

May 29, 2022

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

Re: Release Characterization and Remediation Work Plan ConocoPhillips SEMU Permian Upper Battery Release Unit Letter K, Section 19, Township 20 South, Range 38 East Lea County, New Mexico Incident ID# nAPP2207049431

Sir or Madam:

Tetra Tech, Inc. (Tetra Tech) was contacted by ConocoPhillips to assess a release that occurred as the result of a mechanical failure of a 2-phase horizontal separator at the Southeast Monument Unit (SEMU) Permian Upper Battery. The release footprint is located in Public Land Survey System (PLSS) Unit Letter K, Section 19, Township 20 South, Range 38 East, in Lea County, New Mexico (Site). There were two releases which occurred on the same day, with adjacent footprints. The approximate release point for the Mist occurred at coordinates 32.558347°, -103.190526°, and the approximate release point for the Vent occurred at coordinates 32.558113°, -103.190504°, as shown on Figures 1 and 2.

BACKGROUND

According to the State of New Mexico Oil Conservation Division (NMOCD) C-141 Initial Report, the releases were discovered on February 24, 2022. The C-141 documentation reports that the releases occurred due to a mechanical failure of a two-phase horizontal separator. Overpressure at the separator caused the relieve valve to pop-off and mist the pad area to the south and west. The separator failure caused a vent release to occur on the gas sales line, concurrent with the two-phase separator release. The vent release point is located south of the SEMU Permian Upper Battery pad. This release vented an area south and east in the pastureland. Approximately 8.14 barrels (bbls) of produced water and 0.7 bbls of crude oil were reported released. Fluid released from the combined two locations affected an approximate 7,750 square feet of pad and pastureland. The NMOCD received the initial C-141 on March 11, 2022, and subsequently assigned the release the Incident ID nAPP2207049431. The initial C-141 form is included in Appendix A.

SITE CHARACTERIZATION

A site characterization was performed and no watercourses, sinkholes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, 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 no water wells located within an 800-meter (approximately ½ mile) radius of the release location. There is one (1) water well with water level data within 2,700 meters (1.7 miles) of the Site with a depth to groundwater at 70 feet below ground surface (bgs).

The remediation action levels proposed for the site are largely dependent upon depth to groundwater. As such, the OCD focuses upon depth to water estimation. Thus, 19.15.11(A)(2) NMAC allows for various

means of determining depth to groundwater. For this release, as the available water level information was from wells further than ½ mile away from the site, COP reviewed adjacent release sites with approved Work Plans for possibility of associated borings which could provide a means for determining depth to groundwater in the vicinity of nAPP2207049431 release area. As such, subsurface data from the SEMU BMT Battery Tank Release Site (NOY1727735399) was reviewed.

One boring (BH-2A/2R) drilled as a portion of the SEMU BMT Battery Tank release characterization was identified as located within roughly 0.7-mile radius of the SEMU Permian Upper Battery release footprint. A review of the associated boring logs indicates boring BH-2A/2R does not define depth to groundwater but was dry to a depth of 51 feet bgs. The borehole was plugged with 3/8" bentonite chips on September 23, 2021. The borehole coordinates are 32.553388, -103.175938. Thus, based on this data, COP proposes to use the 51 feet – 100 feet criteria listed in Table I of 19.15.29.12 NMAC. The boring log from the SEMU BMT Battery Tank Release investigation is included in Appendix B. The remainder of the site characterization is also included in Appendix B.

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, established depth to groundwater, and in accordance with Table I of 19.15.29.12 NMAC, the remediation RRALs for the Site are as follows:

Constituent	Remediation RRAL
Chloride	10,000 mg/kg
TPH (GRO+DRO+ORO)	2,500 mg/kg
BTEX	50 mg/kg
Benzene	10 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 (GRO+DRO+ORO)	100 mg/kg

INITIAL RESPONSE ACTIVITIES

In accordance with 19.15.29.8.B.(4) NMAC that states "the responsible party may commence remediation immediately after discovery of a release", COP elected to begin remediation of the impacted area footprint in 2022. The release extents consisted of approximately 3,000 square feet of oil and gas lease pad and roughly 1,600 square feet of pastureland.

Initial response remedial actions were performed at the release site between April 7 and 11, 2022. Visually stained areas of the pastureland were scraped to remove impacted materials to approximately 1 foot bgs, resulting in approximately 46 cubic yards of contaminated soil being removed. and sent to R360 Halfway Facility in Hobbs, New Mexico. Waste manifests can be found in Appendix C. The initial response area is indicated in Figure 3.

SITE ASSESSMENT ACTIVITIES AND RESULTS

In order to achieve vertical and horizontal delineation of the release extents, Tetra Tech personnel were at the Site to conduct soil sampling on May 4, 2022. A total of nine (9) boreholes were advanced in the vicinity

Release Characterization and Remediation Work Plan May 29, 2022 Page 3 of 74

of the release area. Six (6) borings (AH-1 through AH-6) were installed around the perimeters of the release extents to a depth of 1-foot bgs to determine the lateral extent of impacted soil. The remaining three (3) borings (AH-7 through AH-9) were installed within the release footprints to depths ranging from 1 to 3 feet bgs to determine the extent of vertical impact of the releases. Photographic documentation of the Site conditions at the time of the assessment is presented in Appendix D. Boring locations are presented in Figure 4.

A total of eleven (11) samples were collected from the nine (9) borings and submitted to Cardinal Laboratories (Cardinal) in Hobbs, New Mexico to be analyzed for TPH (DRO and ORO) by EPA Method 8015, TPH Low Fraction (GRO) by EPA Method 8015D, BTEX by EPA Method 8260B, and chlorides by EPA Method 4500.0. A copy of the laboratory analytical report and chain-of-custody documentation are included in Appendix E.

Results from the May 4, 2022 soil sampling event are summarized in Table 1. The analytical results associated with boring locations AH-8 and AH-9 exceeded the reclamation requirement and Site RRALs for TPH to the total boring depth of 3 feet. The results associated with the remainder of analyzed samples were below the Site proposed RRALs and/or reclamation requirements for chloride, TPH, and BTEX. Neither vertical nor horizontal delineation of the "Vent" release was achieved during the May 4 assessment activities. Analytical results associated with the "Mist" release were below Site RRALs and reclamation requirements.

ADDITIONAL DELINEATION ACTIVITIES AND RESULTS

Tetra Tech personnel returned to the Site on May 20, 2022 to complete vertical and horizontal delineation of the "Vent" release extent. A total of two (2) borings (AH-10 and AH-11) were advanced in the vicinity of the release area. One (1) boring (AH-10) was installed southeast of the perimeter of the release extent to a depth of 1 foot bgs to determine the lateral extent of the impacted soil. One (1) boring (AH-11) was installed within the release extent to a depth of 6 feet bgs to determine the vertical impact of the release. These additional boring locations are presented in Figure 4.

