



November 17, 2022

New Mexico Oil Conservation Division  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505

**Re: Closure Request Addendum  
Starcaster 18 Fed Com #4H  
Incident Number nOY1723062483  
Lea County, New Mexico**

To Whom It May Concern:

Ensolum, LLC (Ensolum), on behalf of BTA Oil Producers, LLC (BTA), has prepared this *Closure Request Addendum* to document assessment, delineation, and soil sampling activities performed at the Starcaster 18 Fed Com #4H (Site). The purpose of the Site assessment, delineation, and soil sampling activities was to address a denial of the *Closure Request*, dated October 18, 2019, by the New Mexico Oil Conservation Division (NMOCD). Based on new delineation activities completed following the denial and laboratory analytical results from the soil sampling events, BTA is submitting this *Closure Request Addendum*, describing remediation that has occurred and requesting closure for Incident Number nOY1723062483.

## **SITE DESCRIPTION AND RELEASE SUMMARY**

The Site is located in Unit A, Section 18, Township 23 South, Range 34 East, in Lea County, New Mexico (32.31097° N, 103.50281° W) and is associated with oil and gas exploration and production operations on Federal Land managed by the Bureau of Land Management (BLM).

On August 13, 2017, a malfunction with a fire tube resulted in the release of approximately 70 barrels (bbls) of produced water and 35 bbls of oil into lined containment. The containment was full of rainwater causing the release to spill over onto the surrounding pad surface. A vacuum truck was dispatched to the Site to recover free-standing fluids; approximately 17 bbls of oil and 20 bbls of produced water were recovered from the ground and 25 bbls of oil and 50 bbls of produced water were recovered inside the lined containment. BTA reported the release immediately to the NMOCD on August 14, 2017 and submitted a *Release Notification Form C-141* (Form C-141) on August 18, 2017. The release was assigned Incident Number nOY1723062483.

On August 21, 2017, BTA oversaw the application of Micro-Blaze® to the release extent and in September 2019, delineation of the release extent was completed. A *Closure Request* was submitted October 18, 2019 detailing the delineation and analytical results. NMOCD responded on September 21, 2022, denying the *Closure Request* for the following reasons:

- *The depth to groundwater has not been adequately determined. When nearby wells are used to determine depth to groundwater, the wells should be no further than ½ mile away from the site, and data should be no more than 25 years old, and well construction information should be*

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*provided in the submission. The responsible party may choose to remediate to the most stringent levels listed in Table 1 of 19.15.29 NMAC in lieu of drilling to determine the depth to groundwater.*

- Horizontal delineation submitted was incomplete and did not meet the requirements of 19.15.29.11 NMAC. The values for determination of horizontal impact are derived by either approved "background" values or Table I Closure Criteria for releases where groundwater is at a depth of 50 feet or less. This is especially important for "on-pad" releases to ensure the release did not extend to the "off-pad"/pasture area. A visual footprint on the surface is not sufficient to assess the horizontal extent of the release. Laboratory data must be provided as evidence of delineation efforts. Any sample exceeding approved "background" values or Table I Closure Criteria for releases where groundwater is at a depth of 50 feet or less requires additional samples for horizontal delineation.*

The following describes a review of the groundwater data surrounding the Site and describes additional sampling completed.

## **SITE CHARACTERIZATION AND CLOSURE CRITERIA**

The Site was characterized to assess the applicability of Table I, Closure Criteria for Soils Impacted by a Release, of Title 19, Chapter 15, Part 29 (19.15.29) of the New Mexico Administrative Code (NMAC). Results from the characterization desktop review are presented on page 3 of the Form C-141, Site Assessment/Characterization. Potential site receptors are identified on Figure 1.

Depth to groundwater at the Site is estimated to be greater than 100 feet below ground surface (bgs) based on the nearest groundwater well data. The closest permitted groundwater well with depth to groundwater data is New Mexico Office of the State Engineer (NMOSE) well CP-01886-POD1, located approximately 0.4 miles northwest of the Site. The well was drilled on September 9, 2021 and has a reported total depth 110 feet bgs. Based on the well log, groundwater was not encountered and as such, depth to water beneath the Site is reasonably estimated to be greater than 100 feet bgs. All wells used for depth to water determination are depicted on Figure 1 and the referenced well records are included in Appendix A.

The closest continuously flowing or significant watercourse to the Site is an intermittent riverine, located approximately 400 feet south of the Site. The Site is greater than 200 feet from a lakebed, sinkhole, or playa lake and greater than 300 feet from an occupied residence, school, hospital, institution, church, or wetland. The Site is greater than 1,000 feet to a freshwater well or spring and is not within a 100-year floodplain or overlying a subsurface mine. The Site is not underlain by unstable geology (low potential karst designation area). Site receptors are identified on Figure 1.

Based on the results of the Site Characterization, the following NMOC Table I Closure Criteria (Closure Criteria) apply:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Benzene, toluene, ethylbenzene, and total xylenes (BTEX): 50 mg/kg
- Total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) and TPH-diesel range organics (DRO): 1,000 mg/kg
- TPH: 2,500 mg/kg
- Chloride: 20,000 mg/kg

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## SITE ASSESSMENT ACTIVITIES AND ANALYTICAL RESULTS

Between October 6 and 11, 2022, Ensolum personnel were at the Site to evaluate the release extent based on information provided on the Form C-141 and visual observations. Seven assessment soil samples (SS01 through SS07) were collected within and around the release extent at a depth of approximately 0.5 feet bgs to assess surficial soil associated with the release. The preliminary soil samples were field screened for volatile organic compounds (VOCs) utilizing a calibrated photoionization detector (PID) and chloride utilizing Hach® chloride QuanTab® test strips. The soil sample locations were mapped utilizing a handheld Global Positioning System (GPS) unit and are depicted on Figure 2. Photographic documentation was completed during the Site visit and a photographic log is included in Appendix B.

The soil samples were placed directly into pre-cleaned glass jars, labeled with the location, date, time, sampler name, method of analysis, and immediately placed on ice. The soil samples were transported at or below 4 degrees Celsius (°C) under strict chain-of-custody procedures to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico, for analysis of the following chemicals of concern (COCs): BTEX following United States Environmental Protection Agency (EPA) Method 8021B; TPH-GRO, TPH-DRO, and TPH-oil range organics (ORO) following EPA Method 8015M/D; and chloride following EPA Method SM4500.

Laboratory analytical results for preliminary soil samples SS01 through SS07, collected within and around the release extent, indicated all COC concentrations were compliant with the Closure Criteria; however, additional vertical delineation activities within the release extent still appeared to be warranted.

## DELINEATION ACTIVITIES AND ANALYTICAL RESULTS

On October 24, 2022, Ensolum personnel were at the Site to perform delineation activities. Three boreholes (SS01A through SS03A) were advanced via hand-auger at the respective locations of assessment soil samples SS01 through SS03. One discrete delineation soil sample was collected in each location, SS01A through SS03A, from the boreholes at a depth of 1-foot bgs. Soil from the delineation samples was field screened for VOCs and chloride. The boreholes were backfilled with soil removed. The delineation soil sample locations are depicted in Figure 2. A photographic log is included in Appendix B.

Laboratory analytical results for delineation soil samples SS01A through SS03A, indicated all COC concentrations were compliant with the most stringent Table I Closure Criteria. Laboratory analytical results are summarized in Table 1 and the complete analytical reports are included as Appendix C.

## CLOSURE REQUEST

Site assessment and delineation activities were conducted at the Site to address NMOCD's September 2022 denial of the *Closure Request* for the August 2017 produced water and crude oil release. Laboratory analytical results for preliminary and delineation soil samples, collected from the on-pad release, indicated all COC concentrations were compliant with the Site Closure Criteria and even met the strictest Closure Criteria in the lateral delineation sampling, indicating the release did not extend to the pasture. Based on the soil sample analytical results, no further remediation appears to be required.

Depth to groundwater has been estimated to be greater than 100 feet bgs and no other sensitive receptors were identified near the release extent. BTA believes these remedial actions are protective of human health, the environment, and groundwater and have addressed NMOCD's concerns in their

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denial of the original *Closure Request*. As such, BTA respectfully requests closure for Incident Number nOY1723062483. The Form C-141 is included as Appendix E.

If you have any questions or comments, please contact Ms. Tacoma Morrissey at (337) 257-8307 or [tmorrissey@ensolum.com](mailto:tmorrissey@ensolum.com).

