



August 24, 2020

District Supervisor
Oil Conservation Division, District 1
1625 N. French Dr.
Hobbs, NM 88240

**Re: Release Characterization and Remediation Work Plan
ConocoPhillips
Golden Spur to Wilder Pipeline Release
Unit Letter D, Section 29, Township 26 South, Range 32 East
Lea County, New Mexico
1RP-5622
Incident ID: NDHR1921234950**

Sir or Madam:

Tetra Tech, Inc. (Tetra Tech) was contacted by ConocoPhillips (COP) to assess a release that occurred from a check valve in a tinhorn cellar along the Golden Spur to Wilder Federal Pipeline. The release footprint is located in Unit Letter D, Section 29, Township 26 South, Range 32 East, Lea County, New Mexico (Site). The approximate release site coordinates are 32.020140°, -103.704774°. The Site location is shown on Figures 1 and 2.

BACKGROUND

According to the State of New Mexico C-141 Initial Report (Appendix A), a release occurred from a tinhorn at the Golden Spur to Wilder Federal Pipeline on July 2, 2019 as a result of a check valve failure. Approximately 644 barrels (bbls) of produced water were reported released and approximately 110 bbls of produced water were recovered. Immediate notice was provided to the New Mexico Oil Conservation District (NMOCD) the day following the discovery of the release. The release notification was received by the NMOCD on July 19, 2019 and subsequently assigned the District Remediation Permit (RP) number 1RP-5622 and the Incident ID ndhr1921234950.

SITE CHARACTERIZATION

A site characterization was performed and no watercourses, lakebeds, sinkholes, playa lakes, residences, schools, hospitals, institutions, churches, springs, private domestic water wells, springs, wetlands, incorporated municipal boundaries, subsurface mines, or floodplains are located within the specified distances. However, the site is in a high karst potential area.

There are no water wells listed in Section 29 on the New Mexico Office of the State Engineer (NMOSE) database. The nearest wells are in Section 21 and Section 31 with groundwater documented at 251 feet below ground surface on average. Site characterization data is included in Appendix B.

REGULATORY FRAMEWORK

Based upon the release footprint 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

TETRA TECH

901 West Wall St., Suite 100, Midland, TX 79701

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levels (RRALs) for benzene, toluene, ethylbenzene, and xylene (collectively referred to as BTEX), total petroleum hydrocarbons (TPH), and chlorides in soil.

Based upon the Site characterization and the high karst potential, the proposed RRALs for soil are:

- Benzene: 10 milligrams per kilogram (mg/kg)
- Total BTEX (sum of benzene, toluene, ethylbenzene, and xylene): 50 mg/kg
- TPH (GRO + DRO + ORO): 100 mg/kg
- Chloride: 600 mg/kg

INITIAL SITE ASSESSMENT

Tetra Tech personnel were onsite to delineate and sample the release area in October 2019. Four (4) borings (BH-1 through BH-4) were installed using an air rotary drilling rig to various depths to evaluate the vertical and horizontal extents of the release in the northern portion of the footprint. Three (3) additional borings (AH-1 through AH-3) were installed using a hand auger to a depth of 3 feet to evaluate the horizontal extents in the southern portion of the release footprint. A total of 34 soil samples were collected from these 7 boring locations on October 7, 2019 (Figure 3). Boring logs, included as Appendix C, present soil descriptions, sample depths and field screening data from the additional site assessment.

Selected samples were submitted to Pace Analytical Laboratory for total petroleum hydrocarbons (TPH) by EPA Method 8015, benzene, toluene, ethylbenzene and xylenes (BTEX) by EPA Method 8021B and chloride (EPA Method 300.0) analysis. Copies of laboratory analytical reports and chain-of-custody documentation are included in Appendix D.

SUMMARY OF SAMPLING RESULTS

The results of the initial sampling event in October 2019 are summarized in Table 1. The sample locations are shown on Figure 3. The analytical results from sample locations BH-1 and BH-4 (inside the footprint) had chloride concentrations above the RRAL of 600 mg/kg from 0 – 55 feet below ground surface (bgs) and 0 – 5 feet bgs, respectively. The vertical extents of the release footprint were delineated, however, as the analytical results associated with BH-1 (at 59-60 feet bgs) and BH-4 (at 6-7 feet bgs) were below the RRAL for chloride of 600 mg/kg. The analytical results associated with boring locations AH-1, AH-2, AH-3, BH-2 and BH-3 (borings for horizontal delineation) were below the RRAL for chloride. The analytical results associated with the remainder of samples collected from the Site were below the proposed RRALs for TPH and BTEX.

REMEDIATION WORK PLAN

Based on the soil sample results, ConocoPhillips proposes to remove the impacted material to a depth of 4 feet below surface as shown in Table 1 and as depicted in Figure 4. Excavation in the area will be performed using heavy equipment (backhoes and track hoes) within the release area footprint. The impacted areas within a 3-foot radius of the subsurface produced water and water lines and tinhorn cellar are excluded from the proposed excavation area due to safety concerns. Any visibly impacted soil within these areas will be hand-dug to the maximum extent practicable.

Excavated soils will be transported offsite and disposed of at an NMOCD-approved or permitted facility. Confirmation floor and sidewall samples will be collected for verification of remedial activities, and analyzed for TPH, BTEX and chloride. Once the sample 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 1850 cubic yards.

VARIANCE REQUEST

After characterization of this release, COP proposes to leave impacted soils (with concentrations greater than those specified in Table I) located below four (4) feet bgs in place. The contamination is fully delineated, groundwater in this area is below 200 feet bgs, and the release footprint is located in areas immediately under or around pipelines where any further excavation past four feet bgs could cause a major facility deconstruction, and/or additional unwanted impact to the environment.

Thus, in accordance with 19.15.29.14(A) NMAC, ConocoPhillips requests a variance for the placement of a liner within the excavated area. A 20-mil reinforced poly liner will be installed and properly seated throughout the base of the excavation (at 4 feet below surrounding grade). The liner will provide a engineering control that will serve as a barrier and inhibit the downward migration of residual constituents.

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 5. Twenty-three (23) confirmation floor samples and forty-nine (49) confirmation sidewall samples are proposed for verification of remedial activities. Confirmation samples will be sent to Pace Laboratories for analysis of TPH, BTEX and chloride. The proposed excavation encompasses an area of approximately 12,600 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 Pace Laboratories for analysis of TPH, BTEX and chloride. If the analytical results associated with these sample locations exceed the respective RRAL, additional excavation will be conducted at those locations until closure criteria are attained, or the excavation floor reaches four feet bgs.

REVEGETATION PLAN

The backfilled areas will be seeded in Spring 2021 (first favorable growing season) to aid in revegetation. Based on the soil types present at the site, the New Mexico State Land Office (NMSLO) Sandy Loam (SL) 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 E.

CONCLUSION

ConocoPhillips proposes to begin remediation activities at the Site within 90 days of the date of NMOCD approval of this submittal. Upon completion of the proposed work, a final report detailing the remediation activities, the results of the confirmation sampling, and conformance with the above-mentioned variance request will be submitted to the NMOCD.

Contamination in the impacted areas within a 3-foot radius of the tinhorn and subsurface pipelines does not cause an imminent risk to human health, the environment, or groundwater. ConocoPhillips respectfully requests that NMOCD will consider delaying remediation activities at these portions of the site until the tinhorn and pipelines are decommissioned.

Release Characterization and Remediation Work Plan
August 24, 2020

ConocoPhillips

If you have any questions or comments concerning the assessment or the proposed remediation activities for this site, please call me at (512) 338-2861 or (432) 682-4559.

Sincerely,

Tetra Tech, Inc.



Christian M. Llull, P.G.
Project Manager



Greg W. Pope, P.G.
Program Manager

cc:

Mr. Marvin Soriwei, RMR – ConocoPhillips
Mr. Charles Beauvais, GPBU - ConocoPhillips
Mr. Jim Amos, BLM

LIST OF ATTACHMENTS

Figures:

- Figure 1 – Site Location/Overview Map
- Figure 2 – Site Location/Topographic Map
- Figure 3 – Release Assessment Map
- Figure 4 – Proposed Remediation Extents
- Figure 5 – Alternative Confirmation Sampling Plan

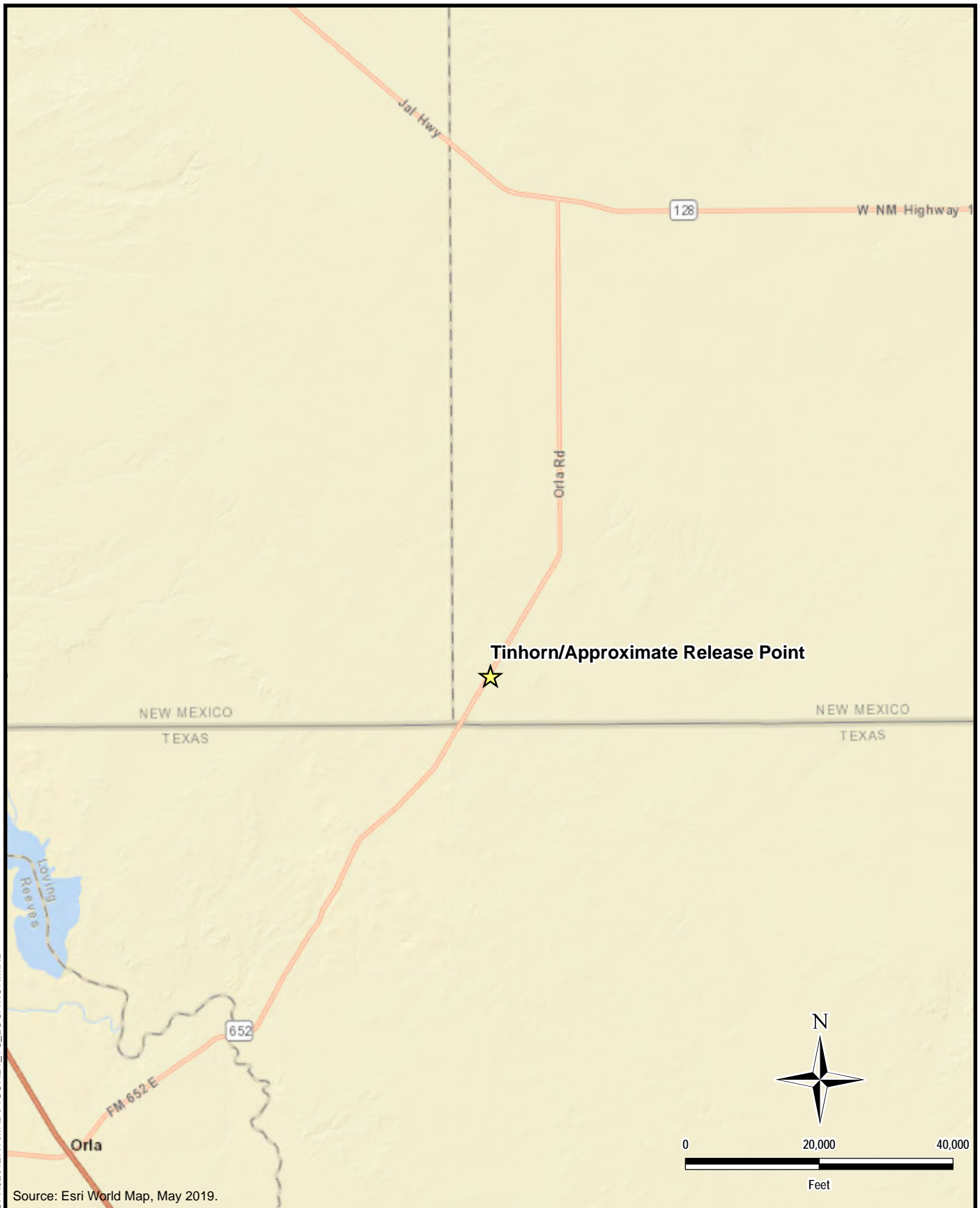
Tables:

- Table 1 – Summary of Analytical Results – Soil Assessment

Appendices:

- Appendix A – C-141 Forms
- Appendix B – Site Characterization Data
- Appendix C – Soil Boring Logs
- Appendix D – Laboratory Analytical Data
- Appendix E – NMSLO Seed Mixture Details

FIGURES



Source: Esri World Map, May 2019.



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CONOCOPHILLIPS

(32.020149°, -103.704759°)
LEA COUNTY, NEW MEXICO

**GOLDEN SPUR TO WILDER RELEASE
OVERVIEW MAP**

PROJECT NO.: 212C-MD-01867

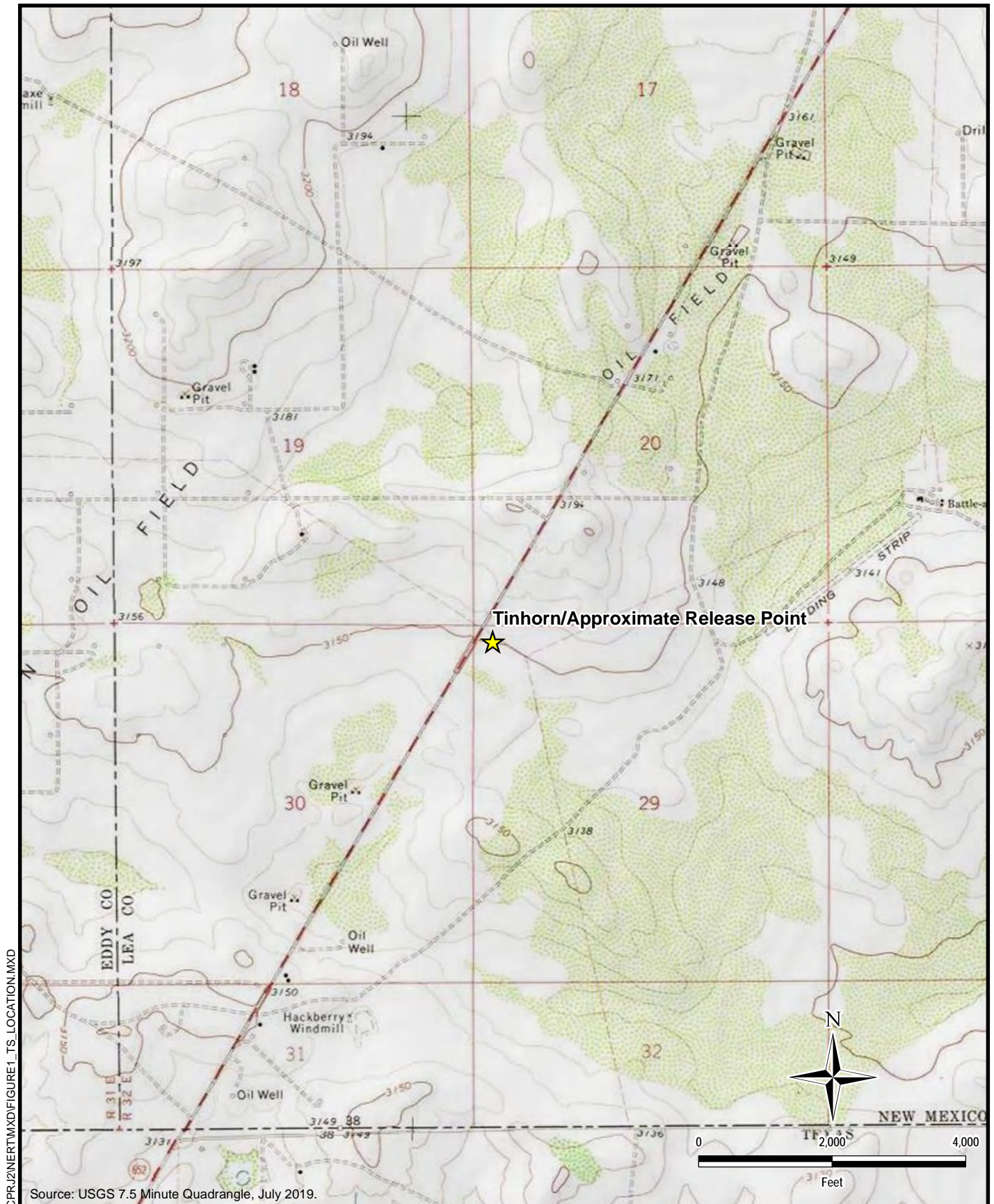
DATE: JUNE 22, 2020

DESIGNED BY: AAM

Figure No.

