TETRA TECH

February 1, 2023

District Supervisor
Oil Conservation Division, District 1
1625 North French Drive
Hobbs, New Mexico 88240

Re: Release Characterization and Remediation Report
Maverick Natural Resources, LLC
MCA 478 Injection Line Release
Unit Letter O, Section 28, Township 17 South, Range 32 East
Lea County, New Mexico
Incident ID# nRM1935448024

Dear Sir or Madam:

Tetra Tech, Inc. (Tetra Tech) was contracted by the previous site owner (ConocoPhillips) to assess a release that occurred from a subsurface injection line associated with the Maljamar Cooperative Agreement (MCA) Unit #478 injection well (API No. 30-025-39351). The release footprint is located in Public Land Survey System (PLSS) UnitLetter O, Section 23, Township 17 South, Range 32 East, in Lea County, New Mexico (Site). The approximate release point occurred at coordinates 32.800096°, -103.770461°, as shown in **Figures 1** and **2**.

BACKGROUND

According to the State of New Mexico Oil Conservation Division (NMOCD) C-141 Initial Report, the release was discovered on October 29, 2019. The C-141 reports that the release occurred due to a leak on a subsurface water injection line. Approximately 50 barrels (bbls) of produced water and 6 bbls of crude oil were reported released. A vacuum truck recovered 10 bbls of produced water and 2 bbls of oil. The NMOCD received the initial C-141 on November 4, 2019, and subsequently assigned the release Incident ID nRM1935448024. The initial C-141 form is included in **Appendix A**.

SITE CHARACTERIZATION

Tetra Tech performed a site characterization that did not identify any watercourses, sinkholes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, playa lakes, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the distances specified in 19.15.09 New Mexico Administrative Code (NMAC). The Site is in an area of low karst potential. According to the New Mexico Office of the State Engineers (NMOSE) reporting system, there are three (3) water wells located within a ½-mile radius of the release location. Based on available water well information, the average depth to groundwater is 102 feet below ground surface (bgs) in the vicinity of the Site. Site characterization data is included in **Appendix B**.

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REGULATORY FRAMEWORK

Based upon the release footprint location and in accordance with Subsection E of 19.15.29.12 NMAC, per 19.15.29.11 NMAC, the site characterization data was used to determine recommended remedial action levels (RRALs) for benzene, toluene, ethylbenzene, and xylene (collectively referred to as BTEX), total petroleum hydrocarbons (TPH), and chlorides in soil.

Based on the site characterization and in accordance with Table I of 19.15.29.12 NMAC, the remediation RRALs for the Site are as follows:

Constituent	Site RRALs
Chloride	10,000 mg/kg
TPH	2,500 mg/kg
BTEX	50 mg/kg

Additionally, in accordance with the NMOCD guidance *Procedures for Implementation of the Spill Rule (19.15.29 NMAC)* (September 6, 2019), the following reclamation requirements for surface soils (0-4 feet bgs) outside of active oil and gas operations are as follows:

Constituent	Reclamation Requirements
Chloride	600 mg/kg
TPH	100 mg/kg
BTEX	50 mg/kg

INITIAL RESPONSE ACTIVITIES

The subsurface water injection line runs east-west just north of a lease road between the MCA 478 injection well and a tinhorn where the line ties in approximately 650 feet east of the well. The release occurred from a point on the injection line near a “T” junction in the lease road. The release extent consisted of approximately 17,500 square feet of primarily lease road and some pasture, as shown in **Figure 3**.

According to site records, initial response actions were taken by COP Operations at the release site on November 1, 2019. Approximately 475 cubic yards of contaminated soil were removed from impacted areas in the lease road at this time and sent to R360 for disposal. According to the records, confirmation samples were not collected during the initial response remediation activities.

Tetra Tech conducted a visual site inspection of the release area on May 18, 2021, to assess current Site conditions and document the release area footprint. The NMOCD online well records indicate that the MCA 478 injection well is active. During the site visit, stressed vegetation was observed in the pasture north of the lease road and the reported release point coordinates. A cursory aerial review of this area revealed evidence of disturbed soils and possible remedial actions conducted in this area prior to the October 2019 injection line release. Based on this review, this area north of the release point is believed unrelated to the MCA 478 Injection Line Release. The nRM1935448024 release extent, area of disturbed soils, and observed site features are presented in **Figure 3**.

SITE ASSESSMENT SUMMARY

In August and September 2021, Tetra Tech personnel returned to the Site to conduct soil sampling to delineate the release extent and confirm the efficacy of the reported remediation activities conducted during the initial response. A total of sixteen (16) borings were installed to achieve vertical and horizontal delineation of the release. Twelve (12) hand auger borings (AH-1 through AH-12) were installed along the perimeter of the reported release extent to depths ranging from 3 to 6 feet bgs to horizontally delineate the release. Four (4) borings (BH-1 through BH-4) were installed using an air rotary drill rig within the release extent to depths ranging from 20 to 30 feet bgs to achieve vertical delineation of the release. Select samples were field screened for salinity using an ExTech EC400 ExStik and for total hydrocarbons using a photoionization detector (PID) to measure volatile organics. Boring logs for select borings are presented in **Appendix B**. Photographic documentation of Site conditions at the time of the assessment is presented in **Appendix D**. Boring locations are presented in **Figure 4**.

A total of fifty-eight (58) samples were collected from the sixteen (16) borings and submitted to Pace Analytical (Pace) in Mount Juliet, Tennessee for analysis of TPH Diesel Range Organics (DRO) and TPH Oil Range Organics (ORO) by EPA Method 8015, TPH Low Fraction (GRO) by EPA Method 8015D, BTEX by EPA Method 8260B, and chloride by EPA Method 300.0.

SUMMARY OF SAMPLING RESULTS

Results from the August and September 2021 soil sampling events are summarized in **Table 1**. The analytical results associated with two sample locations located in the lease road (BH-1 and BH-4) are below both the reclamation requirements and the applicable Site RRAL of 20,000 mg/kg for oil and gas production areas. The analytical results associated with BH-2 (just off lease road) were above the site reclamation requirements in the upper 3 feet. The analytical results associated with sample locations AH-1, BH-3, and AH-8 were above the Site reclamation requirement of 600 mg/kg in the 2-3 foot, 0-1 foot, and 0-1 foot sample intervals, respectively. The results associated with all other perimeter sample locations (AH-2 through AH- 7 and AH-9 through AH-12) were below the Site reclamation requirements for chloride, TPH, and BTEX in all analyzed samples.

REMEDIATION WORK PLAN

The Release Characterization and Remediation Work Plan (Work Plan) was prepared by Tetra Tech on behalf of ConocoPhillips and submitted to NMOCD on January 19, 2022, with fee application payment PO Number RSJ3X-191104-C-1410. The Work Plan described the results of the release assessment and provided characterization of the impact at the Site. The Work Plan was approved via email by Jennifer Nobui on February 16, 2022.

REMEDIATION AND CONFIRMATION SAMPLING

Based on the soil assessment and delineation results for the release and the approved remediation work plan, excavation activities commenced on December 16 and concluded on December 29, 2022. Maverick's subcontractor, SDR Enterprises, used heavy equipment to excavate 570 cubic yards of impacted soil from the remediation areas as shown in **Figure 5** to depths of 1 foot to 3 feet below the surrounding ground surface, respectively. To avoid any potential contact by heavy equipment with the pressurized lines, heavy equipment was maintained at a distance of at least 4 feet from pressurized lines. In the 3-foot deep excavation area, the surface lines were moved to excavate below them. Confirmation sampling results from samples FS-5 (2) and FS-6 (2) in the areas below the pressurized lines showed that clean margins were obtained. In the northernmost 1-foot deep excavation area, the soil was excavated by hydrovac to avoid any impact to subsurface utilities. All excavated soils were transported offsite and disposed of at R360 Halfway.

Upon reaching the final lateral and vertical excavation extents, 26 confirmation samples were collected, including 8 from the floors and 18 from the side walls of the excavated areas, and submitted to Cardinal Laboratory in Hobbs, NM for analysis of chloride (SM4500 CL-B), TPH (8015M), and BTEX (8021B). Laboratory analytical results for submitted confirmation samples reported chloride, TPH, and BTEX concentrations below respective Reclamation Requirements for depths sampled above 4 feet bgs.

On December 29, 2022, subsequent to the receipt of confirmation sample results, SDR completed backfilling of the excavated areas with 912 yards of topsoil obtained from the Seth Boyd Pit and trucked to the Site.

Confirmation sampling results are summarized in **Table 2** and laboratory analytical data packages including chain of custody documentation are included in **Appendix C**. Photographic Documentation showing the excavated areas and final grading after backfilling is provided in **Appendix D**.

CONCLUSIONS

Based on the results of the confirmation sampling, the impacted soil within the release footprint with chloride or TPH concentrations initially assessed with concentrations greater than applicable Reclamation Requirements and/or RRALs has been removed and properly disposed of; therefore, Site remediation is complete. The excavated area has been backfilled with clean material and graded. Re-seeding will be seeded at the beginning of the next growing season to aid in vegetation regrowth and complete reclamation. The seed mixture to be used is provided in **Appendix E**. If you have any questions concerning the remediation activities for the Site, please call me at (832) 252-2093 or Steve Jester at (713) 806-8871.

Sincerely,

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

Stephen Jester
Program Manager
Tetra Tech, Inc.

Cc:
Mr. Bryce Wagoner – Maverick Natural Resources

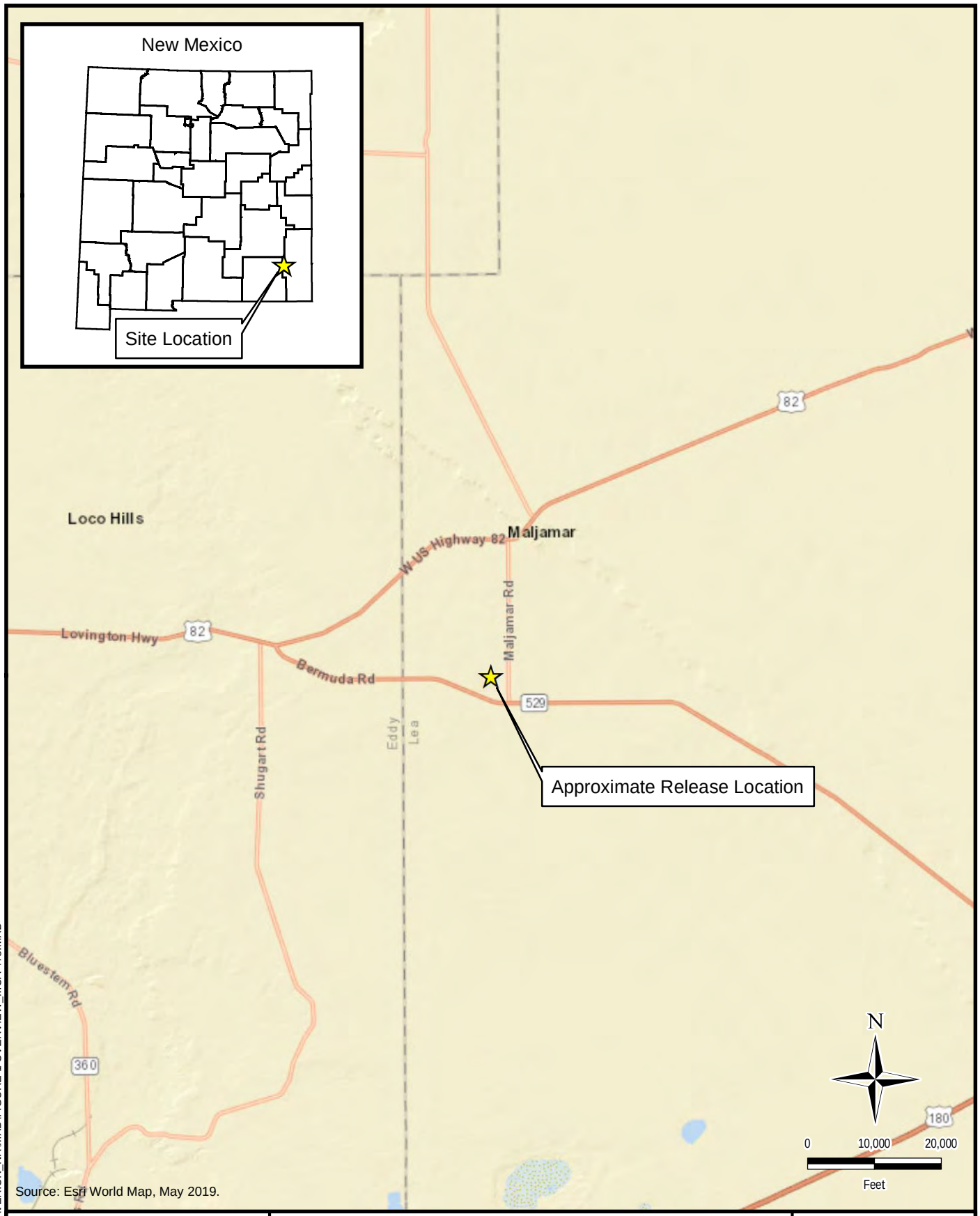
LIST OF ATTACHMENTS

Figures:

Tables:

Appendices:

FIGURES



Source: Esri World Map, May 2019.