Sincerely,  
**Ensolum, LLC**



Hadlie Green  
Staff Geologist



Tacoma Morrissey  
Senior Geologist

cc: Bob Hall, BTA Oil Producers, LLC  
Bureau of Land Management

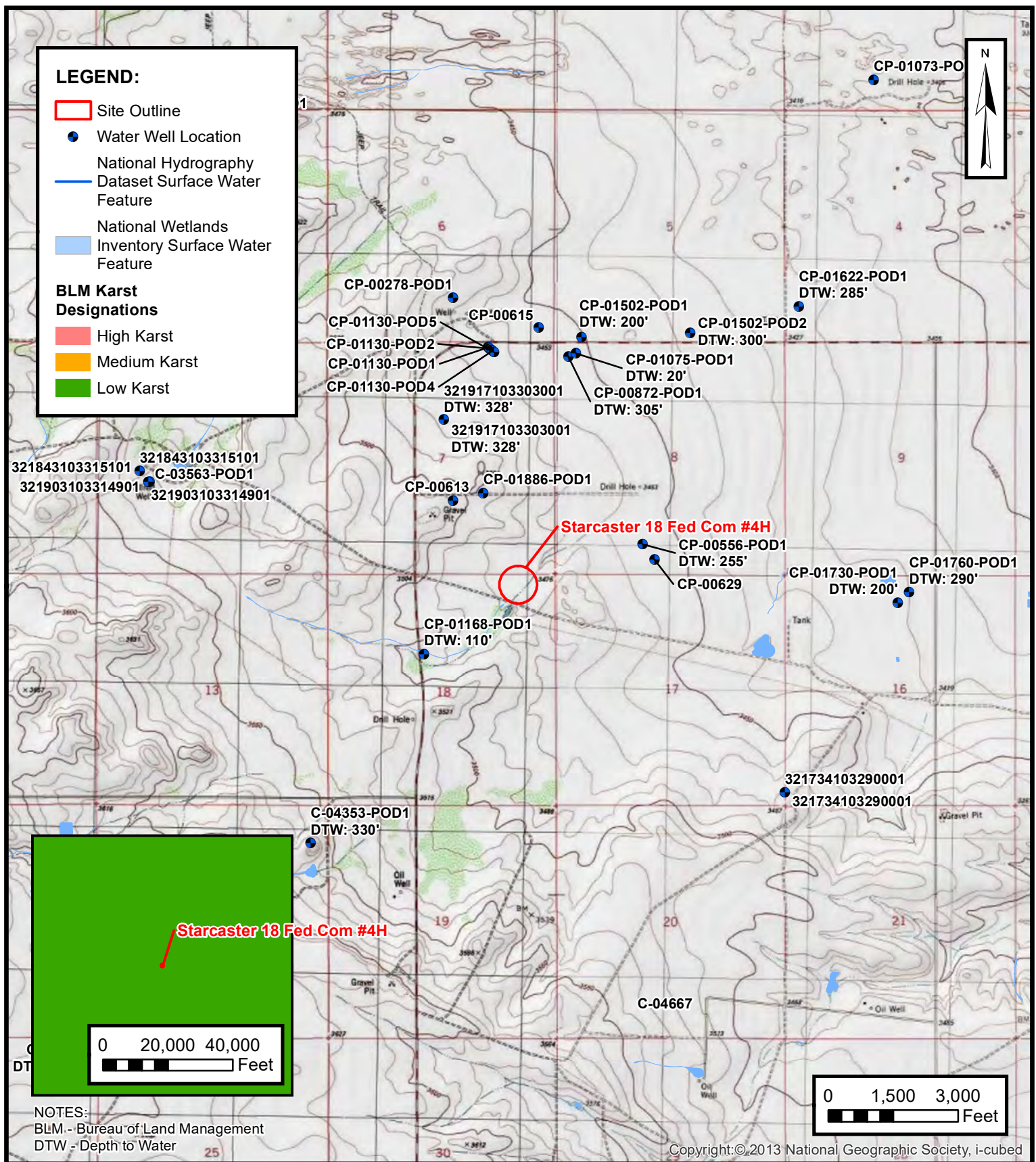
Appendices:

Figure 1	Site Location Map
Figure 2	Soil Sample Locations Map
Table 1	Soil Sample Analytical Results
Appendix A	Referenced Well Records
Appendix B	Photographic Log
Appendix C	Laboratory Analytical Reports & Chain-of-Custody Documentation
Appendix D	NMOCD Sample Notification
Appendix E	Final C-141

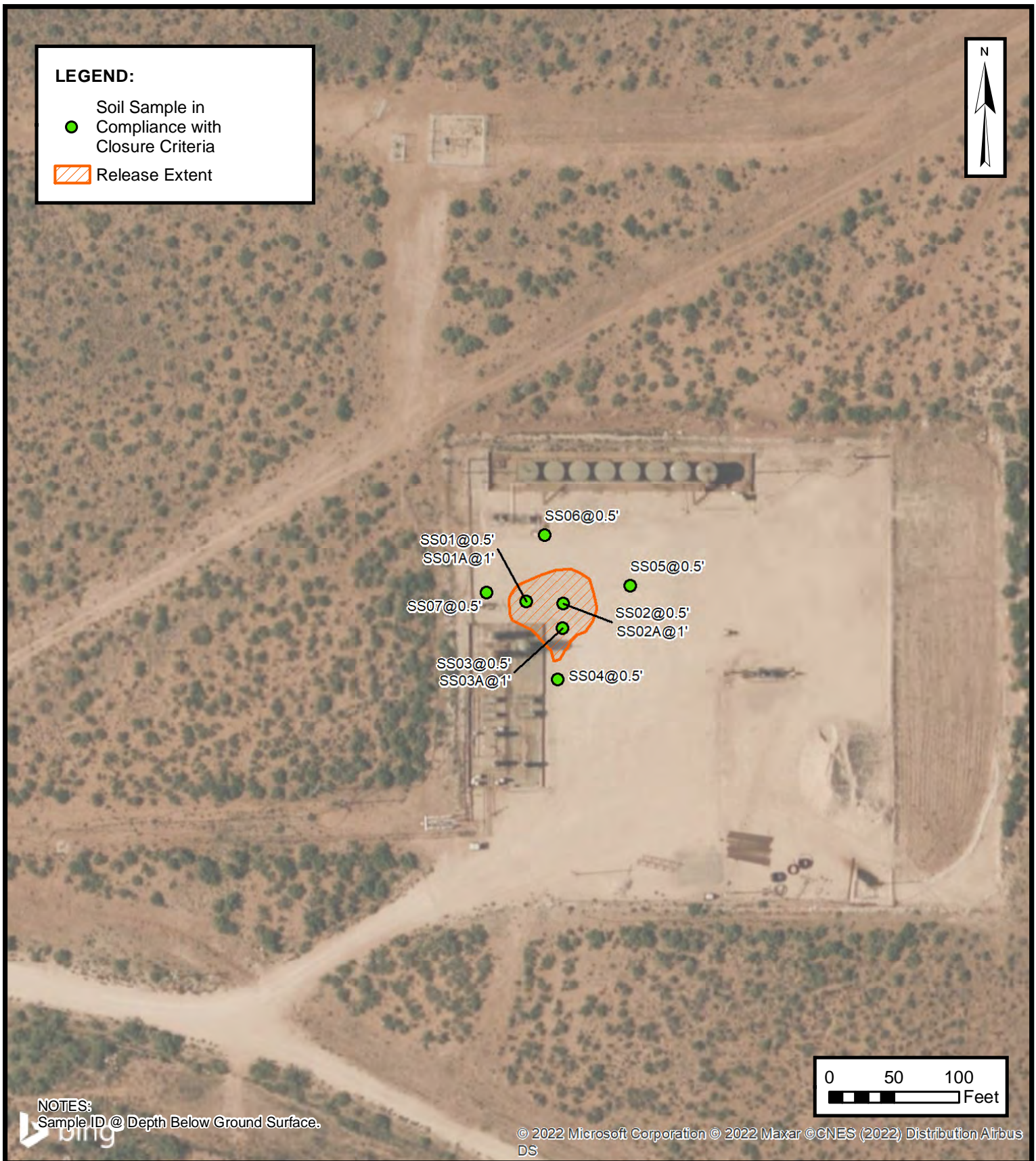


FIGURES









### SOIL SAMPLE LOCATIONS

BTA OIL PRODUCERS, LLC  
STARCASTER 18 FED COM #4H  
Incident Number nOY1723062483  
Unit A Sec 18 T23S R34E  
Lea County, New Mexico