1

\\TTS134FS1\SUP-GIS\ARCP\J2\NERT\MXD\FIGURE1_TS_LOCATION.MXD



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 LEA COUNTY, NEW MEXICO

GOLDEN SPUR TO WILDER RELEASE
 TOPOGRAPHIC MAP

PROJECT NO.: 212C-MD-01867

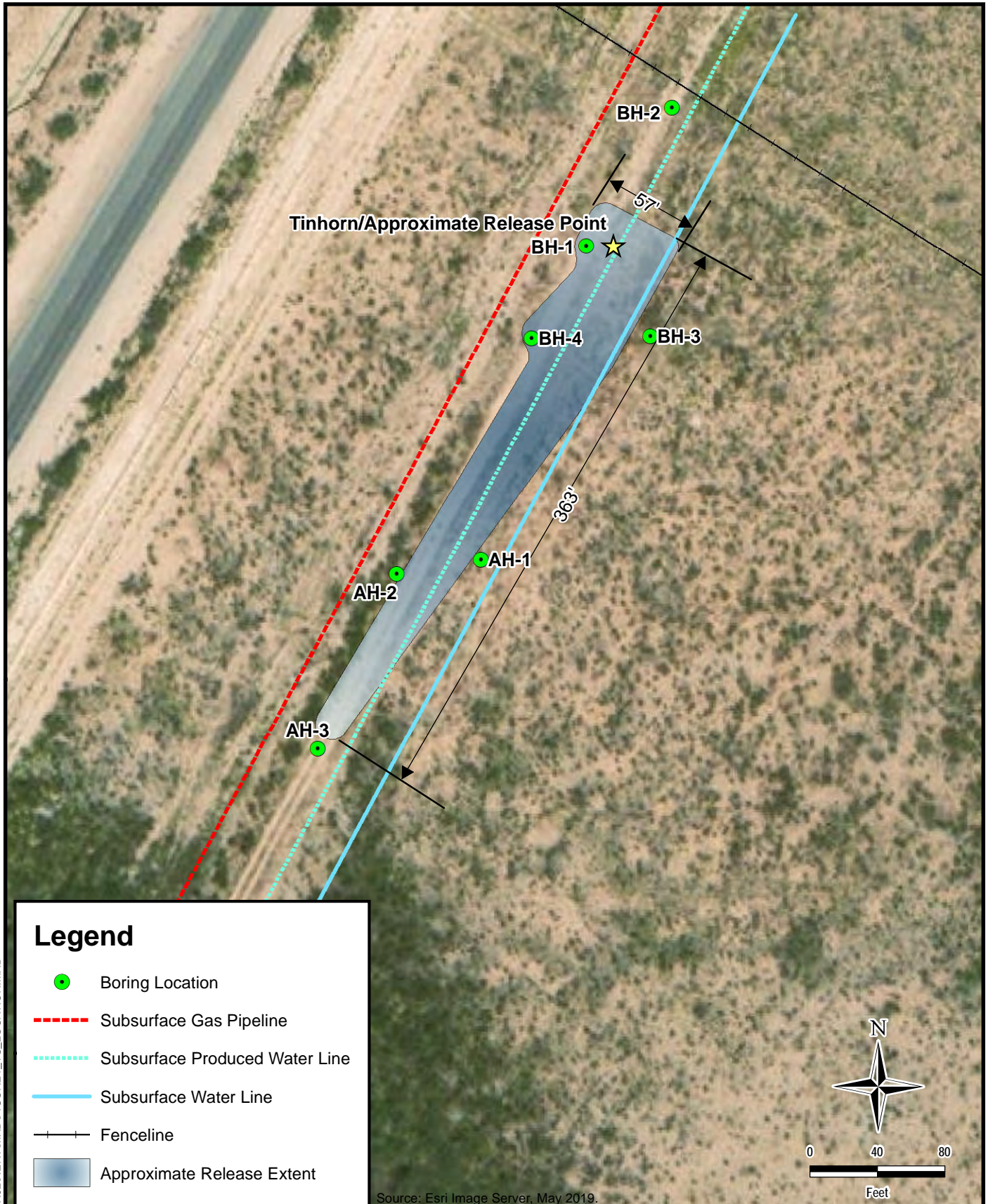
DATE: JUNE 22, 2020

DESIGNED BY: AAM

Figure No.

2

\\TTS134FS1\SUP-GIS\ARCP\J2N\TERTMX\FIGURE1_TS_LOCATION.MXD



\\TTS134FS1\SUP-GIS\ARCP\J2NERT\MXD\FIGURE1_TS_LOCATION.MXD



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**GOLDEN SPUR TO WILDER RELEASE
RELEASE ASSESSMENT MAP**

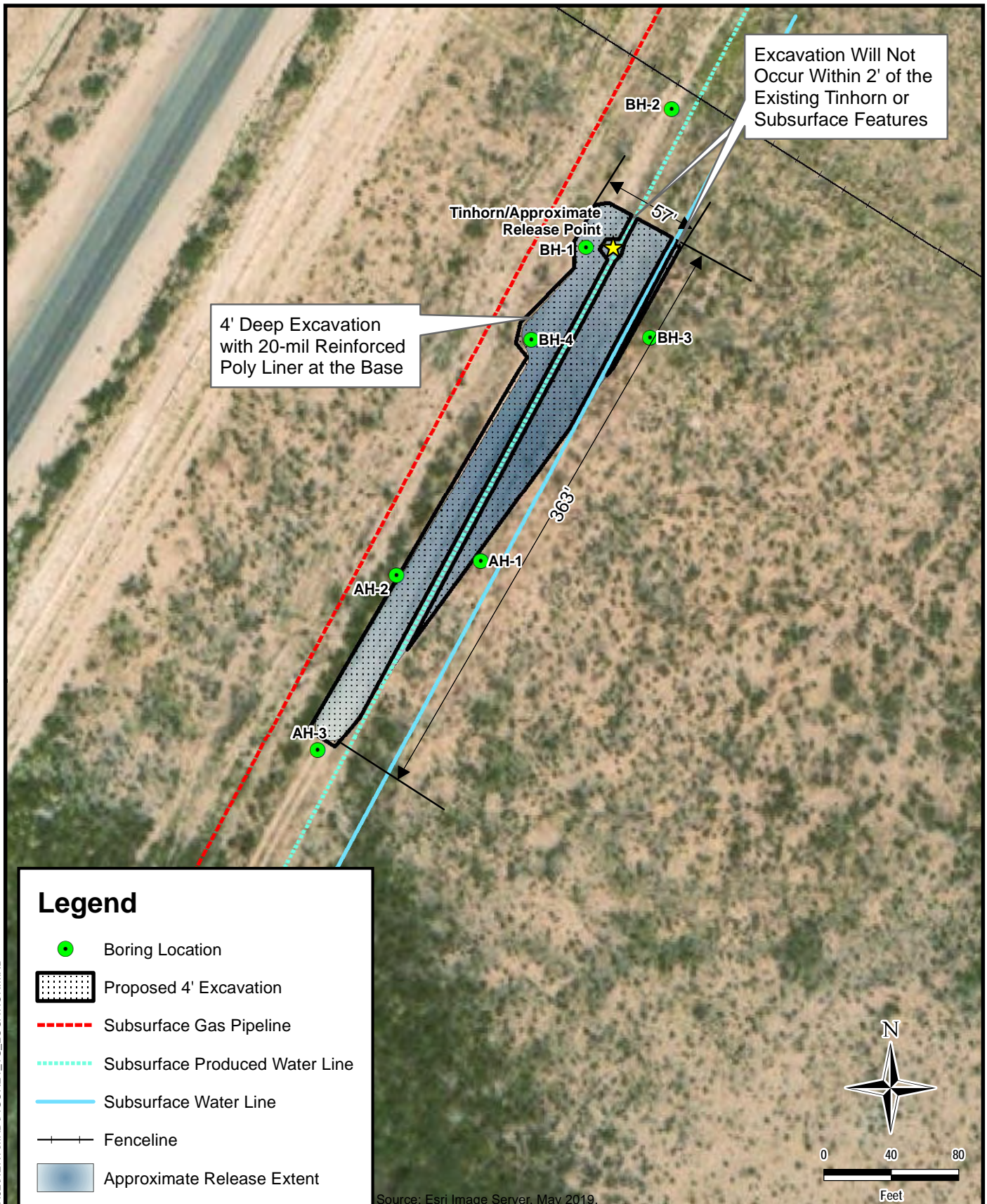
PROJECT NO.: 212C-MD-01867

DATE: JUNE 22, 2020

DESIGNED BY: AAM

Figure No.

3



\ITTS134FS1\SUP-GIS\ARCP\J2NERT\MXD\FIGURE1_TS_LOCATION.MXD


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CONOCOPHILLIPS

 (32.020149°, -103.704759°)
 LEA COUNTY, NEW MEXICO

**GOLDEN SPUR TO WILDER RELEASE
 PROPOSED REMEDIATION EXTENTS**

PROJECT NO.: 212C-MD-01867

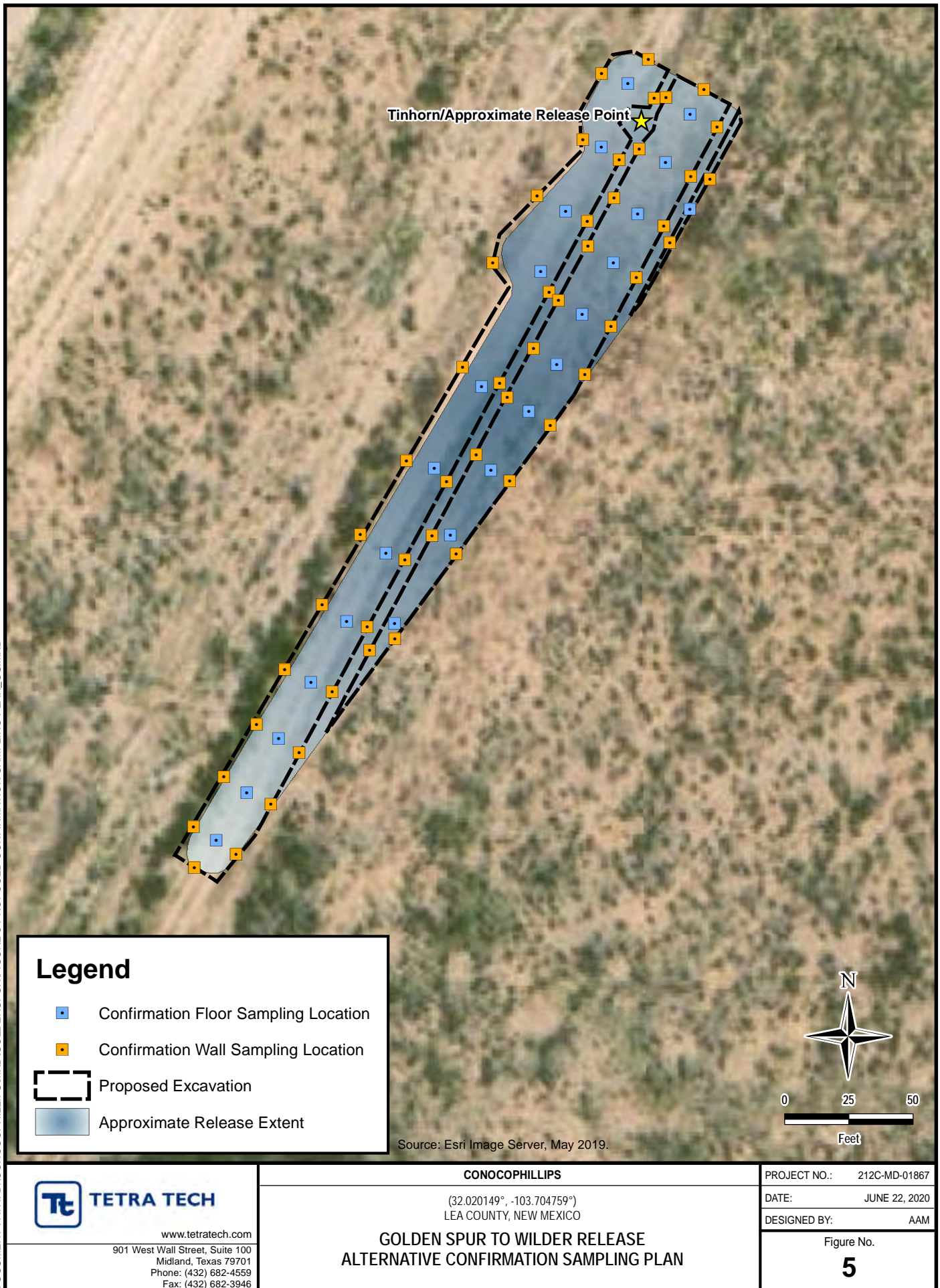
DATE: JUNE 22, 2020

DESIGNED BY: AAM

Figure No.