A total of three (3) samples were collected from the two (2) borings and submitted to Cardinal to be analyzed for TPH (DRO and ORO) by EPA Method 8015, TPH Low Fraction (GRO) by EPA Method 8015D, BTEX by EPA Method 8260B, and chlorides by EPA Method 4500.0. A copy of the laboratory analytical reports and chain-of-custody documentation are included in Appendix E.

Results from the May 20, 2022 soil sampling event are summarized in Table 1. The analytical results associated with boring location AH-11 exceeded the reclamation requirement and Site RRALs for TPH in the 3'-4' interval. The results associated with the remainder of analyzed samples were below the Site RRALs and/or reclamation requirements for chloride, TPH, and BTEX. After review of analytical results from the sampling events, both horizontal and vertical delineation of the "Vent" release were achieved during the May assessment activities.

REMEDIATION WORK PLAN

Based on the analytical results from the site assessment, ConocoPhillips proposes to remove the impacted material within the "Vent" release extent as shown in Figure 5. Due to acceptable analytical results within the "Mist" release footprint, no further remediation is proposed in this area. Impacted soils will be excavated using methods applicable for the Site. There are numerous subsurface, surface, and overhead lines in the release footprint. Where applicable, heavy equipment (backhoes and excavators) will be used to excavate to a maximum depth of 4 feet below the surrounding surface or until a representative sample from the walls and bottom of the excavation is below the Site RRALs and reclamation requirements for soils above 4 feet. Heavy equipment will come no more than 4 feet from any pressurized lines. Impacted soils within the vicinity of the surface and subsurface lines which intersect the release footprint will be dug by hand to the maximum extent practicable.

Excavated soils will be transported offsite and disposed of at an NMOCD-approved or permitted facility. Confirmation bottom and sidewall samples will be collected for verification of remedial activities, and analyzed for TPH, BTEX, and chlorides. Once analytical results are received, NMOCD will be notified, and the excavation will then be backfilled with clean material to surface grade. The estimated volume of material to be remediated is approximately 425 cubic yards.

ALTERNATIVE CONFIRMATION SAMPLING PLAN

In accordance with 19.15.29.12(D)(1)(b) NMAC, ConocoPhillips proposes the following alternative confirmation sampling plan to adhere with NMOCD requirements. The proposed confirmation sample locations are depicted in Figure 6. Four (4) confirmation floor samples and seven (7) confirmation sidewall samples are proposed for verification of remedial activities. The proposed excavation encompasses a surface area of approximately 2,850 square feet.

These confirmation sidewall and floor samples will be representative of no more than approximately 500 square feet of excavated area. Confirmation samples will be sent to an accredited laboratory for analysis of TPH (Method 8015 modified), BTEX (Method 8260B), and chloride (USEPA Method 4500.0/300.0). Once results are received, NMOCD will be notified, and the excavation will then be backfilled with clean material to surface grade.

SITE RECLAMATION AND RESTORATION PLAN

Post-remediation, the backfilled pasture area will be seeded (in the next first favorable growing season) to aid in revegetation. Based on the soils at the site, the New Mexico State Land Office (NMSLO) Deep Sand (DS) Sites Seed Mixture will be used for seeding and will be planted in the amount specified in the pounds pure live seed (PLS) per acre. The seed mixture will be spread by a drill equipped with a depth regulator or a hand-held broadcaster and raked. If a hand-held broadcaster is used for dispersal, the pounds pure live seed per acre will be doubled.

Site inspections will be performed to assess the revegetation progress and evaluate the site for the presence of primary or secondary noxious weeds. If noxious weeds are identified, the NMSLO will be contacted to determine an effective method for eradication. If the site does not show revegetation after one growing season, the area will be reseeded as appropriate. The NMSLO seed mixture details and corresponding pounds pure live seed per acre are included in Appendix F. Final reclamation will create a landform that approximates and blends in with the surrounding landform, while controlling erosion.

CONCLUSION

ConocoPhillips proposes to begin remediation activities at the Site within 120 days of NMOCD plan approval. Upon completion of the proposed work, a final closure report detailing the remediation activities and the results of the confirmation sampling will be submitted to NMOCD. If you have any questions concerning the soil assessment or the proposed remediation activities for the Site, please call me at (512) 560-9064 or Christian at (512) 338-2861.

Sincerely, Tetra Tech, Inc.

Nicholas M. Poole Project Lead

Christian M. Llull, P.G. Project Manager

cc: Rahul Kaushik, GPBU – ConocoPhillips Charles Beauvais, GPBU – ConocoPhillips

Release Characterization and Remediation Work Plan May 29, 2022

LIST OF ATTACHMENTS

Figures:

- Figure 1 Overview Map
- Figure 2 Topographic Map
- Figure 3 Approximate Release Extent
- Figure 4 Initial Response and Site Assessment
- Figure 5 Proposed Remediation Extent
- Figure 6 Alternative Confirmation Sampling Plan

Table:

Table 1 – Summary of Analytical Results – Soil Assessment

Appendices:

Appendix A – C-141 Forms

Appendix B – Site Characterization Data

Appendix C – Waste Manifests

Appendix D – Photographic Documentation

Appendix E – Laboratory Analytical Data

Appendix F – NMSLO Seed Mixture Details

ConocoPhillips

FIGURES

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TABLE

TABLE 1

SUMMARY OF ANALYTICAL RESULTS SOIL ASSESSMENT- (NAPP2207049431) CONOCOPHILLIPS

SEMU PERMIAN UPPER BATTERY RELEASE

LEA COUNTY, NM

		BTEX ²								TI	РН ³										
Sample ID Sample Date		Sample Depth	Chloride1		Bonzono		Toluor		Ethulhon		Total Vul		Total P	rev.	GRO		DRO		EXT DR	0	Total TPH
Sample ID	Sample Date				Benzene Toluen		le	Ethylbenzene		i otal Aylenes		TOLAIDIEA		C ₆ - C ₁	.0	> C ₁₀ - C ₂₈		> C ₂₈ - C ₃₆		(GRO+DRO+EXT DRO)	
		ft. bgs	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
AH-1	5/4/2022	0-1	208		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
AH-2	5/4/2022	0-1	48.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
AH-3	5/4/2022	0-1	32.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
AH-4	5/4/2022	0-1	16.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
AH-5	5/4/2022	0-1	< 16.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
AH-6	5/4/2022	0-1	160		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
AH-7	5/4/2022	0-1	64.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
	5/4/2022	1-2	32.0		< 0.050		< 0.050		< 0.050	GC-NC	< 0.150		< 0.300		< 100		4,960		1,440		6,400
ALL-9	5/4/2022	2-3	< 16.0		< 0.050		< 0.050	GC-NC	< 0.050	GC-NC	< 0.150	GC-NC	< 0.300		430		15,700		3,930		20,060
AH-0	5/4/2022	1-2	16.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		1,530		677		2,207
A11-3	5/4/2022	2-3	32.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		10.7		2,510		1,080		3,601
AH-10	5/20/2022	0-1	32.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		< 10.0		< 10.0		-
ALL 11	E /20/2022	3-4	16.0		< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		32.4		4,280		1,160		5,472
AH-11 5/20/2022	5-6	32.0	1	< 0.050		< 0.050		< 0.050		< 0.150		< 0.300		< 10.0		10.3		14.7		25.0	

NOTES:

ft. Feet

bgs Below ground surface

mg/kg Milligrams per kilogram

TPH Total Petroleum Hydrocarbons

GRO Gasoline range organics DRO Diesel range organics

- 1 Method SM4500Cl-B
- 2 Method 8021B
- 3 Method 8015M

Bold and italicized values indicate exceedance of proposed Remediation RRALs and Reclamation Requirements for soil above 4 feet.