FIGURE

2



TABLES





**TABLE 1**  
**SOIL SAMPLE ANALYTICAL RESULTS**  
 Starcaster 18 Fed Com #4H  
 BTA Oil Producers, LLC  
 Lea County, New Mexico

Sample I.D.	Sample Date	Sample Depth (feet bgs)	Benzene (mg/kg)	Total BTEX (mg/kg)	TPH GRO (mg/kg)	TPH DRO (mg/kg)	TPH ORO (mg/kg)	GRO+DRO (mg/kg)	Total TPH (mg/kg)	Chloride (mg/kg)
<b>NMOCD Table 1 Closure Criteria (NMAC 19.15.29)</b>			<b>10</b>	<b>50</b>	<b>NE</b>	<b>NE</b>	<b>NE</b>	<b>1,000</b>	<b>2,500</b>	<b>20,000</b>
<b>Delineation Soil Samples</b>										
SS01	10/06/2022	0.5	<0.050	<0.300	<10.0	18.7	<10.0	18.7	18.7	144
SS01A	10/24/2022	1	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	96.0
SS02	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	96.0
SS02A	10/24/2022	1	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	96.0
SS03	10/06/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	128
SS03A	10/24/2022	1	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	80.0
SS04	10/11/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	48.0
SS05	10/11/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0
SS06	10/11/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	64.0
SS07	10/11/2022	0.5	<0.050	<0.300	<10.0	<10.0	<10.0	<10.0	<10.0	32.0

## Notes:

bgs: below ground surface

mg/kg: milligrams per kilogram

NMOCD: New Mexico Oil Conservation Division

BTEX: Benzene, Toluene, Ethylbenzene, and Xylenes

Concentrations in bold exceed the NMOCD Table 1 Closure Criteria or reclamation standard where applicable.

GRO: Gasoline Range Organics

DRO: Diesel Range Organics

ORO: Oil Range Organics

TPH: Total Petroleum Hydrocarbon



## APPENDIX A

### Referenced Well Records

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# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

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

1. GENERAL AND WELL LOCATION	OSE POD NO. (WELL NO.) POD1 (EW-01)		WELL TAG ID NO. n/a		OSE FILE NO(S). CP-1886			
	WELL OWNER NAME(S) Kaiser-Francis Oil Company				PHONE (OPTIONAL)			
	WELL OWNER MAILING ADDRESS 6733 S. Yale Ave				CITY Tulsa	STATE OK	ZIP 74136	
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE 32	MINUTES 19	SECONDS 0.91 N	• ACCURACY REQUIRED: ONE TENTH OF A SECOND • DATUM REQUIRED: WGS 84			
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS - PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILABLE SE NW SE Sec. 7 T23S R34E								
2. DRILLING & CASING INFORMATION	LICENSE NO. 1249		NAME OF LICENSED DRILLER Jackie D. Atkins			NAME OF WELL DRILLING COMPANY Atkins Engineering Associates, Inc.		
	DRILLING STARTED 09/09/2021	DRILLING ENDED 09/09/2021	DEPTH OF COMPLETED WELL (FT) temporary well material		BORE HOLE DEPTH (FT) 110	DEPTH WATER FIRST ENCOUNTERED (FT) n/a		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input checked="" type="checkbox"/> DRY HOLE <input type="checkbox"/> SHALLOW (UNCONFINED)					STATIC WATER LEVEL IN COMPLETED WELL (FT) n/a		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD ADDITIVES - SPECIFY:							
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: Hollow Stem Auger							
	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)	CASING CONNECTION TYPE (add coupling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLOT SIZE (inches)
	0 105		±6.5	Boring- HSA	--	--	--	--
3. ANNULAR MATERIAL	DEPTH (feet bgl) FROM TO		BORE HOLE DIAM. (inches)	LIST ANNULAR SEAL MATERIAL AND GRAVEL PACK SIZE-RANGE BY INTERVAL	AMOUNT (cubic feet)	METHOD OF PLACEMENT		

FOR OSE INTERNAL USE

WR-20 WELL RECORD & LOG (Version 06/30/17)

FILE NO.	CP-1886	POD NO.	1	TRN NO.	702706
LOCATION	23S:34E:7.414			WELL TAG ID NO.	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	4	4	Sand, Medium/Fine grained, poorly graded, caliche gravel Brown	Y    ✓ N	
	4	9	5	Caliche, with fine-grained sand, Off White/ Tan	Y    ✓ N	
	9	105	96	Sand, Fine grained, poorly graded, with caliche gravel, Brown	Y    ✓ N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
					Y    N	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA: <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> BAILER <input type="checkbox"/> OTHER - SPECIFY:					TOTAL ESTIMATED WELL YIELD (gpm):                      0.00	

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: Temporary well materials removed and the soil boring backfilled using drill cuttings from total depth to ten feet below ground surface, then hydrated bentonite chips from ten feet below ground surface to surface.	
PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Shane Eldridge, Carmelo Trevino, Cameron Pruitt <div style="text-align: right; margin-top: 10px;">09E DJJ SEP 24 2021 PM 10:58</div>		

6. SIGNATURE	SIGNATURE OF DRILLER / PRINT SIGNED NAME	DATE
	<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="text-align: center;">             Jackie D. Atkins         </div> <div style="text-align: right;">09/23/2021</div> </div>	

FOR OSE INTERNAL USE		WR-20 WELL RECORD & LOG (Version 06/30/2017)	
FILE NO.	POD NO.	TRN NO.	
LOCATION	WELL TAG ID NO.		PAGE 2 OF 2





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## National Water Information System: Web Interface

USGS Water Resources

Data Category:


Site Information ▼

Geographic Area:

United States ▼

GO

Click to hide News Bulletins

- Effective October 24, 2022 hyperlinks to legacy Current Condition pages will automatically redirect users to the corresponding Monitoring Location page. Please see the [Water Data For The Nation Blog](#) for full details, including how to navigate back to the legacy Current Condition page, if desired.
- Explore the *NEW* [USGS National Water Dashboard](#) interactive map to access real-time water data from over 13,500 stations nationwide.
- [Full News](#) 

## USGS 321917103303001 23S.34E.06.43314

Available data for this site

SUMMARY OF ALL AVAILABLE DATA ▼

GO

### Well Site

#### DESCRIPTION:

Latitude 32°19'17", Longitude 103°30'30" NAD27

Lea County, New Mexico , Hydrologic Unit 13070007

Well depth: 640 feet

Land surface altitude: 3,480 feet above NAVD88.

Well completed in "Other aquifers" (N9999OTHER) national aquifer.

Well completed in "Santa Rosa Sandstone" (231SNRS) local aquifer

#### AVAILABLE DATA:

Data Type	Begin Date	End Date	Count
<a href="#">Field groundwater-level measurements</a>	1968-06-11	1986-03-21	2
<a href="#">Revisions</a>	Unavailable (site:0) (timeseries:0)		

#### OPERATION:

Record for this site is maintained by the USGS New Mexico Water Science Center

Email questions about this site to [New Mexico Water Science Center Water-Data Inquiries](#)

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[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

**Title: NWIS Site Information for USA: Site Inventory**

**URL: [https://waterdata.usgs.gov/nwis/inventory?](https://waterdata.usgs.gov/nwis/inventory?site_no=321917103303001&agency_cd=USGS)**