DOCUMENT PATH: D:\MAVERICK_NRIMXD\FIGURE 1 OVERVIEW_MCA 478.MXD

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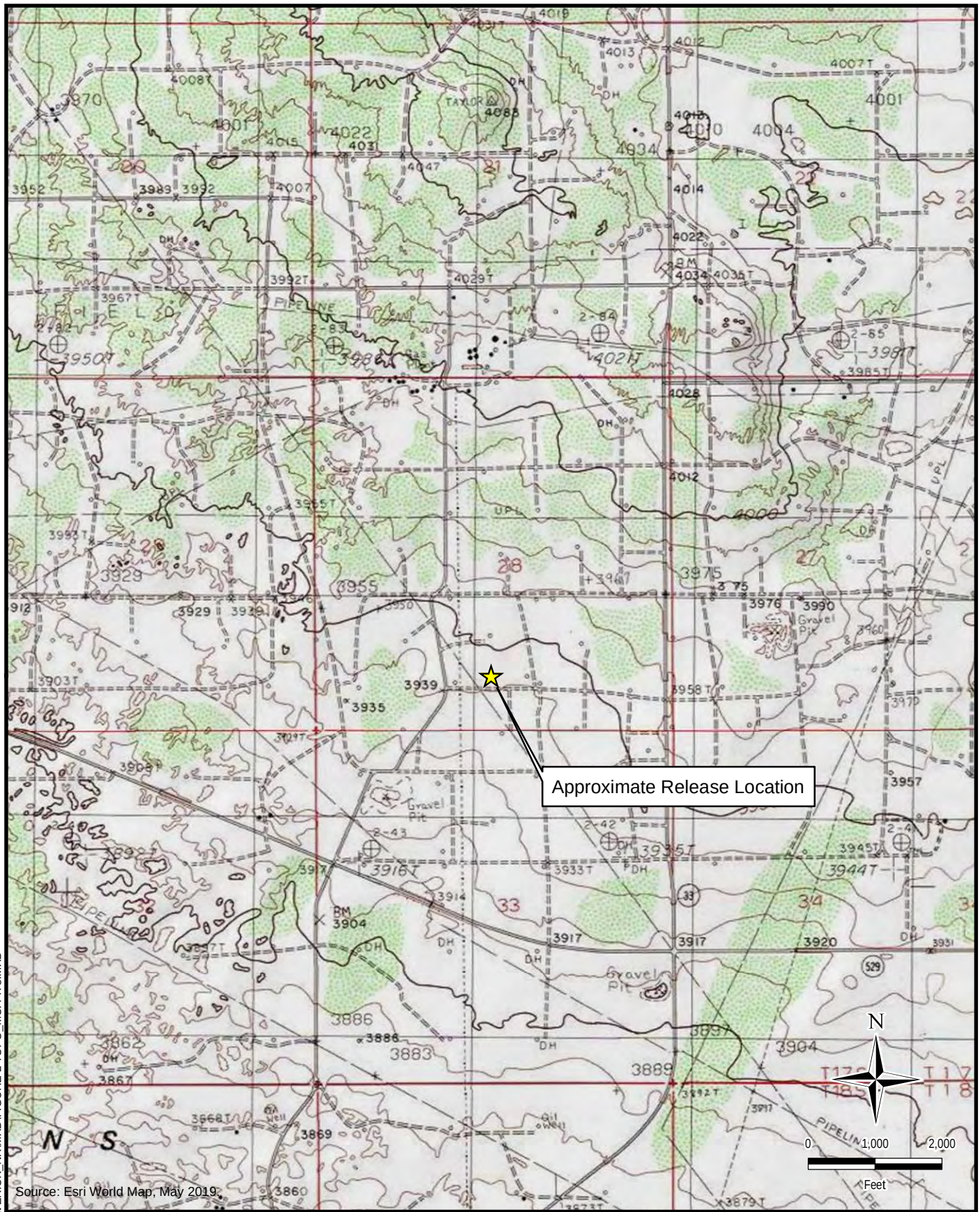
MAVERICK NATURAL RESOURCES

NRM1935448024
(32.800087°, -103.770536°)
LEA COUNTY, NEW MEXICO

MCA 478 INJECTION LINE RELEASE
OVERVIEW MAP

PROJECT NO.:	212C-HN-02078
DATE:	JANUARY 25, 2023
DESIGNED BY:	AAM

Figure No.
1



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MCA 478 INJECTION LINE RELEASE
TOPOGRAPHIC MAP

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DATE:	JANUARY 25, 2023
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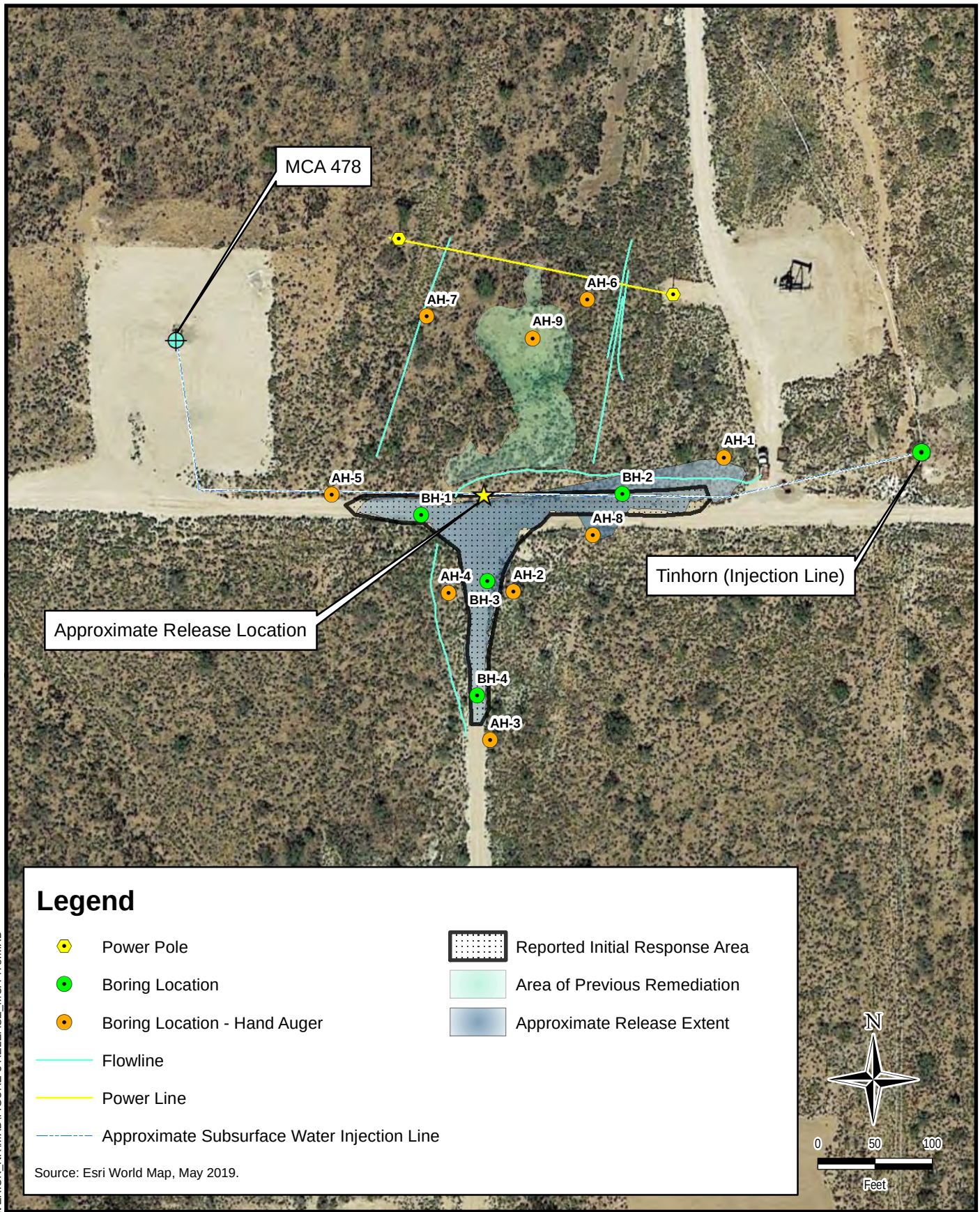
Figure No.
2



DOCUMENT PATH: D:\MAVERICK_NRM\XD\FIGURE 3 RELEASE_MCA 478.MXD

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MAVERICK NATURAL RESOURCES

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MCA 478 INJECTION LINE RELEASE
APPROXIMATE RELEASE EXTENT AND SITE FEATURES

PROJECT NO.:	212C-HN-02078
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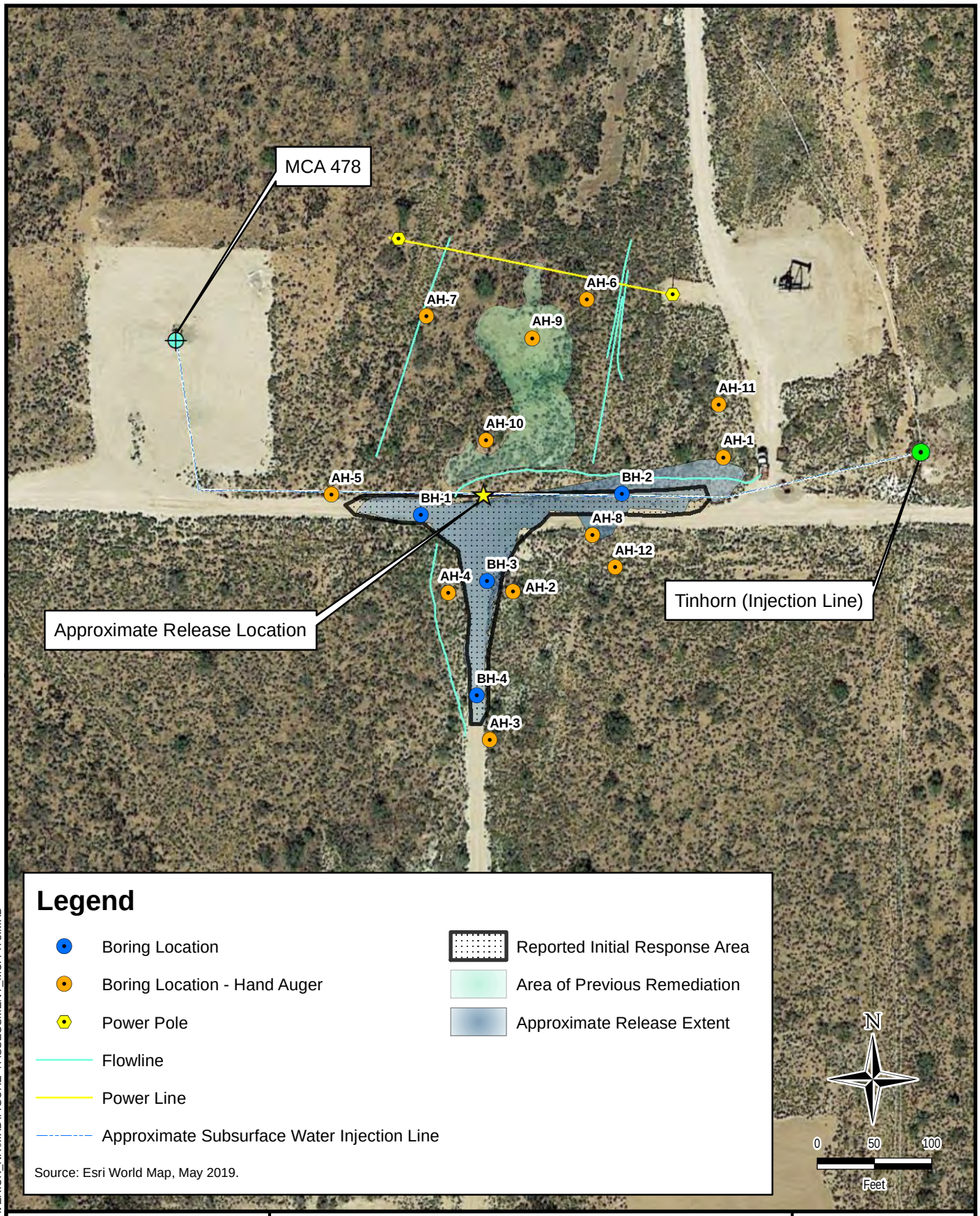
Figure No.
3



DOCUMENT PATH: D:\MAVERICK_NRM\XD\FIGURE 4 ASSESSMENT_MCA 478.MXD

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MAVERICK NATURAL RESOURCES

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LEA COUNTY, NEW MEXICO

MCA 478 INJECTION LINE RELEASE
SITE ASSESSMENT MAP

PROJECT NO.:	212C-HN-02078
DATE:	JANUARY 25, 2023
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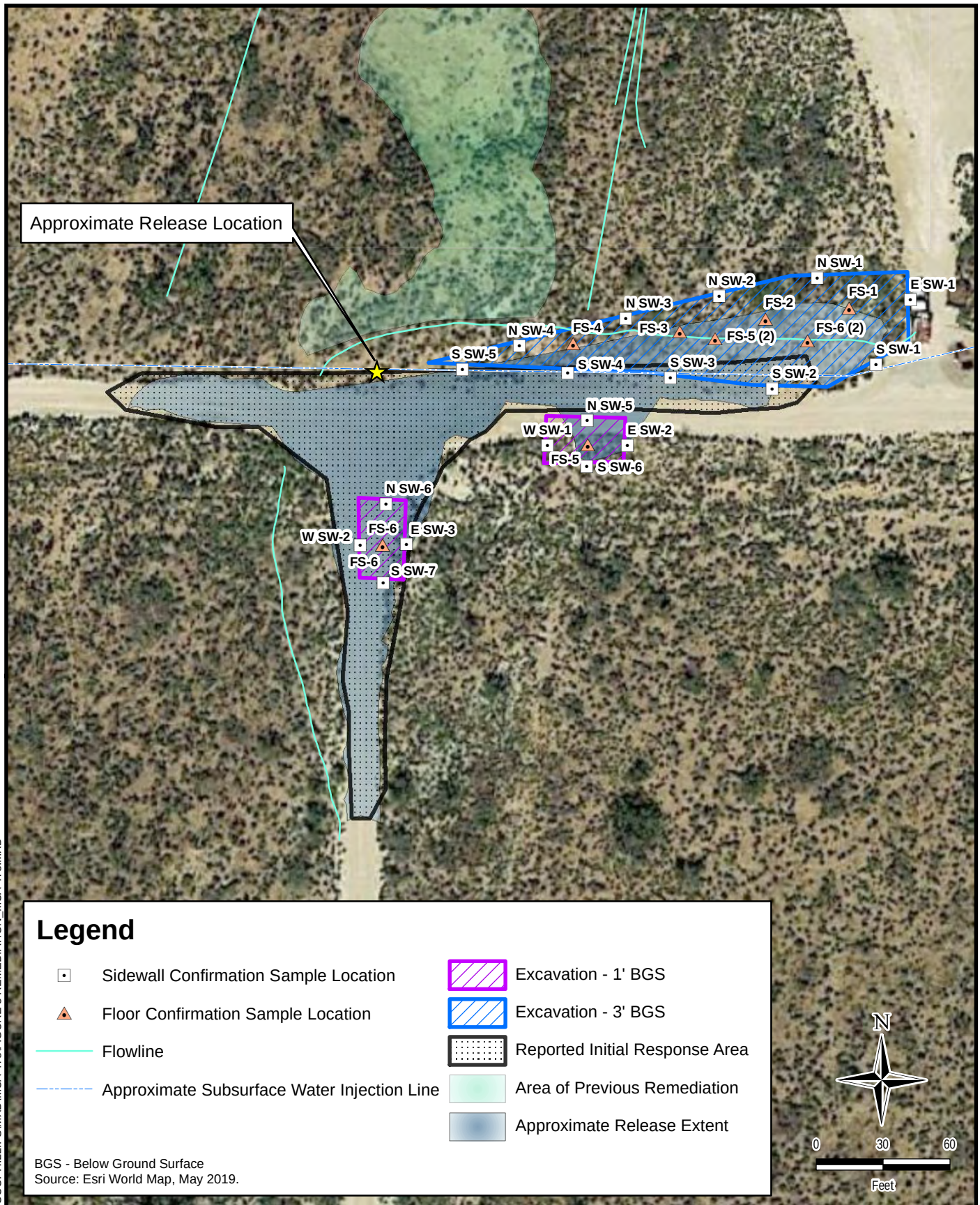
Figure No.
4