Shaded rows indicate intervals proposed for excavation.

QUALIFIERS:

GC-NC 8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis

and are reported as ND.

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APPENDIX A C-141 Forms

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	NAPP2207049431
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party	ConocoPhillips	OGRID	217817		
Contact Name	Rahul Kaushik	Contact Telephone	(432) 238-3781		
Contact email	Rahul.Kaushik@ConocoPhillips.com	Incident # (assigned by OCD)	NAPP2207049431		
Contact mailing address	600 West Illinois Avenue, Midland, Texas 79701				

Location of Release Source

Latitude

32.55826

-103.19058

Longitude _____ (NAD 83 in decimal degrees to 5 decimal places)

Site Name	SEMU Permian Battery	Site Type	Tank Battery
Date Release Discovered	February 24, 2022	API# (if applicable)	

Unit Letter	Section	Township	Range	County
K	19	20S	38E	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) 0.7	Volume Recovered (bbls) 0
Produced Water	Volume Released (bbls) 8.14	Volume Recovered (bbls) 0
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	Ves 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

Mechanical failure of 2 phase horizontal separator caused fluid release on and off pad.

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Oil Conservation Division

Incident ID	NAPP2207049431
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?	If YES, for what reason(s) does the responsible party consider this a major release?
Yes No	
If YES, was immediate no	otice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?

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:

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.

Title: Environmental Technician
Date: 3/11/2022
Telephone: (432) 221-0398
Date: 03/14/2022

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X				L48 Spill Volume	Estimate Form				
Received by (OCD: 3/11/	2022 Fac46 NB2 BMumber:	Permian Battery Ver	nt .				NAPP2207	049431 of 5
		Asset Area:	HPA02						
5		Release Discovery Date & Time:	2/24/2022 8:45						
Y		Release Type:	Oil Mixture						
	Provide a	ny known details about the event:	Vent line left open a	nd spill caused by the facility ESD value	ve being by passed				
				Spill Calculation - Subs	urface Spill - Rectangle				
9	W	as the release on pad or off-pad?			See reference table	e below			
Ha	is it rained at leas	st a half inch in the last 24 hours?			See reference table	below			
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	48.0	10.0	2.50	15.50%	17.800	2.759	8.00%	0.221	2.538
Rectangle B					0.000	0.000		0.000	0.000
Rectangle C					0.000	0.000		0.000	0.000
Rectangle D					0.000	0.000		0.000	0.000
Rectangle E					0.000	0.000		0.000	0.000
Rectangle F					0.000	0.000		0.000	0.000
Rectangle G					0.000	0.000		0.000	0.000
Rectangle H					0.000	0.000		0.000	0.000
Rectangle		12/2022 1 12 22 234			0.000	0.000		0.000	0.000
THELEASED TO I	maging: 3/	15/2022 1:1/:25 PM			0.000	0.000		0.000	0.000 •
0					Total Volume Release:	2.759		0.221	2.538

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- Received by OC	n. 3/11/2022	1.46.22 PM	Demine Detter Use	L48 Spill Volume	Estimate Form				AD ADDING & of 5
		Accet Area:						NAPP22070	494356 7 97 5
		Asset Area.	0/2//2022 8:45						
		Release Discovery Date & Time.	2/24/2022 0.40 Oil Mixture						
	Drovide a	ny known details about the event:	Horizontal relief valu	e nonned off due to ESD hunges being	a left open causing facility to fill and pressure	2.00			
	T TOVIGE &	iny known details about the event.		Spill Calculation - Subsu	uface Spill - Dectangle	, up			
	W	as the release on pad or off-pad?		Spin Calculation - Subsu	See reference table	below			
На	s it rained at leas	st a half inch in the last 24 hours?			See reference table	below			
Convert Irregular shape into a series of rectangles	Length (ft.)	Width (ff.)	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	47.0	27.0	0.10	10.50%	1.882	0.198	8.00%	0.016	0.182
Rectangle B	57.0	113.0	0.10	15.16%	9.554	1.448	8.00%	0.116	1.333
Rectangle C	60.0	75.0	0.10	15.16%	6.675	1.012	8.00%	0.081	0.931
Rectangle D	103.0	80.0	0.10	15.16%	12.223	1.853	8.00%	0.148	1.705
Rectangle E	58.0	55.0	0.10	15.16%	4.732	0.717	8.00%	0.057	0.660
Rectangle F	60.0	63.0	0.10	15.16%	5.607	0.850	8.00%	0.068	0.782
Rectangle G					0.000	0.000		0.000	0.000
Rectangle H					0.000	0.000		0.000	0.000
Rectangle I					0.000	0.000		0.000	0.000
KReetenget to Ima	ging: 3/15/2	022 1:17:25 PM			0.000	0.000		0.000	0.000 -
					Total Volume Release:	6.078		0.486	5 592

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

MA 14:25:9 2202/7/8 :2nigaml of besaele \$22

CONDITIONS

Action 89703

CONDITIONS

Operator:	OGRID:
CONOCOPHILLIPS COMPANY	217817
600 W. Illinois Avenue	Action Number:
Midland, TX 79701	89703
	Action Type:
	[C-141] Release Corrective Action (C-141)
	·

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	3/15/2022

Received by OCD: 5/29/2022 7:03:40 PM Form C-141 State of New Mexico

Oil Conservation Division

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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.

Received by OCD: 5/29/20	22 7:03:40 PM			Page 22 of 7 4
Form C-141	State of New Mexico		Incident ID	
Page 4	Oil Conservation Division	n	District RP	
			Facility ID	
			Application ID	
I hereby certify that the info regulations all operators are public health or the environn failed to adequately investig addition, OCD acceptance o and/or regulations. Printed Name: Signature: Charles R. B email:	rmation given above is true and complete to the required to report and/or file certain release not nent. The acceptance of a C-141 report by the ate and remediate contamination that pose a the farmed to be a the contamination of the the operator of a C-141 report does not relieve the operator and the contamination of the c	he best of my knowledge totifications and perform of e OCD does not relieve th hreat to groundwater, sur- of responsibility for com Title: Date: Telephone:	and understand that purse corrective actions for rele he operator of liability she face water, human health pliance with any other fee	uant to OCD rules and eases which may endanger ould their operations have or the environment. In deral, state, or local laws
OCD Only Bassived by:				

Received by OCD: 5/29/2022 7:03:40 PM Form C-141 State of New Mexico

Page 5

Oil Conservation Division

<u>Remediation Plan Checklist</u>: Each of the following items must be included in the plan.