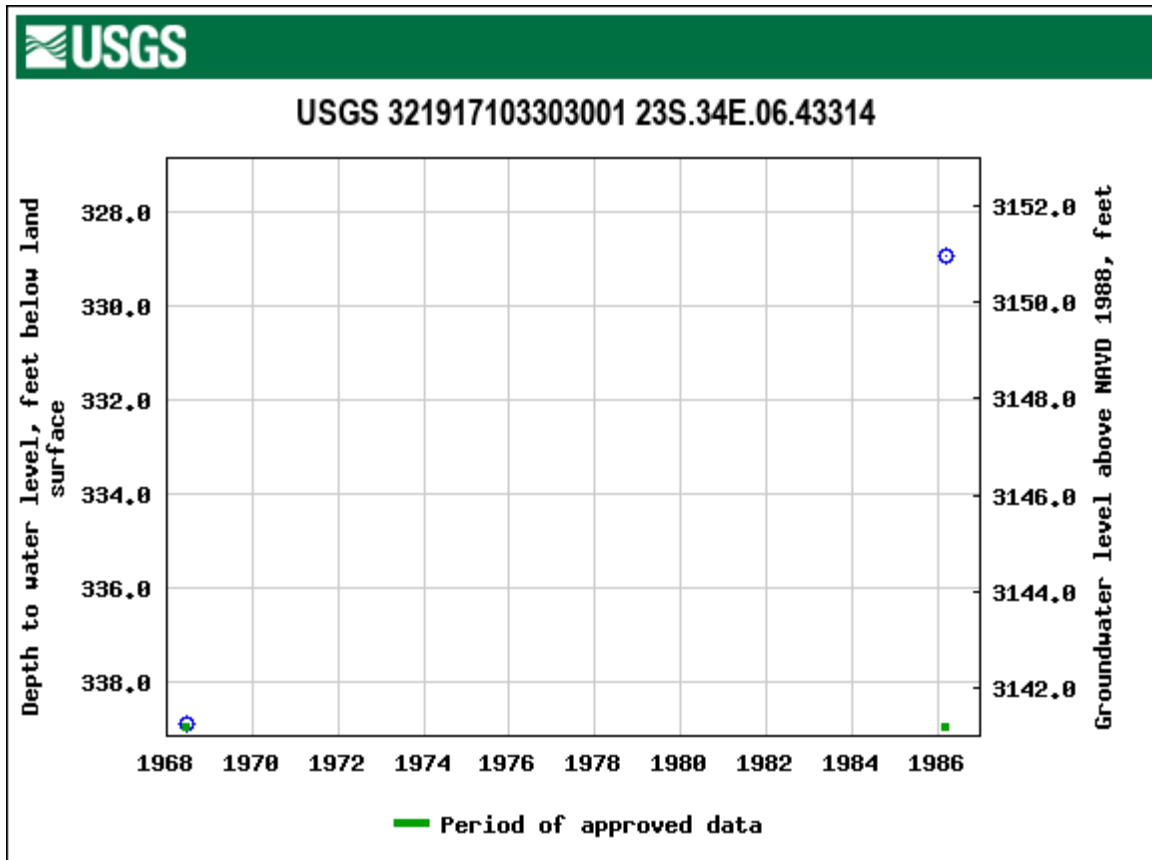
**site\_no=321917103303001&agency\_cd=USGS**



Page Contact Information: [New Mexico Water Data Support Team](#)

Page Last Modified: 2022-11-03 14:39:52 EDT

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## APPENDIX B

### Photographic Log

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# Photographic Log

BTA Oil Producers, LLC.

Starcaster 18 Fed Com #4H

Incident Number: nOY1723062483

Date & Time: Thu, Oct 06, 2022, 09:26:26 MDT  
 Position: 032.911079° N / 103.503142° W (+15.9ft)  
 Altitude: 3484ft (+10.6ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 317° N43W 5636mils True (+19°)  
 Elevation Angle: +02.4°  
 Horizon Angle: +00.0°  
 Zoom: 1.0X  
 Starcaster 18 Fed Com



Photograph 1

Date: 10/6/2022

Description: Photo of release area on pad facing northwest.

Date & Time: Mon, Oct 24, 2022, 09:17:35 MDT  
 Position: +032.911069° / -103.503230° (+20.4ft)  
 Altitude: 3484ft (+21.9ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 290° N70W 5166mils True (+17°)  
 Elevation Angle: +25.3°  
 Horizon Angle: +03.8°  
 Zoom: 0.5X



Photograph 2

Date: 10/24/2022

Description: Photo of hand auger delineation of SS01 facing northwest.

Date & Time: Mon, Oct 24, 2022, 09:28:19 MDT  
 Position: +032.911146° / -103.503249° (+133.8ft)  
 Altitude: 3493ft (+207.3ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 261° S87W 4640mils True (+25°)  
 Elevation Angle: +26.7°  
 Horizon Angle: +02.0°  
 Zoom: 0.5X



Photograph 3

Date: 10/24/2022

Description: Photo of hand auger delineation of SS02 facing west.

Date & Time: Mon, Oct 24, 2022, 09:26:45 MDT  
 Position: +032.911198° / -103.503295° (+114.1ft)  
 Altitude: 3483ft (+22.4ft)  
 Datum: WGS-84  
 Azimuth/Bearing: 090° N90E 1800mils True (+15°)  
 Elevation Angle: +24.3°  
 Horizon Angle: +01.9°  
 Zoom: 0.5X



Photograph 4

Date: 10/24/2022

Description: Photo of hand auger delineation of SS03 facing east.



## APPENDIX C

### Laboratory Analytical Reports & Chain of Custody Documentation

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

October 12, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: STARCASTER 18 FED COM

Enclosed are the results of analyses for samples received by the laboratory on 10/07/22 13:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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, flowing style.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/07/2022  
Reported: 10/12/2022  
Project Name: STARCASTER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/06/2022  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: SS01 (H224724-01)**

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	10/11/2022	ND	1.95	97.4	2.00	1.84	
Toluene*	<0.050	0.050	10/11/2022	ND	1.92	96.0	2.00	3.03	
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.89	94.5	2.00	2.49	
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.77	96.2	6.00	2.72	
Total BTEx	<0.300	0.300	10/11/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 102 % 69.9-140

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	10/11/2022	ND	384	96.0	400	4.08		

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	10/11/2022	ND	195	97.4	200	4.38	
DRO >C10-C28*	18.7	10.0	10/11/2022	ND	192	96.1	200	12.6	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 104 % 45.3-161

Surrogate: 1-Chlorooctadecane 127 % 46.3-178

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:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/07/2022  
Reported: 10/12/2022  
Project Name: STARCATER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/06/2022  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: SS02 (H224724-02)**

BTX 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	10/11/2022	ND	1.95	97.4	2.00	1.84	
Toluene*	<0.050	0.050	10/11/2022	ND	1.92	96.0	2.00	3.03	
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.89	94.5	2.00	2.49	
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.77	96.2	6.00	2.72	
Total BTX	<0.300	0.300	10/11/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 104 % 69.9-140

Chloride, SM4500CI-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	10/11/2022	ND	384	96.0	400	4.08	

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	10/11/2022	ND	195	97.4	200	4.38	
DRO >C10-C28*	<10.0	10.0	10/11/2022	ND	192	96.1	200	12.6	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 94.8 % 45.3-161

Surrogate: 1-Chlorooctadecane 114 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/07/2022  
Reported: 10/12/2022  
Project Name: STARCATER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/06/2022  
Sampling Type: Soil  
Sampling Condition: Cool & Intact  
Sample Received By: Tamara Oldaker

**Sample ID: SS03 (H224724-03)**

BTX 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	10/11/2022	ND	1.95	97.4	2.00	1.84	
Toluene*	<0.050	0.050	10/11/2022	ND	1.92	96.0	2.00	3.03	
Ethylbenzene*	<0.050	0.050	10/11/2022	ND	1.89	94.5	2.00	2.49	
Total Xylenes*	<0.150	0.150	10/11/2022	ND	5.77	96.2	6.00	2.72	
Total BTX	<0.300	0.300	10/11/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 103 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	10/11/2022	ND	384	96.0	400	4.08	

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	10/11/2022	ND	195	97.4	200	4.38	
DRO >C10-C28*	<10.0	10.0	10/11/2022	ND	192	96.1	200	12.6	
EXT DRO >C28-C36	<10.0	10.0	10/11/2022	ND					

Surrogate: 1-Chlorooctane 94.0 % 45.3-161

Surrogate: 1-Chlorooctadecane 114 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

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", is written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager



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(575) 393-2326 FAX (575) 393-2476

### CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]





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

October 17, 2022

TACOMA MORRISSEY

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: STARCASTER 18 FED COM

Enclosed are the results of analyses for samples received by the laboratory on 10/11/22 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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:**

ENSOLUM  
TACOMA MORRISSEY  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/11/2022  
Reported: 10/17/2022  
Project Name: STARCATER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/11/2022  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Tamara Oldaker

**Sample ID: SS 04 (H224771-01)**

BTX 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	10/14/2022	ND	2.06	103	2.00	1.95		
Toluene*	<0.050	0.050	10/14/2022	ND	2.16	108	2.00	0.592		
Ethylbenzene*	<0.050	0.050	10/14/2022	ND	1.99	99.7	2.00	0.962		
Total Xylenes*	<0.150	0.150	10/14/2022	ND	5.99	99.8	6.00	0.573		
Total BTX	<0.300	0.300	10/14/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.0 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	48.0	16.0	10/13/2022	ND	400	100	400	3.92		

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	10/13/2022	ND	197	98.4	200	0.879	
DRO >C10-C28*	<10.0	10.0	10/13/2022	ND	200	99.9	200	0.430	
EXT DRO >C28-C36	<10.0	10.0	10/13/2022	ND					

Surrogate: 1-Chlorooctane 94.5 % 45.3-161

Surrogate: 1-Chlorooctadecane 111 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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---

### Notes and Definitions

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 "C. D. Keene", is written over a horizontal line.