DOCUMENT PATH: D:\CONOCOPHILLIPS\MXD\MCA 478\FIGURE 5 REMEDIATION_MCA 478.MXD

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MAVERICK NATURAL RESOURCES

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MCA 478 INJECTION LINE RELEASE
REMEDIATION AREAS AND CONFIRMATION SAMPLES

PROJECT NO.:	212C-HN-02078
DATE:	JANUARY 25, 2023
DESIGNED BY:	AAM

Figure No.
5

TABLES

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
SOIL ASSESSMENT - NRM1935448024
CONOCOPHILLIPS
MCA 478 INJECTION LINE RELEASE
LEA COUNTY, NM

Sample ID	Sample Date	Sample Depth Interval	Field Screening Results		Chloride[1]		BTEX[2]										TPH[3]							
							Benzene		Toluene		Ethylbenzene		Total Xylenes		Total BTEX		GRO[4] C_3 - C_{10}		DRO C_{10} - C_{28}		ORO C_{28} - C_{36}		Total TPH (GRO+DRO+ORO)	
			Chloride	PID																				
		ft. bgs	ppm		mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg		mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	
AH-1	8/12/2021	0-1	35.3	-	< 20.3		< 0.00103		< 0.00514		< 0.00257		0.00102	J	0.00102		0.0533	B J	3.30	J	14.6		18.0	
		2-3	85.1	-	***647***		< 0.00115		< 0.00575		< 0.00287		< 0.00747		-		0.0474	B J	2.18	J	9.18		11.4	
AH-2	8/12/2021	0-1	39.1	-	9.56	J P1	< 0.00104		< 0.00520		< 0.00260		< 0.00676		-		0.0510	B J	6.41		30.2		36.7	
		2-3	61.2	-	16.8	J	< 0.00105		< 0.00525		< 0.00263		< 0.00683		-		0.0487	B J	< 4.10		5.42		5.47	
AH-3	8/12/2021	0-1	42.3	-	10.7	J	< 0.00104		< 0.00518		< 0.00259		< 0.00674		-		0.0494	B J	1.93	J	8.76		10.7	
		2-3	56.5	-	12.6	J	< 0.00107		< 0.00535		< 0.00267		< 0.00695		-		0.0598	B J	2.10	J	10.6		12.8	
AH-4	8/12/2021	0-1	32.9	-	< 20.3		< 0.00103		< 0.00514		< 0.00257		< 0.00669		-		0.0556	B J	2.74	J	11.6		14.4	
		2-3	54.3	-	12.1	J	< 0.00103		< 0.00516		< 0.00258		< 0.00671		-		0.0580	B J	6.25		24.5		30.8	
AH-5	8/12/2021	0-1	69.9	-	11.8	J	< 0.00103		< 0.00517		< 0.00258		< 0.00672		-		0.0408	B J	2.87	J	7.78		10.7	
		2-3	52.1	-	< 20.3		< 0.00103		< 0.00515		< 0.00257		< 0.00669		-		0.0439	B J	2.38	J	9.07		11.5	
AH-6	8/12/2021	0-1	17.8	-	11.9	J	< 0.00103		< 0.00516		< 0.00258		< 0.00671		-		0.0421	B J	< 4.06		5.76		5.80	
AH-7	8/12/2021	0-1	19.2	-	57.2		< 0.00103	J3	< 0.00515	J3	< 0.00258	J3	0.00456	J	0.00456		0.0589	B J	4.67		24.2		28.9	
AH-8	8/12/2021	0-1	78.3	-	***690***		< 0.00112		< 0.00560		< 0.00280		0.00227	J	0.00227		0.0462	B J	< 4.24		6.11		6.16	
		2-3	536	-	19.8	J	< 0.00105		< 0.00523		< 0.00261		0.00214	J	0.00214		0.0559	B J	2.27	J	6.54		8.87	
AH-9	8/18/2021	0-1	25.6	0.1	18.2	J	< 0.00138		< 0.00691		< 0.00345		< 0.00898		-		< 0.119		< 4.76	J6	0.719	J	0.719	
		2-3	28.4	0.1	14.9	J	< 0.00148		< 0.00739		< 0.00370		< 0.00961		-		< 0.124		< 4.95		< 4.95		-	
		3-4	27.6	0.1	10.4	J	< 0.00116		< 0.00578		< 0.00289		< 0.00751		-		< 0.108		< 4.31		1.04	J	1.04	
		5-6	90.1	0.1	14.4	J	< 0.00123		< 0.00616		< 0.00308		< 0.00801		-		< 0.112		< 4.46		2.31	J	2.31	
AH-10	8/18/2021	0-1	32.2	0.1	< 20.2		< 0.00102		< 0.00512		< 0.00256		< 0.00666		-		0.0226	J	< 4.05		4.25		4.27	
		2-3	37.9	0.1	< 20.5		< 0.00105		< 0.00523		< 0.00261		< 0.00680		-		0.0222	J	< 4.09		3.02	J	3.04	
		3-4	56.6	0.1	10.3	J	< 0.00116		< 0.00581		< 0.00290		< 0.00755		-		< 0.108		2.37	J	10.0		12.4	
		5-6	56.8	0.1	16.5	J	< 0.00143		< 0.00717		< 0.00359		< 0.00933		-		< 0.122		< 4.87		0.374	J	0.374	
AH-11	9/20/2021	0-1	-	-	< 20.8		< 0.00108		< 0.00539		< 0.00269		< 0.00700		-		< 0.104		1.67	J	5.21		6.88	
		2-3	-	-	< 20.8		< 0.00108		< 0.00540		< 0.00270		< 0.00702		-		< 0.104		< 4.16		5.90		5.90	
AH-12	9/20/2021	0-1	-	-	< 21.1		< 0.00111		< 0.00556		< 0.00278		< 0.00723		-		< 0.106		4.27		68.4		72.7	
		2-3	-	-	< 20.8		< 0.00108		< 0.00540		< 0.00270		< 0.00701		-		0.0330	B J	< 4.16		4.02	J	4.05	
BH-1	8/18/2021	0-1	252	0.3	100		< 0.00142		< 0.00709		< 0.00355		0.00912	J	0.00192		< 0.121		6.00		5.37	B	11.4	
		2-3	360	0.2	277		< 0.00114		< 0.00570		< 0.00285		0.00155	J	0.00155		< 0.107		2.66	J	4.84	B	7.50	
		4-5	577	0.1	428		< 0.00111		< 0.00557		< 0.00278		< 0.00724		-		< 0.106		2.56	J	12.3		14.9	
		6-7	912	0.1	881		< 0.00121		< 0.00604		< 0.00302		< 0.00785		-		< 0.110		4.90		7.36	B	12.3	
		9-10	801	0.1	752		< 0.00113		< 0.00567		< 0.00284		< 0.00737		-		< 0.107		2.34	J	3.22	B J	5.56	
		14-15	425	0.1	314		< 0.00108		< 0.00539		< 0.00269		< 0.00701		-		< 0.104		2.25	J	2.19	B J	4.44	
		19-20	323	0.1	102		< 0.00107		< 0.00537		< 0.00268		< 0.00698		-		< 0.104		2.43	J	1.93	B J	4.36	
BH-2	8/18/2021	0-1	956	0.2	***1,090***		< 0.00122		< 0.00611		< 0.00306		< 0.00795		-		< 0.111		11.2		37.2		48.4	
		2-3	1290	0.1	***1,080***		< 0.00110		< 0.00551		< 0.00275		0.00132	J	0.00132		< 0.105		6.07		19.8		25.9	
		4-5	1430	0.1	1,340		< 0.00114		< 0.00569		< 0.00285		0.00108	J	0.00108		< 0.107		4.30		8.27	B	12.6	
		6-7	651	0.1	514		< 0.00106		< 0.00528		< 0.00264		< 0.00686		-		< 0.103		2.25	J	2.39	B J	4.64	
		9-10	676	0.1	681		< 0.00108		< 0.00542		< 0.00271		< 0.00704		-		< 0.104		2.22	J	2.50	B J	4.72	
		14-15	681	0.1	610		< 0.00112		< 0.00558		< 0.00279		< 0.00726		-		< 0.106		< 4.23		0.947	B J	0.947	
		19-20	520	0.1	606		< 0.00110		< 0.00550		< 0.00275		< 0.00714		-		< 0.105		< 4.20		0.896	B J	0.896	
		24-25	320	0.1	326		< 0.00108		< 0.00541		< 0.00270		< 0.00703		-		< 0.104		< 4.16		0.494	B J	0.494	

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
SOIL ASSESSMENT - NRM1935448024
CONOCOPHILLIPS
MCA 478 INJECTION LINE RELEASE
LEA COUNTY, NM

Sample ID	Sample Date	Sample Depth Interval	Field Screening Results		Chloride[1]		BTEX[2]									TPH[3]						
							Benzene		Toluene		Ethylbenzene		Total Xylenes		Total BTEX	GRO[4] C_3 - C_{10}		DRO C_{10} - C_{28}		ORO C_{28} - C_{36}		Total TPH (GRO+DRO+ORO)
			Chloride	PID																		
		ft. bgs	ppm		mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg
BH-3	8/18/2021	0-1	569	0.1	***666***		< 0.00119		< 0.00594		< 0.00297		< 0.00773		-	0.0281	J	19.0		47.2		66.2
		2-3	402	0.1	419		< 0.00107		< 0.00534		< 0.00267		< 0.00694		-	0.0296	J	7.38		18.2		25.6
		4-5	567	0.1	548		< 0.00110		< 0.00548		< 0.00274		< 0.00712		-	0.0250	J	< 4.19		2.99	J	3.02
		6-7	917	0.1	757		< 0.00128		< 0.00642		< 0.00321		< 0.00835		-	0.0317	J	< 4.57		< 4.57		0.0317
		9-10	961	0.1	563		< 0.00113		< 0.00565		< 0.00282		< 0.00734		-	0.0354	J	< 4.26		< 4.26		0.0354
		14-15	976	0.1	296		< 0.00107		< 0.00536		< 0.00268		< 0.00697		-	0.0261	J	< 4.14		0.582	J	0.608
		19-20	662	0.1	587		< 0.00113		< 0.00565		< 0.00283		< 0.00735		-	0.0337	J	< 4.26		< 4.26		0.0337
		24-25	445	0.1	110		< 0.00110		< 0.00548		< 0.00274		< 0.00712		-	0.0279	J	< 4.19		< 4.19		0.0279
BH-4	8/18/2021	0-1	586	0.1	565		< 0.00115		< 0.00575		< 0.00288		< 0.00748		-	0.0284	J	16.2		42.1		58.3
		2-3	401	0.1	530		< 0.00110	J3	< 0.00549	J3	< 0.00275	J3	< 0.00714	J3	-	0.0283	J	< 4.20		4.02	J	4.05
		4-5	1130	0.2	977		< 0.00116		< 0.00578		0.000867	J	0.00180	J	0.00267	< 0.108		< 4.31		2.06	J	2.06
		6-7	1120	0.2	856		< 0.00113		< 0.00567		< 0.00284		< 0.00737		-	0.0268	J	< 4.27		< 4.27		0.0268
		9-10	1110	0.1	810		< 0.00112		< 0.00562		< 0.00281		< 0.00731		-	0.0249	J	< 4.25		< 4.25		0.0249
		14-15	1020	0.1	835		< 0.00113		< 0.00566		< 0.00283		< 0.00736		-	0.0262	J	< 4.26		< 4.26		0.0262
		19-20	972	0.1	730		< 0.00117		< 0.00587		< 0.00294		< 0.00764		-	0.0307	J	< 4.35		< 4.35		0.0307
		24-25	683	0.1	695		< 0.00115		< 0.00577		< 0.00288		< 0.00750		-	0.0286	J	< 4.31		< 4.31		0.0286
		29-30	361	0.1	103		< 0.00144		< 0.00721		< 0.00361		< 0.00938		-	0.0337	J	< 4.88		< 4.88		0.0337

NOTES:

ft. Feet
bgs Below ground surface
ppm Parts per million
mg/kg Milligrams per kilogram
TPH Total Petroleum Hydrocarbons
GRO Gasoline range organics
DRO Diesel range organics
ORO Oil range organics
1 EPA Method 300.0
2 EPA Method 8260B
3 EPA Method 8015
4 EPA Method 8015D/GRO

Bold and italicized values indicate exceedance of proposed Remediation RRALs and Reclamation Requirements.