4

DOCUMENT PATH: D:\CONOCOPHILLIPS\MXD\GOLDEN SPUR\FIGURE 5 PROPOSED CONFIRMATION SAMPLING PLAN_GS.MXD



TABLES

TABLE 1
SUMMARY OF ANALYTICAL RESULTS
SOIL ASSESSMENT
GOLDEN SPUR TO WILDER RELEASE
1RP-5622
LEA COUNTY, NM

Sample ID	Sample Date	Sample Interval	Field Screening Results		Chloride ¹		BTEX ²								TPH ³							
							Benzene		Toluene		Ethylbenzene		Xylene		Total BTEX	GRO (C ₃ - C ₁₀) ⁴		DRO (C ₁₀ - C ₂₈)		ORO (C ₂₈ - C ₄₀)		TPH (C ₃ - C ₄₀)
		ft bgs	Chloride	PID	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
			ppm																			
AH-1	10/07/19	0-1	146	1.2	23.4		< 0.00103		< 0.00514		< 0.00257		< 0.00669		-	0.0827	B J	< 4.12		2.62	J	2.7027
		2-3	NM	0.9	11.7	B	< 0.00103		< 0.00514		< 0.00257		< 0.00668		-	0.0848	B J	< 4.11		2.83	J	2.9148
AH-2	10/07/19	0-1	112	1.1	64.2		< 0.00105		< 0.00523		< 0.00262		< 0.00680		-	0.0947	B J	< 4.19		1.34	J	1.4347
		2-3	NM	1.0	71.5		< 0.00103		< 0.00517		< 0.00258		< 0.00672		-	0.0779	B J	< 4.13		1.97	J	2.0479
AH-3	10/07/19	0-1	98	1.1	56.1		< 0.00103		< 0.00517		< 0.00258		< 0.00672		-	0.0815	B J	1.72	J	2.99	J	4.7915
		2-3	NM	0.8	74.8		< 0.00103		< 0.00515		< 0.00258		< 0.00670		-	0.0773	B J	< 4.12		0.917	J	0.9943
BH-1	10/07/19	0-1	NM	10	1550		< 0.00108	T8	< 0.00538	T8	< 0.00269	T8	< 0.00700	T8	-	0.0300	J T8	2.48	J T8	5.19	T8	7.70
		2-3	3690	2.1	5090		< 0.00108	T8	< 0.00542	T8	< 0.00271	T8	< 0.00704	T8	-	< 0.108	T8	9.35	T8	16.6	T8	25.95
		4-5	3300	1.1	4310		< 0.00111	T8	< 0.00557	T8	< 0.00278	T8	< 0.00724	T8	-	0.0331	J T8	< 4.45	T8	0.537	J T8	0.5701
		6-7	NM	1.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		9-10	2340	1.1	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		14-15	NM	0.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		19-20	3010	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		24-25	2400	0.9	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		29-30	1970	NM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		34-35	NM	NM	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	-
		39-40	2640	NM	3150		< 0.00106		0.00153	J	< 0.00264		< 0.00687		-	< 0.106		< 4.23		< 4.23		-
		44-45	NM	NM	3060		< 0.00106		< 0.00531		< 0.00265		< 0.00690		-	0.0968	B J	< 4.25		0.515	J	0.6118
		49-50	1990	NM	2370		< 0.00105		< 0.00526		< 0.00263		< 0.00684		-	0.0975	B J	< 4.21		0.432	J	0.5295
		54-55	3110	NM	4320		< 0.00114		< 0.00568		< 0.00284		< 0.00739		-	0.0993	B J	1.99	J	0.631	J	2.7203
59-60	419	NM	355		< 0.00102		< 0.00509		< 0.00255		< 0.00662		-	0.0845	B J	< 4.08		0.319	J	0.4035		
BH-2	10/07/19	0-1	136	1.4	65.6		< 0.00102		< 0.00512		< 0.00256		< 0.00665		-	0.0912	B J	< 4.09		1.71	J	1.8012
		2-3	159	1.1	56.6		< 0.00102		< 0.00512		< 0.00256		< 0.00666		-	0.0795	B J	1.67	J	0.646	J	2.3955
		4-5	216	0.9	56.3		< 0.00104		< 0.00522		< 0.00261		< 0.00679		-	0.0879	B J	< 4.18		1.08	J	1.1679
BH-3	10/07/19	0-1	NM	2.1	9.33	B J	< 0.00102		< 0.00511		< 0.00256		< 0.00665		-	0.0836	B J	2.85	J	5.04		7.9736
		2-3	61.7	0.8	24.8		< 0.00103		< 0.00513		< 0.00257		< 0.00667		-	0.0821	B J	< 4.11		3.40	J	3.4821
		4-5	100	0.9	--		--		--		--		--		-	--		--		--		-
BH-4	10/07/19	0-1	NM	4.4	1460		< 0.00108	T8	< 0.00542	T8	< 0.00271	T8	< 0.00704	T8	-	< 0.108	T8	2.95	J T8	5.21	T8	8.16
		2-3	3380	3.2	3450		< 0.00109	T8	< 0.00547	T8	< 0.00274	T8	< 0.00712	T8	-	0.0239	J T8	3.24	J T8	3.27	J T8	6.5339
		4-5	2270	1.6	2490		< 0.00112	T8	< 0.00560	T8	< 0.00280	T8	< 0.00727	T8	-	< 0.112	T8	< 4.48	T8	1.80	J T8	1.80
		6-7	768	1.1	24.6		< 0.00103		< 0.00513		< 0.00256		< 0.00666		-	0.0768	B J	< 4.10		3.32	J	3.3968
		9-10	941	1.2	183		< 0.00108		< 0.00539		< 0.00269		< 0.00700		-	0.0779	B J	1.90	J	1.48	J	3.4579
		14-15	894	0.8	19.8	B	< 0.00110		< 0.00548		< 0.00274		< 0.00712		-	0.0706	B J	< 4.38		0.963	J	1.0336
		19-20	336	0.9	66.5		< 0.00102		< 0.00509		< 0.00255		< 0.00662		-	0.0681	B J	5.24		8.08		13.3881

NOTES:

ft	Feet	<i>Bold and italicized values indicate exceedance of proposed RRALS.</i>
bgs	Below ground surface	1 Method 300.0
ppm	Parts per million	2 Method 8260B
mg/kg	Milligrams per kilogram	3 Method 8015
NM	Not measured	4 Method 8015D/GRO
--	Not analyzed	B The same analyte is found in the associated blank.
TPH	Total Petroleum Hydrocarbons	T The identification of the analyte is acceptable; the reported value is an estimate.
GRO	Gasoline range organics	T8 Sample(s) received past/too close to --ing time expiration.

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	NDHR1921234950
District RP	1RP-5622
Facility ID	fDHR1921234800
Application ID	pDHR1921234384

Release Notification

Responsible Party

Responsible Party ConocoPhillips	OGRID 217817
Contact Name <u>Charles Beauvais</u>	Contact Telephone <u>1-575-745-1959</u>
Contact email <u>charles.r.beauvais@conocophillips.com</u>	Incident # (assigned by OCD)
Contact mailing address <u>15 West London Rd, Loving, NM 88256</u>	

Location of Release Source

Latitude 32.02028° or 32°1'13"N Longitude -103.70472° or 103°42'17"W
(NAD 83 in decimal degrees to 5 decimal places)

Site Name <u>Golden Spur/Wilder Federal Pipeline</u>	Site Type <u>Produced water pipeline</u>
Date Release Discovered <u>7/2/19</u>	API# (if applicable)

Unit Letter	Section	Township	Range	County
<u>D</u>	<u>29</u>	<u>26S</u>	<u>32E</u>	<u>LEA</u>

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private (Name: BLM)

Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) <u>644</u>	Volume Recovered (bbls) <u>110</u>
	Is the concentration of total dissolved solids (TDS) in the produced water >10,000 mg/l?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input type="checkbox"/> Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release – Fatigue failure of check valve

Oil Conservation Division

Incident ID	NDHR1921234950
District RP	1RP-5622
Facility ID	fDHR1921234800
Application ID	pDHR1921234384

Was this a major release as defined by 19.15.29.7(A) NMAC? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? <i>19.15, 29.7(A) (1)</i> <i>An unauthorized release of a volume, excluding gases, of 25 barrels or more</i>
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? <i>Notice was made by Charles Beauvais, Environmental Coordinator, at 12:43 P.M. on 7/3/19 via email to bradford.billings@state.nm and dylan.h.rose-cross@state.nm.us. Calls were made to Jim Briswald & NMOC, however, voicemails were received multiple times.</i>	

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.

Printed Name: Charles Beauvais

Title: Environmental Coordinator

Signature: *Charles Beauvais*

Date: 07/03/19

email: charles.r.beauvais@conocophillips.com

Telephone: 1-575-745-1959

OCD Only

Received by: Dylan Rose-Coss

Date: 07/31/2019

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?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input type="checkbox"/> No
Did the release impact areas not on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input type="checkbox"/> No

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

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

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

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

State of New Mexico
Oil Conservation Division

Page 4

Incident ID	
District RP	
Facility ID	
Application ID	

I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: _____ Title: _____

Signature:  _____ Date: _____

email: _____ Telephone: _____

OCD Only

Received by: _____ Date: _____

Incident ID	
District RP	
Facility ID	
Application ID	

Remediation Plan

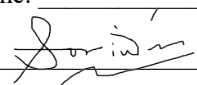
Remediation Plan Checklist: *Each of the following items must be included in the plan.*

- ☐ 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:  _____ Date: _____

APPENDIX B

Site Characterization Data



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 Code	Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
C 02271	R	CUB	LE	2	3	21	26S	32E		624449	3544111*	150	125	25
C 02271 POD2		CUB	LE	3	2	3	21	26S	32E	624348	3544010*	270	250	20
C 02274		CUB	LE	2	1	2	31	26S	32E	621742	3541730*	300	295	5
C 02323		C	LE	3	2	3	21	26S	32E	624348	3544010*	405	405	0
C 03537 POD1		CUB	LE	3	2	3	21	26S	32E	624250	3543985	850		
C 03595 POD1		CUB	LE	4	2	3	21	26S	32E	624423	3544045	280	180	100

Average Depth to Water: **251 feet**

Minimum Depth: **125 feet**

Maximum Depth: **405 feet**

Record Count: 6

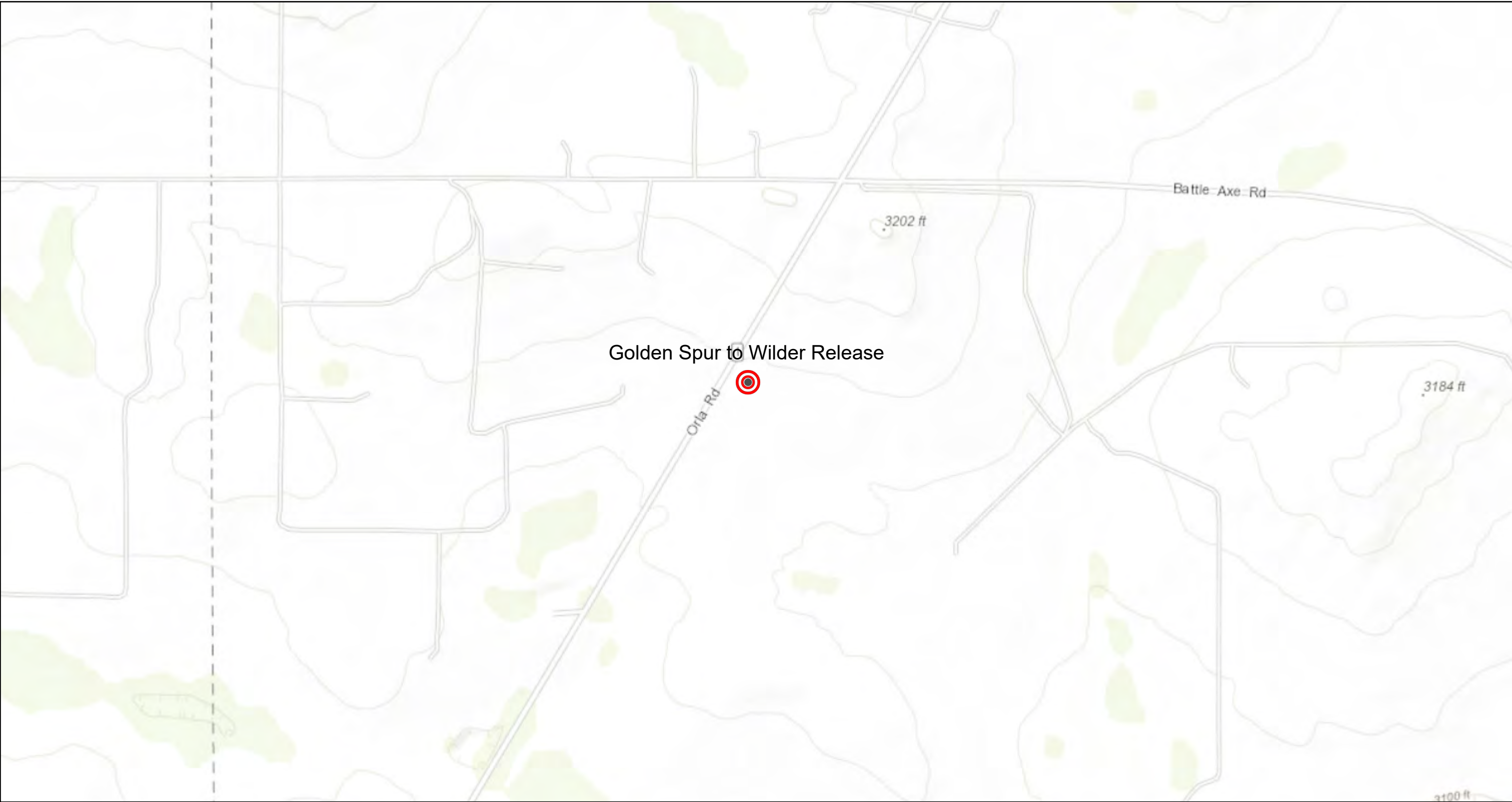
PLSS Search:

Section(s): 19, 20, 21, 28, 30, 31, 32, 33, 29
Township: 26S
Range: 32E









*UTM location was derived from PLSS - see Help

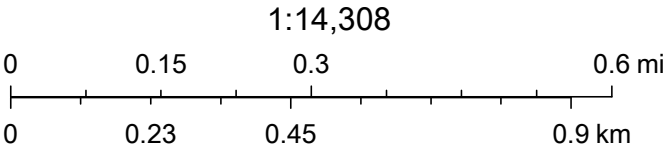
The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

Golden Spur to Wilder Release NMOCD Map



11/15/2019 3:29:48 PM

-  Override 1
-  NMDOT GPS ROADS
-  PLJV Probable Playas
-  New Mexico Counties
-  NMDOT Railroads
-  OSE Streams
-  New Mexico Towns
-  OSE Water-bodies







US Census Bureau, NMDOT, Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the

Karst Potential Map

Golden Spur to Wilder Release

Legend

-  Golden Spur to Wilder Release
-  High
-  Low
-  Medium


Golden Spur to Wilder Release

1



APPENDIX C

Soil Boring Logs

212C-MD-01867	 TETRA TECH	LOG OF BORING AH-1	Page 1 of 1
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Project Name: Golden Spur to Wilder Federal Pipeline Release

Borehole Location: GPS: N 32.019655° E -103.705012°

Surface Elevation: 3151 ft

Borehole Number: AH-1
















Borehole
Diameter (in.): 2

Date Started: 10/7/2019

Date Finished: 10/7/2019

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS		DEPTH (ft)	REMARKS
												While Drilling	Upon Completion of Drilling		
			ExStik	PID				LL	PI			REMARKS: MATERIAL DESCRIPTION			
			146	1.2								-SM- SILTY SAND; Brown, medium dense, with no hydrocarbon odor, with no staining.			AH-1 (0'-1')
				0.9										3	AH-1 (2'-3')


Bottom of borehole at 3.0 feet.

Sampler Types:  Split Spoon  Shelby  Bulk Sample  Grab Sample	 Acetate Liner  Vane Shear  California  Test Pit	Operation Types:  Auger  Mud Rotary  Continuous Flight Auger  Wash Rotary	 Air Rotary  Core Barrel  Direct Push	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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Logger: Joe Tyler

Drilling Equipment: Hand Auger

Driller: Scarborough Drilling

212C-MD-01867	 TETRA TECH	LOG OF BORING AH-2	Page 1 of 1
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Project Name: Golden Spur to Wilder Federal Pipeline Release

Borehole Location: GPS: N 32.019633° E -103.705174°

Surface Elevation: 3152 ft

Borehole Number: AH-2
















Borehole
Diameter (in.): 2

Date Started: 10/7/2019

Date Finished: 10/7/2019

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS		DEPTH (ft)	REMARKS
												While Drilling	Upon Completion of Drilling		
			ExStik	PID				LL	PI				Remarks:		
			112	1.1									-SM- SILTY SAND; Brown, medium dense, with no hydrocarbon odor, with no staining.		AH-1 (0'-1')
				1										3	AH-1 (2'-3')


Bottom of borehole at 3.0 feet.

Sampler Types:  Split Spoon  Shelby  Bulk Sample  Grab Sample  Acetate Liner  Vane Shear  California  Test Pit	Operation Types:  Auger  Mud Rotary  Continuous Flight Auger  Wash Rotary  Air Rotary  Core Barrel  Direct Push	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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Logger: Joe Tyler

Drilling Equipment: Hand Auger

Driller: Scarborough Drilling

212C-MD-01867	 TETRA TECH	LOG OF BORING AH-3	Page 1 of 1
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Project Name: Golden Spur to Wilder Federal Pipeline Release

Borehole Location: GPS: N 32.019348° E -103.705326°

Surface Elevation: 3151 ft

Borehole Number: AH-3
















Borehole
Diameter (in.): 2

Date Started: 10/7/2019

Date Finished: 10/7/2019

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS		DEPTH (ft)	REMARKS
												While Drilling	Upon Completion of Drilling		
			ExStik	PID				LL	PI				Remarks:		
													MATERIAL DESCRIPTION		
			98	1.1									-SM- SILTY SAND; Brown, medium dense, with no hydrocarbon odor, with no staining.		AH-1 (0'-1')
				0.8										3	AH-1 (2'-3')

Bottom of borehole at 3.0 feet.