Celey D. Keene, Lab Director/Quality Manager



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

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Company Name: <u>Ensolum</u>		<b>BILL TO</b>		<b>ANALYSIS REQUEST</b>	
Project Manager: <u>Teresa McNissey</u>		P.O. #:			
Address: <u>3122 Northval Park Blvd</u>		Company: <u>Ensolum</u>			
City: <u>Carlsbad</u> State: <u>NM</u> Zip: <u>88220</u>		Attn:			
Phone #: <u>505-257-8307</u> Fax #:		Address:			
Project #: <u>0302012005</u> Project Owner:		City:			
Project Name: <u>Starstor 18 Fed Com #44</u>		State:			
Project Location: <u>32.3169, -103.6028</u>		Zip:			
Sample Name: <u>Kyse Parker</u>		Phone #: <u>t.morrissey@ensolum.com</u>			
Fax #:		Fax #:			
FOR LAB USE ONLY		MATRIX		PRESERV.	
Lab I.D. Sample I.D.		(G)RAB OR (C)OMP.		DATE	
#224771		# CONTAINERS		TIME	
5504		GROUNDWATER		✓	
		WASTEWATER			
		SOIL			
		OIL			
		SLUDGE			
		OTHER:			
		ACID/BASE:			
		ICE / COOL			
		OTHER:			
		DATE		10/11/22	
		TIME		1100	
		✓		BTEX	
		✓		TPH	
		✓		Chloride	

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Relinquished By: <u>[Signature]</u>	Date: <u>10-11-22</u>	Received By: <u>[Signature]</u>	Date: <u>10-11-22</u>
Relinquished By: <u>[Signature]</u>	Date: <u>10-11-22</u>	Received By: <u>[Signature]</u>	Date: <u>10-11-22</u>

Delivered By: (Circle One) Observed Temp. °C 25.4 Sample Condition Intact CHECKED BY: [Signature] (Initials)

Sampler - UPS - Bus - Other: Corrected Temp. °C 24.8 ☒ Yes ☐ No ☐ No

Turnaround Time: Standard ☒ Rush ☐ Bacteria (only) Sample Condition Intact ☒ Observed Temp. °C 25.4 ☐ Corrected Temp. °C 24.8 ☐ Yes ☐ No

Thermometer ID #113 Correction Factor -0.5°C

REMARKS: hgren@ensolum.com

Verbal Result: ☐ Yes ☐ No Add'l Phone #:

All Results are emailed. Please provide Email address:



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

October 17, 2022

TACOMA MORRISSEY

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: STARCASTER 18 FED COM

Enclosed are the results of analyses for samples received by the laboratory on 10/11/22 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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:**

ENSOLUM  
TACOMA MORRISSEY  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/11/2022  
Reported: 10/17/2022  
Project Name: STARCATER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/11/2022  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Tamara Oldaker

**Sample ID: SS 05 (H224772-01)**

BTX 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	10/14/2022	ND	2.06	103	2.00	1.95		
Toluene*	<0.050	0.050	10/14/2022	ND	2.16	108	2.00	0.592		
Ethylbenzene*	<0.050	0.050	10/14/2022	ND	1.99	99.7	2.00	0.962		
Total Xylenes*	<0.150	0.150	10/14/2022	ND	5.99	99.8	6.00	0.573		
Total BTX	<0.300	0.300	10/14/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/13/2022	ND	400	100	400	3.92		

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	10/13/2022	ND	197	98.4	200	0.879	
DRO >C10-C28*	<10.0	10.0	10/13/2022	ND	200	99.9	200	0.430	
EXT DRO >C28-C36	<10.0	10.0	10/13/2022	ND					

Surrogate: 1-Chlorooctane 94.7 % 45.3-161

Surrogate: 1-Chlorooctadecane 111 % 46.3-178

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Celey D. Keene, Lab Director/Quality Manager





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### Notes and Definitions

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



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

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> Ensdam							<b>BILL TO</b>							<b>ANALYSIS REQUEST</b>						
<b>Project Manager:</b> Tiedema, Mervisey							<b>P.O. #:</b>													
<b>Address:</b> 3122 National Parks Hwy							<b>Company:</b> Ensdam													
<b>City:</b> Landisburg PA							<b>Attn:</b>													
<b>State:</b> PA Zip: 88220							<b>Address:</b>													
<b>Phone #:</b> 337-257-8307 Fax #:							<b>City:</b>													
<b>Project #:</b> 03C2012005 Project Owner:							<b>State:</b>													
<b>Project Location:</b> Stearns St 18 Fed Con #44							<b>Zip:</b>													
<b>Sampler Name:</b> Kase Baker							<b>Phone #:</b> t.mari@ensdam.com													
<b>Fax #:</b>																				
FOR LAB USE ONLY																				
<b>Lab I.D.</b>  H224772 5505		<b>Sample I.D.</b>		(G)RAB OR (C)OMP		<b>MATRIX</b>		<b>PRESERV</b>		<b>SAMPLING</b>										
				# CONTAINERS																
				GROUNDWATER																
				WASTEWATER																
				SOIL																
				OIL																
				SLUDGE																
				OTHER :																
				ACID/BASE:																
				ICE / COOL																
				OTHER :																
				DATE		TIME														
				10/11/02		1105														

**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 the client for the services. 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> [Signature]		<b>Date:</b> 10-11-22		<b>Received By:</b> [Signature]		<b>Date:</b> 10-11-22	
<b>Relinquished By:</b> [Signature]		<b>Date:</b> 10-11-22		<b>Received By:</b> [Signature]		<b>Date:</b> 10-11-22	
<b>Time:</b>		<b>Time:</b>		<b>Time:</b>		<b>Time:</b>	
<b>Observed Temp. °C</b> 35.4		<b>Cool Intact</b> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		<b>Sample Condition</b> Cool Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		<b>CHECKED BY:</b> (Initials) [Signature]	
<b>Corrected Temp. °C</b> 34.8		<b>Thermometer ID #113</b>		<b>Turnaround Time:</b> Standard Rush <input checked="" type="checkbox"/>		<b>Standard Bacteria (only)</b> Sample Condition Cool Intact Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
<b>Correction Factor -0.6°C</b>		<b>Corrected Temp. °C</b>		<b>Observed Temp. °C</b>		<b>Corrected Temp. °C</b>	
<b>REMARKS:</b> hg rick@ensdam.com							
<b>Verbal Result:</b> <input type="checkbox"/> Yes <input type="checkbox"/> No Add'l Phone #: All Results are emailed. Please provide Email address:							



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

October 17, 2022

TACOMA MORRISSEY

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: STARCASTER 18 FED COM

Enclosed are the results of analyses for samples received by the laboratory on 10/11/22 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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, flowing style.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
TACOMA MORRISSEY  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/11/2022  
Reported: 10/17/2022  
Project Name: STARCASTER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/11/2022  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Tamara Oldaker

**Sample ID: SS 06 (H224773-01)**

BTX 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	10/14/2022	ND	2.06	103	2.00	1.95	
Toluene*	<0.050	0.050	10/14/2022	ND	2.16	108	2.00	0.592	
Ethylbenzene*	<0.050	0.050	10/14/2022	ND	1.99	99.7	2.00	0.962	
Total Xylenes*	<0.150	0.150	10/14/2022	ND	5.99	99.8	6.00	0.573	
Total BTX	<0.300	0.300	10/14/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	64.0	16.0	10/13/2022	ND	400	100	400	3.92		

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	10/13/2022	ND	197	98.4	200	0.879	
DRO >C10-C28*	<10.0	10.0	10/13/2022	ND	200	99.9	200	0.430	
EXT DRO >C28-C36	<10.0	10.0	10/13/2022	ND					