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation 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. Title: Printed Name: Signature: Charles R. Beauvais 99 Date: Telephone: _____ email: OCD Only Received by: Date: X Approved with Attached Conditions of Approval Approved Denied Deferral Approved Signature: annilar Nobili Date:

APPENDIX B Site Characterization Data

OCD Waterbodies



5/19/2022, 12:02:21 PM

OSW Water Bodys





Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community, Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community, NM OSE

New Mexico Oil Conservation Division



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

POD suffix indicates the POD has been replaced & no longer serves a water right file.)	(R=POD has been replace O=orphaned C=the file is closed)	ed, ,	(qua (qua	irter	rs a rs a	are 1 are si	=NW malles	2=NE 3 st to lar	3=SW 4= ·gest)	SE) (NAD83 UT	M in me	eters)	(In feet)	
POD Number	POD Sub- Code basin	Count	Q 1 64	Q 16	Q 4	Sec	Tws	Rng		X	Y	Distance	Depth Well	Depth Water	Water Column
L 04412 S	L	LE	4	4	2	13	20S	37E	66918	39 360549	91* 🌍	1854	155	84	71
L 02109	L	LE	2	4	2	18	20S	38E	67080)3 36057 ⁻	19* 🌍	2154	124	50	74
<u>L 04412</u>	L	LE	4	2	2	13	20S	37E	66918	360589	94* 🌍	2236	140	85	55
L 05351	L	LE		2	2	13	20S	37E	66908	360599	95* 🌍	2363	115		
<u>L 10117</u>	L	LE	1	1	2	13	20S	37E	66858	360608	86* 🌍	2656	130	70	60
L 01675 POD1	L	LE		3	3	07	20S	38E	66947	76 360640	05* 🌍	2665	130	80	50
											Avera	ge Depth to	Water:	73	feet
												Minimum	Depth:	50	feet
												Maximum	Depth:	85	feet

Record Count: 6

UTMNAD83 Radius Search (in meters):

Easting (X): 669882.64

Northing (Y): 3603770.92

Radius: 2700

*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

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Received by OCD: 5/29/2022

eived by OCD: 5	/29/2022	7:0	3:40	PM	[Page 28 o
212C-MD-02101	MD-02101 TETRA TECH							LO	4	Page 1 of 2		
Project Name: SI	EMU BM	T Ba	ittery	Tan	ik Rele	ase						
Borehole Location:	32.55338	8°, -1	03.175	938°				Surface Elevation	: 3544 ft			
Borehole Number:	BH-2R/	2A					Boreł Diam	nole eter (in.): 6	Date Started:	8/6/2020	Date Finished:	9/23/2020
								\ \	NATER LEVE	L OBSERVATIO	ONS	
		(%)	(%)					While Drilling	<mark>⊻ Dry</mark> ft U	pon Completion of	Drilling <u>¥</u> D	<u>ry</u> ft
	Ê	×	5			5		Damaarka				

212C-MD-02101		Ŧŧ	TETRA
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$\begin{array}{ c c c c c } \hline & & & & & \\ \hline & & & & \\ \hline & & & & \\ \hline & & & &$	<u>¥</u>	<u>Dry</u> ft
DEPTH (ft) DEPTH (ft) OPERATION TYPE SAMPLE	DEPTH (ft)	REMARKS
- SM- SILTY SAND; Light brown to reddish brown, loose, fine to very fine-grained, with abundant	_	BH-2R (0'-1')
hydrocarbon staining, heavy hydrocarbon odor.	_	BH-2R (2'-3')
	_	BH-2R (4'-5')
	_	BH-2R (6'-7')
	_	BH-2R (0'-10')
	-	BH-2R (9-10)
	_	
	_	BH-2R (14'-15')
	_	
20	19	
 medium to fine-grained, with caliche and calcrete layers throughout. Trace hydrocarbon odor, no hydrocarbon staining. Cemented 19'-19.5' Moderately cemented 19.5'-22' 	_	BH-2R (20'-21') BH-2R (21'-22') BH-2R (22'-23') BH-2R (23'-24')
25 Well cemented with caliche layers 22'-39'	_	
Upper 25' of boring 2R completed with DPT rig by HCl drilling. Scarborough drilling reamed out upper 25' at BH-2A and installed 8" PVC Surface casing to preserve borehole integrity. 25'-65' drilled with air rotary methods.		BH-2A (29'-30')
Sampler Split Dependence Operation		BH-2A (34'-35')
Type's: Spoon Accetate Liner Types: Image: Hand Auger Notes: Shelby Vane Shear Mud Image: Auger Air Rotary Analytical samples are shown in the remark Bulk California California Image: Continuous Image: Continuous Direct Push	ks co Igle E	lumn above. arth data.
Grab Sample Test Pit Wash Rotary Core Barrel		

Logger: Joe Tyler Drilling Equipment:Direct Push/Air Rotary Driller: HCI Drilling & Scarborough Drilling Released to Imaging: 6/7/2022 9:32:41 - AMERICAN DOMESTIC: 100 - 2010

212C-MD-02101 TE TETRA TECH									LOG OF BORING BH-2R/2A				Page				
Proje	ct N	lam	e: SEM	IU BM	T Ba	ttery	Tan	k Re	lease	e						2 01	
Borel	nole	Loc	ation:	32.55338	8°, -1()3.175	5938°					Surface Elevation:	3544 ft				
Borehole Number: BH-2R/2A Borehole Number: BH-2R/2A							E	Boreho Diame	ole eter (in): 6 Date Started: 8/6/2020 Date Finished:			d: 9/23/2020					
												N N	ATER LEVEL OBSERVATIO	NS			
					(%)	(%)						While Drilling	Dry ft Upon Completion of I	Drilling	<u>Ā</u>	Dry_ft	
	ш		(mdc	(mdc	ERY ('ENT	Ĵ,			(%)		Remarks:					
РТН (ft) ERATION TYPE		ERATION TYPI MPLE	MPLE CHLORIDE FIE SCREENING (I	MPLE CHLORIDE FIE SCREENING (VOC FIELD	VOC FIELD SCREENING (DISTURE CONT	Y DENSITY (po	LIQUID LIMIT	PLASTICITY IN	NUS NO. 200 (°	APHIC LOG	MATE	RIAL DESCRIPTION		EPTH (ft)	REMARK
B	Ъ	SA	ExStik	PID	S	M	ä	LL	ΡI	Σ	5				B		
.0				462								- SP- SILTY SA with high hydro staining. well-cemente	AND; Tan, loose to medium-de ocarbon odor, with no hydrocarl ed and lithified in layers.	nse, bon	 	BH-2A (39'-40	

	121 11.2	-SM- SILTY SAND; Dark tan, loose to medium-dense, with no hydrocarbon odor, with no hydrocarbon staining. Bottom of borehole at 65.0 feet.	59 65	BH-2A (59'-60') BH-2A (64'-65')
	153	-SM- SILTY SAND; Dark tan, loose to medium-dense, with trace hydrocarbon odor, with no hydrocarbon staining.	54 	BH-2A (54'-55')
50	230			BH-2A (49'-50')
45	321	well-cemented and lithified in layers.	_	BH-2A (44'-45'
40	462		39 	BH-2A (39'-40')