Sampler Types:  Split Spoon  Shelby  Bulk Sample  Grab Sample	 Acetate Liner  Vane Shear  California  Test Pit	Operation Types:  Mud Rotary  Continuous Flight Auger  Wash Rotary	 Auger  Air Rotary  Core Barrel  Direct Push	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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Logger: Joe Tyler

Drilling Equipment: Hand Auger

Driller: Scarborough Drilling

212C-MD-01867		TETRA TECH		LOG OF BORING BH-1				Page 1 of 3						
Project Name: Golden Spur to Wilder Federal Pipeline Release														
Borehole Location: GPS: N 32.020165° E -103.704807°				Surface Elevation: 3155 ft										
Borehole Number: BH-1				Borehole Diameter (in.): 8		Date Started: 10/7/2019		Date Finished: 10/7/2019						
DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS While Drilling <u>▽</u> DRY ft Upon Completion of Drilling <u>▽</u> DRY ft Remarks:		
			ExStik	PID	MATERIAL DESCRIPTION		DEPTH (ft)	REMARKS						
5	[Symbol]	[Symbol]	3690	2.1							5.5	-SM- SILTY SAND; Brown, medium dense, with no hydrocarbon odor, with no staining.		BH-1 (0'-1')
														BH-1 (2'-3')
														BH-1 (4'-5')
														BH-1 (6'-7')
														BH-1 (9'-10')
10	[Symbol]	[Symbol]	3300	1.1							22	-SM- SILTY SAND; Tan, loose to medium dense, with intermittent gravel, with no hydrocarbon odor, with no staining.		BH-1 (14'-15')
														BH-1 (19'-20')
15	[Symbol]	[Symbol]		1.2							22	-SM- SILTY SAND; Tan, medium dense, with no hydrocarbon odor, with no staining.		
20	[Symbol]	[Symbol]	2340	1.1							22	-SM- SILTY SAND; Tan, medium dense, with no hydrocarbon odor, with no staining.		
25	[Symbol]	[Symbol]		0.8							22	-SM- SILTY SAND; Tan, medium dense, with no hydrocarbon odor, with no staining.		
20	[Symbol]	[Symbol]	3010	0.9							22	-SM- SILTY SAND; Tan, medium dense, with no hydrocarbon odor, with no staining.		
25	[Symbol]	[Symbol]		0.9							22	-SM- SILTY SAND; Tan, medium dense, with no hydrocarbon odor, with no staining.		
25	[Symbol]	[Symbol]	2400	0.9							22	-SM- SILTY SAND; Tan, medium dense, with no hydrocarbon odor, with no staining.		BH-1 (24'-25')

Sampler Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input checked="" type="checkbox"/> Split Spoon <input type="checkbox"/> Shelby <input type="checkbox"/> Bulk Sample <input type="checkbox"/> Grab Sample </div> <div style="width: 50%;"> <input type="checkbox"/> Acetate Liner <input type="checkbox"/> Vane Shear <input checked="" type="checkbox"/> California <input type="checkbox"/> Test Pit </div> </div>	Operation Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input type="checkbox"/> Mud Rotary <input type="checkbox"/> Continuous Flight Auger <input type="checkbox"/> Wash Rotary </div> <div style="width: 50%;"> <input type="checkbox"/> Auger <input type="checkbox"/> Air Rotary <input type="checkbox"/> Core Barrel <input checked="" type="checkbox"/> Direct Push </div> </div>	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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Logger: Joe Tyler	Drilling Equipment: Air Rotary	Driller: Scarborough Drilling
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212C-MD-01867	TETRA TECH	LOG OF BORING BH-1	Page 2 of 3
Project Name: Golden Spur to Wilder Federal Pipeline Release			
Borehole Location: GPS: N 32.020165° E -103.704807°		Surface Elevation: 3155 ft	
Borehole Number: BH-1		Borehole Diameter (in.): 8	Date Started: 10/7/2019 Date Finished: 10/7/2019

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS	DEPTH (ft)	REMARKS
			ExStik	PID				LL	PI			While Drilling <u>▽</u> DRY ft Upon Completion of Drilling <u>▽</u> DRY ft Remarks:		
30			1970											BH-1 (29'-30')
35														BH-1 (34'-35')
40			2640											BH-1 (39'-40')
45														BH-1 (44'-45')
50			1990											BH-1 (44'-45')

Sampler Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> Split Spoon Shelby Bulk Sample Grab Sample </div> <div style="width: 50%;"> Acetate Liner Vane Shear California Test Pit </div> </div>	Operation Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> Mud Rotary Continuous Flight Auger Wash Rotary </div> <div style="width: 50%;"> Auger Air Rotary Core Barrel Direct Push </div> </div>	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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212C-MD-01867		TETRA TECH		LOG OF BORING BH-1				Page 3 of 3											
Project Name: Golden Spur to Wilder Federal Pipeline Release																			
Borehole Location: GPS: N 32.020165° E -103.704807°				Surface Elevation: 3155 ft															
Borehole Number: BH-1				Borehole Diameter (in.): 8		Date Started: 10/7/2019		Date Finished: 10/7/2019											
DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS While Drilling <u>▽</u> DRY ft Upon Completion of Drilling <u>▽</u> DRY ft Remarks:							
												MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS					
55		X	3110																
60		X	419										57	-SP- SAND: Tan, loose, with no hydrocarbon odor, with no staining.					
60													60	BH-1 (59'-60')					


Bottom of borehole at 60.0 feet.




Sampler Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> Split Spoon Shelby Bulk Sample Grab Sample </div> <div style="width: 50%;"> Acetate Liner Vane Shear California Test Pit </div> </div>	Operation Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> Mud Rotary Continuous Flight Auger Wash Rotary </div> <div style="width: 50%;"> Auger Air Rotary Core Barrel Direct Push </div> </div>	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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Logger: Joe Tyler

Drilling Equipment: Air Rotary

Driller: Scarborough Drilling

212C-MD-01867	 TETRA TECH	LOG OF BORING BH-2	Page 1 of 1
Project Name: Golden Spur to Wilder Federal Pipeline Release			
Borehole Location: GPS: N 32.020389° E -103.704642°		Surface Elevation: 3157 ft	
Borehole Number: BH-2		Borehole Diameter (in.): 8	Date Started: 10/7/2019 Date Finished: 10/7/2019

DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS		
												While Drilling <u>▽</u> DRY ft Upon Completion of Drilling <u>▽</u> DRY ft		
Remarks:														
MATERIAL DESCRIPTION												DEPTH (ft)	REMARKS	
5			136	1.4								-SM- SILTY SAND; White, loose, with gravel, with no hydrocarbon odor, with no staining.		BH-2 (0'-1')
			159	1.1									BH-2 (2'-3')	
			216	0.9									BH-2 (4'-5')	
Bottom of borehole at 5.0 feet.														

Sampler Types:  Split Spoon  Shelby  Bulk Sample  Grab Sample  Acetate Liner  Vane Shear  California  Test Pit	Operation Types:  Mud Rotary  Continuous Flight Auger  Wash Rotary  Auger  Air Rotary  Core Barrel  Direct Push	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
Logger: Joe Tyler		Drilling Equipment: Air Rotary
		Driller: Scarborough Drilling

212C-MD-01867		TETRA TECH		LOG OF BORING BH-3				Page 1 of 1						
Project Name: Golden Spur to Wilder Federal Pipeline Release														
Borehole Location: GPS: N 32.020016° E -103.704686°				Surface Elevation: 3155 ft										
Borehole Number: BH-3				Borehole Diameter (in.): 8		Date Started: 10/7/2019		Date Finished: 10/7/2019						
DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS While Drilling <u>▽</u> DRY ft Upon Completion of Drilling <u>▽</u> DRY ft Remarks:		
												MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS
5	[Symbol]	[Symbol]	61.7	2.1								-SM- SILTY SAND; Brown, loose to medium dense, with few gravel, with no hydrocarbon odor, with no staining.	BH-3 (0'-1')	
	[Symbol]	[Symbol]	100.0	0.8									BH-3 (2'-3')	
	[Symbol]	[Symbol]	100.0	0.9									BH-3 (4'-5')	

Bottom of borehole at 5.0 feet.

Sampler Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> Split Spoon Shelby Bulk Sample Grab Sample </div> <div style="width: 50%;"> Acetate Liner Vane Shear California Test Pit </div> </div>	Operation Types: <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> Mud Rotary Continuous Flight Auger Wash Rotary </div> <div style="width: 50%;"> Auger Air Rotary Core Barrel Direct Push </div> </div>	Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.
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Logger: Joe Tyler

Drilling Equipment: Air Rotary

Driller: Scarborough Drilling

212C-MD-01867		TETRA TECH		LOG OF BORING BH-4				Page 1 of 1							
Project Name: Golden Spur to Wilder Federal Pipeline Release															
Borehole Location: GPS: N 32.020014° E -103.704913°				Surface Elevation: 3155 ft											
Borehole Number: BH-4				Borehole Diameter (in.): 8		Date Started: 10/7/2019		Date Finished: 10/7/2019							
DEPTH (ft)	OPERATION TYPE	SAMPLE	CHLORIDE FIELD SCREENING (ppm)	VOC FIELD SCREENING (ppm)	SAMPLE RECOVERY (%)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)	LIQUID LIMIT	PLASTICITY INDEX	MINUS NO. 200 (%)	GRAPHIC LOG	WATER LEVEL OBSERVATIONS While Drilling <input checked="" type="checkbox"/> DRY ft Upon Completion of Drilling <input checked="" type="checkbox"/> DRY ft Remarks:			
												MATERIAL DESCRIPTION	DEPTH (ft)	REMARKS	
5	[Symbol]	[Symbol]	ExStik	PID								[Symbol]	-SM- SILTY SAND; Brown, medium dense, with no hydrocarbon odor, with no staining.	5.5	BH-4 (0'-1')
			3380	3.2										BH-4 (2'-3')	
			2270	1.6										BH-4 (4'-5')	
			968	1.1										BH-4 (6'-7')	
			641	1.2										BH-4 (9'-10')	
10	[Symbol]	[Symbol]										[Symbol]	-SP- SAND; Tan, loose, with few gravel, with no hydrocarbon odor, with no staining.		
			894	0.8											BH-4 (14'-15')
15	[Symbol]	[Symbol]										[Symbol]			
			336	0.9											BH-4 (19'-20')
Bottom of borehole at 20.0 feet.															
Sampler Types:		<input checked="" type="checkbox"/> Split Spoon <input type="checkbox"/> Acetate Liner <input checked="" type="checkbox"/> Shelby <input type="checkbox"/> Vane Shear <input checked="" type="checkbox"/> Bulk Sample <input checked="" type="checkbox"/> California <input checked="" type="checkbox"/> Grab Sample <input type="checkbox"/> Test Pit		Operation Types:		<input type="checkbox"/> Mud Rotary <input type="checkbox"/> Auger <input type="checkbox"/> Continuous Flight Auger <input type="checkbox"/> Air Rotary <input type="checkbox"/> Wash Rotary <input type="checkbox"/> Core Barrel <input type="checkbox"/> Direct Push		Notes: Analytical samples are shown in the "Remarks" column. Surface elevation is an estimated value.							
Logger: Joe Tyler				Drilling Equipment: Air Rotary				Driller: Scarborough Drilling							

APPENDIX D

Laboratory Analytical Data



ANALYTICAL REPORT

October 24, 2019

ConocoPhillips - Tetra Tech

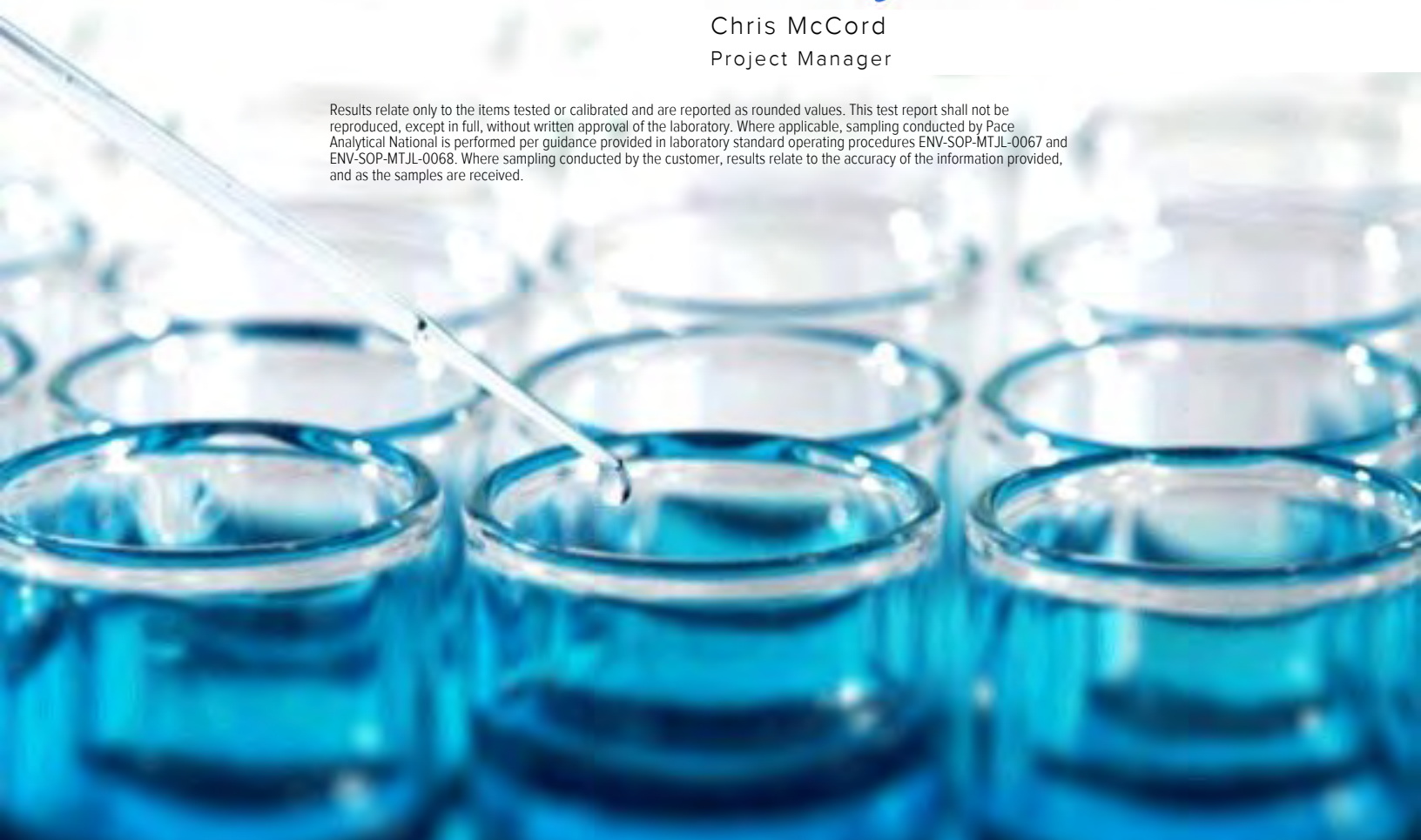
Sample Delivery Group: L1150103
Samples Received: 10/15/2019
Project Number: 212C-MD-01867
Description: COP Golden Spur to Wilder Release

Report To: Christian Llull
901 West Wall
Suite 100
Midland, TX 79701

Entire Report Reviewed By:

Chris McCord
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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BH-1 (39'-40') L1150103-01 Solid

Collected by JT
Collected date/time 10/07/19 11:20
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	5	10/17/19 10:08	10/17/19 11:50	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1366338	1	10/16/19 08:07	10/21/19 17:58	ACG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365835	1	10/16/19 08:07	10/19/19 12:45	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1366255	1	10/16/19 08:07	10/20/19 18:58	ADM	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1364761	1	10/17/19 17:33	10/18/19 16:55	TJD	Mt. Juliet, TN

