



June 23, 2025

District Supervisor
Oil Conservation Division, District 2
811 S. First Street
Artesia, New Mexico 88210

**Re: 2nd Revised Stage 1 Groundwater Abatement Work Plan
BTA Oil Producers, LLC
Harroun Ranch West Fire
Unit Letter O, Section 20, Township 23 South, Range 29 East
Eddy County, New Mexico
Incident ID# nAPP2411724780**

Dear Sir or Madam,

Tetra Tech, Inc. (Tetra Tech) on behalf of BTA Oil Produces, LLC (BTA) is presenting the second revision of the Stage 1 Groundwater Abatement Work Plan subsequent to the completion of soil remediation documented in the Tetra Tech Soil Remediation Report dated August 19, 2024, and approved by the New Mexico Oil Conservation Division (NMOCD) on October 11, 2024.

PURPOSE

The purpose of this Stage 1 Groundwater Abatement Plan (Abatement Plan) is to detail a groundwater investigation that will include the installation and sampling of a groundwater monitoring well network at the Harroun Ranch West Battery (Site) located at 32.285895°, -104.006467°, that will adequately define site groundwater conditions and provide the data necessary to select and design an effective groundwater abatement option.

PREVIOUS NMOCD WORK PLAN REJECTION

The First Revision Stage 1 Groundwater Abatement Work Plan was previously submitted to the NMOCD on March 5, 2025. On April 17, 2025, the NMOCD rejected the Revised Stage 1 Groundwater Abatement Work Plan, stating that the work plan is unsatisfactory as it was administratively incomplete based on the following:

1. *"OCD notes there is a livestock well (C03377) owned by BF & G Farms approximately 0.52 miles south of the incident, but was not included in the abatement plan. As per 19.15.30.13 subparagraph C.2(a), an inventory of domestic wells, livestock wells, etc. must be included in the plan that contamination could potentially affect within a one mile radius of the release."*
2. *"Groundwater gradient must be established and included in the abatement plan, as well as rate and direction of contaminant migration as required in 19.15.30.13 NMAC"*
3. *"In addition to the five (5) proposed monitoring wells proposed for delineation, a minimum of one background monitoring well is required to be proposed either upgradient or side-gradient of the release, off-pad, and at least 100 feet away from the edge of the release, in an area undisturbed by oil & gas activities, including roads and pipeline ROWs."*

This 2nd Revisions Stage 1 Groundwater Abatement Work Plan incorporates the NMOCD identified deficiencies below.

Tetra Tech, Inc.

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BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

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BACKGROUND

Release Details

On April 25, 2024, a fire consumed the Harroun Ranch West facility. Upon report of the fire, BTA immediately isolated production lines and pipelines associated with the facility, and emergency response activities were immediately initiated by the local fire department, which extinguished the fire. BTA dispatched vacuum trucks immediately to begin recovering released fluids, as safely accessible. As soon as the Site was cool enough to approach safely, BTA began demolition of the remaining equipment and scraping of surficial impacted soils on the facility pad. Approximately 580 barrels (bbls) of oil and 1,200 bbls of produced water were released due to the fire, of which approximately 100 bbls of produced water was recovered during the initial response activities. The release notification was submitted to NMOCD and the Bureau of Land Management (BLM) on April 26, 2024, and subsequently assigned the release Incident Identification (ID) nAPP2411724780. The Site Location is shown in **Figure 1**, and the release extent is shown in **Figure 2**.

Soil Remediation

Soil remediation excavation activities commenced during the initial response on April 26, 2024, when approximately 2,200 cubic yards of impacted material was removed from the upper 1 foot of the Site. On May 16, 2024, the second phase of remediation excavation was initiated, which concluded on July 11, 2024, resulting in the excavation of an additional 8,004 cubic yards of contaminated soil from an approximate total area of 8,000 square feet. Excavated material was transported to R360 Halfway Disposal and Landfill in Hobbs, New Mexico, for off-site disposal. **Figure 3** shows the soil remediation extent. The soil remediation covering impacted soil in the vadose zone down to the top of the uppermost groundwater-bearing zone was conducted in accordance with 19.15.29 NMAC. The soil remediation report was submitted under separate cover to the NMOCD and subsequently approved on October 11, 2024.

SITE SETTING

Geology

The geology in the vicinity of the Site is characterized by a variety of sedimentary formations. The Site sits on Holocene Epoch aeolian quartz sand deposits with alluvium present in river channels and floodplains and fine-grained sedimentary deposits within Playa lakes (Pederson & Dehler, 2004). Sedimentary deposits are underlain by the Late Tertiary Period Gatuna Formation reddish siltstones and sandstones with calcite cementation. The Gatuna formation in the vicinity of the Site was deposited in a floodplain and playa depositional environment, resulting in fining upward sedimentary sequences that can be up to 300 feet thick in areas and are widely distributed across the Pecos Valley (Powers and Holt, 1993).

Hydrogeology

The hydrogeology of the Site is influenced by its sedimentary rock formations, which serve as aquifers consisting primarily of alluvial aquifers composed of unconsolidated sands and gravel. The Pecos River, located approximately 0.9 miles southwest of the Site, also plays a role in local hydrogeology (Wells *et al.*, 1981).

The Site is located above the Pecos River Basin Alluvial Aquifer that consists of alluvial deposits of gravel, sand, silt, and clay deposited during the late Tertiary and Quaternary Periods and overlies Permian, Triassic, and Cretaceous rocks (USGS, 2024). Groundwater in the Pecos aquifer is typically unconfined, and recharge is direct infiltration of precipitation and infiltration from losing streams and rivers. Groundwater typically moves from recharge areas toward the Pecos River (Ryder, 1996).

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Groundwater at the Site has been measured at depths of approximately 10.5 feet below ground surface (bgs) on the facility pad, and as shallow as approximately 6.5 feet bgs in the pasture on the south side of the pad that sits at a lower elevation. The uppermost groundwater-bearing zone at the Site appears to be heavily influenced by the complex of salt lakes located approximately 350 feet to the north and north-northeast of the Site. As discussed above, groundwater at the Site has been measured with high levels of chloride that are currently understood to be representative of background concentrations.

Surface Water Hydrology

The Pecos River is one of two main surface water features in the vicinity of the Site, located approximately 0.9 miles south-southwest of the Site. The Pecos River generally runs from the north-northwest to the south-southeast past the Site. The Pecos River provides water for agricultural irrigation in the area, primarily visible on the west side of the Pecos River in the Vicinity of the Site. Water quality is variable, influenced by agricultural runoff and seasonal water flows (NMWSC, 2024).

The second main surface water feature in the vicinity of the Site is Salt Lake, a large saltwater lake complex located approximately 350 feet north-northeast of the Site and covering approximately 7.5 square miles. Historical aerial imagery in the vicinity of the Site shows a levee with a levee road for the saltwater lake to the north-northeast. The earliest clear aerial image shows the absence of the levee and levee road with the southernmost edge of the salt lake extending to approximately 150 feet from the Site. Aerial images show the levee and levee road were constructed between the Site and the edge of the salt lake sometime between February 2014 and March 2016. The south side of the levee to the north-northeast of the site shows evidence of either overtopping or seepage through the levee in 2016, 2017, and 2024 aerial images.