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<u>Page 29 of</u> 74

Page 2 of 2

REMARKS

APPENDIX C Waste Manifests

Received by OCD: 5/29/2022 7:03:4	Customer: Customer #: Ordered by: AFE #: PO #: Manifest #: Manif. Date: Hauler: Driver Truck # Card # Job Ref #	CONOCOPHILLIPS CRI2190 ANDREW RICHARDS N/A 4/7/2022 MCNABB PARTNERS GUMER M32	Ticket #: Bid #: Date: Generator: Generator #: Well Ser. #: Well Ser. #: Well Name: Well #: Field #: Field #: Rig: County	700-1291777 O6UJ9A000HH0 4/7/2022 CONOCOPHILLIF 999908 SEMU PERMIAN NON-DRILLING LEA (NM)	Page 31 of 74 PS BATTERY
Facility: CRI					
Product / Service	NARE NOT	Quantit	v Units		
Contaminated Soil (RCRA Exempt	t)	18.	00 yards		
I hereby certify that according to the Re 1988 regulatory determination, the abov X RCRA Exempt: Oil Field wastes gen _ RCRA Non-Exempt: Oil field waste characteristics established in RCRA reg amended. The following documentation _ MSDS Information _ RCRA Ha Driver/ Agent Signature	of Waste Sta source Conserv e described was nerated from oi e which is non-h ulations, 40 CFh is attached to zardous Waste	ation and Recovery Act (RCRA) a ste is: 1 and gas exploration and product nazardous that does not exceed the R 261.21-261.24 or listed hazardou demonstrate the above-described Analysis Process Knowledge R360 Representative	and the US Environian operations and the US Environian operations and the minimum standard is waste as defined waste is non-hazard e Other (Prover Signature	anmental Protection A are not mixed with no ds for waste hazardou in 40 CFR, part 261, dous. (Check the appr ride description above	.gency's July on-exempt waste is by subpart D, as opriate items): e)
Customer Approval					
	THIS	S IS NOT AN INVO	ICE!		
Approved By:		Date:			

Received by OCD: 5/29/2022 7:03:4	Customer: Customer #: Ordered by: AFE #: PO #: Manifest #: Manif. Date: Hauler: Driver Truck # Card # Job Ref #	CONOCOPHILLIPS CRI2190 ANDREW RICHARDS N/A 4/8/2022 MCNABB PARTNERS GUMER M32	Ticket #: Bid #: Date: Generator: Generator #: Well Ser. #: Well Name: Well Name: Well #: Field : Field #: Rig: County	700-1292179 O6UJ9A000HH0 4/8/2022 CONOCOPHILLIF 999908 SEMU PERMIAN NON-DRILLING LEA (NM)	<i>Page 32 of 74</i> PS BATTERY			
Facility: CRI								
Product / Service		Quan	tity Units					
Contaminated Soil (RCRA Exemp	t)	18.00 yards						
Generator Certification Statement I hereby certify that according to the Re 1988 regulatory determination, the abov X RCRA Exempt: Oil Field wastes ge RCRA Non-Exempt: Oil field waste characteristics established in RCRA reg amended. The following documentation MSDS Information RCRA Ha Driver/ Agent Signature	of Waste Sta source Conserv e described was nerated from oi e which is non-H ulations, 40 CF n is attached to o izardous Waste	ation and Recovery Act (RCRA ste is: and gas exploration and produ azardous that does not exceed R 261.21-261.24 or listed hazard demonstrate the above-describe Analysis Process Knowled R360 Representati	A) and the US Environ action operations and a the minimum standard lous waste as defined d waste is non-hazard dge Other (Prov.	nmental Protection A are not mixed with no ds for waste hazardou in 40 CFR, part 261, lous. (Check the appr ide description above	gency's July on-exempt waste is by subpart D, as opriate items): e)			
		Noo Representati	ve Signature					
Customer Approval	and the second							
	THIS	S IS NOT AN INV	OICE!					
Approved By:		Date:						

Received by OCD: 5/29/2022 7:03 RECEIVED AND AND AND AND AND AND AND AND AND AN	2:4 Customer: Customer #: Ordered by: AFE #: PO #: Manifest #: Manif. Date: Hauler: Driver Truck # Card # Job Ref #	CONOCOPHILLIPS CRI2190 ANDRW RICHARDS NA 4/11/2022 MCNABB PARTNERS JR M02	Ticke Bid #: Date: Gener Well S Well M Well # Field: Rig: Count	t #: rator: rator #: Ser. #: Name: t: t: y	700-1293426 O6UJ9A000HH0 4/11/2022 CONOCOPHILLIP 999908 SEMU PERMIAN B NON-DRILLING LEA (NM)	<i>Page 33 of 74</i> S BATTERY
Product / Service						
Contaminated Soil (RCRA Exemp	ot)	Qu	10.00 vorde			
1988 regulatory determination, the abo X RCRA Exempt: Oil Field wastes gr RCRA Non-Exempt: Oil field waste characteristics established in RCRA reg amended. The following documentatio MSDS Information RCRA H Driver/ Agent Signature	esource Conserv ve described was enerated from oi te which is non-h gulations, 40 CFI n is attached to o azardous Waste	ation and Recovery Act (RC ste is: and gas exploration and pr azardous that does not exce 261.21-261.24 or listed haz demonstrate the above-descr Analysis Process Know R360 Represent	CRA) and the US oduction operatio red the minimum s zardous waste as o ribed waste is non vledge Othe cative Signature	Enviror ns and a standard defined -hazard r (Provi	nmental Protection Ag are not mixed with no ls for waste hazardous in 40 CFR, part 261, s ous. (Check the appro- ide description above)	ency's July n-exempt wasta by ubpart D, as priate items):
Customer Approval				N		
	THIS	S IS NOT AN IN	VOICE	x -		
Approved By:		Dat	e:			

APPENDIX D Photographic Documentation










APPENDIX E Laboratory Analytical Data



May 10, 2022

CHRISTIAN LLULL TETRA TECH 901 WEST WALL STREET , STE 100 MIDLAND, TX 79701

RE: SEMU PERMIAN UPPER BATTERY RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 05/04/22 13:55.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-21-14. 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. Keine

Celey D. Keene Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 1 (0'-1') (H221863-01)

BTEX 8021B	mg/	kg	Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	101 %	69.9-14)						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	208	16.0	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	83.0 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	88.5 9	59.5-14.	2						

Cardinal Laboratories

*=Accredited Analyte

Celeg D. Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 2 (0'-1') (H221863-02)

BTEX 8021B	mg/	kg	Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	99.5	% 69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	48.0	16.0	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	'kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	78.6	% 66.9-13	6						
Surrogate: 1-Chlorooctadecane	87.3	% 59.5-14	2						

Cardinal Laboratories

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 3 (0'-1') (H221863-03)