BH-1 (44'-45') L1150103-02 Solid

Collected by JT
Collected date/time 10/07/19 11:25
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	5	10/17/19 10:08	10/17/19 12:09	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 15:47	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365835	1	10/16/19 08:07	10/19/19 13:06	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1364761	1	10/17/19 17:33	10/18/19 17:09	TJD	Mt. Juliet, TN

BH-1 (49'-50') L1150103-03 Solid

Collected by JT
Collected date/time 10/07/19 11:30
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	5	10/17/19 10:08	10/17/19 12:18	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 16:09	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365835	1	10/16/19 08:07	10/19/19 13:26	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1364761	1	10/17/19 17:33	10/18/19 17:23	TJD	Mt. Juliet, TN

BH-1 (54'-55') L1150103-04 Solid

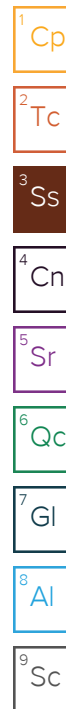
Collected by JT
Collected date/time 10/07/19 11:45
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	10	10/17/19 10:08	10/17/19 12:28	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 16:32	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365835	1	10/16/19 08:07	10/19/19 13:47	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1364761	1	10/17/19 17:33	10/18/19 17:36	TJD	Mt. Juliet, TN

BH-1 (59'-60') L1150103-05 Solid

Collected by JT
Collected date/time 10/07/19 11:50
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 12:37	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 16:54	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365835	1	10/16/19 08:07	10/19/19 14:07	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1364761	1	10/17/19 17:33	10/18/19 17:49	TJD	Mt. Juliet, TN



BH-2 (0'-1') L1150103-06 Solid

Collected by JT
Collected date/time 10/07/19 11:55
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 12:47	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 17:16	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 12:57	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 18:40	KME	Mt. Juliet, TN

¹ Cp² Tc³ Ss⁴ Cn

BH-2 (2'-3') L1150103-07 Solid

Collected by JT
Collected date/time 10/07/19 12:00
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367005	1	10/23/19 14:35	10/23/19 14:44	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 12:56	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 17:38	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 13:17	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 18:53	KME	Mt. Juliet, TN

⁵ Sr⁶ Qc⁷ Gl⁸ Al

BH-2 (4'-5') L1150103-08 Solid

Collected by JT
Collected date/time 10/07/19 12:10
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 13:25	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 18:01	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 13:36	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 19:06	KME	Mt. Juliet, TN

⁹ Sc

BH-3 (0'-1') L1150103-09 Solid

Collected by JT
Collected date/time 10/07/19 12:25
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 13:34	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 18:23	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 13:55	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 19:18	KME	Mt. Juliet, TN

BH-3 (2'-3') L1150103-10 Solid

Collected by JT
Collected date/time 10/07/19 12:40
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 13:44	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 18:45	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 14:15	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 19:31	KME	Mt. Juliet, TN

BH-4 (6'-7') L1150103-11 Solid

				Collected by JT	Collected date/time 10/07/19 13:50	Received date/time 10/15/19 09:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 13:54	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 19:07	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 14:34	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 19:44	KME	Mt. Juliet, TN

1 Cp

2 Tc

3 Ss

4 Cn

BH-4 (9'-10') L1150103-12 Solid

				Collected by JT	Collected date/time 10/07/19 14:00	Received date/time 10/15/19 09:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 14:03	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 19:30	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 14:54	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 19:57	KME	Mt. Juliet, TN

5 Sr

6 Qc

7 Gl

8 Al

BH-4 (14'-15') L1150103-13 Solid

				Collected by JT	Collected date/time 10/07/19 14:10	Received date/time 10/15/19 09:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 14:13	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 19:52	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 15:13	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 20:10	KME	Mt. Juliet, TN

9 Sc

BH-4 (19'-20') L1150103-14 Solid

				Collected by JT	Collected date/time 10/07/19 14:30	Received date/time 10/15/19 09:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 14:41	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 20:14	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 15:33	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 20:22	KME	Mt. Juliet, TN

AH-1 (0'-1') L1150103-15 Solid

				Collected by JT	Collected date/time 10/07/19 14:35	Received date/time 10/15/19 09:15
Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 14:51	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1364083	1	10/16/19 08:07	10/17/19 20:36	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 15:52	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/19/19 06:54	KME	Mt. Juliet, TN

AH-1 (2'-3') L1150103-16 Solid

Collected by JT
Collected date/time 10/07/19 14:40
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 15:19	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1365550	1	10/16/19 08:07	10/20/19 15:28	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 16:11	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 20:48	KME	Mt. Juliet, TN

¹ Cp² Tc³ Ss⁴ Cn

AH-2 (0'-1') L1150103-17 Solid

Collected by JT
Collected date/time 10/07/19 14:45
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367007	1	10/23/19 14:23	10/23/19 14:32	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 15:29	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1365550	1	10/16/19 08:07	10/20/19 15:51	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 16:31	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 21:01	KME	Mt. Juliet, TN

⁵ Sr⁶ Qc⁷ Gl⁸ Al

AH-2 (2'-3') L1150103-18 Solid

Collected by JT
Collected date/time 10/07/19 14:50
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367008	1	10/23/19 13:53	10/23/19 14:05	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 15:38	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1365550	1	10/16/19 08:07	10/20/19 16:18	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 16:50	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 21:13	KME	Mt. Juliet, TN

⁹ Sc

AH-3 (0'-1') L1150103-19 Solid

Collected by JT
Collected date/time 10/07/19 15:00
Received date/time 10/15/19 09:15


Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367008	1	10/23/19 13:53	10/23/19 14:05	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 15:48	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1365550	1	10/16/19 08:07	10/20/19 16:40	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 17:10	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 21:26	KME	Mt. Juliet, TN

AH-3 (2'-3') L1150103-20 Solid

Collected by JT
Collected date/time 10/07/19 15:10
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1367008	1	10/23/19 13:53	10/23/19 14:05	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1363821	1	10/17/19 10:08	10/17/19 15:57	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1365550	1	10/16/19 08:07	10/20/19 17:03	DWR	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1365838	1	10/16/19 08:07	10/19/19 17:29	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1365094	1	10/18/19 06:39	10/18/19 21:39	KME	Mt. Juliet, TN

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris McCord
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Collected date/time: 10/07/19 11:20

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	94.6		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	3150		4.20	10.0	52.8	5	10/17/2019 11:50	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U		0.0229	0.100	0.106	1	10/21/2019 17:58	WG1366338
(S) a,a,a-Trifluorotoluene(FID)	95.0				77.0-120		10/21/2019 17:58	WG1366338

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000423	0.00100	0.00106	1	10/19/2019 12:45	WG1365835
Toluene	0.00153	J	0.00132	0.00500	0.00528	1	10/20/2019 18:58	WG1366255
Ethylbenzene	U		0.000560	0.00250	0.00264	1	10/19/2019 12:45	WG1365835
Total Xylenes	U		0.00505	0.00650	0.00687	1	10/19/2019 12:45	WG1365835
(S) Toluene-d8	103				75.0-131		10/19/2019 12:45	WG1365835
(S) Toluene-d8	107				75.0-131		10/20/2019 18:58	WG1366255
(S) 4-Bromofluorobenzene	98.0				67.0-138		10/19/2019 12:45	WG1365835
(S) 4-Bromofluorobenzene	102				67.0-138		10/20/2019 18:58	WG1366255
(S) 1,2-Dichloroethane-d4	102				70.0-130		10/19/2019 12:45	WG1365835
(S) 1,2-Dichloroethane-d4	74.3				70.0-130		10/20/2019 18:58	WG1366255

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.70	4.00	4.23	1	10/18/2019 16:55	WG1364761
C28-C40 Oil Range	U		0.290	4.00	4.23	1	10/18/2019 16:55	WG1364761
(S) o-Terphenyl	68.9				18.0-148		10/18/2019 16:55	WG1364761

Collected date/time: 10/07/19 11:25

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	94.2		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	3060		4.22	10.0	53.1	5	10/17/2019 12:09	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0968	B J	0.0230	0.100	0.106	1	10/17/2019 15:47	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 15:47	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000425	0.00100	0.00106	1	10/19/2019 13:06	WG1365835
Toluene	U		0.00133	0.00500	0.00531	1	10/19/2019 13:06	WG1365835
Ethylbenzene	U		0.000563	0.00250	0.00265	1	10/19/2019 13:06	WG1365835
Total Xylenes	U		0.00507	0.00650	0.00690	1	10/19/2019 13:06	WG1365835
(S) Toluene-d8	104				75.0-131		10/19/2019 13:06	WG1365835
(S) 4-Bromofluorobenzene	103				67.0-138		10/19/2019 13:06	WG1365835
(S) 1,2-Dichloroethane-d4	106				70.0-130		10/19/2019 13:06	WG1365835

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.71	4.00	4.25	1	10/18/2019 17:09	WG1364761
C28-C40 Oil Range	0.515	J	0.291	4.00	4.25	1	10/18/2019 17:09	WG1364761
(S) o-Terphenyl	78.2				18.0-148		10/18/2019 17:09	WG1364761

Collected date/time: 10/07/19 11:30

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	95.1		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	2370		4.18	10.0	52.6	5	10/17/2019 12:18	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0975	B J	0.0228	0.100	0.105	1	10/17/2019 16:09	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 16:09	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000421	0.00100	0.00105	1	10/19/2019 13:26	WG1365835
Toluene	U		0.00131	0.00500	0.00526	1	10/19/2019 13:26	WG1365835
Ethylbenzene	U		0.000557	0.00250	0.00263	1	10/19/2019 13:26	WG1365835
Total Xylenes	U		0.00503	0.00650	0.00684	1	10/19/2019 13:26	WG1365835
(S) Toluene-d8	101				75.0-131		10/19/2019 13:26	WG1365835
(S) 4-Bromofluorobenzene	98.4				67.0-138		10/19/2019 13:26	WG1365835
(S) 1,2-Dichloroethane-d4	105				70.0-130		10/19/2019 13:26	WG1365835

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.69	4.00	4.21	1	10/18/2019 17:23	WG1364761
C28-C40 Oil Range	0.432	J	0.288	4.00	4.21	1	10/18/2019 17:23	WG1364761
(S) o-Terphenyl	68.2				18.0-148		10/18/2019 17:23	WG1364761

Collected date/time: 10/07/19 11:45

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	88.0		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	4320		9.04	10.0	114	10	10/17/2019 12:28	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0993	B J	0.0247	0.100	0.114	1	10/17/2019 16:32	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 16:32	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000455	0.00100	0.00114	1	10/19/2019 13:47	WG1365835
Toluene	U		0.00142	0.00500	0.00568	1	10/19/2019 13:47	WG1365835
Ethylbenzene	U		0.000602	0.00250	0.00284	1	10/19/2019 13:47	WG1365835
Total Xylenes	U		0.00543	0.00650	0.00739	1	10/19/2019 13:47	WG1365835
(S) Toluene-d8	99.8				75.0-131		10/19/2019 13:47	WG1365835
(S) 4-Bromofluorobenzene	97.4				67.0-138		10/19/2019 13:47	WG1365835
(S) 1,2-Dichloroethane-d4	101				70.0-130		10/19/2019 13:47	WG1365835

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.99	J	1.83	4.00	4.55	1	10/18/2019 17:36	WG1364761
C28-C40 Oil Range	0.631	J	0.311	4.00	4.55	1	10/18/2019 17:36	WG1364761
(S) o-Terphenyl	78.2				18.0-148		10/18/2019 17:36	WG1364761

Collected date/time: 10/07/19 11:50

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	98.1		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	355		0.810	10.0	10.2	1	10/17/2019 12:37	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0845	B J	0.0221	0.100	0.102	1	10/17/2019 16:54	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 16:54	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000408	0.00100	0.00102	1	10/19/2019 14:07	WG1365835
Toluene	U		0.00127	0.00500	0.00509	1	10/19/2019 14:07	WG1365835
Ethylbenzene	U		0.000540	0.00250	0.00255	1	10/19/2019 14:07	WG1365835
Total Xylenes	U		0.00487	0.00650	0.00662	1	10/19/2019 14:07	WG1365835
(S) Toluene-d8	101				75.0-131		10/19/2019 14:07	WG1365835
(S) 4-Bromofluorobenzene	97.1				67.0-138		10/19/2019 14:07	WG1365835
(S) 1,2-Dichloroethane-d4	105				70.0-130		10/19/2019 14:07	WG1365835

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.64	4.00	4.08	1	10/18/2019 17:49	WG1364761
C28-C40 Oil Range	0.319	J	0.279	4.00	4.08	1	10/18/2019 17:49	WG1364761
(S) o-Terphenyl	76.4				18.0-148		10/18/2019 17:49	WG1364761

Collected date/time: 10/07/19 11:55

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.7		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	65.6		0.814	10.0	10.2	1	10/17/2019 12:47	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0912	B J	0.0222	0.100	0.102	1	10/17/2019 17:16	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	103				62.0-128		10/17/2019 17:16	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000409	0.00100	0.00102	1	10/19/2019 12:57	WG1365838
Toluene	U		0.00128	0.00500	0.00512	1	10/19/2019 12:57	WG1365838
Ethylbenzene	U		0.000542	0.00250	0.00256	1	10/19/2019 12:57	WG1365838
Total Xylenes	U		0.00489	0.00650	0.00665	1	10/19/2019 12:57	WG1365838
(S) Toluene-d8	101				75.0-131		10/19/2019 12:57	WG1365838
(S) 4-Bromofluorobenzene	92.5				67.0-138		10/19/2019 12:57	WG1365838
(S) 1,2-Dichloroethane-d4	110				70.0-130		10/19/2019 12:57	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.65	4.00	4.09	1	10/18/2019 18:40	WG1365094
C28-C40 Oil Range	1.71	J	0.280	4.00	4.09	1	10/18/2019 18:40	WG1365094
(S) o-Terphenyl	84.7				18.0-148		10/18/2019 18:40	WG1365094

Collected date/time: 10/07/19 12:00

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.7		1	10/23/2019 14:44	WG1367005

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	56.6		0.814	10.0	10.2	1	10/17/2019 12:56	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0795	B J	0.0222	0.100	0.102	1	10/17/2019 17:38	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	103				62.0-128		10/17/2019 17:38	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000410	0.00100	0.00102	1	10/19/2019 13:17	WG1365838
Toluene	U		0.00128	0.00500	0.00512	1	10/19/2019 13:17	WG1365838
Ethylbenzene	U		0.000543	0.00250	0.00256	1	10/19/2019 13:17	WG1365838
Total Xylenes	U		0.00489	0.00650	0.00666	1	10/19/2019 13:17	WG1365838
(S) Toluene-d8	102				75.0-131		10/19/2019 13:17	WG1365838
(S) 4-Bromofluorobenzene	89.7				67.0-138		10/19/2019 13:17	WG1365838
(S) 1,2-Dichloroethane-d4	108				70.0-130		10/19/2019 13:17	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.67	J	1.65	4.00	4.10	1	10/18/2019 18:53	WG1365094
C28-C40 Oil Range	0.646	J	0.281	4.00	4.10	1	10/18/2019 18:53	WG1365094
(S) o-Terphenyl	85.4				18.0-148		10/18/2019 18:53	WG1365094