Salt Lake is an ephemeral feature that dries and refills based on seasonal weather and precipitation, as evidenced in historical aerial imagery. Salt Lake is known for its high salinity and sulfate content derived from gypsiferous lithology in the area (Davis and Hopkins, 1992; Hendrickson and Jones, 1952). At the time of the fire that consumed the Site in April 2024, the lake contained water at levels that brought the lake edge within proximity of the levee near the Site. BTA collected a surface water sample from Salt Lake on May 5, 2024, and submitted the sample to Cardinal Laboratory in Hobbs, New Mexico, for chloride analysis. The laboratory analytical results reported a chloride concentration of 232,000 mg/L in the sample.

GROUNDWATER ASSESSMENT

During soil remediation excavation, groundwater was exposed at two locations beneath the footprint of the former tank battery and one location in the pasture to the southeast. Tetra Tech collected groundwater samples from exposed groundwater at BG-45-GW, BH-114-GW, and BH-151-GW. Groundwater sample locations are detailed in **Table 1** and presented in **Figure 4**. Samples were submitted to Cardinal Laboratory in Hobbs, New Mexico, for analysis of benzene, toluene, ethylbenzene, and xylenes (BTEX), total petroleum hydrocarbons (TPH), and chloride.

Groundwater Gradient

During sampling, the three (3) groundwater sampling locations were measured from the ground surface to the top of the water surface. Google Earth was used to obtain ground surface elevations at each location, estimated to the nearest 0.25 feet. Based on the depth-to-water measurements, the groundwater gradient is calculated as 0.01423 ft/ft with a flow to the south. **Table 1** presents the depth to water and groundwater elevation calculations, and **Figure 5** presents a groundwater potentiometric surface map showing groundwater elevation and flow direction.

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Groundwater Analytical Results

All three (3) samples reported high concentrations of chloride between 24,400 mg/L and 36,700 mg/L, which are likely indicative of background chloride concentrations resulting from the saline lake approximately 350 feet north-northeast of the Site. In addition to the high chloride concentrations, sample BH-114-GW reported detectable concentrations of BTEX and Total TPH, and specifically, benzene was reported at a concentration of 0.014 mg/L, greater than 19.15.30.9 NMAC Abatement Standard and Requirement of 0.005 mg/L defined in 20.6.2.3103 NMAC. Petroleum hydrocarbon constituents were not detected in the two other groundwater samples analyzed. Groundwater laboratory analytical results screened against 20.6.2.3103 Standards for Ground Water of 10,000 mg/l TDS Concentration or Less are presented in **Table 2**, and **Attachment 1** provides copies of the laboratory analytical data packages.

Contaminant Migration

The Pecos River Alluvial Aquifer is primarily composed of unconsolidated sediments consisting of sand and gravel with silt and clay deposited by rivers and streams (Wells *et al.*, 1981). The Pecos River Alluvial Aquifer has been characterized by the New Mexico Office of the State Engineer (OSE) with hydraulic conductivities (k) of between 10 to 100 feet per day (Barroll, 2004) and the USGS with effective porosities between 0.20 and 0.30 (USGS, 2024).

For the purpose of estimating contaminant migration, average values of the published range will be assumed for both hydraulic conductivity (55 feet per day) and effective porosity (0.25). Darcy's Law states $v = (K \cdot i)/n$ where:

v = groundwater velocity;

K = hydraulic conductivity;

i = hydraulic gradient; and

n = effective porosity.

Therefore, to calculate the velocity of groundwater, and therefore dissolved phase hydrocarbon migration:

$$v = (55 \text{ feet/day} \cdot 0.01423 \text{ feet/feet})/0.25 = 3.13 \text{ feet/day}.$$

WORK PLAN

To assess groundwater impacts in the vicinity of the Site and identify background chloride concentrations resulting from Salt Lake nearby to the North, BTA proposes to install a network of six (6) groundwater monitoring wells at the Site. One well will be located as close as possible to the source zone based on accessibility amongst flowlines and newly rebuilt tank battery facilities. Five (5) monitoring wells are proposed to be installed in an attempt to delineate groundwater impacts around the source area to the northeast, southwest, east, and west of the source areas and one background well is proposed over 100 feet north of the release area, up gradient, in an area not previously developed. **Figure 6** presents proposed groundwater monitoring well locations.

Monitoring Well Installation

Each proposed monitoring well location will be cleared via hydro-excavation to approximately 4 feet bgs to ensure no subsurface lines will be encountered during soil boring advancement. Upon hydro-excavation completion, a New Mexico licensed water well driller will utilize an air rotary or hollow-stem auger drilling rig to advance soil borings to approximately 25 feet bgs, below the top of the uppermost groundwater bearing zone estimated to be between 7 and 12 feet bgs at the Site. During advancement, each soil boring will be logged to record the lithological conditions in terms of lithology, color, and moisture content.

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Upon reaching the total depth at each boring, two-inch PVC monitoring wells will be constructed with at least 10 feet of screen below the top of the uppermost groundwater bearing zone and approximately 5 feet of screen above the top of the uppermost groundwater bearing zone to allow detection of phase-separated hydrocarbons. Newly installed monitoring wells will be constructed with stickup steel monument well vaults set into concrete pads and surrounded by bollards to protect the monitoring wells.

Once the monitoring wells have been installed and materials have cured, the wells will be developed using a submersible pump to remove fines, stabilize the filter pack, and ensure good hydraulic conductivity between the monitoring well and the uppermost groundwater bearing zone. Each monitoring well will then be surveyed to obtain the lateral coordinates and elevations of the ground surface and top of well casings.

Groundwater Sampling

Subsequent to monitoring well development, monitoring wells will be allowed to rest for at least 72 hours before the initial sampling. Prior to sampling, depth to water and total well depth will be measured at each well from the top of the well casing. If measurable Light Non-Aqueous Phase Liquid (LNAPL) is measured in any of the monitoring wells, those wells will not be sampled. Low-flow sampling techniques will then be utilized to purge and sample each well using a peristaltic pump and new disposable tubing in accordance with United States Environmental Protection Agency (EPA) guidance. Monitoring wells will be purged, and groundwater quality parameters including temperature, pH, Specific Conductivity (SC), Dissolved Oxygen (DO), Oxygen Reduction Potential (ORP), and turbidity will be recorded during purging in addition to well drawdown and flow rate. Once field parameters stabilize at each well, samples will be collected into laboratory-supplied sample containers.

Analytical Testing

Soil and groundwater samples will be collected into laboratory-provided, pre-preserved containers and immediately placed in a cooler on ice for preservation. Duplicate samples will be collected at a frequency of one (1) duplicate sampler per 10 primary samples. Samples will be submitted under Chain of Custody documentation to Cardinal Laboratory in Hobbs, New Mexico, for analysis of the following:

- BTEX by Method 8021B;
- TPH by Method 8015M;
- Chloride by Method SM4500Cl-B; and
- Total Dissolved Solids (TDS) by Method 2540 C-2011.

Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) samples will be collected at a rate of one field duplicate sample per 10 primary samples. QA/QC samples will be submitted for analysis of BTEX, TPH, chloride, and TDS. Field duplicate analytical results will be used to evaluate field sampling precision.

Reporting

A report will be prepared and submitted to the NMOCD detailing field activities and the results of the initial groundwater investigation. The report will identify background concentrations of chloride and TDS, as appropriate, propose additional investigation as necessary, and include a Stage 2 Groundwater Abatement Work Plan or supplemental Stage 1 Groundwater Abatement investigation activities. The report will include the following:

- Site geology and hydrogeology;

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- Surface water hydrology, seasonal streamflow characteristics, and groundwater/surface water relationships;
- Vertical and horizontal extent and magnitude of vadose-zone and groundwater contamination;
- Subsurface hydraulic conductivity; transmissivity, storativity, and rate and direction of contaminant migration;
- Revised inventory of water wells inside and within one mile from the perimeter of the three-dimensional body where the standards set forth in Subsection C of 19.15.30.9 NMAC are exceeded; and
- location and number of wells that the pollution actually or potentially affects;
- Laboratory data summary tables;
- Required figures to include a site details map, groundwater elevation potentiometric surface map, and constituents of concern concentration isopleth map.

INVENTORY OF WELLS

The following water wells were identified within 1 mile of the presumed perimeter of the three-dimensional body of groundwater impacts in accordance with 19.15.30.13 C.2(a):

POD C 02613 - an exploration well belonging to United Salt Corporation, is located 0.50 miles northeast of the release area;

POD C 03377 - a stock well belonging to Jim Gibson, is located 0.52 miles south of the release area;

POD C 04903, a monitoring well belonging to WSP USA Inc., is located 0.77 miles southwest of the release area;

POD C 02721 - a monitoring well belonging to John Woznicwics, is located 0.81 miles east-northeast of the release area;

POD C 03587 - a monitoring well belonging to Mosaic Potash Carlsbad Inc., is located 0.82 miles west of the release area;

POD C 03057 - an exploration well belonging to United Salt Corporation, is located 0.86 miles northeast of the release area; and

POD C 04903 - a monitoring well belonging to WSP USA Inc., is located 0.98 miles west-southwest of the release area.

None of the identified wells is currently suspected to be impacted by the release to groundwater at the Site.

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PUBLIC NOTICE AND PARTICIPATION

In accordance with 19.15.30.15 NMAC Public Notice and Participation, Tetra Tech performed a search of surface owners of record within one mile of known groundwater contamination at the Site that identified the following properties:

- Bureau of Land Management at 280 Rabbit Hill Road, Loving, NM 88256 with Eddy County Parcel IDs 4170136264466, 4170137263265, and 4171137266266;
- United States of America (BLM) at 351 E Ash Street, Loving, NM 88256 with Eddy County Parcel IDs: 4169137388265 and 4169136257466; and
- Mosaic Potash Carlsbad Inc at 37 Cottontail Road, Loving, NM 88256 with Eddy County Parcel IDs: 4170136264199, 4170135264265, 4171135265265, 4171136266265, 4171137333066, and 4169136257200.

The above property owners, along with the Eddy County Commission and the New Mexico trustee for natural resources, will need to be given written notice of the Stage 1 groundwater abatement plan before public notice in accordance with 19.15.30.15A NMAC. Written notice will consist of the letters containing the Public Notice of Abatement information provided in **Attachment 2**.

Upon NMOCD approval of this groundwater abatement work plan, BTA will issue a public notice in a division-approved form in the following newspapers:

- Carlsbad Current-Argus, in general circulation in Eddy County, New Mexico, covering Carlsbad, Artesia, Loving, and Eddy County, New Mexico; and
- Albuquerque Journal, in general circulation across New Mexico.

The draft Public Notice is provided in **Attachment 2**.

SCHEDULE

Monitoring Well Permitting

Within two (2) weeks of NMOCD approval of this Work Plan, BTA will submit a Bureau of Land Management (BLM) Sundry Form to the BLM Pecos District Office in Roswell, New Mexico, within two weeks. Within one (1) week of BLM approval of the monitoring well installation activities detailed in the Sundry Notice, a WR-07 Application For Permit to Drill a Well With No Water Right form will be prepared and submitted to the State of New Mexico Office of the State Engineer (OSE) to obtain a permit to drill wells for non-consumptive purposes. Permitting is anticipated to be completed by May 31, 2025

Monitoring Well Installation and Sampling

Within 90 days of receipt of the permit from the OSE, BTA will schedule their environmental consultant and a State of New Mexico licensed water well driller to install the new monitoring well network, develop newly installed monitoring wells, survey the new monitoring wells, and conduct the first round of groundwater sampling. Providing NMOCD approval, this is anticipated to be complete before July 31, 2025.

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BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

June 23, 2025

Reporting

Within three (3) weeks of the completion of monitoring well installation, survey, development, initial sampling, and receipt of final laboratory analytical results, a report will be prepared and submitted to the NMOCD detailing field activities and the results of the initial groundwater investigation within two weeks. The report will contain the required information prescribed by 19.15.30.13 NMAC as described above.

Ongoing Groundwater Monitoring and Reporting

Subsequent to groundwater monitoring well installation, BTA proposes to conduct quarterly groundwater sampling from the newly installed monitoring well network. Sampling is proposed to be conducted in each of the four calendar year quarters moving forward, per the following:

- Quarter 1: January through March;
- Quarter 2: April through June;
- Quarter 3: July through September; and
- Quarter 4: October through December.

Quarterly groundwater monitoring will begin once monitoring wells are installed, which will constitute the first quarterly sampling event at the Site under groundwater abatement. Annual reports will be prepared, providing figures, laboratory analytical data, summary tables, and other supplementary information, as necessary. The annual report will also include summaries of any remedial activities performed during the calendar year under approved Stage 1 or Stage 2 groundwater abatement plans. Reports will be submitted to the NMOCD no later than March 31 of the following calendar year.

CONCLUSION

BTA believes the above-proposed State 1 Groundwater Abatement activities are sufficient to perform an initial assessment and delineation of groundwater impacts at the Site and provide groundwater monitoring points and data required to prepare a Stage 2 Groundwater Abatement Work Plan. If you have any questions or feedback concerning the proposed remediation activities for the Site, please contact Charles Terhune by email at chuck.terhune@tetrattech.com or by phone at (832)-252-2093.

Sincerely,



Charles H. Terhune IV, P.G.
Program Manager
Tetra Tech, Inc.