Surrogate: 1-Chlorooctane 89.3 % 45.3-161

Surrogate: 1-Chlorooctadecane 104 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



---

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---

### Notes and Definitions

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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\*=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





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

## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]



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

---

October 17, 2022

TACOMA MORRISSEY

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: STARCASTER 18 FED COM

Enclosed are the results of analyses for samples received by the laboratory on 10/11/22 14:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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:**

ENSOLUM  
TACOMA MORRISSEY  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/11/2022  
Reported: 10/17/2022  
Project Name: STARCATER 18 FED COM  
Project Number: 03C2012005  
Project Location: BTA - 32.3107707, -103.5028146

Sampling Date: 10/11/2022  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Tamara Oldaker

**Sample ID: SS 07 (H224774-01)**

BTX 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	10/14/2022	ND	2.06	103	2.00	1.95	
Toluene*	<0.050	0.050	10/14/2022	ND	2.16	108	2.00	0.592	
Ethylbenzene*	<0.050	0.050	10/14/2022	ND	1.99	99.7	2.00	0.962	
Total Xylenes*	<0.150	0.150	10/14/2022	ND	5.99	99.8	6.00	0.573	
Total BTX	<0.300	0.300	10/14/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.9 % 69.9-140

Chloride, SM4500Cl-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	10/13/2022	ND	400	100	400	3.92		

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	10/13/2022	ND	197	98.4	200	0.879	
DRO >C10-C28*	<10.0	10.0	10/13/2022	ND	200	99.9	200	0.430	
EXT DRO >C28-C36	<10.0	10.0	10/13/2022	ND					

Surrogate: 1-Chlorooctane 100 % 45.3-161

Surrogate: 1-Chlorooctadecane 116 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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### Notes and Definitions

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 "C. D. Keene".

Celey D. Keene, Lab Director/Quality Manager





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## CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]





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

---

October 31, 2022

HADLIE GREEN

ENSOLUM

3122 NATIONAL PARKS HWY

CARLSBAD, NM 88220

RE: STARCASTER 18 FED COM #4H

Enclosed are the results of analyses for samples received by the laboratory on 10/24/22 11:25.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-22-15. 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, flowing style.

Celey D. Keene

Lab Director/Quality Manager



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

**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received:	10/24/2022	Sampling Date:	10/24/2022
Reported:	10/31/2022	Sampling Type:	Soil
Project Name:	STARCASTER 18 FED COM #4H	Sampling Condition:	** (See Notes)
Project Number:	03C2012005	Sample Received By:	Tamara Oldaker
Project Location:	BTA - 32.3109, -103.5028		

**Sample ID: SS01 A @ 1' (H224980-01)**

BTX 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	10/29/2022	ND	1.95	97.5	2.00	0.846	
Toluene*	<0.050	0.050	10/29/2022	ND	2.10	105	2.00	0.821	
Ethylbenzene*	<0.050	0.050	10/29/2022	ND	2.10	105	2.00	0.756	
Total Xylenes*	<0.150	0.150	10/29/2022	ND	6.29	105	6.00	1.00	
Total BTX	<0.300	0.300	10/29/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID) 92.0 % 69.9-140

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	10/27/2022	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	10/28/2022	ND	198	98.8	200	3.97	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	200	100	200	4.64	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 98.0 % 45.3-161

Surrogate: 1-Chlorooctadecane 100 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/24/2022  
Reported: 10/31/2022  
Project Name: STARCATER 18 FED COM #4H  
Project Number: 03C2012005  
Project Location: BTA - 32.3109, -103.5028

Sampling Date: 10/24/2022  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Tamara Oldaker

**Sample ID: SS02 A @ 1' (H224980-02)**

BTX 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	10/29/2022	ND	1.95	97.5	2.00	0.846		
Toluene*	<0.050	0.050	10/29/2022	ND	2.10	105	2.00	0.821		
Ethylbenzene*	<0.050	0.050	10/29/2022	ND	2.10	105	2.00	0.756		
Total Xylenes*	<0.150	0.150	10/29/2022	ND	6.29	105	6.00	1.00		
Total BTX	<0.300	0.300	10/29/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 92.8 % 69.9-140

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	10/27/2022	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	10/28/2022	ND	198	98.8	200	3.97	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	200	100	200	4.64	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 84.5 % 45.3-161

Surrogate: 1-Chlorooctadecane 88.2 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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**Analytical Results For:**

ENSOLUM  
HADLIE GREEN  
3122 NATIONAL PARKS HWY  
CARLSBAD NM, 88220  
Fax To:

Received: 10/24/2022  
Reported: 10/31/2022  
Project Name: STARCATER 18 FED COM #4H  
Project Number: 03C2012005  
Project Location: BTA - 32.3109, -103.5028

Sampling Date: 10/24/2022  
Sampling Type: Soil  
Sampling Condition: \*\* (See Notes)  
Sample Received By: Tamara Oldaker

**Sample ID: SS03 A @ 1' (H224980-03)**

BTX 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	10/29/2022	ND	1.95	97.5	2.00	0.846		
Toluene*	<0.050	0.050	10/29/2022	ND	2.10	105	2.00	0.821		
Ethylbenzene*	<0.050	0.050	10/29/2022	ND	2.10	105	2.00	0.756		
Total Xylenes*	<0.150	0.150	10/29/2022	ND	6.29	105	6.00	1.00		
Total BTX	<0.300	0.300	10/29/2022	ND						

Surrogate: 4-Bromofluorobenzene (PID) 91.2 % 69.9-140

Chloride, SM4500CI-B		mg/kg		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	80.0	16.0	10/27/2022	ND	416	104	400	0.00		

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	10/28/2022	ND	198	98.8	200	3.97	
DRO >C10-C28*	<10.0	10.0	10/28/2022	ND	200	100	200	4.64	
EXT DRO >C28-C36	<10.0	10.0	10/28/2022	ND					

Surrogate: 1-Chlorooctane 95.1 % 45.3-161

Surrogate: 1-Chlorooctadecane 101 % 46.3-178

Cardinal Laboratories

\*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager

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### Notes and Definitions

QR-03	The RPD value for the sample duplicate or MS/MSD was outside of QC acceptance limits due to matrix interference. QC batch accepted based on LCS and/or LCSD recovery and/or RPD values.
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





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

# CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

<b>Company Name:</b> <u>Ensdum</u> <b>Project Manager:</b> <u>Hadie Green</u> <b>Address:</b> <u>3122 Natural Pkwy Hwy</u> <b>City:</b> <u>Carlsbad</u> <b>State:</b> <u>NM</u> <b>Zip:</b> <u>88220</u> <b>Phone #:</b> <u>505-557-8495</u> <b>Fax #:</b> _____ <b>Project #:</b> <u>030202005</u> <b>Project Owner:</b> _____ <b>Project Name:</b> <u>Stanger 18 Fed on #4H</u> <b>Project Location:</b> <u>32, 3109, -103, 8028</u> <b>Sampler Name:</b> <u>Kasey Parker</u>		<b>P.O. #:</b> _____ <b>Company:</b> <u>Ensdum</u> <b>Attn:</b> <u>hgreen@ensdum.com</u> <b>Address:</b> _____ <b>City:</b> _____ <b>State:</b> _____ <b>Zip:</b> _____ <b>Phone #:</b> _____ <b>Fax #:</b> _____	
<b>FOR LAB USE ONLY</b>		<b>BILL TO</b>	
<b>Lab I.D.</b> <u>H224980</u>	<b>Sample I.D.</b> <u>55014 @ 1'</u> <u>55024 @ 1'</u> <u>55034 @ 1'</u>	<b>(G)RAB OR (C)OMP.</b> <b># CONTAINERS</b> <b>GROUNDWATER</b> <b>WASTEWATER</b> <b>SOIL</b> <b>OIL</b> <b>SLUDGE</b> <b>OTHER:</b> _____ <b>ACID/BASE:</b> _____ <b>ICE / COOL</b> <b>OTHER:</b> _____	<b>MATRIX</b> <b>PRESERV</b> <b>SAMPLING</b>
<b>Date:</b> <u>10-24-22</u> <b>Time:</b> <u>11:25</u> <b>Date:</b> _____ <b>Time:</b> _____	<b>Received By:</b> <u>[Signature]</u> <b>Relinquished By:</b> <u>[Signature]</u> <b>Date:</b> _____ <b>Time:</b> _____	<b>DATE</b> <u>10/24/22 0630</u> <u>10/24/22 0935</u> <u>10/24/22 0940</u>	<b>TIME</b> <u>0630</u> <u>0935</u> <u>0940</u>
<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 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 30 days after completion of the applicable analyses. 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>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> <u>tmarissey@ensdum.com</u>		<b>Turnaround Time:</b> _____ <b>Thermometer ID #113</b> <b>Correction Factor -0.8°C</b> <b>Standard</b> <input checked="" type="checkbox"/> <b>Rush</b> <input type="checkbox"/> <b>Bacteria (only) Sample Condition</b> <b>Cool Intact</b> <input type="checkbox"/> <b>Observed Temp. °C</b> <b>Yes</b> <input type="checkbox"/> <b>No</b> <input type="checkbox"/> <b>Corrected Temp. °C</b>	