Collected date/time: 10/07/19 12:10

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	95.7		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	56.3		0.831	10.0	10.4	1	10/17/2019 13:25	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0879	B J	0.0227	0.100	0.104	1	10/17/2019 18:01	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	103				62.0-128		10/17/2019 18:01	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000418	0.00100	0.00104	1	10/19/2019 13:36	WG1365838
Toluene	U		0.00131	0.00500	0.00522	1	10/19/2019 13:36	WG1365838
Ethylbenzene	U		0.000554	0.00250	0.00261	1	10/19/2019 13:36	WG1365838
Total Xylenes	U		0.00499	0.00650	0.00679	1	10/19/2019 13:36	WG1365838
(S) Toluene-d8	103				75.0-131		10/19/2019 13:36	WG1365838
(S) 4-Bromofluorobenzene	89.4				67.0-138		10/19/2019 13:36	WG1365838
(S) 1,2-Dichloroethane-d4	108				70.0-130		10/19/2019 13:36	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.68	4.00	4.18	1	10/18/2019 19:06	WG1365094
C28-C40 Oil Range	1.08	J	0.286	4.00	4.18	1	10/18/2019 19:06	WG1365094
(S) o-Terphenyl	81.3				18.0-148		10/18/2019 19:06	WG1365094

Collected date/time: 10/07/19 12:25

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.8		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	9.33	B J	0.813	10.0	10.2	1	10/17/2019 13:34	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0836	B J	0.0222	0.100	0.102	1	10/17/2019 18:23	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 18:23	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000409	0.00100	0.00102	1	10/19/2019 13:55	WG1365838
Toluene	U		0.00128	0.00500	0.00511	1	10/19/2019 13:55	WG1365838
Ethylbenzene	U		0.000542	0.00250	0.00256	1	10/19/2019 13:55	WG1365838
Total Xylenes	U		0.00489	0.00650	0.00665	1	10/19/2019 13:55	WG1365838
(S) Toluene-d8	103				75.0-131		10/19/2019 13:55	WG1365838
(S) 4-Bromofluorobenzene	91.4				67.0-138		10/19/2019 13:55	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 13:55	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	2.85	J	1.65	4.00	4.09	1	10/18/2019 19:18	WG1365094
C28-C40 Oil Range	5.04		0.280	4.00	4.09	1	10/18/2019 19:18	WG1365094
(S) o-Terphenyl	91.6				18.0-148		10/18/2019 19:18	WG1365094

Collected date/time: 10/07/19 12:40

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	97.4		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Chloride	24.8		0.816	10.0	10.3	1	10/17/2019 13:44	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.0821	B J	0.0223	0.100	0.103	1	10/17/2019 18:45	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 18:45	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
Benzene	U		0.000411	0.00100	0.00103	1	10/19/2019 14:15	WG1365838
Toluene	U		0.00128	0.00500	0.00513	1	10/19/2019 14:15	WG1365838
Ethylbenzene	U		0.000544	0.00250	0.00257	1	10/19/2019 14:15	WG1365838
Total Xylenes	U		0.00491	0.00650	0.00667	1	10/19/2019 14:15	WG1365838
(S) Toluene-d8	99.4				75.0-131		10/19/2019 14:15	WG1365838
(S) 4-Bromofluorobenzene	95.2				67.0-138		10/19/2019 14:15	WG1365838
(S) 1,2-Dichloroethane-d4	115				70.0-130		10/19/2019 14:15	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	U		1.65	4.00	4.11	1	10/18/2019 19:31	WG1365094
C28-C40 Oil Range	3.40	J	0.281	4.00	4.11	1	10/18/2019 19:31	WG1365094
(S) o-Terphenyl	85.0				18.0-148		10/18/2019 19:31	WG1365094

Collected date/time: 10/07/19 13:50

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.6		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	24.6		0.815	10.0	10.3	1	10/17/2019 13:54	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0768	B J	0.0222	0.100	0.103	1	10/17/2019 19:07	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 19:07	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000410	0.00100	0.00103	1	10/19/2019 14:34	WG1365838
Toluene	U		0.00128	0.00500	0.00513	1	10/19/2019 14:34	WG1365838
Ethylbenzene	U		0.000543	0.00250	0.00256	1	10/19/2019 14:34	WG1365838
Total Xylenes	U		0.00490	0.00650	0.00666	1	10/19/2019 14:34	WG1365838
(S) Toluene-d8	101				75.0-131		10/19/2019 14:34	WG1365838
(S) 4-Bromofluorobenzene	90.9				67.0-138		10/19/2019 14:34	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 14:34	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.65	4.00	4.10	1	10/18/2019 19:44	WG1365094
C28-C40 Oil Range	3.32	J	0.281	4.00	4.10	1	10/18/2019 19:44	WG1365094
(S) o-Terphenyl	88.1				18.0-148		10/18/2019 19:44	WG1365094

Collected date/time: 10/07/19 14:00

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	92.8		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	183		0.856	10.0	10.8	1	10/17/2019 14:03	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0779	B J	0.0234	0.100	0.108	1	10/17/2019 19:30	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 19:30	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000431	0.00100	0.00108	1	10/19/2019 14:54	WG1365838
Toluene	U		0.00135	0.00500	0.00539	1	10/19/2019 14:54	WG1365838
Ethylbenzene	U		0.000571	0.00250	0.00269	1	10/19/2019 14:54	WG1365838
Total Xylenes	U		0.00515	0.00650	0.00700	1	10/19/2019 14:54	WG1365838
(S) Toluene-d8	103				75.0-131		10/19/2019 14:54	WG1365838
(S) 4-Bromofluorobenzene	89.6				67.0-138		10/19/2019 14:54	WG1365838
(S) 1,2-Dichloroethane-d4	110				70.0-130		10/19/2019 14:54	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.90	J	1.73	4.00	4.31	1	10/18/2019 19:57	WG1365094
C28-C40 Oil Range	1.48	J	0.295	4.00	4.31	1	10/18/2019 19:57	WG1365094
(S) o-Terphenyl	81.9				18.0-148		10/18/2019 19:57	WG1365094

Collected date/time: 10/07/19 14:10

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	91.3		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	19.8	<u>B</u>	0.871	10.0	11.0	1	10/17/2019 14:13	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0706	<u>B J</u>	0.0238	0.100	0.110	1	10/17/2019 19:52	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 19:52	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000438	0.00100	0.00110	1	10/19/2019 15:13	WG1365838
Toluene	U		0.00137	0.00500	0.00548	1	10/19/2019 15:13	WG1365838
Ethylbenzene	U		0.000580	0.00250	0.00274	1	10/19/2019 15:13	WG1365838
Total Xylenes	U		0.00523	0.00650	0.00712	1	10/19/2019 15:13	WG1365838
(S) Toluene-d8	101				75.0-131		10/19/2019 15:13	WG1365838
(S) 4-Bromofluorobenzene	92.1				67.0-138		10/19/2019 15:13	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 15:13	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.76	4.00	4.38	1	10/18/2019 20:10	WG1365094
C28-C40 Oil Range	0.963	<u>J</u>	0.300	4.00	4.38	1	10/18/2019 20:10	WG1365094
(S) o-Terphenyl	90.3				18.0-148		10/18/2019 20:10	WG1365094

Collected date/time: 10/07/19 14:30

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	98.1		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	66.5		0.810	10.0	10.2	1	10/17/2019 14:41	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0681	B J	0.0221	0.100	0.102	1	10/17/2019 20:14	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 20:14	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000408	0.00100	0.00102	1	10/19/2019 15:33	WG1365838
Toluene	U		0.00127	0.00500	0.00509	1	10/19/2019 15:33	WG1365838
Ethylbenzene	U		0.000540	0.00250	0.00255	1	10/19/2019 15:33	WG1365838
Total Xylenes	U		0.00487	0.00650	0.00662	1	10/19/2019 15:33	WG1365838
(S) Toluene-d8	105				75.0-131		10/19/2019 15:33	WG1365838
(S) 4-Bromofluorobenzene	93.3				67.0-138		10/19/2019 15:33	WG1365838
(S) 1,2-Dichloroethane-d4	109				70.0-130		10/19/2019 15:33	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	5.24		1.64	4.00	4.08	1	10/18/2019 20:22	WG1365094
C28-C40 Oil Range	8.08		0.279	4.00	4.08	1	10/18/2019 20:22	WG1365094
(S) o-Terphenyl	88.9				18.0-148		10/18/2019 20:22	WG1365094

Collected date/time: 10/07/19 14:35

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.2		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	23.4		0.818	10.0	10.3	1	10/17/2019 14:51	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0827	B J	0.0223	0.100	0.103	1	10/17/2019 20:36	WG1364083
(S) a,a,a-Trifluorotoluene(FID)	104				62.0-128		10/17/2019 20:36	WG1364083

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000412	0.00100	0.00103	1	10/19/2019 15:52	WG1365838
Toluene	U		0.00129	0.00500	0.00514	1	10/19/2019 15:52	WG1365838
Ethylbenzene	U		0.000545	0.00250	0.00257	1	10/19/2019 15:52	WG1365838
Total Xylenes	U		0.00492	0.00650	0.00669	1	10/19/2019 15:52	WG1365838
(S) Toluene-d8	99.9				75.0-131		10/19/2019 15:52	WG1365838
(S) 4-Bromofluorobenzene	88.7				67.0-138		10/19/2019 15:52	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 15:52	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.66	4.00	4.12	1	10/19/2019 06:54	WG1365094
C28-C40 Oil Range	2.62	J	0.282	4.00	4.12	1	10/19/2019 06:54	WG1365094
(S) o-Terphenyl	87.9				18.0-148		10/19/2019 06:54	WG1365094

Collected date/time: 10/07/19 14:40

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.3		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	11.7	<u>B</u>	0.817	10.0	10.3	1	10/17/2019 15:19	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0848	<u>B J</u>	0.0223	0.100	0.103	1	10/20/2019 15:28	WG1365550
(S) a,a,a-Trifluorotoluene(FID)	105				77.0-120		10/20/2019 15:28	WG1365550

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000411	0.00100	0.00103	1	10/19/2019 16:11	WG1365838
Toluene	U		0.00128	0.00500	0.00514	1	10/19/2019 16:11	WG1365838
Ethylbenzene	U		0.000545	0.00250	0.00257	1	10/19/2019 16:11	WG1365838
Total Xylenes	U		0.00491	0.00650	0.00668	1	10/19/2019 16:11	WG1365838
(S) Toluene-d8	103				75.0-131		10/19/2019 16:11	WG1365838
(S) 4-Bromofluorobenzene	92.6				67.0-138		10/19/2019 16:11	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 16:11	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.65	4.00	4.11	1	10/18/2019 20:48	WG1365094
C28-C40 Oil Range	2.83	<u>J</u>	0.282	4.00	4.11	1	10/18/2019 20:48	WG1365094
(S) o-Terphenyl	88.9				18.0-148		10/18/2019 20:48	WG1365094

Collected date/time: 10/07/19 14:45

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	95.6		1	10/23/2019 14:32	WG1367007

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	64.2		0.832	10.0	10.5	1	10/17/2019 15:29	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0947	B J	0.0227	0.100	0.105	1	10/20/2019 15:51	WG1365550
(S) a,a,a-Trifluorotoluene(FID)	105				77.0-120		10/20/2019 15:51	WG1365550

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000419	0.00100	0.00105	1	10/19/2019 16:31	WG1365838
Toluene	U		0.00131	0.00500	0.00523	1	10/19/2019 16:31	WG1365838
Ethylbenzene	U		0.000555	0.00250	0.00262	1	10/19/2019 16:31	WG1365838
Total Xylenes	U		0.00500	0.00650	0.00680	1	10/19/2019 16:31	WG1365838
(S) Toluene-d8	103				75.0-131		10/19/2019 16:31	WG1365838
(S) 4-Bromofluorobenzene	93.3				67.0-138		10/19/2019 16:31	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 16:31	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.68	4.00	4.19	1	10/18/2019 21:01	WG1365094
C28-C40 Oil Range	1.34	J	0.287	4.00	4.19	1	10/18/2019 21:01	WG1365094
(S) o-Terphenyl	87.2				18.0-148		10/18/2019 21:01	WG1365094

Collected date/time: 10/07/19 14:50

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	96.7		1	10/23/2019 14:05	WG1367008

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	71.5		0.822	10.0	10.3	1	10/17/2019 15:38	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0779	B J	0.0224	0.100	0.103	1	10/20/2019 16:18	WG1365550
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	105				77.0-120		10/20/2019 16:18	WG1365550

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000413	0.00100	0.00103	1	10/19/2019 16:50	WG1365838
Toluene	U		0.00129	0.00500	0.00517	1	10/19/2019 16:50	WG1365838
Ethylbenzene	U		0.000548	0.00250	0.00258	1	10/19/2019 16:50	WG1365838
Total Xylenes	U		0.00494	0.00650	0.00672	1	10/19/2019 16:50	WG1365838
(S) Toluene-d8	104				75.0-131		10/19/2019 16:50	WG1365838
(S) 4-Bromofluorobenzene	93.5				67.0-138		10/19/2019 16:50	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 16:50	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.66	4.00	4.13	1	10/18/2019 21:13	WG1365094
C28-C40 Oil Range	1.97	J	0.283	4.00	4.13	1	10/18/2019 21:13	WG1365094
(S) <i>o</i> -Terphenyl	89.0				18.0-148		10/18/2019 21:13	WG1365094

Collected date/time: 10/07/19 15:00

L1150103

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	96.7		1	10/23/2019 14:05	WG1367008

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	56.1		0.822	10.0	10.3	1	10/17/2019 15:48	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0815	B J	0.0224	0.100	0.103	1	10/20/2019 16:40	WG1365550
(S) a,a,a-Trifluorotoluene(FID)	105				77.0-120		10/20/2019 16:40	WG1365550

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000414	0.00100	0.00103	1	10/19/2019 17:10	WG1365838
Toluene	U		0.00129	0.00500	0.00517	1	10/19/2019 17:10	WG1365838
Ethylbenzene	U		0.000548	0.00250	0.00258	1	10/19/2019 17:10	WG1365838
Total Xylenes	U		0.00494	0.00650	0.00672	1	10/19/2019 17:10	WG1365838
(S) Toluene-d8	102				75.0-131		10/19/2019 17:10	WG1365838
(S) 4-Bromofluorobenzene	92.2				67.0-138		10/19/2019 17:10	WG1365838
(S) 1,2-Dichloroethane-d4	112				70.0-130		10/19/2019 17:10	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	1.72	J	1.66	4.00	4.14	1	10/18/2019 21:26	WG1365094
C28-C40 Oil Range	2.99	J	0.283	4.00	4.14	1	10/18/2019 21:26	WG1365094
(S) o-Terphenyl	85.9				18.0-148		10/18/2019 21:26	WG1365094

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	97.0		1	10/23/2019 14:05	WG1367008

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Chloride	74.8		0.819	10.0	10.3	1	10/17/2019 15:57	WG1363821

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0773	B J	0.0224	0.100	0.103	1	10/20/2019 17:03	WG1365550
(S) a,a,a-Trifluorotoluene(FID)	106				77.0-120		10/20/2019 17:03	WG1365550

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
Benzene	U		0.000412	0.00100	0.00103	1	10/19/2019 17:29	WG1365838
Toluene	U		0.00129	0.00500	0.00515	1	10/19/2019 17:29	WG1365838
Ethylbenzene	U		0.000546	0.00250	0.00258	1	10/19/2019 17:29	WG1365838
Total Xylenes	U		0.00493	0.00650	0.00670	1	10/19/2019 17:29	WG1365838
(S) Toluene-d8	103				75.0-131		10/19/2019 17:29	WG1365838
(S) 4-Bromofluorobenzene	90.0				67.0-138		10/19/2019 17:29	WG1365838
(S) 1,2-Dichloroethane-d4	109				70.0-130		10/19/2019 17:29	WG1365838

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	SDL (dry)	Unadj. MQL	MQL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U		1.66	4.00	4.12	1	10/18/2019 21:39	WG1365094
C28-C40 Oil Range	0.917	J	0.282	4.00	4.12	1	10/18/2019 21:39	WG1365094
(S) o-Terphenyl	80.5				18.0-148		10/18/2019 21:39	WG1365094