Shaded rows indicate intervals proposed for excavation.

QUALIFIERS:

B The same analyte is found in the associated blank.
J The identification of the analyte is acceptable; the reported value is an estimate.
J3 The associated batch QC was outside the established quality control range for precision.
J6 The sample matrix interfered with the ability to make any accurate determination; spike value is low.
P1 RPD value not applicable for sample concentrations less than 5 times the reporting limit.

TABLE 2
SUMMARY OF CONFIRMATION SAMPLING ANALYTICAL RESULTS
MAVERICK NATURAL RESOURCES
MCA 478 INJECTION LINE RELEASE - nRM1935448024
LEA COUNTY, NM

Sample ID	Sample Date	Sample Depth Interval	Field Screening Results	Chloride[1]	BTEX[2]										TPH[3]									
			Chloride		Benzene		Toluene		Ethylbenzene		Total Xylenes		Total BTEX		GRO[7] C_3 - C_{10}		DRO C_{10} - C_{28}		EXT DRO C_{28} - C_{36}		Total TPH (GRO+DRO+ORO)			
		ft. bgs	ppm	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg	Q	mg/kg
FS-1	12/19/2022	3	-	224		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
FS-2	12/19/2022	3	-	160		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
FS-3	12/19/2022	3	-	64.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
FS-4	12/19/2022	3	-	96.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
FS-5	12/16/2022	1	498	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
FS-6	12/16/2022	1	220	288		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		15.7		30.4		46.1		
FS-5 (2)	12/28/2022	3	-	16.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
FS-6 (2)	12/28/2022	3	-	32.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
NSW-1	12/19/2022	-	-	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
NSW-2	12/19/2022	-	-	16.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
NSW-3	12/19/2022	-	-	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
NSW-4	12/19/2022	-	-	16.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
NSW-5	12/16/2022	-	122	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
NSW-6	12/16/2022	-	260	256		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		18.5		20.0		38.5		
ESW-1	12/19/2022	-	-	304		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
ESW-2	12/16/2022	-	149	96.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
ESW-3	12/16/2022	-	87.3	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-1	12/20/2022	-	-	16.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-2	12/20/2022	-	-	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-3	12/20/2022	-	-	160		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-4	12/20/2022	-	-	32.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-5	12/19/2022	-	-	<16.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-6	12/16/2022	-	138	80.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
SSW-7	12/16/2022	-	130	48.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
WSW-1	12/16/2022	-	118	64.0		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		<10.0		<10.0		-		
WSW-2	12/16/2022	-	200	240		<0.050		<0.050		<0.050		<0.150		<0.300		<10.0		12.9		13.5		26.4		

NOTES:

ft. Feet
bgs Below ground surface
ppm Parts per million
mg/kg Milligrams per kilogram
TPH Total Petroleum Hydrocarbons
GRO Gasoline range organics
DRO Diesel range organics
1 SM4500Cl-B
2 Method 8021B
3 Method 8015M

APPENDIX A
C-141 Form

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 Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NRM1935448024
District RP	
Facility ID	
Application ID	

Release Notification

RSJ3X-191104-C-1410

Responsible Party

Responsible Party ConocoPhillips Company	OGRID 217817
Contact Name Gustavo Fejervary	Contact Telephone 432/210-7037
Contact email g.fejervary@cop.com	Incident # *(assigned by OCD)*
Contact mailing address 5735 SW 7000 Andrews, TX 79714	

Location of Release Source

Latitude 32.8003922 Longitude -103.7714081
(NAD 83 in decimal degrees to 5 decimal places)

Site Name MCA 478	Site Type LINE LEAK
Date Release Discovered 10/2919	API# *(if applicable)*

Unit Letter	Section	Township	Range	County
O	28	17S	32E	LEA

Surface Owner: ☐ State ☑ Federal ☐ Tribal ☐ Private (*Name:* _____)

Nature and Volume of Release

Material(s) Released (Select all that apply and attach calculations or specific justification for the volumes provided below)

☑ Crude Oil	Volume Released (bbls) 6	Volume Recovered (bbls) 2
☑ Produced Water	Volume Released (bbls) 50	Volume Recovered (bbls) 10
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	☑ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Underground water Injection line for the MCA 478 developed a leak which led to a 56 bbl spill. 12 bbls. of fluid was recovered with a vacuum truck leaving approximately 44 bbls. in the ground on and off pad

Form C-141
Page 2

State of New Mexico
Oil Conservation Division

Incident ID	NRM1935448024
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC? ☑ Yes ☐ No	If YES, for what reason(s) does the responsible party consider this a major release? it was more than 25 bbls.

If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

It was given on 10/30/19 to district 1 email address and Bradford Billings

Initial Response

The responsible party must undertake the following actions immediately unless they could create a safety hazard that would result in injury

☑ The source of the release has been stopped.
☑ The impacted area has been secured to protect human health and the environment.
☐ Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices.
☐ All free liquids and recoverable materials have been removed and managed appropriately.

If all the actions described above have not been undertaken, explain why:

Remediation process is ongoing.

Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.

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: Gustavo Fejervary Title: Environmental Coordinator

Signature: Date: 11/4/19

email: g.fejervary@cop.com Telephone: 432/210-7037

OCD Only

Received by: Ramona Marcus Date: 12/20/2019

L48 Spill Volume Estimate Form

Facility Name & Number:	MCA 478 injection line
Asset Area:	Maljamar
Release Discovery Date & Time:	10/29/19 8:35pm
Release Type:	Oil Mixture
Provide any known details about the event:	an additional 12 bbls were recovered, for a total of 56 bbls released. (5.6 Oil, 50.4 PW)

Spill Calculation - Subsurface Spill - Rectangle

Was the release on pad or off-pad?	On Pad - 10.5%; Off Pad - 15.12% soil spilled-fluid saturation factor
Has it rained at least a half inch in the last 24 hours?	Yes, On Pad - 8%; Off Pad - 13.57% soil spilled-fluid saturation factor; if No, use factors above.

Convert Irregular shape into a series of rectangles	Length (ft.)	Width (ft.)	Depth (in.)	Soil Spilled-Fluid Saturation	Estimated volume of each area (bbl.)	Total Estimated Volume of Spill (bbl.)	Percentage of Oil if Spilled Fluid is a Mixture	Total Estimated Volume of Spilled Oil (bbl.)	Total Estimated Volume of Spilled Liquid other than Oil (bbl.)
Rectangle A	120.0	18.0	1.50	10.50%	48.060	5.046	10.00%	0.505	4.542
Rectangle B	116.0	4.0	2.00	15.12%	13.765	2.081	10.00%	0.208	1.873
Rectangle C	333.0	16.0	1.00	10.50%	79.032	8.298	10.00%	0.830	7.469
Rectangle D	24.0	25.0	4.00	15.12%	35.600	5.383	10.00%	0.538	4.844
Rectangle E	30.0	6.0	3.00	15.12%	8.010	1.211	10.00%	0.121	1.090
Rectangle F	65.0	12.0	4.00	15.12%	46.280	6.998	10.00%	0.700	6.298
Rectangle G	12.0	8.0	4.00	15.12%	5.696	0.861	10.00%	0.086	0.775
Rectangle H	12.0	18.0	4.00	15.12%	12.816	1.938	10.00%	0.194	1.744
Rectangle I	26.0	16.0	4.00	15.12%	24.683	3.732	10.00%	0.373	3.359
Rectangle I	37.0	16.0	4.00	15.12%	35.125	5.311	10.00%	0.531	4.780
Rectangle I	35.0	6.0	6.00	10.50%	18.690	1.962	10.00%	0.196	1.766
Rectangle J	34.0	15.0	1.00	10.50%	7.565	0.794	10.00%	0.079	0.715
Rectangle I	36.0	16.0	1.00	10.50%	8.544	0.897	10.00%	0.090	0.807
Rectangle I					0.000	0.000		0.000	0.000
Rectangle I					0.000	0.000		0.000	0.000
Rectangle J					0.000	0.000		0.000	0.000
					Total Volume Release:	44.513		4.451	40.062

NRM1935448024

State of New Mexico
Oil Conservation Division

Incident ID	
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?	_____ (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☐ 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)?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☐ 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?	☐ Yes ☐ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☐ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☐ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☐ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☐ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☐ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☐ No
Did the release impact areas **not** on an exploration, development, production, or storage site?	☐ Yes ☐ 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.

Form C-141
Page 4

State of New Mexico
Oil Conservation Division

Incident ID	
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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: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

Remediation Plan Checklist: ***Each of the following items must be included in the plan.***

- ☐ Detailed description of proposed remediation technique
- ☐ Scaled sitemap with GPS coordinates showing delineation points
- ☐ Estimated volume of material to be remediated
- ☐ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☐ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

Deferral Requests Only: ***Each of the following items must be confirmed as part of any request for deferral of remediation.***

☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.

☐ Extents of contamination must be fully delineated.

☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

☐ Approved ☐ Approved with Attached Conditions of Approval ☐ Denied ☐ Deferral Approved

Signature: Jennifer Nobui Date: _____

State of New Mexico
Oil Conservation Division

Incident ID	
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: _____ Title: _____

Signature: _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

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.

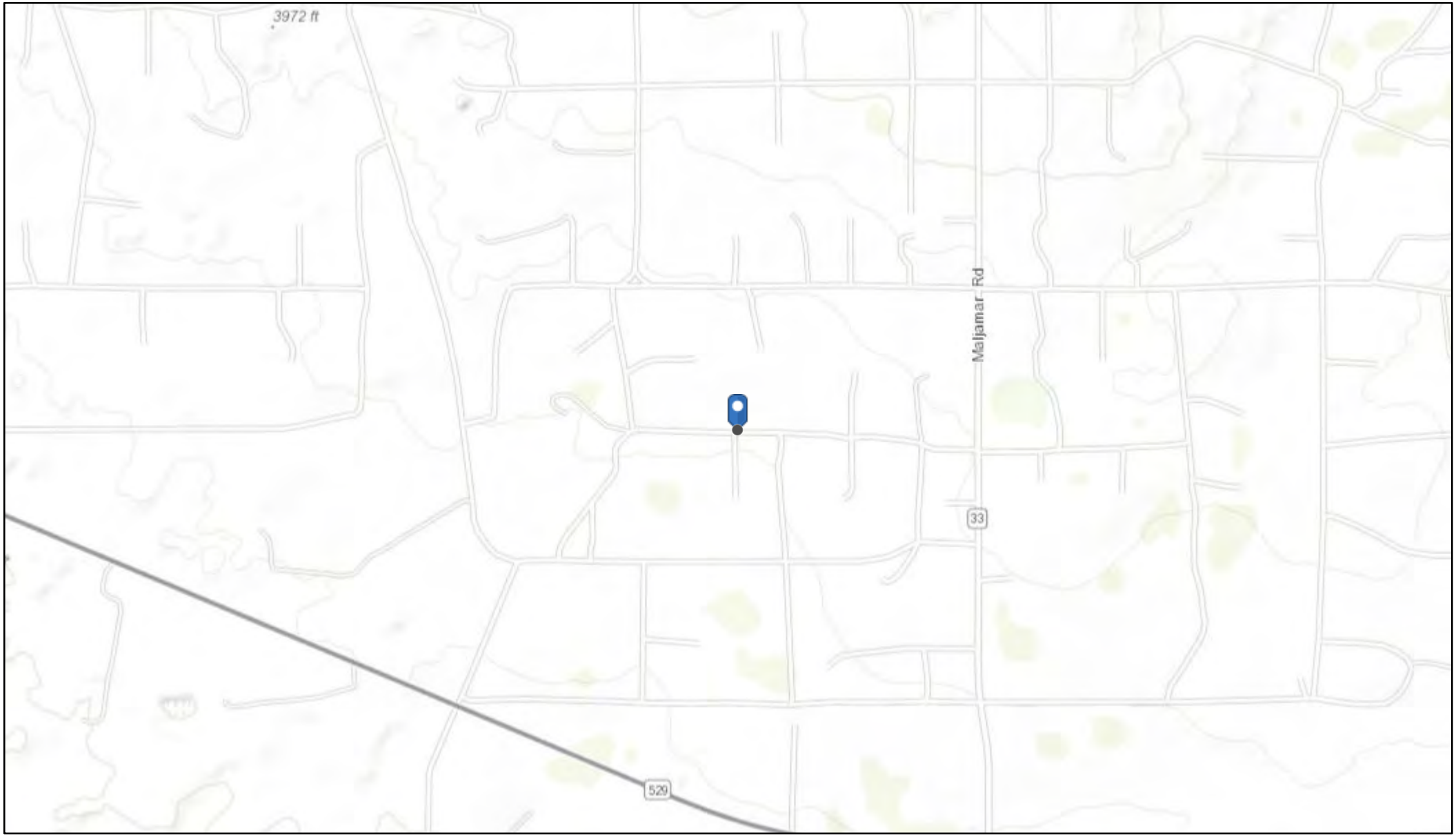
Closure Approved by: Jennifer Nobui Date: 03/07/2023