Chris Straub
Project Manager
Tetra Tech, Inc.

cc: BTA Oil Producers, LLC
Bureau of Land Management

2nd Revision Stage 1 Groundwater Abatement Work Plan
BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

June 23, 2025

REFERENCES

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BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

June 23, 2025

LIST OF ATTACHMENTS

Figures

- Figure 1 – Site Location Map
- Figure 2 – Approximate Release Extent Map
- Figure 3 – Soil Remediation Extents
- Figure 4 – Groundwater Sample Locations
- Figure 5 – Groundwater Potentiometric Surface Map
- Figure 6 – Proposed Monitoring Well Locations

Tables

- Table 1 – Groundwater Sample Locations
- Table 2 – Groundwater Analytical Summary

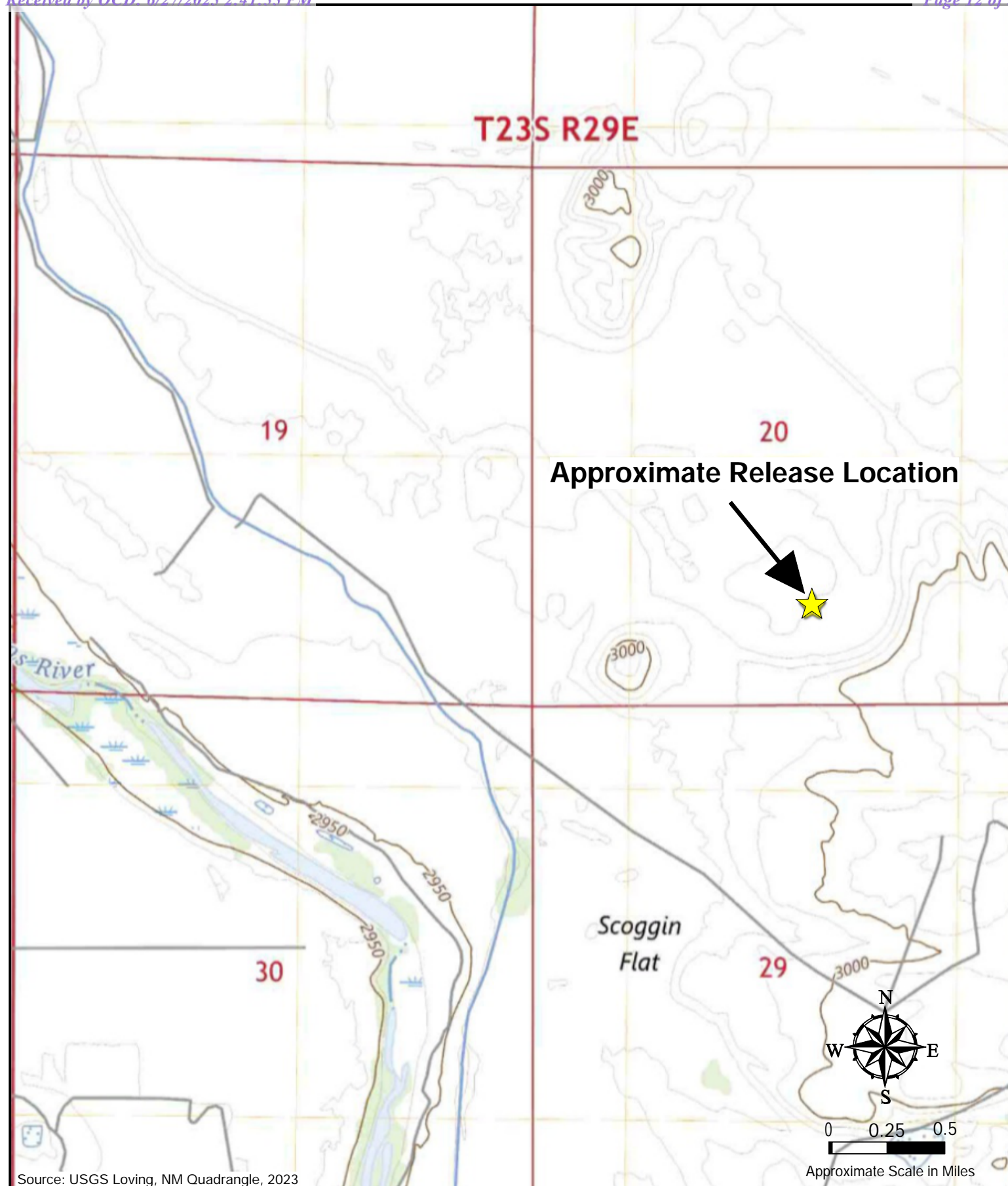
Attachment

- Attachment 1 – Laboratory Analytical Data

2nd Revision Stage 1 Groundwater Abatement Work Plan
BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

June 23, 2025

FIGURES



Source: USGS Loving, NM Quadrangle, 2023

**TETRA TECH**1500 CityWest Boulevard
Suite 1000
Houston, Texas 77042

BTA OIL PRODUCERS, LLC
NAPP2411724780
32.285895°, -104.006467°
EDDY COUNTY, NEW MEXICO
HARROUN RANCH WEST FIRE
SITE LOCATION MAP

PROJECT NO: TBD
DATE: 05/08/2023
DESIGNED BY: CHT

Figure
1

**TETRA TECH**

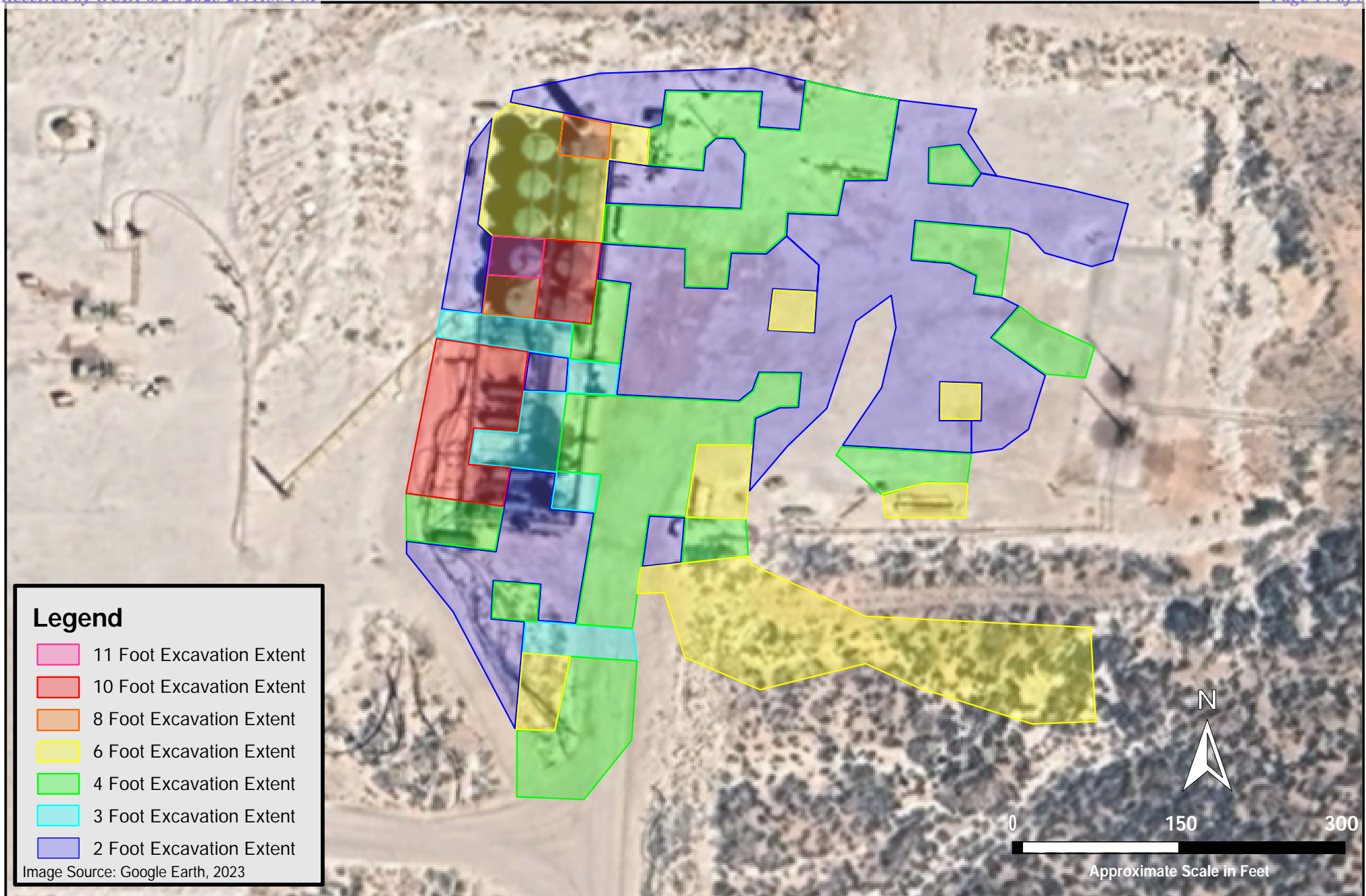
1500 CityWest Boulevard
Suite 1000
Houston, Texas 77042