Total Solids by Method 2540 G-2011 [L1150103-01,02,03,04,05,06,07](#)

Method Blank (MB)

(MB) R3464469-1 10/23/19 14:44

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Total Solids	0.00700			

L1150103-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1150103-01 10/23/19 14:44 • (DUP) R3464469-3 10/23/19 14:44

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Total Solids	94.6	94.7	1	0.124		10

Laboratory Control Sample (LCS)

(LCS) R3464469-2 10/23/19 14:44

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Total Solids	50.0	49.9	99.9	85.0-115	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Total Solids by Method 2540 G-2011 [L1150103-08,09,10,11,12,13,14,15,16,17](#)

Method Blank (MB)

(MB) R3464466-1 10/23/19 14:32				
	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00400			

L1150103-12 Original Sample (OS) • Duplicate (DUP)

(OS) L1150103-12 10/23/19 14:32 • (DUP) R3464466-3 10/23/19 14:32						
	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	92.8	93.4	1	0.562		10

Laboratory Control Sample (LCS)

(LCS) R3464466-2 10/23/19 14:32					
	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	%	%	%	%	
Total Solids	50.0	50.0	99.9	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Total Solids by Method 2540 G-2011 [L1150103-18,19,20](#)

Method Blank (MB)

(MB) R3464454-1 10/23/19 14:05

	MB Result	<u>MB Qualifier</u>	MB MDL	MB RDL
Analyte	%		%	%
Total Solids	0.00100			

L1150106-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1150106-01 10/23/19 14:05 • (DUP) R3464454-3 10/23/19 14:05

	Original Result	DUP Result	Dilution	DUP RPD	<u>DUP Qualifier</u>	DUP RPD Limits
Analyte	%	%		%		%
Total Solids	85.1	85.7	1	0.723		10

Laboratory Control Sample (LCS)

(LCS) R3464454-2 10/23/19 14:05

	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	<u>LCS Qualifier</u>
Analyte	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 300.0

[L1150103-01,02,03,04,05,06,07,08,09,10,11,12,13,14,15,16,17,18,19,20](#)

Method Blank (MB)

(MB) R3462178-1 10/17/19 11:12

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	1.92	<div></div>	0.795	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1150103-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1150103-01 10/17/19 11:50 • (DUP) R3462178-3 10/17/19 11:59

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	3150	3050	5	3.06		20

L1150103-20 Original Sample (OS) • Duplicate (DUP)

(OS) L1150103-20 10/17/19 15:57 • (DUP) R3462178-6 10/17/19 16:07

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	74.8	72.1	1	3.69		20

Laboratory Control Sample (LCS)

(LCS) R3462178-2 10/17/19 11:22

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	200	203	102	90.0-110	

L1150103-13 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1150103-13 10/17/19 14:13 • (MS) R3462178-4 10/17/19 14:22 • (MSD) R3462178-5 10/17/19 14:32

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	548	19.8	555	550	97.7	96.9	1	80.0-120			0.844	20

Volatile Organic Compounds (GC) by Method 8015D/GRO

[L1150103-02,03,04,05,06,07,08,09,10,11,12,13,14,15](#)

Method Blank (MB)

(MB) R3462951-2 10/17/19 12:14

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0599	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	104			77.0-120

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Method Blank (MB)

(MB) R3463345-3 10/21/19 12:16

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0704	⬇	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	103			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3462951-1 10/17/19 11:11

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.29	96.2	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			107	77.0-120	

Laboratory Control Sample (LCS)

(LCS) R3463345-2 10/21/19 11:32

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	4.73	86.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			101	77.0-120	

Volatile Organic Compounds (GC) by Method 8015D/GRO

L1150103-16,17,18,19,20

Method Blank (MB)

(MB) R3463029-2 10/20/19 14:10

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	0.0731	J	0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	106			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3463029-1 10/20/19 13:09

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.45	99.1	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

L1150129-29 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1150129-29 10/20/19 17:25 • (MS) R3463029-3 10/20/19 23:24 • (MSD) R3463029-4 10/20/19 23:46

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	0.0758	1.18	2.12	20.1	37.2	1	10.0-151		J3	57.0	28
(S) a,a,a-Trifluorotoluene(FID)					101	90.9		77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (GC) by Method 8015D/GRO

[L1150103-01](#)

Method Blank (MB)

(MB) R3463571-2 10/21/19 14:22

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	95.7			77.0-120

Laboratory Control Sample (LCS)

(LCS) R3463571-1 10/21/19 13:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
TPH (GC/FID) Low Fraction	5.50	5.06	92.0	72.0-127	
(S) a,a,a-Trifluorotoluene(FID)			103	77.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

L1150103-01,02,03,04,05

Method Blank (MB)

(MB) R3462907-2 10/19/19 11:27

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	104			75.0-131
(S) 4-Bromofluorobenzene	97.0			67.0-138
(S) 1,2-Dichloroethane-d4	101			70.0-130

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS)

(LCS) R3462907-1 10/19/19 10:24

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.129	103	70.0-123	
Ethylbenzene	0.125	0.125	100	74.0-126	
Toluene	0.125	0.115	92.0	75.0-121	
Xylenes, Total	0.375	0.310	82.7	72.0-127	
(S) Toluene-d8			99.9	75.0-131	
(S) 4-Bromofluorobenzene			100	67.0-138	
(S) 1,2-Dichloroethane-d4			108	70.0-130	

L1149279-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1149279-06 10/19/19 17:56 • (MS) R3462907-3 10/19/19 19:19 • (MSD) R3462907-4 10/19/19 19:40

Analyte	Spike Amount mg/kg	Original Result mg/kg	MS Result mg/kg	MSD Result mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.00500	44.0	0.0144	0.0144	0.000	0.000	.04	10.0-149	V	V	0.000	37
Ethylbenzene	0.00500	81.6	0.0206	0.0218	0.000	0.000	.04	10.0-160	V	V	5.66	38
Toluene	0.00500	213	0.0455	0.0473	0.000	0.000	.04	10.0-156	V	V	3.88	38
Xylenes, Total	0.0150	U	0.0839	0.0890	559	593	.04	10.0-160	J5	J5	5.90	38
(S) Toluene-d8					101	104		75.0-131				
(S) 4-Bromofluorobenzene					107	110		67.0-138				
(S) 1,2-Dichloroethane-d4					107	111		70.0-130				

Method Blank (MB)

(MB) R3463061-2 10/19/19 12:20

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	106			75.0-131
(S) 4-Bromofluorobenzene	92.9			67.0-138
(S) 1,2-Dichloroethane-d4	106			70.0-130

Laboratory Control Sample (LCS)

(LCS) R3463061-1 10/19/19 10:56

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Benzene	0.125	0.124	99.2	70.0-123	
Ethylbenzene	0.125	0.124	99.2	74.0-126	
Toluene	0.125	0.0997	79.8	75.0-121	
Xylenes, Total	0.375	0.365	97.3	72.0-127	
(S) Toluene-d8			100	75.0-131	
(S) 4-Bromofluorobenzene			97.3	67.0-138	
(S) 1,2-Dichloroethane-d4			115	70.0-130	

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

L1150103-01

Method Blank (MB)

(MB) R3463027-3 10/20/19 12:03

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Toluene	U		0.00125	0.00500
(S) Toluene-d8	109			75.0-131
(S) 4-Bromofluorobenzene	100			67.0-138
(S) 1,2-Dichloroethane-d4	86.8			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3463027-1 10/20/19 10:48 • (LCSD) R3463027-2 10/20/19 11:07

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Toluene	0.125	0.123	0.118	98.4	94.4	75.0-121			4.15	20
(S) Toluene-d8				108	106	75.0-131				
(S) 4-Bromofluorobenzene				103	99.4	67.0-138				
(S) 1,2-Dichloroethane-d4				90.2	88.9	70.0-130				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

L1150103-01,02,03,04,05

Method Blank (MB)

(MB) R3462392-1 10/18/19 05:42

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	82.0			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3462392-2 10/18/19 05:55

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	41.1	82.2	50.0-150	
(S) o-Terphenyl			73.7	18.0-148	

L1149605-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1149605-06 10/18/19 12:27 • (MS) R3462392-3 10/18/19 12:40 • (MSD) R3462392-4 10/18/19 12:54

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	55.9	2.15	40.7	38.0	69.0	64.2	1	50.0-150			6.82	20
(S) o-Terphenyl					59.2	54.4		18.0-148				

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Semi-Volatile Organic Compounds (GC) by Method 8015

[L1150103-06,07,08,09,10,11,12,13,14,15,16,17,18,19,20](#)

Method Blank (MB)

(MB) R3462663-1 10/18/19 13:36

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	84.5			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3462663-2 10/18/19 13:49

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	43.1	86.2	50.0-150	
(S) o-Terphenyl			105	18.0-148	

L1150103-20 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1150103-20 10/18/19 21:39 • (MS) R3462663-3 10/18/19 21:52 • (MSD) R3462663-4 10/18/19 22:05

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
C10-C28 Diesel Range	50.1	U	44.5	44.6	88.9	88.0	1	50.0-150			0.231	20
(S) o-Terphenyl					108	105		18.0-148				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

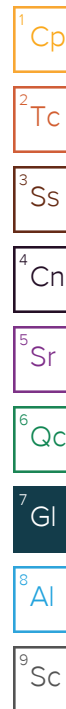
Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MQL (dry)	Method Quantitation Limit.
MQL	Method Quantitation Limit.
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
SDL	Sample Detection Limit.
SDL (dry)	Sample Detection Limit.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Sample Detection Limit.
Unadj. MQL	Unadjusted Method Quantitation Limit.
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier Description

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.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
V	The sample concentration is too high to evaluate accurate spike recoveries.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN2000002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

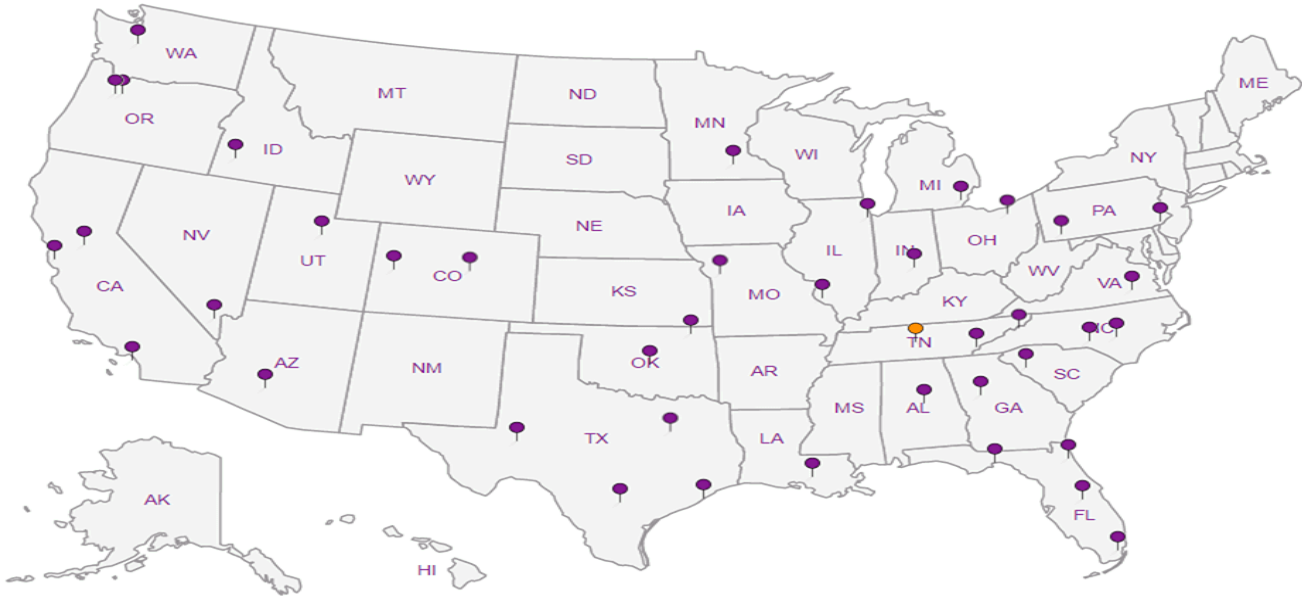
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Analysis Request of Chain of Custody Record

**Tetra Tech, Inc.**
 901 West Wall Street, Suite 100
 Midland, Texas 79701
 Tel (432) 682-4559
 Fax (432) 682-3946
F199

Client Name:	Conoco Phillips	Site Manager:	Christian Llull
Project Name:	COP Golden Spur to Wilder Release		
Project Location: (county, state)	Lea County, New Mexico	Project #:	212C-MD-01867
Invoice to:	Accounts Payable 901 West Wall Street, Suite 100 Midland, Texas 79701		
Receiving Laboratory:	Pace Analytical	Sampler Signature:	<i>[Signature]</i>

Comments: Run deeper samples if GRO+DRO exceeds 100 mg/kg or if benzene exceeds 10 mg/kg or if total BTEX exceeds 50 mg/kg or if chlorides exceed 600 mg/kg.

COPTETRA Acctnum

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX			PRESERVATIVE METHOD				# CONTAINERS	FILTERED (Y/N)	ANALYSIS REQUEST (Circle or Specify Method No.)																				
		YEAR: 2019		WATER	SOIL		HCL	HNO ₃	ICE	NONE			BTEX 8021B	BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	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	GCMS Vol. 8260B / 624	GCMS Semi. Vol. 8270C/625	PCB's 8082 / 608	NORM	PLM (Asbestos)	Chloride 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R	HOLD
		DATE	TIME																														
	BH-1 (0'- 1')	10/7/2019	1000		X			X		1	N																						X
	BH-1 (2'- 3')	10/7/2019	1005		X			X		1	N																						X
	BH-1 (4'- 5')	10/7/2019	1010		X			X		1	N																						X
	BH-1 (6'- 7')	10/7/2019	1020		X			X		1	N																						X
	BH-1 (9'- 10')	10/7/2019	1030		X			X		1	N																						X
	BH-1 (14'- 15')	10/7/2019	1035		X			X		1	N																						X
	BH-1 (19'- 20')	10/7/2019	1040		X			X		1	N																						X
	BH-1 (24'- 25')	10/7/2019	1050		X			X		1	N																						X
	BH-1 (29'- 30')	10/7/2019	1055		X			X		1	N																						X
	BH-1 (34'- 35')	10/7/2019	1100		X			X		1	N																						X
												REMARKS:																					

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
<i>[Signature]</i>	10-14-19	14:00	<i>[Signature]</i>	10/14-19	1400
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			<i>[Signature]</i>	10/15/19	9:15

LAB USE ONLY

Sample Temperature

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

RAD SCREEN: <0.5 mR/hr


ORIGINAL COPY

0.20-0.2 ASR

[Signature]