Printed Name: Jennifer Nobui Title: Environmental Specialist A

APPENDIX B

Site Characterization Data

NMOCD Waterbodies



5/19/2021, 4:35:18 PM

OSE Water-bodies

PLJV Probable Playas

OSE Streams

1:18,056

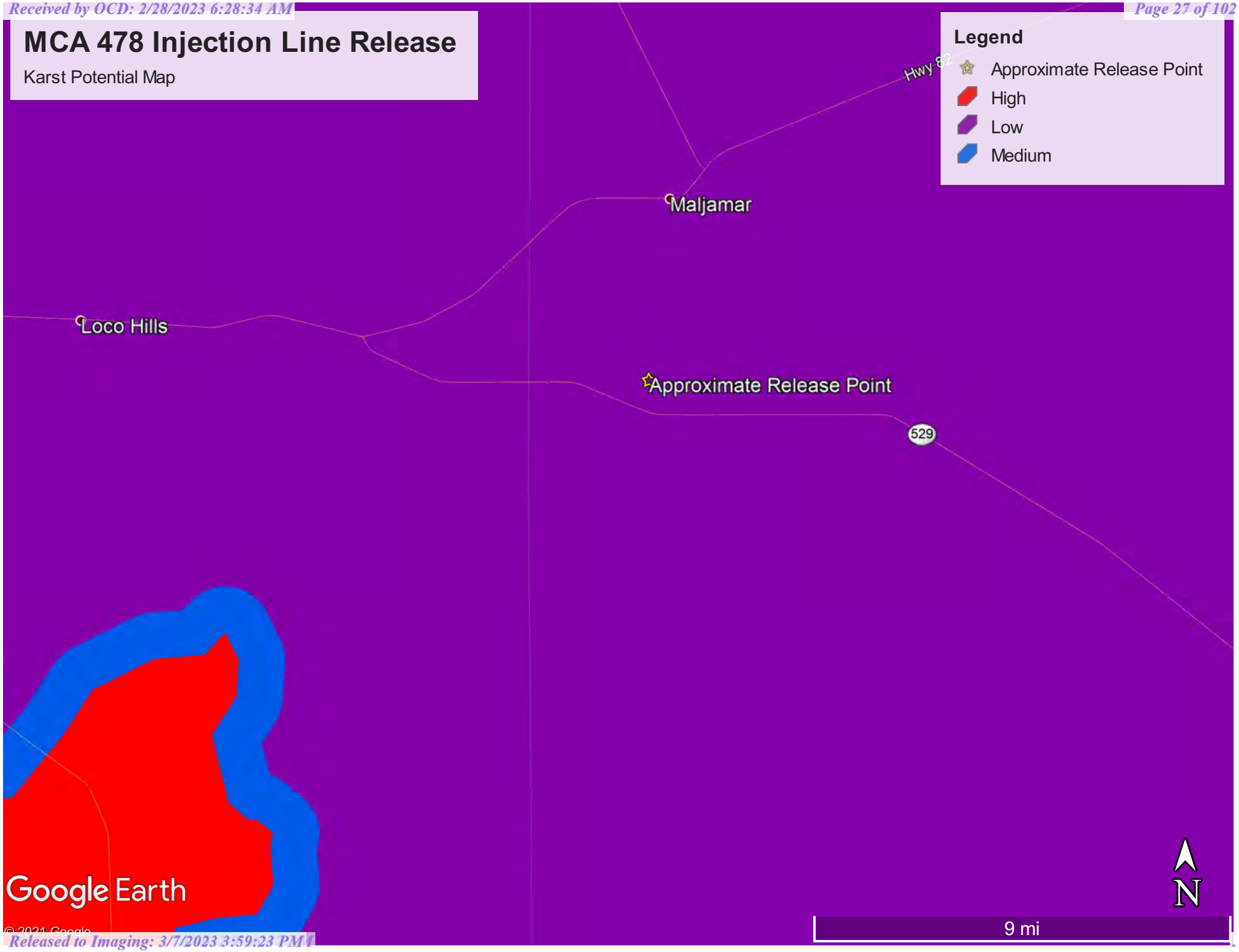
0 0.13 0.25 0.5 mi

0 0.2 0.4 0.8 km

Bureau of Land Management, Texas Parks & Wildlife, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA

MCA 478 Injection Line Release

Karst Potential Map



New Mexico Office of the State Engineer
Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced, O=orphaned, C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)
(quarters are smallest to largest) (NAD83 UTM in meters) (In feet)

POD Number	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
RA 12721 POD4	RA	LE	1	1	2	33	17S	32E	615055	3629589	215	140		
RA 12721 POD3	RA	LE	2	3	4	28	17S	32E	615417	3629979	349	115		
RA 12721 POD6	RA	LE	1	2	2	33	17S	32E	615530	3629431	548	130		
RA 12721 POD5	RA	LE	2	4	4	28	17S	32E	615650	3629961	555	130	124	6
RA 12721 POD8	RA	LE	1	2	1	33	17S	32E	614640	3629463	583	130	108	22
RA 12721 POD1	RA	LE	3	2	3	28	17S	32E	614645	3630141	588	125		
RA 12721 POD7	RA	LE	1	3	2	33	17S	32E	615064	3629198	599	130		
RA 12721 POD2	RA	LE	1	1	4	28	17S	32E	615055	3630407	615	124	75	49

Average Depth to Water: **102 feet**
Minimum Depth: **75 feet**
Maximum Depth: **124 feet**

Record Count: 8

UTMNAD83 Radius Search (in meters):

Easting (X): 615120.36 **Northing (Y):** 3629795 **Radius:** 800

APPENDIX C
Boring Logs

212C-MD-02505 | TETRA TECH

LOG OF BORING BH-1

Page 1 of 1

Project Name: MCA 478 Injection Line Release

Borehole Location: GPS: 32.800041°, -103.770714° | Surface Elevation: 3942 ft

Borehole Number: BH-1 | Borehole Diameter (in.): 8 | Date Started: 8/18/2021 | Date Finished: 8/18/2021

WATER LEVEL OBSERVATIONS

While Drilling: DRY ft | Upon Completion of Drilling: DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
0-1	Air Rotary	Discrete	252	0.3							**-CALICHE-** CALICHE (LEASE ROAD): White to tan, dry, heavily cemented with calcium carbonate, with abundant gravel, no staining, no odor.	1	BH-1 (0'-1')
2-3	Air Rotary	Discrete	360	0.2							**-SM-** SILTY SAND: Tan, slightly moist, loose, very fine grained, with abundant caliche gravel, no staining, no odor.	2	BH-1 (2'-3')
4-5	Air Rotary	Discrete	577	0.1							**-SM-** SILTY SAND: Dark brown, slightly moist, medium dense, fine grained, with abundant clay, with trace gravel, no staining, no odor. -- Dry @ 4' -- Abundant caliche gravel @ 6'		BH-1 (4'-5')
6-7	Air Rotary	Discrete	912	0.1									BH-1 (6'-7')
9-10	Air Rotary	Discrete	801	0.1							**-SP-** SAND: Tan, dry, medium dense, very fine grained, with abundant caliche gravel, with some silt, no staining, no odor.	9	BH-1 (9'-10')
14-15	Air Rotary	Discrete	425	0.1							**-SP-** SAND: Tan, dry, dense, very fine grained, with some silt, with some gravel, no staining, no odor.	14	BH-1 (14'-15')
19-20	Air Rotary	Discrete	323	0.1								20	BH-1 (19'-20')

Bottom of borehole at 20.0 feet.

Sampler Types: Split Spoon; Shelby; Bulk Sample; Grab Sample; Acetate Liner; Vane Shear; Discrete Sample; Test Pit

Operation Types: Mud Rotary; Continuous Flight Auger; Wash Rotary; Hand Auger; Air Rotary; Direct Push; Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value based on Google Earth data.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

MCA 478 SP-1 9-14-21 - TT_AUSTIN_GEOTECH_NOWELL 8-1-2015 TT TEMPLATE DECEMBER WELL.GDT

Revised 5-16-12 (RHM)

212C-MD-02505 | TETRA TECH

LOG OF BORING BH-2

Page 1 of 1

Project Name: MCA 478 Injection Line Release

Borehole Location: GPS: 32.800090°, -103.770143° | Surface Elevation: 3943 ft

Borehole Number: BH-2 | Borehole Diameter (in.): 8 | Date Started: 8/18/2021 | Date Finished: 8/18/2021

WATER LEVEL OBSERVATIONS

While Drilling ▽ DRY ft | Upon Completion of Drilling ▼ DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
			956	0.2								**-CALICHE-** CALICHE (LEASE ROAD): White to tan, dry, heavily cemented with calcium carbonate, with abundant gravel, no staining, no odor.	1	BH-2 (0'-1')
			1290	0.1								**-SM-** SILTY SAND: Tan, slightly moist, loose, very fine grained, with abundant caliche gravel, no staining, no odor.		BH-2 (2'-3')
5			1430	0.1										BH-2 (4'-5')
			651	0.1								**-SM-** SILTY SAND: Dark brown, slightly moist, medium dense, fine grained, with abundant clay, with trace gravel, no staining, no odor.	6	BH-2 (6'-7')
												-- Dry @ 6.5'	8	
												-- Abundant caliche gravel @ 7'		
10			676	0.1								**-SP-** SAND: Tan, dry, medium dense, very fine grained, with abundant caliche gravel, with some silt, no staining, no odor.		BH-2 (9'-10')
15			681	0.1										BH-2 (14'-15')
20			520	0.1									20	BH-2 (19'-20')
												-SP- SAND: Tan, dry, dense, very fine grained, with some silt, with some gravel, no staining, no odor.		
25			320	0.1									25	BH-2 (24'-25')

Bottom of borehole at 25.0 feet.

Sampler Types: Split Spoon, Acetate Liner, Shelby, Vane Shear, Bulk Sample, Discrete Sample, Grab Sample, Test Pit

Operation Types: Hand Auger, Mud Rotary, Air Rotary, Continuous Flight Auger, Direct Push, Wash Rotary, Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value based on Google Earth data.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

212C-MD-02505	TETRA TECH	LOG OF BORING BH-3	Page 1 of 1

Project Name: MCA 478 Injection Line Release

Borehole Location: GPS: 32.799882°, -103.770528° | Surface Elevation: 3942 ft

Borehole Number: BH-3 | Borehole Diameter (in.): 8 | Date Started: 8/18/2021 | Date Finished: 8/18/2021

WATER LEVEL OBSERVATIONS

While Drilling ▽ DRY ft   Upon Completion of Drilling ▼ DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	REMARKS
0-1	Air Rotary	Discrete Sample	569	0.1							BH-3 (0'-1')
2-3	Air Rotary	Discrete Sample	402	0.1							BH-3 (2'-3')
4-5	Air Rotary	Discrete Sample	567	0.1							BH-3 (4'-5')
6-7	Air Rotary	Discrete Sample	917	0.1							BH-3 (6'-7')
9-10	Air Rotary	Discrete Sample	961	0.1							BH-3 (9'-10')
14-15	Air Rotary	Discrete Sample	976	0.1							BH-3 (14'-15')
19-20	Air Rotary	Discrete Sample	662	0.1							BH-3 (19'-20')
24-25	Air Rotary	Discrete Sample	445	0.1							BH-3 (24'-25')

MATERIAL DESCRIPTION

DEPTH (ft)	MATERIAL DESCRIPTION
0-1	**-CALICHE-** CALICHE (LEASE ROAD): White to tan, dry, heavily cemented with calcium carbonate, with abundant gravel, no staining, no odor.
1-6	**-SM-** SILTY SAND: Tan, slightly moist, loose, very fine grained, with abundant caliche gravel, no staining, no odor.
6-8	**-SM-** SILTY SAND: Dark brown, slightly moist, medium dense, fine grained, with abundant clay, with trace gravel, no staining, no odor. -- Dry @ 6.5' -- Abundant caliche gravel @ 7'
8-20	**-SP-** SAND: Tan, dry, medium dense, very fine grained, with abundant caliche gravel, with some silt, no staining, no odor.
20-25	**-SP-** SAND: Tan, dry, dense, very fine grained, with some silt, with some gravel, no staining, no odor.

Bottom of borehole at 25.0 feet.

Sampler Types: Split Spoon; Shelby; Bulk Sample; Grab Sample; Acetate Liner; Vane Shear; Discrete Sample; Test Pit

Operation Types: Mud Rotary; Continuous Flight Auger; Wash Rotary; Hand Auger; Air Rotary; Direct Push; Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value based on Google Earth data.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

212C-MD-02505 | TETRA TECH

LOG OF BORING BH-4

Page 1 of 1

Project Name: MCA 478 Injection Line Release

Borehole Location: GPS: 32.799610°, -103.770558° | Surface Elevation: 3940 ft

Borehole Number: BH-4 | Borehole Diameter (in.): 8 | Date Started: 8/18/2021 | Date Finished: 8/18/2021

WATER LEVEL OBSERVATIONS

While Drilling DRY ft | Upon Completion of Drilling DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
			586	0.1								**-CALICHE-** CALICHE (LEASE ROAD): White to tan, dry, heavily cemented with calcium carbonate, with abundant gravel, no staining, no odor.	1	BH-4 (0'-1')
			401	0.1								**-SM-** SILTY SAND: Tan, slightly moist, loose, very fine grained, with abundant caliche gravel, no staining, no odor.		BH-4 (2'-3')
5			1130	0.2									6	BH-4 (4'-5')
			1120	0.2								**-SM-** SILTY SAND: Dark brown, slightly moist, medium dense, fine grained, with abundant clay, with trace gravel, no staining, no odor. -- Dry @ 6.5' -- Abundant caliche gravel @ 7'	8	BH-4 (6'-7')
10			1110	0.1								**-SP-** SAND: Tan, dry, medium dense, very fine grained, with abundant caliche gravel, with some silt, no staining, no odor.		BH-4 (9'-10')
15			1020	0.1										BH-4 (14'-15')
20			972	0.1									20	BH-4 (19'-20')
												-SP- SAND: Tan, dry, dense, very fine grained, with some silt, with some gravel, no staining, no odor.		
25			683	0.1										BH-4 (24'-25')
30			361	0.1									30	BH-4 (29'-30')

Sampler Types: Split Spoon; Acetate Liner; Shelby; Vane Shear; Bulk Sample; Discrete Sample; Grab Sample; Test Pit

Operation Types: Mud Rotary; Hand Auger; Air Rotary; Continuous Flight Auger; Direct Push; Wash Rotary; Core Barrel

Bottom of borehole at 30.0 feet.

