Requests Only</b>	
<i>Only answer the questions in this group if seeking a deferral upon approval this submission. Each of the following items must be confirmed as part of any request for deferral of remediation.</i>	
Requesting a deferral of the remediation closure due date with the approval of this submission	No

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QUESTIONS, Page 6  
  
Action 314472

**QUESTIONS (continued)**

Operator: Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:
	15363
	Action Number:
	314472
Action Type:	
[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

**QUESTIONS**

Sampling Event Information	
Last sampling notification (C-141N) recorded	372124
Sampling date pursuant to Subparagraph (a) of Paragraph (1) of Subsection D of 19.15.29.12 NMAC	08/13/2024
What was the (estimated) number of samples that were to be gathered	3
What was the sampling surface area in square feet	400

Remediation Closure Request	
Only answer the questions in this group if seeking remediation closure for this release because all remediation steps have been completed.	
Requesting a remediation closure approval with this submission	No

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CONDITIONS  
  
Action 314472

CONDITIONS

Operator: Murchison Oil and Gas, LLC 7250 Dallas Parkway Plano, TX 75024	OGRID:
	15363
	Action Number:
	314472
Action Type:	
[C-141] Site Char./Remediation Plan C-141 (C-141-v-Plan)	

CONDITIONS

Created By	Condition	Condition Date
bhall	OCD approves horizontal and vertical delineation will be completed through excavation and confirmation sampling pursuant to 19.15.29.12 NMAC. Delineation sampling being performed prior to excavation activities will not be accepted for remediation closure. Remediation and delineation will need to meet the most stringent remediation closure criteria found on Table I of 19.15.29 NMAC.	9/9/2024
bhall	Due to incomplete vertical delineation information at CS-05, the excavation will need to be extended past 9 and a half feet below ground surface contingent upon the results of the remediation confirmation samples. Remediation confirmation samples must meet the most stringent remediation closure criteria found on Table I of 19.15.29 NMAC.	9/9/2024
bhall	Pursuant to 19.15.29.12 D.(1)(a) NMAC, ensure the C-141N (Notification of Sampling) application is completed on the OCD Permitting website at least 2 business days prior to collecting remediation confirmation samples.	9/9/2024
bhall	A complete remediation closure report pursuant to 19.15.29 NMAC will need to be submitted by 12/9/2024. Failure to submit a complete remediation plan and/or remediation closure report by 12/9/2024 is subject to compliance and enforcement penalties pursuant to 19.15.5 NMAC.	9/9/2024