BTA OIL PRODUCERS, LLC
nAPP2411724780
32.285895°, -104.006467°
LEA COUNTY, NEW MEXICO
HARROUND RANCH WEST FIRE
APPROXIMATE RELEASE EXTENT MAP

PROJECT NO: 212C-MD-03474
DATE: May 8, 2024
DESIGNED BY: CHT

Figure No.

2

**TETRA TECH**

1500 CityWest Boulevard
Suite 1000
Houston, Texas 77042

BTA OIL PRODUCERS, LLC

nAPP2411724780

32.285895°, -104.006467°

LEA COUNTY, NEW MEXICO

**HARROUN RANCH WEST FIRE
SOIL REMEDIATION EXTENTS**

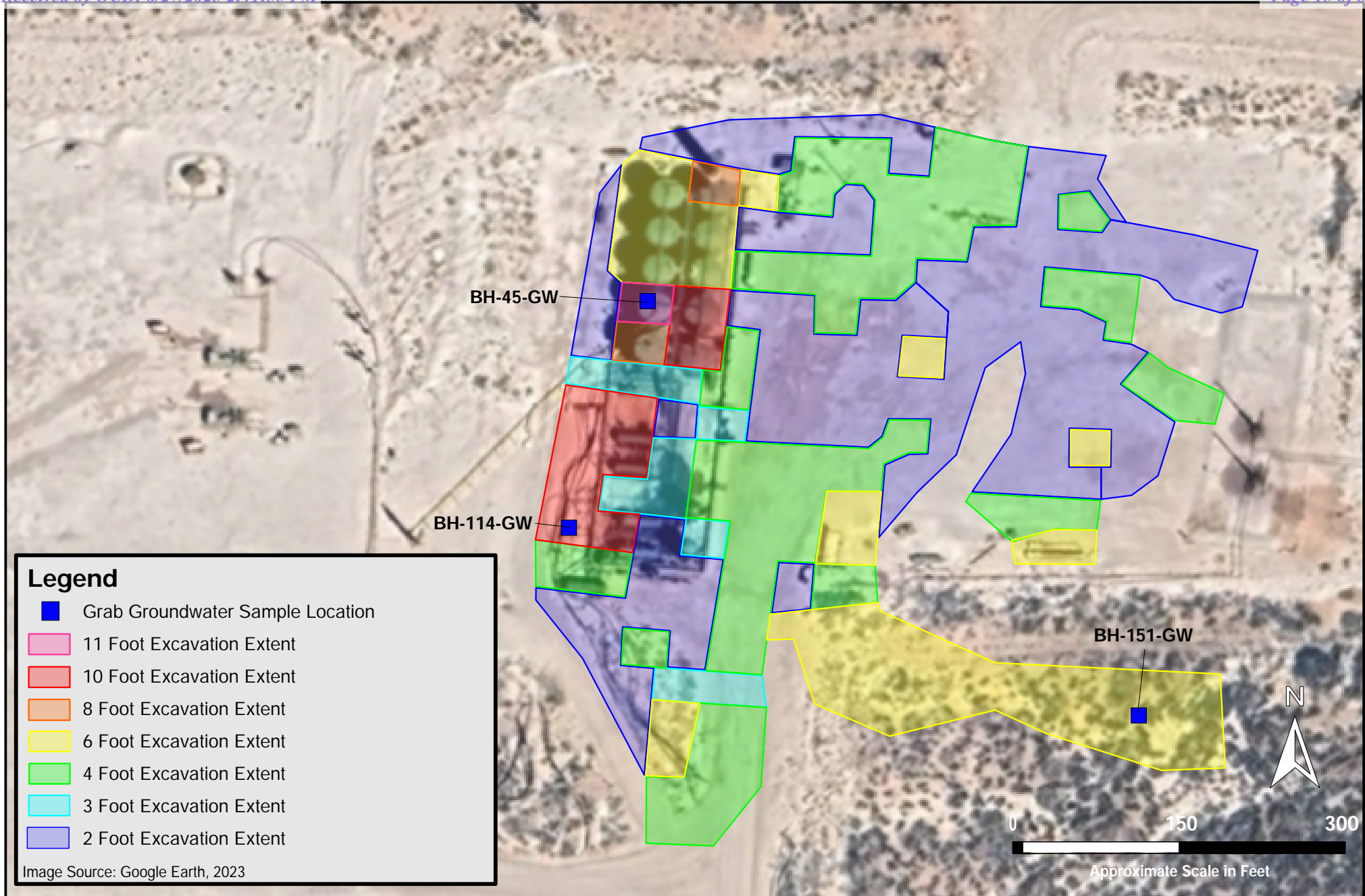
PROJECT NO: 212C-MD-03474

DATE: AUGUST 27, 2024

DESIGNED BY: CHT

Figure No.

3



TETRA TECH

1500 CityWest Boulevard
Suite 1000
Houston, Texas 77042

BTA OIL PRODUCERS, LLC
nAPP2411724780
32.285895°, -104.006467°
LEA COUNTY, NEW MEXICO
**HARROUN RANCH WEST FIRE
GROUNDWATER SAMPLE LOCATIONS**

PROJECT NO: 212C-MD-03474
DATE: AUGUST 27, 2024
DESIGNED BY: CHT

Figure No.