Notes:

Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value based on Google Earth data.

Logger: Devin Dominguez | Drilling Equipment: Air Rotary | Driller: Scarborough Drilling

MCA 478 GP.LL 9-14-21 ' TT_AUSTIN_GEOTECH_NOWELL 9-1-2015 TT TEMPLATE DECEMBER WELL.GDT' ' `

Revised 5-16-12 (RHM)

212C-MD-02505	TETRA TECH	LOG OF BORING AH-8	Page 1 of 1

Project Name: MCA 478 Injection Line Release

Borehole Location: GPS: 32.800220°, -103.770528° | Surface Elevation: 3944 ft

Borehole Number: AH-8 | Borehole Diameter (in.): 4 | Date Started: 8/18/2021 | Date Finished: 8/18/2021

WATER LEVEL OBSERVATIONS

While Drilling DRY ft   Upon Completion of Drilling DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
	Hand Auger	Grab	32.2	0.1							SM	**-SM-** SILTY SAND: Tan, slightly moist, loose, very fine grained, with abundant caliche gravel, no staining, no odor.		AH-8 (0'-1')
	Hand Auger	Grab	37.9	0.1							SM		3	AH-8 (2'-3')
5	Hand Auger	Grab	56.6	0.1							SM	**-SM-** SILTY SAND: Dark brown, slightly moist, medium dense, fine grained, with abundant clay, with trace gravel, no staining, no odor. -- Dry @ 4'		AH-8 (4'-5')
	Hand Auger	Grab	56.8	0.1							SM		6	AH-8 (5'-6')

Bottom of borehole at 6.0 feet.

Sampler Types: Split Spoon; Shelby; Bulk Sample; Grab Sample; Acetate Liner; Vane Shear; Discrete Sample; Test Pit

Operation Types: Mud Rotary; Continuous Flight Auger; Wash Rotary; Hand Auger; Air Rotary; Direct Push; Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value based on Google Earth data.

Logger: Devin Dominguez | Drilling Equipment: Hand Auger | Driller: Tetra Tech

MCA 478 GP.LL 2-14-21 - TT_AUSTIN_GEOTECH_NOWELL 2-1-2015 TT TEMPLATE DECEMBER WELL.GDT

Revised 5-16-12 (RHM)

212C-MD-02505 | TETRA TECH

LOG OF BORING AH-9

Project Name: MCA 478 Injection Line Release

Borehole Location: GPS: 32.800463°, -103.770396°

Surface Elevation: 3945 ft

Borehole Number: AH-9

Borehole Diameter (in.): 4

Date Started: 8/18/2021

Date Finished: 8/18/2021

WATER LEVEL OBSERVATIONS

While Drilling DRY ft   Upon Completion of Drilling DRY ft

Remarks:

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm) ExStik	VOC FIELD SCREENING (ppm) PID	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT LL	PLASTICITY INDEX PI	MINUS NO. 200 (%)	GRAPHIC LOG	MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
	Hand Auger	Grab Sample	25.6	0.1								**-SM-** SILTY SAND: Tan, slightly moist, loose, very fine grained, with abundant caliche gravel, no staining, no odor.		AH-9 (0'-1')
	Hand Auger	Grab Sample	28.4	0.1									3	AH-9 (2'-3')
5	Hand Auger	Grab Sample	27.6	0.1								**-SM-** SILTY SAND: Dark brown, slightly moist, medium dense, fine grained, with abundant clay, with trace gravel, no staining, no odor. -- Dry @ 4'		AH-9 (4'-5')
	Hand Auger	Grab Sample	90.1	0.1									6	AH-9 (6'-7')

Bottom of borehole at 6.0 feet.

Sampler Types: Split Spoon; Shelby; Bulk Sample; Grab Sample; Acetate Liner; Vane Shear; Discrete Sample; Test Pit

Operation Types: Mud Rotary; Continuous Flight Auger; Wash Rotary; Hand Auger; Air Rotary; Direct Push; Core Barrel

Notes:

Analytical samples are shown in the "Remarks" column.
Surface elevation is an estimated value based on Google Earth data.

Logger: Devin Dominguez | Drilling Equipment: Hand Auger | Driller: Tetra Tech

APPENDIX C
Laboratory Analytical Data

CARDINAL Laboratories

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

December 19, 2022

CHUCK TERHUNE

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MCA - 478 INJECTION LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 12/16/22 16:20.

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.

Cardinal Laboratories is accreditated 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,

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: NSW - 6 (H225983-01)

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	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**256**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	**18.5**	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	**20.0**	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *112 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *125 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: ESW - 3 (H225983-02)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

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

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *93.6 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *102 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 7 (H225983-03)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *94.1 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *101 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: WSW - 2 (H225983-04)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**240**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	**12.9**	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	**13.5**	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *95.1 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *103 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: FS - 6 (1') (H225983-05)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	**15.7**	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	**30.4**	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *94.8 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *104 %* *46.3-178*

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: NSW - 5 (H225983-06)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *92.0 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *98.8 %* *46.3-178*

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: ESW - 2 (H225983-07)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *97.5 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *107 %* *46.3-178*

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CARDINAL Laboratories

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 6 (H225983-08)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *82.1 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *87.6 %* *46.3-178*

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: WSW - 1 (H225983-09)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *96.4 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *103 %* *46.3-178*

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/16/2022	Sampling Date:	12/16/2022
Reported:	12/19/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: FS - 5 (1') (H225983-10)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/19/2022	ND	2.04	102	2.00	2.71	
Toluene*	<0.050	0.050	12/19/2022	ND	2.15	108	2.00	2.45	
Ethylbenzene*	<0.050	0.050	12/19/2022	ND	2.15	107	2.00	0.165	
Total Xylenes*	<0.150	0.150	12/19/2022	ND	6.56	109	6.00	0.549	
Total BTEX	<0.300	0.300	12/19/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/19/2022	ND	416	104	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	12/19/2022	ND	205	102	200	3.28	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	178	89.1	200	1.63	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *85.2 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *91.1 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

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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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Analysis Request of Chain of Custody Record

Tetra Tech, Inc.

901 West Wall St, Suite 100
Midland,Texas 79701
Tel (432) 682-4559
Fax (432) 682-3946

Client Name:	Maverick	Site Manager:	Chuck Terhune
Project Name:	MCA 478 Injection Line Release Remediation	Contact Info:	Chuck.Terhune@tetratech.com
Project Location: (county, state)	Lea County, NM	Project #:	212C-HN-02078
Invoice to:	Chuck Terhune		
Receiving Laboratory:	Cardinal Laboratories	Sampler Signature:	Gabe Huerta
Comments:			

ANALYSIS REQUEST
(Circle or Specify Method No.)

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING DATE	SAMPLING TIME	MATRIX WATER	MATRIX SOIL	PRESERVATIVE METHOD HCL	PRESERVATIVE METHOD HNO_3	PRESERVATIVE METHOD ICE	# CONTAINERS	FILTERED (Y/N)	BTEX 8021B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO)	PAH 8270C	Total Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Metals Ag As Ba Cd Cr Pb Se Hg	TCLP Volatiles	TCLP Semi Volatiles	RCI	GC/MS Vol. 8260B / 624	GC/MS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	Asbestos			Hold
H225985																															
1	NSW-6	12/16/2022	1:00		X			X	1		X		X											X							
2	ESW-3	12/16/2022	1:10		X			X	1		X		X											X							
3	SSW-7	12/16/2022	1:20		X			X	1		X		X											X							
4	WSW-2	12/16/2022	1:30		X			X	1		X		X											X							
5	FS-6 (1')	12/16/2022	1:40		X			X	1		X		X											X							
6	NSW-5	12/16/2022	1:50		X			X	1		X		X											X							
7	ESW-2	12/16/2022	2:00		X			X	1		X		X											X							
8	SSW-6	12/16/2022	2:10		X			X	1		X		X											X							
9	WSW-1	12/16/2022	2:20		X			X	1		X		X											X							
10	FS-5 (1')	12/16/2022	2:30		X			X	1		X		X											X							

Relinquished by: Gabe Huelta	Date: 12-16-22	Time: 1620	Received by: Tamara Oldaker
Relinquished by:	Date:	Time:	Received by:
Relinquished by:	Date:	Time:	Received by:

Date: 12-16-22 Time: 1620

LAB USE ONLY

Sample Temperature
2.8c
C-0.6c
2.2c #13

REMARKS:

- [x] RUSH: Same Day (24 hr) 48 hr 72 hr
- [ ] Rush Charges Authorized
- [ ] Special Report Limits or TRRP Report

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

ORIGINAL COPY

CARDINAL Laboratories

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

December 20, 2022

CHUCK TERHUNE

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MCA - 478 INJECTION LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 12/19/22 15:43.

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.

Cardinal Laboratories is accreditated 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,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: FS - 1 (H226001-01)

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	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *105 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**224**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *79.6 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *86.5 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: FS - 2 (H226001-02)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *85.2 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *92.4 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: FS - 3 (H226001-03)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**64.0**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *79.6 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *86.9 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: FS - 4 (H226001-04)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**96.0**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *84.6 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *92.8 %* *46.3-178*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: ESW - 1 (H226001-05)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**304**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *75.7 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *81.9 %* *46.3-178*

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Celey D. Keene, Lab Director/Quality Manager

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: NSW - 1 (H226001-06)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *72.8 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *79.5 %* *46.3-178*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: NSW - 2 (H226001-07)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *107 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *79.7 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *85.9 %* *46.3-178*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: NSW - 3 (H226001-08)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *86.4 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *92.8 %* *46.3-178*

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CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: NSW - 4 (H226001-09)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *81.5 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *87.8 %* *46.3-178*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/19/2022	Sampling Date:	12/19/2022
Reported:	12/20/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	** (See Notes)
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 5 (H226001-10)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/20/2022	ND	2.06	103	2.00	0.847	
Toluene*	<0.050	0.050	12/20/2022	ND	2.20	110	2.00	0.0658	
Ethylbenzene*	<0.050	0.050	12/20/2022	ND	2.19	109	2.00	2.20	
Total Xylenes*	<0.150	0.150	12/20/2022	ND	6.75	113	6.00	1.82	
Total BTEX	<0.300	0.300	12/20/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	<16.0	16.0	12/20/2022	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	12/19/2022	ND	208	104	200	6.58	
DRO >C10-C28*	<10.0	10.0	12/19/2022	ND	205	103	200	11.6	
EXT DRO >C28-C36	<10.0	10.0	12/19/2022	ND					

Surrogate: 1-Chlorooctane *83.9 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *91.1 %* *46.3-178*

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Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

1/1

Company Name: Maverick
Project Manager: Chuck Terhune
Address:
City: State: Zip:
Phone #: Fax #:
Project #: 212C-MN-02078 Project Owner:
Project Name: MCA 478 Injection Line Release
Project Location: Lea County, NM
Sampler Name: Colton Bickerstaff

BILL TO
P.O. #:
Company: Tetra Tech
Attn: Chuck Terhune
Address: by email
City:
State: Zip:
Phone #:
Fax #:

ANALYSIS REQUEST: TPH, BTEX, Chlorides

Lab I.D. (FOR LAB USE ONLY)	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER:	ACID/BASE:	ICE / COOL	OTHER:	DATE	TIME	TPH	BTEX	Chlorides
H226001																	
1	FS-1	G	1			X					X		12/19/22		X	X	X
2	FS-2	↓	↓			↓					↓		↓		↓	↓	↓
3	FS-3	↓	↓			↓					↓		↓		↓	↓	↓
4	FS-4	↓	↓			↓					↓		↓		↓	↓	↓
5	ESW-1	↓	↓			↓					↓		↓		↓	↓	↓
6	NSW-1	↓	↓			↓					↓		↓		↓	↓	↓
7	NSW-2	↓	↓			↓					↓		↓		↓	↓	↓
8	NSW-3	↓	↓			↓					↓		↓		↓	↓	↓
9	NSW-4	↓	↓			↓					↓		↓		↓	↓	↓
10	SSW-5	↓	↓			↓					↓		↓		↓	↓	↓

Relinquished By: Colt B — Date: 12/19/22 Time: 1543 — Received By: S Rodriguez
Relinquished By: — Date: Time: — Received By:

Verbal Result: ☐ Yes ☑ No Add'l Phone #:
All Results are emailed. Please provide Email address: Chuck.Terhune@tetratech.com
REMARKS:

Delivered By: (Circle One) Sampler - UPS - Bus - Other:
Observed Temp. °C 16.1°c
Corrected Temp. °C 15.5°c
Sample Condition: Cool ☑ Yes ☐ No; Intact ☑ Yes ☐ No
CHECKED BY: (Initials) SR

Turnaround Time: Standard ☐ Rush ☑ 24 hr TAT
Thermometer ID #113 Correction Factor -0.6°C
Bacteria (only) Sample Condition: Cool ☐ Yes ☐ No; Intact ☐ Yes ☐ No; Observed Temp. °C; Corrected Temp. °C

FORM-006 R 3.3 07/18/22

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

CARDINAL Laboratories

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

December 21, 2022

CHUCK TERHUNE

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MCA - 478 INJECTION LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 12/20/22 15:32.

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.