## APPENDIX D

### NMOCD Notifications

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OCD Permitting

Home    Searches    Incidents    Incident Details

NOY1723062483 STARCASTER 18 FED COM #4H @ 30-025-42025

General Incident Information

Site Name:

STARCASTER 18 FED COM #4H

Well:

[30-025-42025](#) STARCASTER 18 FEDERAL COM #004H

Facility:

Operator:

[260297](#) BTA OIL PRODUCERS, LLC

Status:

Closure Not Approved

Type:

Oil Release

District:

Hobbs

Severity:

Major

Surface Owner:

Private

County:

Lea (25)

Incident Location:

A-18-23S-34E    330 FNL    660 FEL

Lat/Long:

32.3110123,-103.5027847 NAD83

Directions:

Notes

Source of Referral:

Industry Rep

Action / Escalation:

Resulted In Fire:

☐

Will or Has Reached Watercourse:

☐

Endangered Public Health:

☐

Property Or Environmental Damage:

☐

Fresh Water Contamination:

☐

Contact Details

Contact Name:

Kayla McConnell

Contact Title:

Regulatory analyst

Event Dates

Date of Discovery:

08/13/2017

Extension Date:

11/15/2018

Initial C-141 Received:

08/18/2017

Characterization Report Received:

Remediation Plan Received:

Closure Report Received:

10/26/2021

OCD Notified of Release:

08/13/2017

Cancelled Date:

Characterization Report Approved:

Remediation Plan Approved:

Remediation Due:

12/21/2022

Closure Report Approved:

Compositional Analysis of Vented and/or Flared Natural Gas

No Compositional Analysis Found

Incidents Materials

Cause	Source	Material	Volume				Units
			Unk.	Released	Recovered	Lost	
Equipment Failure	Treating Tower	Crude Oil	<input type="checkbox"/>	70	7	63	BBL

Quic

- [Gene](#)
- [Mater](#)
- [Eveni](#)
- [Order](#)

Assc

- [Incide](#)
- [Well I](#)

New

- [New](#)
- [New](#)
- [New](#)
- [New](#)
- [New](#)
- [New](#)
- [New](#)

Incident Events

Date	Detail
09/21/2022	The (09/21/2022, C-141) application <a href="#">[57981]</a> was rejected by OCD. The operator was emailed with details of this event.
09/21/2022	Closure report rejected due to inadequate depth to groundwater data. In future communication and reporting, refer to 1RP-4791 as incident nOY1723062483.
09/21/2022	An application <a href="#">[57981]</a> was submitted to OCD for review. It was submitted, indicating that it was an: [C-141] Application for administrative approval of a release notification and corrective action The operator was emailed confirmation of this event.
10/26/2021	The (09/21/2022, C-141) application <a href="#">[57981]</a> was assigned to this incident.
08/18/2017	1RP-4791. Dover Rile driver called pumper at 12:18 am about heater blowing gas and fluid out around the firetube. At 1:20 am, pumper called the supervisor about spill. When he got to location at 2:45 am, the oil had ran across the location due to the rain water from the previous day's storm. The supervisor called Diversified to site and started clean-up around 3 am. Total of 35 bbls oil and 70 bbls water released. 10 bbls of oil and 20 bbls of water on ground. 25 bbls oil and 50 bbls of water inside containment. 7 bbls oil recovered from outside containment area.

Orders

1RP-4791-0

Applicant:

Contact:

Reviewer:

[\[260297\]](#) BTA OIL PRODUCERS, LLC

Kayla McConnell

Olivia Yu

Approved By:

Issuing Office:

BLM

Hobbs

Processing Dates

Received:

Approved:

Expiration:

08/14/2017

08/18/2017

Ordered:

Denied:

Cancelled:

08/18/2017

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**From:** Bob Hall <BHall@btaoil.com>  
**Sent:** Wednesday, September 21, 2022 7:01 PM  
**To:** Bob Hall  
**Subject:** FW: The Oil Conservation Division (OCD) has rejected the application, Application ID: 57981

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**From:** OCDOnline@state.nm.us <OCDOnline@state.nm.us>  
**Sent:** Wednesday, September 21, 2022 9:54 AM  
**To:** Bob Hall <BHall@btaoil.com>  
**Subject:** The Oil Conservation Division (OCD) has rejected the application, Application ID: 57981

\*\*\*\*\* EXTERNAL EMAIL - Please use caution and **DO NOT** open attachments or click links from unknown or unexpected emails. \*\*\*\*\*

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To whom it may concern (c/o Bob Hall for BTA OIL PRODUCERS, LLC),

The OCD has rejected the submitted *Application for administrative approval of a release notification and corrective action* (C-141), for incident ID (n#) nOY1723062483, for the following reasons:

- The depth to groundwater has not been adequately determined. When nearby wells are used to determine depth to groundwater, the wells should be no further than ½ mile away from the site, and data should be no more than 25 years old, and well construction information should be provided in the submission. The responsible party may choose to remediate to the most stringent levels listed in Table 1 of 19.15.29 NMAC in lieu of drilling to determine the depth to groundwater.
- Horizontal delineation submitted was incomplete and did not meet the requirements of 19.15.29.11 NMAC. The values for determination of horizontal impact are derived by either approved “background” values or Table I Closure Criteria for releases where groundwater is at a depth of 50 feet or less. This is especially important for “on-pad” releases to ensure the release did not extend to the “off-pad”/pasture area. A visual footprint on the surface is not sufficient to assess the horizontal extent of the release. Laboratory data must be provided as evidence of delineation efforts. Any sample exceeding approved “background” values or Table I Closure Criteria for releases where groundwater is at a depth of 50 feet or less requires additional samples for horizontal delineation.
- In future communication and reporting, refer to 1RP-4791 as incident nOY1723062483.

The rejected C-141 can be found in the OCD Online: Permitting - Action Status, under the Application ID: 57981. Please review and make the required correction(s) prior to resubmitting.

If you have any questions why this application was rejected or believe it was rejected in error, please contact me prior to submitting an additional C-141.

Thank you,  
Ashley Maxwell  
Environmental Specialist - A  
505-334-6178  
[Ashley.Maxwell@state.nm.us](mailto:Ashley.Maxwell@state.nm.us)

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





## APPENDIX E

Final C-141

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District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
811 S. First St., Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

Form C-141  
Revised August 8, 2011

Submit 1 Copy to appropriate District Office in  
accordance with 19.15.29 NMAC.

### Release Notification and Corrective Action

#### OPERATOR

☒ Initial Report ☐ Final Report

Name of Company	BTA Oil Producers, LLC	Contact	Kayla McConnell
Address	104 South Pecos, Midland, TX 79701	Telephone No.	432-682-3753
Facility Name	Starcaster 18 Fed Com #4H	Facility Type	Tank Battery
Surface Owner	Federal	Mineral Owner	Federal
		API No.	3002542025

#### LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
A	18	23S	34E	330	North	660	East	Lea

Latitude 32.3109707 Longitude -103.5028146

#### NATURE OF RELEASE

Type of Release	Oil/Produced Water	Volume of Release	70 bbl wtr / 35 bbl Oil	Volume Recovered	7 bbl Oil
Source of Release	Heater blowing gas and fluid out around firetube	Date and Hour of Occurrence	8/13/17 12:18 am	Date and Hour of Discovery	8/13/17, 12:18 am
Was Immediate Notice Given?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not Required	If YES, To Whom?	Shelly Tucker, BLM; Olivia Yu NMOCD		
By Whom?	Kayla McConnell	Date and Hour	8/13/2017 5:20 pm CDT		
Was a Watercourse Reached?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, Volume Impacting the Watercourse.			