4

**TETRA TECH**

1500 CityWest Boulevard
Suite 1000
Houston, Texas 77042

BTA OIL PRODUCERS, LLC

nAPP2411724780

32.285895°, -104.006467°

LEA COUNTY, NEW MEXICO

**HARROUN RANCH WEST FIRE
GROUNDWATER POTENTIOMETRIC SURFACE MAP**

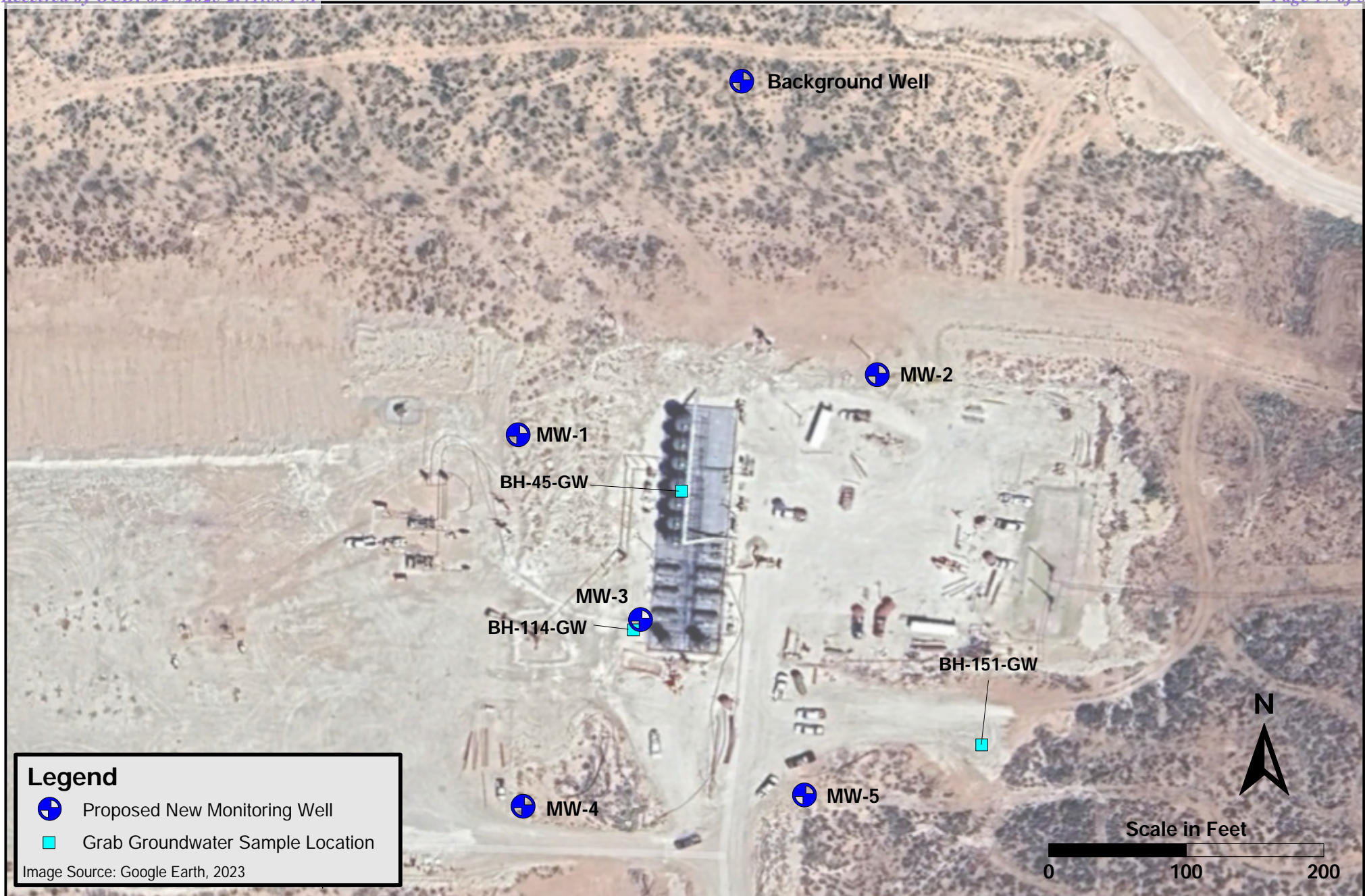
PROJECT NO: 212C-MD-03474

DATE: JUNE 23, 2025

DESIGNED BY: CHT

Figure No.

5

**TETRA TECH**

1500 CityWest Boulevard
Suite 1000
Houston, Texas 77042

BTA OIL PRODUCERS, LLC

nAPP2411724780

32.285895°, -104.006467°

LEA COUNTY, NEW MEXICO

HARROUN RANCH WEST FIRE**PROPOSED GROUNDWATER MONITORING WELLS**

PROJECT NO: 212C-MD-03474

DATE: June 23, 2025

DESIGNED BY: CHT

Figure No.

6

2nd Revision Stage 1 Groundwater Abatement Work Plan
BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

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TABLES



TABLE 1
GROUNDWATER ASSESSMENT LOCATIONS
INCIDENT ID nAPP2411724780
BTA OIL PRODUCERS, LLC
HARROUN RANCH WEST FIRE
EDDY COUNTY, NEW MEXICO

Sample Location	Latitude	Longitude	Date	Surface Elevation ¹	Depth to Water ²	Groundwater Elevation ³
BH-45-GW	32.285966	-104.006535	6/26/2024	2968.50	11.5	2957.00
BH-114-GW	32.285645	-104.006652	6/26/2024	2965.75	10.5	2955.25
BH-151-GW	32.285380	-104.005849	7/11/2024	2960.75	6.5	2954.25

Notes:

1: Google Earth Ground Surface Elevation in feet above mean sea level, estimated to nearest 0.25 foot.

2: Depth to water in feet below ground surface.

3: Feet above mean sea level.



TABLE 2
SUMMARY OF ANALYTICAL RESULTS
GROUNDWATER ASSESSMENT SAMPLING - INCIDENT NAPP241172478
BTA OIL PRODUCERS, LLC
HARROUN RANCH WEST BATTERY FIRE
LEA COUNTY, NEW MEXICO

Sample ID	Sample Date	Sample Depth	Chloride ¹		BTEX ²										TPH ³							
					Benzene		Toluene		Ethylbenzene		Total Xylenes		Total BTEX		GRO		DRO		EXT DRO		Total TPH (GRO+DRO+EXT DRO)	
												C ₆ - C ₁₀		> C ₁₀ - C ₂₈		> C ₂₈ - C ₃₆						
		feet bgs	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	Q	mg/L	
NMWQCC Groundwater Quality Standards			250		0.005		1		0.7		0.62											
BH - 45 - GW	6/26/2024	10.5	35,700		<0.001		<0.001		<0.001		<0.003		<0.006		<1.00		<1.00		<1.00	-		
BH - 114 - GW	6/26/2024	10.5	24,400		0.014		0.006		0.006		0.246		0.272		4.29		34		3.15	41.44		
BH - 151 - GW	7/11/2024	7.0	36,700		<0.001		<0.001		<0.001		<0.003		<0.006		<1.00		<1.00		<1.00	-		

NOTES:

bgs: Below ground surface

GRO: Gasoline Range Organics

mg/kg: Milligrams per kilogram

DRO: Diesel Range Organics

TPH: Total Petroleum Hydrocarbons

EXT DRO: Oil Range Organics

1: Method SM4500Cl-B

2: Method 8021B

3: Method 8015M

NMWQCC Groundwater Quality Standard Exceedance of 19.15.30 NMAC & 20.6.2.3103 NMAC

2nd Revision Stage 1 Groundwater Abatement Work Plan
BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

June 23, 2025

ATTACHMENT 1 – LABORATORY ANALYTICAL RESULTS



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

June 27, 2024

RAY RAMOS

BTA Oil Producers

104 South Pecos

Midland, TX 79701

RE: HARROUN WEST BATTERY - FIRE

Enclosed are the results of analyses for samples received by the laboratory on 06/27/24 8:06.