BTEX 8021B	mg/	kg	Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
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	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	88.5 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	99.6 9	59.5-14	2						

Cardinal Laboratories

*=Accredited Analyte

Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 4 (0'-1') (H221863-04)

BTEX 8021B	mg/	kg	Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
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	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	85.8 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	92.6 9	59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 5 (0'-1') (H221863-05)

BTEX 8021B	mg/	kg	Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
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	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	87.5 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	96.2 9	59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 6 (0'-1') (H221863-06)

BTEX 8021B	mg/kg		Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	99.2	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	160	16.0	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	80.6	% 66.9-13	6						
Surrogate: 1-Chlorooctadecane	88.3	% 59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 7 (0'-1') (H221863-07)

BTEX 8021B	mg/kg		Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	64.0	16.0	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	<10.0	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	<10.0	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	75.4 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	80.1 9	59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 8 (1'-2') (H221863-08)

BTEX 8021B	mg/kg		Analyze	d By: MS/	3y: MS/			S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	GC-NC
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	143 %	69.9-14	0						
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	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					S-06
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<100	100	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	4960	100	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	1440	100	05/07/2022	ND					
Surrogate: 1-Chlorooctane	98.5 %	66.9-13	6						
Surrogate: 1-Chlorooctadecane	251 %	6 59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 8 (2'-3') (H221863-09)

BTEX 8021B	mg/kg		Analyze	d By: MS/					S-04	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58		
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	GC-NC	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	GC-NC	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	GC-NC	
Total BTEX	<0.300	0.300	05/09/2022	ND						
Surrogate: 4-Bromofluorobenzene (PID	378 9	69.9-14	0							
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	05/06/2022	ND	416	104	400	3.77		
TPH 8015M	mg/	kg	Analyze	d By: MS					S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
GRO C6-C10*	430	100	05/07/2022	ND	190	95.2	200	4.16		
DRO >C10-C28*	15700	100	05/07/2022	ND	181	90.5	200	4.11		
EXT DRO >C28-C36	3930	100	05/07/2022	ND						
Surrogate: 1-Chlorooctane	140 9	66.9-13	6							
Surrogate: 1-Chlorooctadecane	345 9	59.5-14	2							

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 9 (1'-2') (H221863-10)

BTEX 8021B	mg/	kg	Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	99.9 9	69.9-14	0						
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	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	1530	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	677	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	83.6 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	153 %	6 59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/04/2022	Sampling Date:	05/04/2022
Reported:	05/10/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Tamara Oldaker
Project Location:	COG -LEA CO NM		

Sample ID: AH - 9 (2'-3') (H221863-11)

BTEX 8021B	mg/kg		Analyze	d By: MS/					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/09/2022	ND	2.09	105	2.00	6.58	
Toluene*	<0.050	0.050	05/09/2022	ND	2.07	103	2.00	7.24	
Ethylbenzene*	<0.050	0.050	05/09/2022	ND	1.94	97.2	2.00	7.37	
Total Xylenes*	<0.150	0.150	05/09/2022	ND	6.06	101	6.00	7.45	
Total BTEX	<0.300	0.300	05/09/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	100 %	69.9-14	0						
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	05/06/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	10.7	10.0	05/07/2022	ND	190	95.2	200	4.16	
DRO >C10-C28*	2510	10.0	05/07/2022	ND	181	90.5	200	4.11	
EXT DRO >C28-C36	1080	10.0	05/07/2022	ND					
Surrogate: 1-Chlorooctane	77.8 %	66.9-13	6						
Surrogate: 1-Chlorooctadecane	196 %	6 59.5-14	2						

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Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
GC-NC	8260 confirmation analysis was performed; initial GC results were not supported by GC/MS analysis and are reported as ND.
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 SM4500CI-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Celez D. Keine

Celey D. Keene, Lab Director/Quality Manager

101 E (57) Company Name: Project Manager: Address: City: Phone #: Project #: Project #:	ast Marland, Hobbs, NM 882 5) 393-2326 FAX (575) 393-24 Coveco Phillips Christicas (141 tetras, II.ul. @ tetratech State: Fax #: Project Owner:	40 76 Zip: P A A	BILL TO .0. #: ompany: Tetta ttn: Christia ddress: ity: zin:	Tech Llul		INALYSIS REQU
Project Name: SEM Project Location:	Lea Caushy, NM	Kaleose S	ity: tate: Zip: hone #:			
FOR LAB USE ONLY	Jon Tyler	Fa MATRIX	ax #: PRESERV SAMP	LING		
Lab I.D. HZZ1863	Sample I.D.	(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL OIL SLUDGE OTHER :	ACID/BASE: ICE / COOL OTHER :	TPH TPH	Chlorides	
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en-t	AH-5 (0-1) AH-5 (0-1) AH-6 (0-1)			0011 0611		
)~~~	AH-7 (0-1) AH-8 (1-2)		· · · · · · · · · · · · · · · · · · ·	0661		
10	AH-8 (2:3) AH-9 (1:3)	4	*	1200 1 1	•	
PLEASE NOTE: Liability and Damages. analyses. All claims including those for r service. In no event shall Cardinal be lial affiliates or successors arising out of or n	 Cardinal's liability and client's exclusive remedy for any negligence and any other cause whatsoever shall be do able for incidental or consequential damages, including we able to the performance of services hereinder by Card related to the performance of services h	claim arising whether based in contract or to med waived unless made in writing and reco thout limitation, business interruptions, loss o final repardless of whether such claim is bear	rt, shall be limited to the amount paid eived by Cardinal within 30 days after of use, or loss of profits incurred by clii	by the client for the completion of the applicable ent, its subsidiaries,		
Relinquished By:	Date: Time:	Received By:	Ullater	Verbal Result:	yes □ No / / ad. Please provid	dd'l Phone #: e Email address:
Delivered By: (Circle One Sampler - UPS - Bus - O	e) Observed Temp. °C Other: Corrected Temp. °C morr21	R4 Sample Condition Cool Intact Q.1 Yes Yes Yes No No	CHECKED BY: (Initials)	Furnaround Time: Thermometer ID #113 Correction Factor -0.5°C	Standard Rush	Bacteria (only) Sa Cool Infact O Yes Yes Nc No C
	† Cardinal can	not accept verbal change	s. Please email chan	ges to celey.keene	@cardinallabsn	m.com

Page 1 of 2

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 54 of 74

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Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