Cardinal Laboratories is accreditated 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,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/20/2022	Sampling Date:	12/20/2022
Reported:	12/21/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 1 (H226023-01)

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	12/21/2022	ND	2.07	103	2.00	1.68	
Toluene*	<0.050	0.050	12/21/2022	ND	2.13	106	2.00	1.69	
Ethylbenzene*	<0.050	0.050	12/21/2022	ND	2.10	105	2.00	1.03	
Total Xylenes*	<0.150	0.150	12/21/2022	ND	6.45	108	6.00	1.56	
Total BTEX	<0.300	0.300	12/21/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**16.0**	16.0	12/21/2022	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	12/21/2022	ND	189	94.3	200	0.995	
DRO >C10-C28*	<10.0	10.0	12/21/2022	ND	175	87.6	200	9.69	
EXT DRO >C28-C36	<10.0	10.0	12/21/2022	ND					

Surrogate: 1-Chlorooctane *90.6 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *97.5 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/20/2022	Sampling Date:	12/20/2022
Reported:	12/21/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 2 (H226023-02)

BTEX 8021B mg/kg Analyzed By: JH/

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/21/2022	ND	2.07	103	2.00	1.68	
Toluene*	<0.050	0.050	12/21/2022	ND	2.13	106	2.00	1.69	
Ethylbenzene*	<0.050	0.050	12/21/2022	ND	2.10	105	2.00	1.03	
Total Xylenes*	<0.150	0.150	12/21/2022	ND	6.45	108	6.00	1.56	
Total BTEX	<0.300	0.300	12/21/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *108 %* *69.9-140*

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**48.0**	16.0	12/21/2022	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	12/21/2022	ND	189	94.3	200	0.995	
DRO >C10-C28*	<10.0	10.0	12/21/2022	ND	175	87.6	200	9.69	
EXT DRO >C28-C36	<10.0	10.0	12/21/2022	ND					

Surrogate: 1-Chlorooctane *88.1 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *96.7 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/20/2022	Sampling Date:	12/20/2022
Reported:	12/21/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 3 (H226023-03)

BTEX 8021B mg/kg Analyzed By: JH/

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/21/2022	ND	2.07	103	2.00	1.68	
Toluene*	<0.050	0.050	12/21/2022	ND	2.13	106	2.00	1.69	
Ethylbenzene*	<0.050	0.050	12/21/2022	ND	2.10	105	2.00	1.03	
Total Xylenes*	<0.150	0.150	12/21/2022	ND	6.45	108	6.00	1.56	
Total BTEX	<0.300	0.300	12/21/2022	ND					

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

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**160**	16.0	12/21/2022	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	12/21/2022	ND	189	94.3	200	0.995	
DRO >C10-C28*	<10.0	10.0	12/21/2022	ND	175	87.6	200	9.69	
EXT DRO >C28-C36	<10.0	10.0	12/21/2022	ND					

Surrogate: 1-Chlorooctane *91.7 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *101 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/20/2022	Sampling Date:	12/20/2022
Reported:	12/21/2022	Sampling Type:	Soil
Project Name:	MCA - 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Tamara Oldaker
Project Location:	MAVERICK - LEA CO NM		

Sample ID: SSW - 4 (H226023-04)

BTEX 8021B mg/kg Analyzed By: JH/

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/21/2022	ND	2.07	103	2.00	1.68	
Toluene*	<0.050	0.050	12/21/2022	ND	2.13	106	2.00	1.69	
Ethylbenzene*	<0.050	0.050	12/21/2022	ND	2.10	105	2.00	1.03	
Total Xylenes*	<0.150	0.150	12/21/2022	ND	6.45	108	6.00	1.56	
Total BTEX	<0.300	0.300	12/21/2022	ND					

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

Chloride, SM4500Cl-B mg/kg Analyzed By: GM

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**32.0**	16.0	12/21/2022	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	12/21/2022	ND	189	94.3	200	0.995	
DRO >C10-C28*	<10.0	10.0	12/21/2022	ND	175	87.6	200	9.69	
EXT DRO >C28-C36	<10.0	10.0	12/21/2022	ND					

Surrogate: 1-Chlorooctane *92.2 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *100 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

1/1

Company Name:	Maverick
Project Manager:	Chuck Terhune
Address:	
City:	State: Zip:
Phone #:	Fax #:
Project #:	212C-HN-02078 Project Owner:
Project Name:	MCA 478 Injection Line Release
Project Location:	Lea County, NM
Sampler Name:	Colton Bickerstaff

BILL TO

P.O. #:	
Company:	Tetra Tech
Attn:	Chuck Terhune
Address:	by email
City:	
State:	Zip:
Phone #:	
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	TPH	BTEX	Chlorides
H226023																	
1	SSW-1	G	1			X					X		12/20/22		X	X	X
2	SSW-2																
3	SSW-3																
4	SSW-4																

Relinquished By:	Date: 12/20/22 Time: 1532	Received By:	Verbal Result: ☐ Yes ☑ No Add'l Phone #:
Relinquished By:	Date: Time:	Received By:	All Results are emailed. Please provide Email address: Chuck.Terhune@tetratech.com / Colton.Bickerstaff@tetratech.com
Delivered By: (Circle One) Sampler - UPS - Bus - Other:	Observed Temp. °C 5.8 Corrected Temp. °C 5.2	Sample Condition Cool: ☑ Yes ☐ No Intact: ☑ Yes ☐ No	CHECKED BY: (Initials) JD

REMARKS:

Turnaround Time: Standard ☐ Rush ☑ 24hr TAT

Bacteria (only) Sample Condition: Cool ☐ Yes ☐ No Intact ☐ Yes ☐ No

Observed Temp. °C

Thermometer ID #113
Correction Factor -0.6°C

Corrected Temp. °C

FORM-006 R 3.3 07/18/22

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

CARDINAL Laboratories

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

December 29, 2022

CHUCK TERHUNE

TETRA TECH

901 WEST WALL STREET , STE 100

MIDLAND, TX 79701

RE: MCA 478 INJECTION LINE RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 12/28/22 13:34.

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.

Cardinal Laboratories is accreditated 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,

Celey D. Keene

Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/28/2022	Sampling Date:	12/28/2022
Reported:	12/29/2022	Sampling Type:	Soil
Project Name:	MCA 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	LEA COUNTY, NM		

Sample ID: FS - 5 (H226088-01)

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	12/28/2022	ND	2.11	106	2.00	1.09	
Toluene*	<0.050	0.050	12/28/2022	ND	2.21	111	2.00	0.780	
Ethylbenzene*	<0.050	0.050	12/28/2022	ND	2.14	107	2.00	0.957	
Total Xylenes*	<0.150	0.150	12/28/2022	ND	6.59	110	6.00	1.05	
Total BTEX	<0.300	0.300	12/28/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	**16.0**	16.0	12/28/2022	ND	400	100	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	12/28/2022	ND	189	94.7	200	2.61	
DRO >C10-C28*	<10.0	10.0	12/28/2022	ND	175	87.7	200	9.50	
EXT DRO >C28-C36	<10.0	10.0	12/28/2022	ND					

Surrogate: 1-Chlorooctane *81.5 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *89.3 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

TETRA TECH
CHUCK TERHUNE
901 WEST WALL STREET , STE 100
MIDLAND TX, 79701
Fax To: (432) 682-3946

Received:	12/28/2022	Sampling Date:	12/28/2022
Reported:	12/29/2022	Sampling Type:	Soil
Project Name:	MCA 478 INJECTION LINE RELEASE	Sampling Condition:	Cool & Intact
Project Number:	212C - HN - 02078	Sample Received By:	Shalyn Rodriguez
Project Location:	LEA COUNTY, NM		

Sample ID: FS - 6 (H226088-02)

BTEX 8021B mg/kg Analyzed By: JH

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	12/28/2022	ND	2.11	106	2.00	1.09	
Toluene*	<0.050	0.050	12/28/2022	ND	2.21	111	2.00	0.780	
Ethylbenzene*	<0.050	0.050	12/28/2022	ND	2.14	107	2.00	0.957	
Total Xylenes*	<0.150	0.150	12/28/2022	ND	6.59	110	6.00	1.05	
Total BTEX	<0.300	0.300	12/28/2022	ND					

Surrogate: 4-Bromofluorobenzene (PID *106 %* *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	12/28/2022	ND	400	100	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	12/28/2022	ND	189	94.7	200	2.61	
DRO >C10-C28*	<10.0	10.0	12/28/2022	ND	175	87.7	200	9.50	
EXT DRO >C28-C36	<10.0	10.0	12/28/2022	ND					

Surrogate: 1-Chlorooctane *92.0 %* *45.3-161*

Surrogate: 1-Chlorooctadecane *98.1 %* *46.3-178*

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

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

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

1/1

Company Name:	Maverick
Project Manager:	Chuck Terhune
Address:	
City:	State: Zip:
Phone #:	Fax #:
Project #:	212C-HN-02078 Project Owner:
Project Name:	MCA 478 Injection Line Release
Project Location:	Lea County, NM
Sampler Name:	Colton Blackthorn

BILL TO

P.O. #:	
Company:	Tetra Tech
Attn:	Chuck Terhune
Address:	by email
City:	
State:	Zip:
Phone #:	
Fax #:	

ANALYSIS REQUEST

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING DATE	SAMPLING TIME	TPH	BTEX	Chlorides
H22160881	FS-5	G	1			X					X		12/28/22		X	X	X
2	FS-6	G	1			X					X		12/28/22		X	X	X

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 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 service. In no event shall Cardinal be liable for incidental or consequental 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.

Relinquished By:	Date: 12/28/22	Received By:	Verbal Result: ☐ Yes ☑ No Add'l Phone #:
	Time: 1334		All Results are emailed. Please provide Email address:
Relinquished By:	Date:	Received By:	Chuck.Terhune@tetratech.com
	Time:		REMARKS:

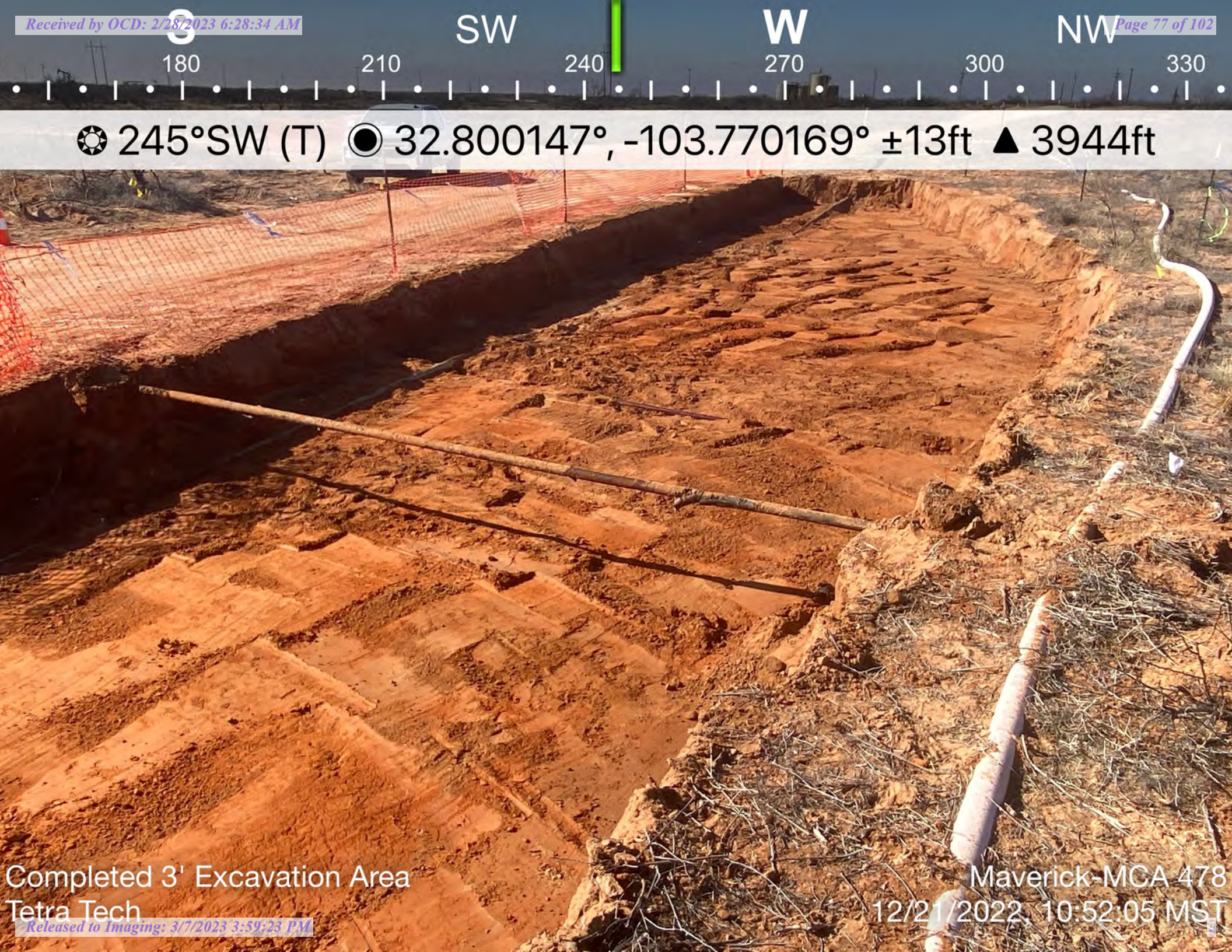
Delivered By: (Circle One)	Observed Temp. °C 1.3	Sample Condition Cool Intact	CHECKED BY: (Initials)	Turnaround Time: Standard ☐ Rush ☑ Bacteria (only) Sample Condition Cool Intact Observed Temp. °C
Sampler - UPS - Bus - Other:	Corrected Temp. °C 0.7	☑ Yes ☑ Yes ☐ No ☐ No	SR	Thermometer ID #113 Correction Factor -0.6°C 24hr. TAT ☐ Yes ☐ Yes ☐ No ☐ No Corrected Temp. °C