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.

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:

BTA Oil Producers
 RAY RAMOS
 104 South Pecos
 Midland TX, 79701
 Fax To: (432) 683-0312

Received:	06/27/2024	Sampling Date:	06/26/2024
Reported:	06/27/2024	Sampling Type:	Water
Project Name:	HARROUN WEST BATTERY - FIRE	Sampling Condition:	Cool & Intact
Project Number:	INCIDENT 148	Sample Received By:	Shalyn Rodriguez
Project Location:	LOVING, NM		

Sample ID: BH - 45 - GW (H243843-01)

BTEx 8021B		mg/L		Analyzed By: JH				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	06/27/2024	ND	0.019	95.9	0.0200	3.65	
Toluene*	<0.001	0.001	06/27/2024	ND	0.020	99.9	0.0200	7.85	
Ethylbenzene*	<0.001	0.001	06/27/2024	ND	0.021	103	0.0200	9.78	
Total Xylenes*	<0.003	0.003	06/27/2024	ND	0.060	101	0.0600	9.86	
Total BTEX	<0.006	0.006	06/27/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 100 % 77.5-125

Chloride, SM4500Cl-B (Water)		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	35700	4.00	06/27/2024	ND	100	100	100	0.00	

TPH 8015M		mg/L		Analyzed By: ms				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<1.00	1.00	06/27/2024	ND	45.8	91.6	50.0	4.00	
DRO >C10-C28*	<1.00	1.00	06/27/2024	ND	46.9	93.9	50.0	2.30	
EXT DRO >C28-C36	<1.00	1.00	06/27/2024	ND					

Surrogate: 1-Chlorooctane 71.8 % 71.5-140

Surrogate: 1-Chlorooctadecane 71.4 % 60.4-151

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:

BTA Oil Producers
 RAY RAMOS
 104 South Pecos
 Midland TX, 79701
 Fax To: (432) 683-0312

Received:	06/27/2024	Sampling Date:	06/26/2024
Reported:	06/27/2024	Sampling Type:	Water
Project Name:	HARROUN WEST BATTERY - FIRE	Sampling Condition:	Cool & Intact
Project Number:	INCIDENT 148	Sample Received By:	Shalyn Rodriguez
Project Location:	LOVING, NM		

Sample ID: BH - 114 - GW (H243843-02)

BTEx 8021B		mg/L		Analyzed By: JH				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	0.014	0.002	06/27/2024	ND	0.019	95.9	0.0200	3.65	
Toluene*	0.006	0.002	06/27/2024	ND	0.020	99.9	0.0200	7.85	
Ethylbenzene*	0.006	0.002	06/27/2024	ND	0.021	103	0.0200	9.78	
Total Xylenes*	0.246	0.006	06/27/2024	ND	0.060	101	0.0600	9.86	
Total BTEX	0.272	0.012	06/27/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 108 % 77.5-125

Chloride, SM4500Cl-B (Water)		mg/L		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	24400	4.00	06/27/2024	ND	100	100	100	0.00	

TPH 8015M		mg/L		Analyzed By: ms				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	4.29	1.00	06/27/2024	ND	45.8	91.6	50.0	4.00	
DRO >C10-C28*	34.0	1.00	06/27/2024	ND	46.9	93.9	50.0	2.30	
EXT DRO >C28-C36	3.15	1.00	06/27/2024	ND					

Surrogate: 1-Chlorooctane 74.8 % 71.5-140

Surrogate: 1-Chlorooctadecane 74.5 % 60.4-151

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

Notes and Definitions

HDSP-1	Sample container had headspace. Results may be biased low.
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

Cardinal Laboratories

*=Accredited Analyte

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

Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

BTA Oil Producers, LLC
104 S. Pecos Street
Midland, Texas 79701

Client Name: BTA Oil Producers, LLC
Site Manager: Ray Ramos

Project Name: Harroun Ranch Battery West Fire
Project #: 432-313-1288

Project Location: Loving, Lea County, NM
Project #: Incident 148

Invoice to: Ray Ramos, Incident 148
Sampler Name: Garibito Sanchez
Sampler Signature: [Signature]

Receiving Laboratory: Cardinal Laboratory

Comments: Reference Incident 148 on invoice

LAB #		SAMPLE IDENTIFICATION		LAB USE ONLY	
1243843					
DATE		TIME		WATER	
				SOIL	
				HCL	
				HNO ₃	
				ICE	
# CONTAINERS					
FILTERED (Y/N)					
BTEX 8021B					
TPH 8015M (GRO - Chloride					
</					

1	BH-45-6w		6-26-24		X	X	X	X	X	1	X	X	X	X						
	BH-45-6w				X	X	X	X	X	1	X	X	X	X						
	BH-45-6w				X	X	X	X	X	1	X	X	X	X						
	BH-114-6w				X	X	X	X	X	1	X	X	X	X						
	BH-114-6w				X	X	X	X	X	1	X	X	X	X						
	BH-114-6w				X	X	X	X	X	1	X	X	X	X						

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Garibito Sanchez	6-27-24		Stokely 0800		
Relinquished by:	Date:	Time:	Received by:	Date:	Time:

ORIGINAL COPY

- samples are in 4 oz jugs. (improper containers)
customer informed they will be affixed to...



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

July 11, 2024

RAY RAMOS

BTA Oil Producers

104 South Pecos

Midland, TX 79701

RE: HARROUN WEST BATTERY - FIRE

Enclosed are the results of analyses for samples received by the laboratory on 07/11/24 10:55.

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.