Page 2 of 2

ompany Name: (5	575) 393-2326 FAX (575) 393-2	476	RILL TO		AN	VI VOIC DED	IIECT
roject Manager:	Christian Lul	G	.O. #:	_			
ddress:		C	company: TE				-
ity:	State:	Zip: A	the Charletran				
hone #:	Fax #:	A	ddress:				
roject #:	Project Owne	л С	ity:				
roject Name: SE	MU Permiton Upper Bath	era Release Si	tate: Zip:				
roject Location:	Lea Cautra NM		hone #:		-		
ampler Name:	Ja Tale	F	ax #:				
OR LAB USE ONLY		MATRIX	PRESERV. SAMP	LING			
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP. # CONTAINERS GROUNDWATER WASTEWATER SOIL DIL SLUDGE DTHER :	ACID/BASE: CE / COOL DTHER :	TPH BTEX	Chlortdus	2	
//	AH-9 (2-3')	GIX	2 5-4	× × 0681	×		
	3				×		
ASE NOTE: Liability and Dams	ages. Cardinal's liability and client's exclusive remedy for a	y claim arising whether based in contract or to	rt, shall be limited to the amount paid	y the client for the			
ates or successors arising out of	be liable for incidental or consequental damages, including of or related to the performance of services hereunder by C	without limitation, business interruptions, loss c ardinal, regardless of whether such claim is bar	of use, or loss of profits incurred by clie sed upon any of the above stated reas	nt, its subsidiaries, ons or otherwise.			
linquished By:	Date:	Received By:	Malador	Verbal Result: □ Yes \II Results are emailed. P REMARKS:	□ No Add lease provide E	'I Phone #: mail address:	
elivered By: (Circle (Impler - UPS - Bus	One) Observed Temp. °C - Other: Corrected Temp. °C	29.6 Sample Condition Cool Intact 29.1 Yes Yes	CHECKED BY: 1 (Initials)	urnaround Time: R hermometer ID #113 forrection Factor -0.5°C	ush	Bacteria (only) Cool Intact □ Yes □ Yes □ Nc □ No	Sample Condition Observed Temp. °C
	t Cardinal c	annot accept verbal change	no Diason amail chan	to color koono	- Ji-allahaam		

Received by OCD: 5/29/2022 7:03:40 PM

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May 20, 2022

CHRISTIAN LLULL TETRA TECH 901 WEST WALL STREET , STE 100 MIDLAND, TX 79701

RE: SEMU PERMIAN UPPER BATTERY RELEASE

Enclosed are the results of analyses for samples received by the laboratory on 05/20/22 11:03.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-21-14. 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,

Whe Singh

Mike Snyder For Celey D. Keene Lab Director/Quality Manager



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

Received:	05/20/2022	Sampling Date:	05/20/2022
Reported:	05/20/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	212C - MD - 02745	Sample Received By:	Shalyn Rodriguez
Project Location:	COG -LEA CO NM		

Sample ID: AH - 10 (0-1') (H222156-01)

BTEX 8021B	mg/	kg	Analyze	d By: MS\					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/20/2022	ND	2.08	104	2.00	3.00	
Toluene*	<0.050	0.050	05/20/2022	ND	2.05	102	2.00	3.08	
Ethylbenzene*	<0.050	0.050	05/20/2022	ND	2.01	101	2.00	2.90	
Total Xylenes*	<0.150	0.150	05/20/2022	ND	6.22	104	6.00	3.52	
Total BTEX	<0.300	0.300	05/20/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	g Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/20/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/20/2022	ND	199	99.6	200	2.96	
DRO >C10-C28*	<10.0	10.0	05/20/2022	ND	198	98.8	200	6.50	
EXT DRO >C28-C36	<10.0	10.0	05/20/2022	ND					
Surrogate: 1-Chlorooctane	112 %	66.9-13	6						
Surrogate: 1-Chlorooctadecane	128 %	6 59.5-14.	2						

Cardinal Laboratories

*=Accredited Analyte

Mite Sugar

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/20/2022	Sampling Date:	05/20/2022
Reported:	05/20/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	212C - MD - 02745	Sample Received By:	Shalyn Rodriguez
Project Location:	COG -LEA CO NM		

Sample ID: AH - 11 (3'-4') (H222156-02)

BTEX 8021B	mg/	kg	Analyze	d By: MS\					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/20/2022	ND	2.08	104	2.00	3.00	
Toluene*	<0.050	0.050	05/20/2022	ND	2.05	102	2.00	3.08	
Ethylbenzene*	<0.050	0.050	05/20/2022	ND	2.01	101	2.00	2.90	
Total Xylenes*	<0.150	0.150	05/20/2022	ND	6.22	104	6.00	3.52	
Total BTEX	<0.300	0.300	05/20/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	116 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	05/20/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					S-04
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	32.4	10.0	05/20/2022	ND	199	99.6	200	2.96	
DRO >C10-C28*	4280	10.0	05/20/2022	ND	198	98.8	200	6.50	
EXT DRO >C28-C36	1160	10.0	05/20/2022	ND					
Surrogate: 1-Chlorooctane	119 %	66.9-13	6						
Surrogate: 1-Chlorooctadecane	239 %	59.5-14	2						

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Mite Sugar

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



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

Received:	05/20/2022	Sampling Date:	05/20/2022
Reported:	05/20/2022	Sampling Type:	Soil
Project Name:	SEMU PERMIAN UPPER BATTERY RELEAS	Sampling Condition:	** (See Notes)
Project Number:	212C - MD - 02745	Sample Received By:	Shalyn Rodriguez
Project Location:	COG -LEA CO NM		

Sample ID: AH - 11 (5'-6') (H222156-03)

BTEX 8021B	mg/	kg	Analyze	d By: MS\					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	05/20/2022	ND	2.08	104	2.00	3.00	
Toluene*	<0.050	0.050	05/20/2022	ND	2.05	102	2.00	3.08	
Ethylbenzene*	<0.050	0.050	05/20/2022	ND	2.01	101	2.00	2.90	
Total Xylenes*	<0.150	0.150	05/20/2022	ND	6.22	104	6.00	3.52	
Total BTEX	<0.300	0.300	05/20/2022	ND					
Surrogate: 4-Bromofluorobenzene (PID	102 %	69.9-14	0						
Chloride, SM4500Cl-B	mg/	kg	Analyze	d By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	05/20/2022	ND	416	104	400	3.77	
TPH 8015M	mg/	kg	Analyze	d By: MS					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	05/20/2022	ND	199	99.6	200	2.96	
DRO >C10-C28*	10.3	10.0	05/20/2022	ND	198	98.8	200	6.50	
EXT DRO >C28-C36	14.7	10.0	05/20/2022	ND					
Surrogate: 1-Chlorooctane	107 9	66.9-13	6						
Surrogate: 1-Chlorooctadecane	129 %	59.5-14	2						

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Mite Sugar

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager



Notes and Definitions

S-04	The surrogate recovery for this sample is outside of established control limits due to a sample matrix effect.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Mite Sugar

Mike Snyder For Celey D. Keene, Lab Director/Quality Manager

aboratories ARDIZ

101 East Marland, Hobbs, NM 88240

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

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

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+ Cardinal cannot accept verbal changes. Please email changes	Corrected Temp. °C 31.3 C Xes Yes Yes	Observed Temp. °C 2 8 Cool Infact (Initials)	Time:	Date: Received By:	Time: In 2 WANDONUVY	Date: Received By:	In client's exclusive remedy for any claim arising whether based in contract or tori, stimutor without on the anisoviry see their cause whatsoever shall be deemed waived unless made in writing and crewind by Cardinal within 30 days at consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by consequential damages, including without limitation, business interruptions, loss of use, or loss of profits incurred by cardinal to a strate of the second by the state of the second by the			
nges to celey.keene@cardinallabsnm.com	Thermometer ID #113	Turnaround Time: Standard Bacteria (only) Sample Condition Rush Cool Intact Observed Temp. °C	christian. L'Indi Ctetratech. cur 50	REMARKS:		All Results are emailed. Please provide Email address:	r competion of the applicable sens or otherwise.	I suite a light for the		