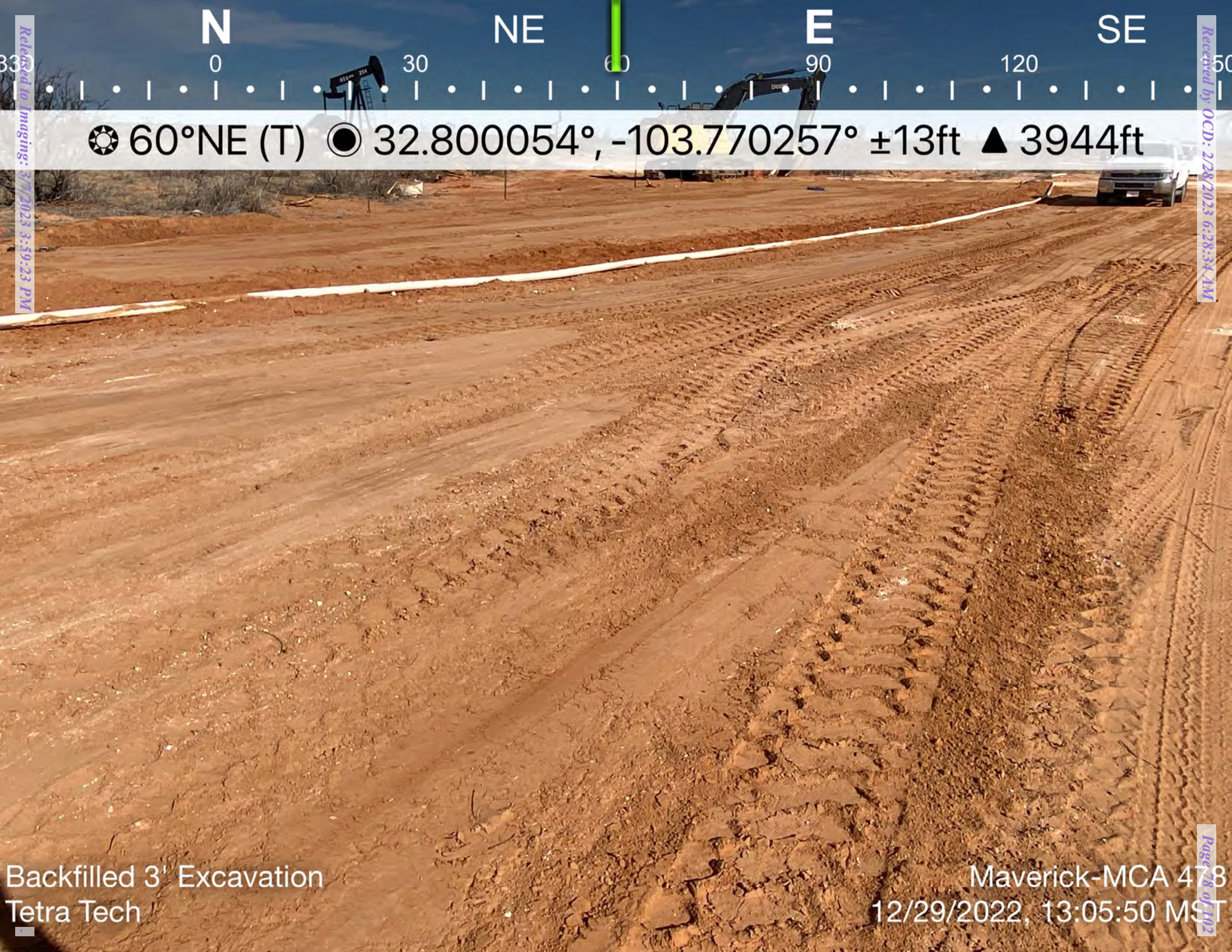
FORM-006 R 3.3 07/18/22

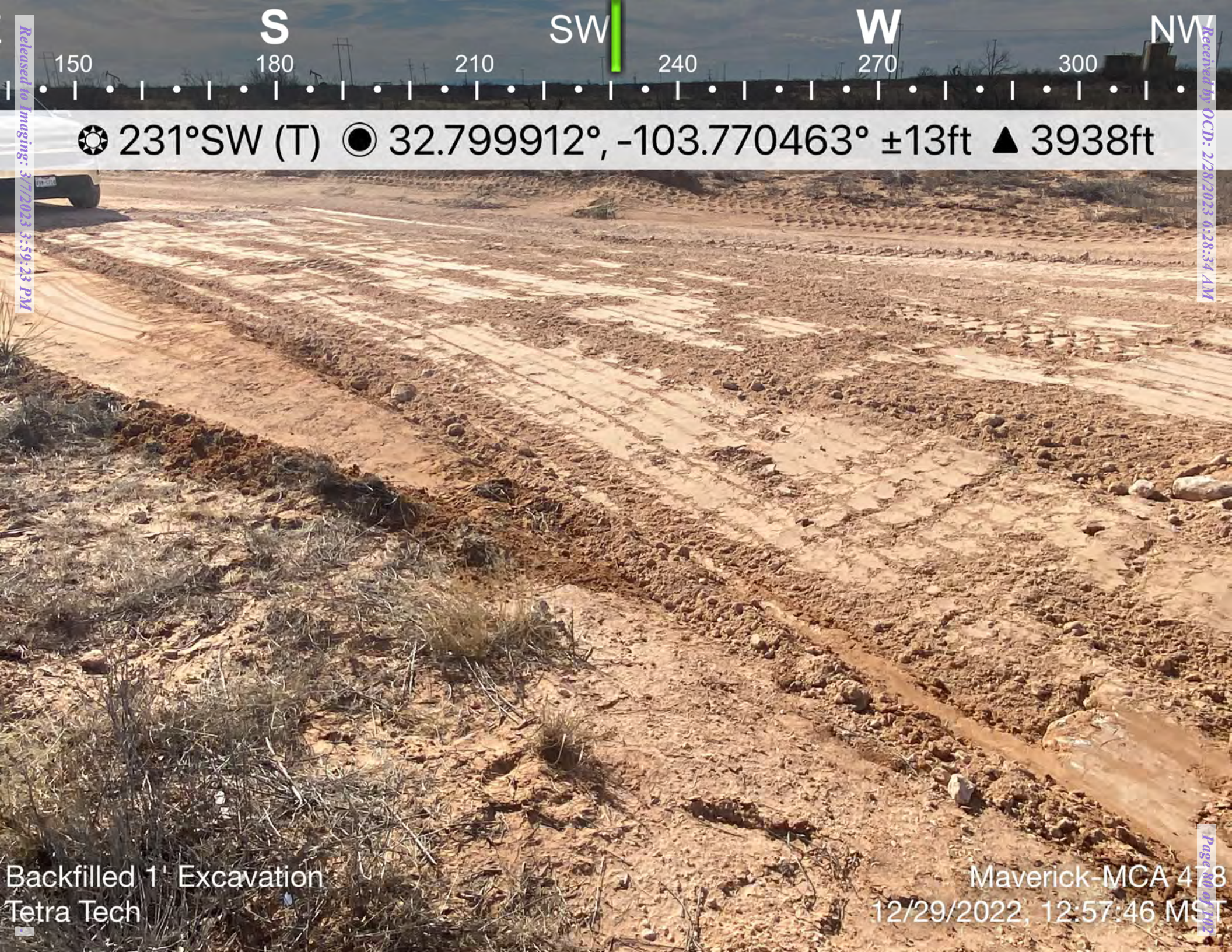
† Cardinal cannot accept verbal changes. Please email changes to celey.keene@cardinallabsnm.com

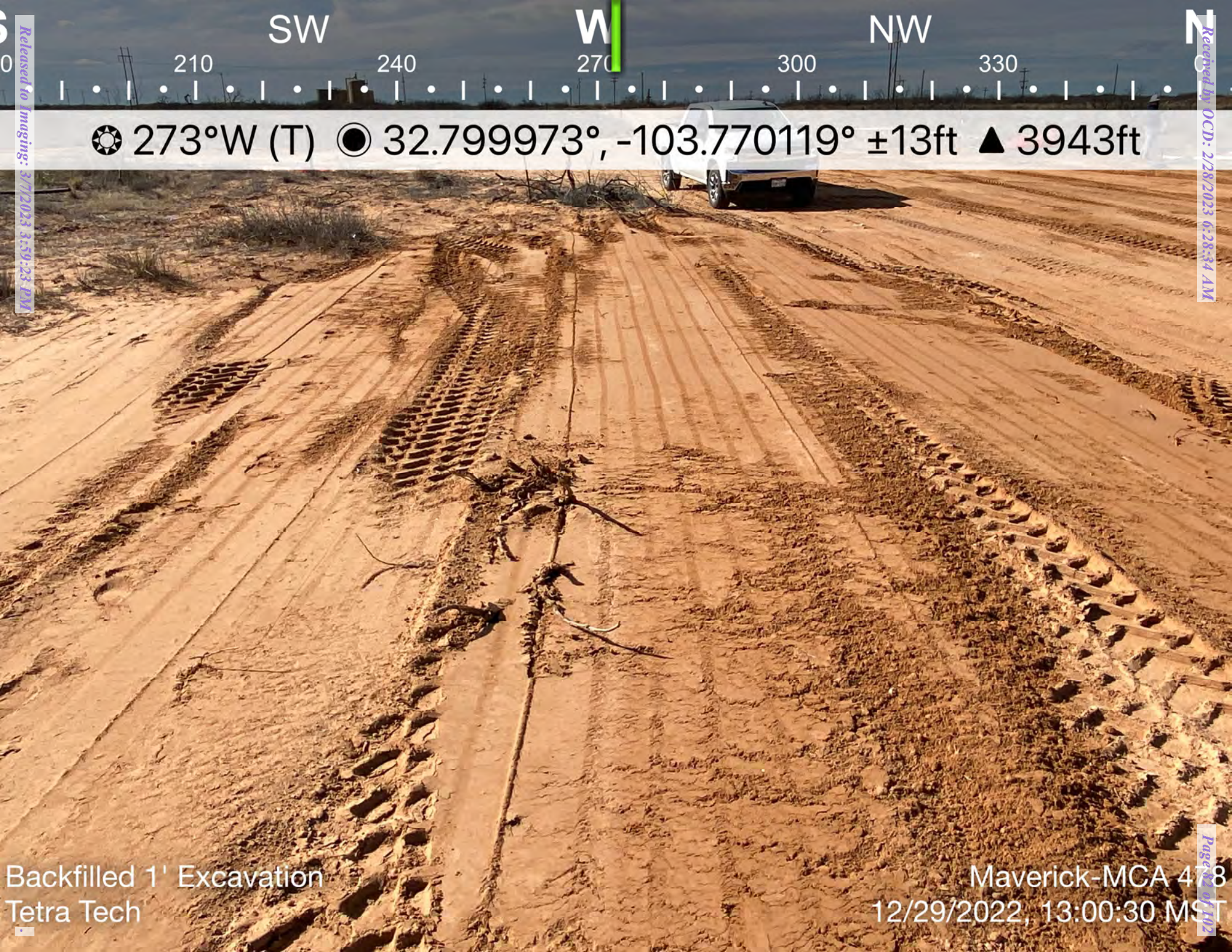
APPENDIX D

Photographic Documentation









Appendix E

NMSLO Seed Mixture Details

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Lea County, New Mexico

MCA 478

October 11, 2021

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

Map Scale: 1:1,720 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 25 50 100 150

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 13N WGS84

Custom Soil Resource Report

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lea County, New Mexico
Survey Area Data: Version 18, Sep 10, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Feb 7, 2020—May 12, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
MF	Maljamar and Palomas fine sands, 0 to 3 percent slopes	12.2	100.0%
Totals for Area of Interest		**12.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lea County, New Mexico

MF—Maljamar and Palomas fine sands, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: dmqb
Elevation: 3,000 to 3,900 feet
Mean annual precipitation: 10 to 15 inches
Mean annual air temperature: 60 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Maljamar and similar soils: 46 percent
Palomas and similar soils: 44 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maljamar

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 24 inches: fine sand
Bt - 24 to 50 inches: sandy clay loam
Bkm - 50 to 60 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 40 to 60 inches to petrocalcic
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 5 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Low (about 5.6 inches)

Interpretive groups

Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Description of Palomas

Setting

Landform: Plains
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from sandstone

Typical profile

A - 0 to 16 inches: fine sand
Bt - 16 to 60 inches: sandy clay loam
Bk - 60 to 66 inches: sandy loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 45 percent
Gypsum, maximum content: 1 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 2.0
Available water supply, 0 to 60 inches: Moderate (about 7.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

Minor Components

Kermit

Percent of map unit: 5 percent
Ecological site: R042XC022NM - Sandhills
Hydric soil rating: No

Wink

Percent of map unit: 5 percent
Ecological site: R042XC003NM - Loamy Sand
Hydric soil rating: No

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NMSLO Seed Mix Sandy Loam (SL)

SANDY LOAM (SL) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
Grasses:			
Galleta grass	Viva, VNS, So.	2.5	F
Little bluestem	Cimmaron, Pastura	2.5	F
Blue grama	Hachita, Lovington	2.0	D
Sideoats grama	Vaughn, El Reno	2.0	F
Sand dropseed	VNS, Southern	1.0	S
Forbs:			
Indian blanketflower	VNS, Southern	1.0	D
Parry penstemon	VNS, Southern	1.0	D
Blue flax	Appar	1.0	D
Desert globemallow	VNS, Southern	1.0	D
Shrubs:			
Fourwing saltbush	VNS, Southern	2.0	D
Common winterfat	VNS, Southern	1.0	F
Apache plume	VNS, Southern	0.75	F
	Total PLS/acre	17.75	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box

- VNS, Southern – No Variety Stated, seed should be from a southern latitude collection of this species.
- Double above seed rates for broadcast or hydroseeding.
- If Parry penstemon is not available, substitute firecracker penstemon.
- If desert globemallow is not available, substitute scarlet globemallow or Nelson globemallow.
- If a species is not available, provide a suggested substitute to the New Mexico Land Office for approval. Increasing all other species proportionately may be acceptable.

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 73676

CONDITIONS

Operator: CONOCOPHILLIPS COMPANY 600 W. Illinois Avenue Midland, TX 79701	OGRID: 217817
	Action Number: 73676
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Remediation Plan Approved with Conditions. The Alternative Confirmation Sampling Plan is approved. Please excavate down to 4 ft by boring BH-2.	2/16/2022

District I
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District IV
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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 190528

CONDITIONS

Operator: Maverick Permian LLC 1111 Bagby Street Suite 1600 Houston, TX 77002	OGRID: 331199
	Action Number: 190528
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Closure Report Approved.	3/7/2023