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 fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

BTA Oil Producers
 RAY RAMOS
 104 South Pecos
 Midland TX, 79701
 Fax To: (432) 683-0312

Received:	07/11/2024	Sampling Date:	07/11/2024
Reported:	07/11/2024	Sampling Type:	Water
Project Name:	HARROUN WEST BATTERY - FIRE	Sampling Condition:	Cool & Intact
Project Number:	INCIDENT 148	Sample Received By:	Shalyn Rodriguez
Project Location:	LOVING, NM		

Sample ID: BH - 151 - GW (H244137-01)

BTX 8021B		mg/L		Analyzed By: JH				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.001	0.001	07/11/2024	ND	0.020	102	0.0200	2.49	
Toluene*	<0.001	0.001	07/11/2024	ND	0.021	105	0.0200	3.48	
Ethylbenzene*	<0.001	0.001	07/11/2024	ND	0.022	108	0.0200	7.09	
Total Xylenes*	<0.003	0.003	07/11/2024	ND	0.070	117	0.0600	7.70	
Total BTX	<0.006	0.006	07/11/2024	ND					

Surrogate: 4-Bromofluorobenzene (PID) 108 % 77.5-125

Chloride, SM4500Cl-B (Water)		mg/L		Analyzed By: AC				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride*	36700	4.00	07/11/2024	ND	100	100	100	0.00	

TPH 8015M		mg/L		Analyzed By: MS				HDSP-1	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<1.00	1.00	07/11/2024	ND	50.8	102	50.0	4.67	
DRO >C10-C28*	<1.00	1.00	07/11/2024	ND	45.8	91.7	50.0	6.35	
EXT DRO >C28-C36	<1.00	1.00	07/11/2024	ND					

Surrogate: 1-Chlorooctane 88.1 % 71.5-140

Surrogate: 1-Chlorooctadecane 107 % 60.4-151

Cardinal Laboratories

*=Accredited Analyte

PLEASE NOTE: 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 client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (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 the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.

Celey D. Keene, Lab Director/Quality Manager



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

Notes and Definitions

HDSP-1	Sample container had headspace. Results may be biased low.
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

Cardinal Laboratories

*=Accredited Analyte

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

Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

BTA Oil Producers, LLC
104 S. Pecos Street
Midland, Texas 79701

Client Name:

BTA Oil Producers, LLC

Site Manager:

Ray Ramos

Project Name:

Harroun Ranch Battery West Fire

Project Location:

Loving, Lea County, NM

Project #:

432-313-1288

Invoice to:

Ray Ramos, Incident 148

Sampler Name:

Receiving Laboratory:

Cardinal Laboratory

Sampler Signature:

Comments:

Reference Incident 148 on invoice

ANALYSIS REQUEST

LAB #
(LAB USE ONLY)

SAMPLE IDENTIFICATION

SAMPLING
YEAR: 2024
DATE
TIME

MATRIX
PRESERVATIVE METHOD

WATER
SOIL
HCL
HNO₃
ICE

CONTAINERS
FILTERED (Y/N)

BTEX 8021B
TPH 8015M (GRO - DRO - ORO - MRO)
Chloride

Hold

Inquired by:

Date: Time:

Inquired by:

Date: Time:

Inquired by:

Date: Time:

-customer was informed samples are in improper storage

LAB USE ONLY

REMARKS:

Standard TAT

Sample Temperature

☒ RUSH Same Day 24 hr 48 hr 72 hr
☐ Rush Charges Authorized
☐ Special Report Limits or TRRP Report

ORIGINAL COPY

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

2nd Revision Stage 1 Groundwater Abatement Work Plan
BTA Oil Producers, LLC
Harroun Ranch West Fire
Incident ID: nAPP2411724780

June 23, 2025

ATTACHMENT 2 – DRAFT PUBLIC NOTICE

PUBLIC NOTICE

STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division (19.15.30.15 NMAC), the following Stage 1 Abatement Plan has been submitted to the New Mexico Oil Conservation Division ("OCD") Environmental Bureau, 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 490-0798 or E-mail: michael.buchanan@emnrd.nm.gov.

BTA Oil Producers, LLC, 104 S Pecos Street, Midland, TX 79701, has submitted a Stage 1 Abatement Plan (AP) to the Permitting Group of the OCD for the Harroun Ranch West Facility. The exact location of the facility is at latitude and longitude decimal degrees: 32.285638°, -104.006621°. To aid in locating this facility the approximate location is east of Loving, New Mexico, 2.35 miles east-southeast of Fishermans Lane and County Road 742, Eddy County, NM 88256

On April 25, 2024, a fire consumed the Harroun Ranch West facility. BTA Oil Producers, LLC (BTA) initiated an emergency response through the local fire department which extinguished the fire. Vacuum trucks recovered approximately 580 barrels (bbls) of oil and 1,200 bbls of produced water from the area covering approximately 1.35 acres. Approximately 100 bbls of produced water was recovered during the initial response activities. The released oil and produced water impacted the vadose zone and shallow groundwater at the Site.

The Stage 1 AP follows the soil and vadose zone remediation conducted at the Site where petroleum hydrocarbon impacts to shallow groundwater were also identified. The Stage 1 AP proposes to install five (5) groundwater monitoring wells, quarterly groundwater monitoring to commence thereafter, and annual reporting. It is anticipated that the tasks associated with Stage 1 AP activities will be completed between May and July 2025. The Stage 1 AP addresses monitoring well installation, construction, development, groundwater monitoring, and reporting. Once the magnitude and extent of groundwater impacts are understood at the site, proposed remediation activities will be presented in a subsequent Stage 2 AP.

The OCD has determined the Stage 1 AP is complete. The OCD will accept comments and statements of interest regarding this work plan and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments, or requesting to be on a facility-specific mailing list may contact the OCD Environmental Bureau at the address given above.

The public may view a copy of the Stage 1 Abatement Plan at the OCD Office in Santa Fe, New Mexico, at the OCD Artesia District Office in Artesia, New Mexico, or online from OCD Permitting under incident ID# nAPP2411724780 at <http://www.emnrd.state.nm.us/ocd/>. Persons interested in obtaining a copy of the Stage 1 AP may contact the OCD at the address given above. The OCD will accept written comments on the Stage 1 AP if the Director receives them within 30 days of publication of this notice.

Para obtener mas información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo Mexico), Oil Conservation Division (Depto. Conservación Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New Mexico (Contacto: Michael Buchanan, (505) 490-0798).

Given under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 19th day of July 2024.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

Gerasimos "Gerry" Razatos, Director

Sante Fe Main Office
Phone: (505) 476-3441

General Information
Phone: (505) 629-6116

Online Phone Directory
<https://www.emnrd.nm.gov/oecd/contact-us>

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 479868

CONDITIONS

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID:
	260297
	Action Number: 479868
	Action Type: [UF-GWA] Ground Water Abatement (GROUND WATER ABATEMENT)

CONDITIONS

Created By	Condition	Condition Date
shanna.smith	Due to past known impacts re-locate proposed MW-5 east approximately 150' in an area that is undisturbed from oil/gas activity or install an additional well in this area.	9/15/2025
shanna.smith	The release has not been fully delineated to the east. Responsible party must install additional monitor to the east of the prior excavated area to fully delineate the site.	9/15/2025
shanna.smith	3. All groundwater samples will be analyzed according to all constituents in 20.6.2.3103 NMAC Pursuant to 19.15.30.9.B(2) NMAC. Operators may request to reduce sampling constituents based upon future results.	9/15/2025
shanna.smith	Approved Stage 1 Abatement Activities will be conducted and submitted as a report by December 1, 2025. The report must include drilling activities and laboratory analysis of soil and groundwater samples. In the event that the release site was not fully delineated, the report must also include the location of proposed additional delineation monitor wells and a schedule for additional delineation.	9/15/2025
shanna.smith	Soil Delineation samples will be sampled at a minimum pursuant to 19.15.29.11 NMAC.	9/15/2025