Page 61 of 74

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Project Manager:

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APPENDIX F NMSLO Seed Mixture Details

Received by OCD: 5/29/2022 7:03:40 PM

Custom Soil Resource Report



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MAP LEGEND		MAP INFORMATION	
Area of Interest (AOI) △ △ Area of Interest (AOI) Boil ○ Soil Map Unit Polygons ○ Soil Map Unit Polygons ○ Soil Map Unit Points Special Features Image: Special Points Image: Spec	Spoil Area Stony Spot Very Stony Spot <t< th=""><th>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</th></t<>	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	
 Gravelly Spot Landfill Lava Flow 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 	Major Roads Local Roads Background Aerial Photography	 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 units bundaries may be avident 	

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
КМ	Kermit soils and Dune land, 0 to 12 percent slopes	0.3	100.0%
Totals for Area of Interest		0.3	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

KM—Kermit soils and Dune land, 0 to 12 percent slopes

Map Unit Setting

National map unit symbol: dmpx Elevation: 3,000 to 4,400 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: Not prime farmland

Map Unit Composition

Kermit and similar soils: 46 percent *Dune land:* 44 percent *Minor components:* 10 percent *Estimates are based on observations, descriptions, and transects of the mapunit.*

Description of Kermit

Setting

Landform: Dunes Landform position (two-dimensional): Shoulder, backslope, footslope Landform position (three-dimensional): Side slope Down-slope shape: Concave, convex, linear Across-slope shape: Convex Parent material: Calcareous sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 8 inches: fine sand C - 8 to 60 inches: fine sand

Properties and qualities

Slope: 5 to 12 percent Depth to restrictive feature: More than 80 inches Drainage class: Excessively drained Runoff class: Very low Capacity of the most limiting layer to transmit water (Ksat): Very high (20.00 in/hr) Depth to water table: More than 80 inches Frequency of flooding: None Frequency of ponding: None Calcium carbonate, maximum content: 3 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: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 7e Hydrologic Soil Group: A Ecological site: R042XC022NM - Sandhills Hydric soil rating: No

Description of Dune Land

Setting

Landform: Dunes Landform position (two-dimensional): Shoulder, backslope, footslope Landform position (three-dimensional): Side slope Down-slope shape: Concave, convex, linear Across-slope shape: Convex Parent material: Sandy eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 6 inches: fine sand C - 6 to 60 inches: fine sand

Interpretive groups

Land capability classification (irrigated): None specified Land capability classification (nonirrigated): 8 Hydrologic Soil Group: A Hydric soil rating: No

Minor Components

Pyote

Percent of map unit: 3 percent Ecological site: R042XC003NM - Loamy Sand Hydric soil rating: No

Palomas

Percent of map unit: 3 percent Ecological site: R042XC003NM - Loamy Sand Hydric soil rating: No

Wink

Percent of map unit: 2 percent Ecological site: R042XC003NM - Loamy Sand Hydric soil rating: No

Maljamar

Percent of map unit: 2 percent Ecological site: R042XC003NM - Loamy Sand Hydric soil rating: No

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/ nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2 053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/ home/?cid=nrcs142p2 053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/ detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/ nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/? cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

NMSLO Seed Mix

Deep Sand (DS)

1.1 BLOW SAND SITES REVEGETATION PLAN (BS)

Use this Revegetation Plan with the following ESD's:

CP2 – Sandy Plains, Sandhills, Deep Sand, Shallow Plains **HP3** – Loamy Sand, Sandy Plains, Sandhills, Deep Sand **SD3** – Loamy Sand, Deep Sand, Sandhills, Salt Meadow

Soil Texture: Fine Sand, Sand, Course Sand

Revegetation Procedures:

I. For flat or gently sloping areas with slopes less than or equal to 3H:1V:

- 1. Soil Amendments: Apply composted manure or similar at the rate of 30.0 air dry tons/acre.
- 2. Fertilize: Type 2
- 3. Mulch Grass Hay mulch applied at 2.0 tons/acre
- 4. Prepare the seedbed and incorporate mulch, fertilizer, and soil amendments:
 - a. Scarify
 - b. Disc (thoroughly mix mulch, fertilizer, and soil amendments in top 6-8 inches of soil before proceeding).
- 5. **Drill Seed** use rangeland drill and apply Drill box seed to 0.5-0.75 inch depth, apply small seed to surface and lightly cover with drag chains or packer wheels or equal.
- 6. **Mulch** Grass Hay mulch applied at 2.0 tons/acre
- 7. Crimp
- 8. **Tackify** tackify to minimize risk of mulch blowing and to hold soil and mulch in place until vegetation begins to establish.
- 9. Wind Fence Install wind fence.



NMSLO Seed Mix

Deep Sand (DS)

DEEP SAND (DS) SITES SEED MIXTURE:

COMMON NAME	VARIETY	APPLICATION RATE (PLS/Acre)	DRILL BOX
Grasses:			
Sand bluestem	Elida, VNS, So.	4.0	F
Sideoats grama	Vaughn, El Reno	4.0	F
Little bluestem	Cimarron, Pastura	3.0	F
Plains bristlegrass	VNS, Southern	1.0	D
Sand dropseed	VNS, Southern	2.0	S
Blue grama	Lovington	1.0	D
			à
Forbs:			2
Firewheel (Gaillardia)	VNS, Southern	1.0	D
Anuual Sunflower	VNS, Southern	0.5	D
Prairie Conflower	VNS, Southern	0.5	D
	Total PLS/acr	re 17	

S = Small seed drill box, D = Standard seed drill box, F = Fluffy seed drill box VNS = Variety Not Stated, PLS = Pure Live Seed

- Seed mixes should be provided in bags separating seed types into the three categories: small (S), standard (D) and fluffy (F).
- VNS, Southern Seed should be from a southern latitude collection of this species.
- Double seed application rate for broadcast or hydroseeding.
- If one species is not available, contact the SLO for an approved substitute; alternatively the SLO may require other species proportionately increased.
- Additional information on these seed species can be found on the USDA Plants Database website at http://plants.usda.gov.


August 2009



Southeastern New Mexico Revegetation Handbook

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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

Operator:	OGRID:
CONOCOPHILLIPS COMPANY	217817
600 W. Illinois Avenue	Action Number:
Midland, TX 79701	111731
	Action Type:
	[C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Remediation Plan Approved with Conditions. Composite confirmation samples will be collected from the bottom and sidewalls of the excavation from areas representing no more than five hundred (500) square feet.	6/7/2022

CONDITIONS

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Action 111731