**RECEIVED**

**By Olivia Yu at 5:12 pm, Aug 18, 2017**

#### Describe Cause of Problem and Remedial Action Taken.\*

Dover Rile driver called pumper at 12:10am about heater blowing gas and fluid out around firetube at 1:20am pumper called the supervisor about spill when he got to location at 2:45 am the oil had ran across location due to rain water from storm the day before. The supervisor called diversified out to the site and started clean up at around 3:00am. Total of 35 bbls of oil and 70 bbls of water released. 10 bbls of oil and 20 bbls of water on the ground. 25 bbls of oil and 50 bbls of water inside containment. 7 bbls of oil recovered from outside the containment area

#### Describe Area Affected and Cleanup Action Taken.\*

See above explanation.

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to NMOCD 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 NMOCD marked as "Final Report" does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to ground water, surface water, human health or the environment. In addition, NMOCD 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.

Signature: <i>Kayla McConnell</i>	OIL CONSERVATION DIVISION	
Printed Name: Kayla McConnell	Approved by Environmental Specialist: <i>cy</i>	
Title: Regulatory Analyst	Approval Date: 8/18/2017	Expiration Date:
E-mail Address: kmccconnell@btaoil.com	Conditions of Approval: see attached directive	Attached <input checked="" type="checkbox"/>
Date: 08/14/17	Phone: 432-382-3753	

\* Attach Additional Sheets If Necessary

1RP-4791

nOY1723062483

pOY1723062910

Operator/Responsible Party,

The OCD has received the form C-141 you provided on \_8/14/2017\_ regarding an unauthorized release. The information contained on that form has been entered into our incident database and remediation case number \_1RP-4791\_ has been assigned. **Please refer to this case number in all future correspondence.**

It is the Division's obligation under both the Oil & Gas Act and Water Quality Act to provide for the protection of public health and the environment. Our regulations (19.15.29.11 NMAC) state the following,

*The responsible person shall complete division-approved corrective action for releases that endanger public health or the environment. The responsible person shall address releases in accordance with a remediation plan submitted to and approved by the division or with an abatement plan submitted in accordance with 19.15.30 NMAC. [emphasis added]*

Release characterization is the first phase of corrective action unless the release is ongoing or is of limited volume and all impacts can be immediately addressed. Proper and cost-effective remediation typically cannot occur without adequate characterization of the impacts of any release. Furthermore, the Division has the ability to impose reasonable conditions upon the efforts it oversees. **As such, the Division is requiring a workplan for the characterization of impacts associated with this release be submitted to the OCD District \_1\_ office in \_\_Hobbs\_\_ on or before \_9/18/2017\_. If and when the release characterization workplan is approved, there will be an associated deadline for submittal of the resultant investigation report. Modest extensions of time to these deadlines may be granted, but only with acceptable justification.**

The goals of a characterization effort are: 1) determination of the lateral and vertical extents along with the magnitude of soil contamination. 2) determine if groundwater or surface waters have been impacted. 3) If groundwater or surface waters have been impacted, what are the extents and magnitude of that impact. 4) The characterization of any other adverse impacts that may have occurred (examples: impacts on vegetation, impacts on wildlife, air quality, loss of use of property, etc.). To meet these goals as quickly as possible, the following items must, at a minimum, be addressed in the release characterization workplan and subsequent reporting:

- Horizontal delineation of soil impacts in each of the four cardinal compass directions. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. This is not an exclusive list of potential contaminants. Analyzed parameters should be modified based on the nature of the released substance(s). Soil sampling must be both within the impacted area and beyond.
- Vertical delineation of soil impacts. Adsorbed soil contamination must be characterized for the following constituents using the associated laboratory methods: benzene, toluene, ethylbenzene, and total xylenes by either Method 8260 or 8021, total petroleum hydrocarbons by Method 8015 extended range (GRO+DRO+MRO; C<sub>6</sub> thru C<sub>36</sub>), and for chloride by Method 300. As above, this is not an exclusive list of potential contaminants and can be modified. Vertical characterization samples should be taken at depth intervals no greater than five feet apart. Lithologic description of encountered soils must also be provided. At least ten vertical feet of soils with contaminant concentrations at or below these values must be demonstrated as existing above the water table.
- Nominal detection limits for field and laboratory analyses must be provided.
- Composite sampling is not generally allowed.
- Field screening and assessment techniques are acceptable (headspace, titration, EC [include algorithm for validation purposes], EM, etc.), but the sampling and assay procedures must be clearly defined. Copies of field notes are highly desirable. A statistically significant set of split samples must be submitted for confirmatory laboratory analysis, including the laterally farthest and vertically deepest sets of soil samples. Make sure there are at least two soil samples submitted

for laboratory analysis from each borehole or test pit (highest observed contamination and deepest depth investigated). Copies of the actual laboratory results must be provided including chain of custody documentation.

- Probable depth to shallowest protectable groundwater and lateral distance to nearest surface water. If there is an estimate of groundwater depth, the information used to arrive at that estimate must be provided. If there is a reasonable assumption that the depth to protectable water is 50 feet or less, the responsible party should anticipate the need for at least one groundwater monitoring well to be installed in the area of likely maximum contamination.

- If groundwater contamination is encountered, an additional investigation workplan may be required to determine the extents of that contamination. Groundwater and/or surface water samples, if any, must be analyzed by a competent laboratory for volatile organic hydrocarbons (typically Method 8260 full list), total dissolved solids, pH, major anions and cations including chloride and sulfate, dissolved iron, and dissolved manganese. The investigation workplan must provide the groundwater sampling method(s) and sample handling protocols. To the fullest extent possible, aqueous analyses must be undertaken using nominal method detection limits. As with the soil analyses, copies of the actual laboratory results must be provided including chain of custody documentation.

- Accurately scaled and well-drafted site maps must be provided providing the location of borings, test pits, monitoring wells, potentially impacted areas, and significant surface features including roads and site infrastructure that might limit either the release characterization or remedial efforts. Field sketches may be included in subsequent reporting, but should not be considered stand-alone documentation of the site's layout. Digital photographic documentation of the location and fieldwork is recommended, especially if unusual circumstances are encountered.

**Nothing herein should be interpreted to preclude emergency response actions or to imply immediate remediation by removal cannot proceed as warranted. Nonetheless, characterization of impacts and confirmation of the effectiveness of remedial efforts must still be provided to the OCD before any release incident will be closed.**

**Jim Griswold**

OCD Environmental Bureau Chief  
1220 South St. Francis Drive  
Santa Fe, New Mexico 87505  
505-476-3465  
jim.griswold@state.nm.us

Incident ID	nOY1723062483
District RP	
Facility ID	
Application ID	

## Site Assessment/Characterization

*This information must be provided to the appropriate district office no later than 90 days after the release discovery date.*

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>&gt;100</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release 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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

### **Characterization Report Checklist:** *Each of the following items must be included in the report.*

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico  
Oil Conservation Division

Incident ID	nOY1723062483
District RP	
Facility ID	
Application ID	

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.

Printed Name: Bob Hall Title: Environmental ManagerSignature:  Date: 11/22/2022email: bhall@btaoil.com Telephone: 432-682-3753**OCD Only**Received by: Jocelyn Harimon Date: 11/22/2022



Incident ID	nOY1723062483
District RP	
Facility ID	
Application ID	


## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Bob Hall Title: Environmental Manager  
Signature:  Date: 11/22/2022  
email: bhall@btaoil.com Telephone: 432-682-3753

### OCD Only

Received by: Jocelyn Harimon Date: 11/22/2022

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by:  Date: 11/23/2022  
Printed Name: Ashley Maxwell Title: Environmental Specialist

**District I**  
1625 N. French Dr., Hobbs, NM 88240  
Phone:(575) 393-6161 Fax:(575) 393-0720  
**District II**  
811 S. First St., Artesia, NM 88210  
Phone:(575) 748-1283 Fax:(575) 748-9720  
**District III**  
1000 Rio Brazos Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170  
**District IV**  
1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS  
  
Action 161015

CONDITIONS

Operator: BTA OIL PRODUCERS, LLC 104 S Pecos Midland, TX 79701	OGRID: 260297
	Action Number: 161015
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
amaxwell	None	11/23/2022