Analysis Request of Chain of Custody Record

Page : 2 of 4

 Tetra Tech, Inc.		901 West Wall Street, Suite 100 Midland, Texas 79701 Tel (432) 682-4559 Fax (432) 682-3946																																			
Client Name: Conoco Phillips		Site Manager: Christian Llull																																			
Project Name: COP Golden Spur to Wilder Release																																					
Project Location: Lea County, New Mexico		Project #: 212C-MD-01867																																			
Invoice to: Accounts Payable 901 West Wall Street, Suite 100 Midland, Texas 79701																																					
Receiving Laboratory: Pace Analytical		Sampler Signature: <i>[Signature]</i>																																			
Comments: Run deeper samples if GRO+DRO exceeds 100 mg/kg or if benzene exceeds 10 mg/kg or if total BTEX exceeds 50 mg/kg or if chlorides exceed 600 mg/kg. <div style="text-align: right; font-weight: bold;">COPTETRA Acctnum</div>																																					
LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX		PRESERVATIVE METHOD				# CONTAINERS	FILTERED (Y/N)	ANALYSIS REQUEST (Circle or Specify Method No.)																									
		YEAR: 2019		WATER	SOIL	HCL	HNO ₃	ICE	NONE			BTEX 8021B	BTEX 8260B	TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	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 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance	TPH 8015R	HOLD					
		DATE	TIME																																		
01	BH-1 (39'- 40')	10/7/2019	1120		X			X		1	N	X	X																								
02	BH-1 (44'- 45')	10/7/2019	1125		X			X		1	N	X	X																								
03	BH-1 (49'- 50')	10/7/2019	1130		X			X		1	N	X	X																								
04	BH-1 (54'- 55')	10/7/2019	1145		X			X		1	N	X	X																								
05	BH-1 (59'- 60')	10/7/2019	1150		X			X		1	N	X	X																								
06	BH-2 (0'- 1')	10/7/2019	1155		X			X		1	N	X	X																								
07	BH-2 (2'- 3')	10/7/2019	1200		X			X		1	N	X	X																								
08	BH-2 (4'- 5')	10/7/2019	1210		X			X		1	N	X	X																								
09	BH-3 (0'- 1')	10/7/2019	1225		X			X		1	N	X	X																								
10	BH-3 (2'- 3')	10/7/2019	1240		X			X		1	N	X	X																								
Relinquished by: <i>[Signature]</i>		Date: 10-14-19	Time: 14:00	Received by: <i>[Signature]</i>		Date: 10-14-19	Time: 14:00	LAB USE ONLY		REMARKS: <input checked="" type="checkbox"/> STANDARD <input type="checkbox"/> RUSH: Same Day 24 hr 48 hr 72 hr <input type="checkbox"/> Rush Charges Authorized <input type="checkbox"/> Special Report Limits or TRRP Report																											
Relinquished by:		Date:	Time:	Received by:		Date:	Time:	Sample Temperature:																													
Relinquished by:		Date:	Time:	Received by: <i>[Signature]</i>		Date: 10-15-19	Time: 9:15																														

ORIGINAL COPY

RAD SCREEN: <0.5 mR/hr

0.2-0.2 ASR

gh

ORIGINAL COPY

RAD SCREEN: <0.5 mR/hr

$$0.2 - 0 = 0.2 \text{ ASR}$$

Pace Analytical National Center for Testing & Innovation

Cooler Receipt Form

Client: <i>COPTETRA</i>	1150103	
Cooler Received/Opened On: <i>10/15/19</i>	Temperature:	<i>0.2</i>
Received By: Hailey Melson		
Signature: <i>Hailey Melson</i>		
Receipt Check List	NP	Yes
COC Seal Present / Intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC Signed / Accurate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Bottles arrive intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Correct bottles used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sufficient volume sent?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
If Applicable	<input type="checkbox"/>	<input type="checkbox"/>
VOA Zero headspace?	<input type="checkbox"/>	<input type="checkbox"/>
Preservation Correct / Checked?	<input type="checkbox"/>	<input type="checkbox"/>



ANALYTICAL REPORT

November 11, 2019

ConocoPhillips - Tetra Tech

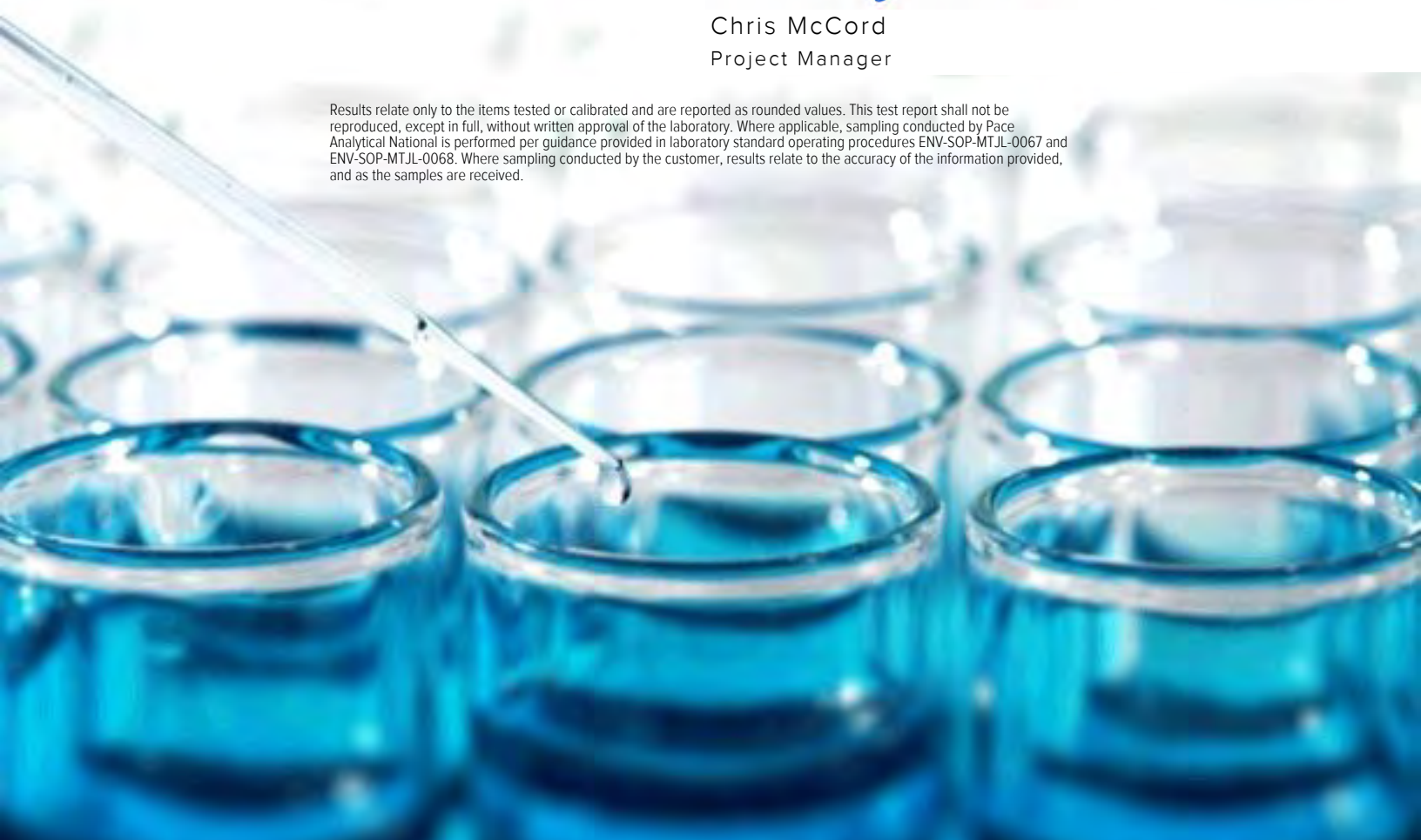
Sample Delivery Group: L1155443
Samples Received: 10/15/2019
Project Number: 212C-MD-01867
Description: COP Golden Spur to Wilder Release

Report To: Christian Llull
901 West Wall
Suite 100
Midland, TX 79701

Entire Report Reviewed By:

Chris McCord
Project Manager

Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



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BH-1 (0'-1') L1155443-01 Solid

Collected by JT
Collected date/time 10/07/19 10:00
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1375370	1	11/06/19 13:37	11/06/19 13:48	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1373812	5	11/03/19 14:30	11/03/19 20:30	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1377102	1	10/31/19 14:34	11/08/19 06:35	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1374328	1	10/31/19 14:34	11/03/19 20:19	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1373323	1	11/01/19 07:45	11/01/19 20:07	JDG	Mt. Juliet, TN

¹ Cp² Tc³ Ss⁴ Cn

BH-1 (2'-3') L1155443-02 Solid

Collected by JT
Collected date/time 10/07/19 10:05
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1375373	1	11/06/19 12:38	11/06/19 12:48	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1373812	10	11/03/19 14:30	11/03/19 20:39	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1377102	1	10/31/19 14:34	11/08/19 06:56	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1374328	1	10/31/19 14:34	11/03/19 20:41	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1373323	1	11/01/19 07:45	11/01/19 20:20	JDG	Mt. Juliet, TN

⁵ Sr⁶ Qc⁷ Gl⁸ Al

BH-1 (4'-5') L1155443-03 Solid

Collected by JT
Collected date/time 10/07/19 10:10
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1375373	1	11/06/19 12:38	11/06/19 12:48	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1373812	10	11/03/19 14:30	11/03/19 20:49	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1377102	1	10/31/19 14:34	11/08/19 07:17	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1374328	1	10/31/19 14:34	11/03/19 21:04	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1373323	1	11/01/19 07:45	11/01/19 20:33	JDG	Mt. Juliet, TN

⁹ Sc

BH-4 (0'-1') L1155443-04 Solid

Collected by JT
Collected date/time 10/07/19 13:10
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1375373	1	11/06/19 12:38	11/06/19 12:48	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1373812	5	11/03/19 14:30	11/03/19 20:58	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1377102	1	10/31/19 14:34	11/08/19 07:37	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1374328	1	10/31/19 14:34	11/03/19 21:26	BMB	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1373323	1	11/01/19 07:45	11/01/19 20:45	JDG	Mt. Juliet, TN

BH-4 (2'-3') L1155443-05 Solid

Collected by JT
Collected date/time 10/07/19 13:40
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1375373	1	11/06/19 12:38	11/06/19 12:48	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1373812	10	11/03/19 14:30	11/03/19 21:08	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1377102	1	10/31/19 14:34	11/08/19 07:58	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1374392	1	10/31/19 14:34	11/04/19 05:37	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1373323	1	11/01/19 07:45	11/01/19 20:58	JDG	Mt. Juliet, TN

BH-4 (4'-5') L1155443-06 Solid

Collected by JT
Collected date/time 10/07/19 13:30
Received date/time 10/15/19 09:15

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Total Solids by Method 2540 G-2011	WG1375373	1	11/06/19 12:38	11/06/19 12:48	KDW	Mt. Juliet, TN
Wet Chemistry by Method 300.0	WG1373812	10	11/03/19 14:30	11/03/19 21:17	ST	Mt. Juliet, TN
Volatile Organic Compounds (GC) by Method 8015D/GRO	WG1377102	1	10/31/19 14:34	11/08/19 08:18	ADM	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1374392	1	10/31/19 14:34	11/04/19 06:01	DWR	Mt. Juliet, TN
Semi-Volatile Organic Compounds (GC) by Method 8015	WG1373323	1	11/01/19 07:45	11/01/19 21:11	JDG	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

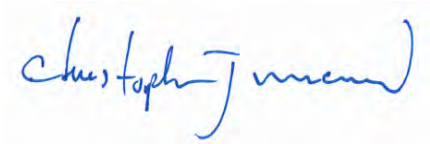
⁶Qc

⁷Gl

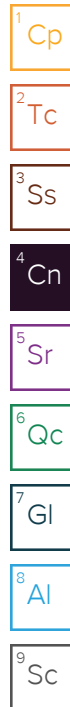
⁸Al

⁹Sc

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris McCord
Project Manager



Collected date/time: 10/07/19 10:00

L1155443

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.9		1	11/06/2019 13:48	WG1375370

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloride	1550		4.28	53.8	5	11/03/2019 20:30	WG1373812

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.0300	J T8	0.0234	0.108	1	11/08/2019 06:35	WG1377102
(S) a,a,a-Trifluorotoluene(FID)	98.0			77.0-120		11/08/2019 06:35	WG1377102

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U	T8	0.000430	0.00108	1	11/03/2019 20:19	WG1374328
Toluene	U	T8	0.00135	0.00538	1	11/03/2019 20:19	WG1374328
Ethylbenzene	U	T8	0.000570	0.00269	1	11/03/2019 20:19	WG1374328
Total Xylenes	U	T8	0.00514	0.00700	1	11/03/2019 20:19	WG1374328
(S) Toluene-d8	92.7			75.0-131		11/03/2019 20:19	WG1374328
(S) 4-Bromofluorobenzene	94.9			67.0-138		11/03/2019 20:19	WG1374328
(S) 1,2-Dichloroethane-d4	94.4			70.0-130		11/03/2019 20:19	WG1374328

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	2.48	J T8	1.73	4.30	1	11/01/2019 20:07	WG1373323
C28-C40 Oil Range	5.19	T8	0.295	4.30	1	11/01/2019 20:07	WG1373323
(S) o-Terphenyl	59.3			18.0-148		11/01/2019 20:07	WG1373323

Collected date/time: 10/07/19 10:05

L1155443

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.3		1	11/06/2019 12:48	WG1375373

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloride	5090		8.61	108	10	11/03/2019 20:39	WG1373812

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	U	T8	0.0235	0.108	1	11/08/2019 06:56	WG1377102
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.1			77.0-120		11/08/2019 06:56	WG1377102

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U	T8	0.000433	0.00108	1	11/03/2019 20:41	WG1374328
Toluene	U	T8	0.00135	0.00542	1	11/03/2019 20:41	WG1374328
Ethylbenzene	U	T8	0.000574	0.00271	1	11/03/2019 20:41	WG1374328
Total Xylenes	U	T8	0.00518	0.00704	1	11/03/2019 20:41	WG1374328
(S) <i>Toluene-d8</i>	93.0			75.0-131		11/03/2019 20:41	WG1374328
(S) <i>4-Bromofluorobenzene</i>	94.8			67.0-138		11/03/2019 20:41	WG1374328
(S) <i>1,2-Dichloroethane-d4</i>	92.9			70.0-130		11/03/2019 20:41	WG1374328

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	9.35	T8	1.74	4.33	1	11/01/2019 20:20	WG1373323
C28-C40 Oil Range	16.6	T8	0.297	4.33	1	11/01/2019 20:20	WG1373323
(S) <i>o</i> -Terphenyl	70.6			18.0-148		11/01/2019 20:20	WG1373323

Collected date/time: 10/07/19 10:10

L1155443

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.8		1	11/06/2019 12:48	WG1375373

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
Chloride	4310		8.85	111	10	11/03/2019 20:49	WG1373812

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	0.0331	J T8	0.0242	0.111	1	11/08/2019 07:17	WG1377102
(S) a,a,a-Trifluorotoluene(FID)	97.8			77.0-120		11/08/2019 07:17	WG1377102

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	U	T8	0.000445	0.00111	1	11/03/2019 21:04	WG1374328
Toluene	U	T8	0.00139	0.00557	1	11/03/2019 21:04	WG1374328
Ethylbenzene	U	T8	0.000590	0.00278	1	11/03/2019 21:04	WG1374328
Total Xylenes	U	T8	0.00532	0.00724	1	11/03/2019 21:04	WG1374328
(S) Toluene-d8	94.9			75.0-131		11/03/2019 21:04	WG1374328
(S) 4-Bromofluorobenzene	96.8			67.0-138		11/03/2019 21:04	WG1374328
(S) 1,2-Dichloroethane-d4	90.9			70.0-130		11/03/2019 21:04	WG1374328

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U	T8	1.79	4.45	1	11/01/2019 20:33	WG1373323
C28-C40 Oil Range	0.537	J T8	0.305	4.45	1	11/01/2019 20:33	WG1373323
(S) o-Terphenyl	48.6			18.0-148		11/01/2019 20:33	WG1373323

Collected date/time: 10/07/19 13:10

L1155443

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	92.3		1	11/06/2019 12:48	WG1375373

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloride	1460		4.31	54.2	5	11/03/2019 20:58	WG1373812

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	U	T8	0.0235	0.108	1	11/08/2019 07:37	WG1377102
(S) <i>a,a,a</i> -Trifluorotoluene(FID)	98.4			77.0-120		11/08/2019 07:37	WG1377102

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U	T8	0.000433	0.00108	1	11/03/2019 21:26	WG1374328
Toluene	U	T8	0.00135	0.00542	1	11/03/2019 21:26	WG1374328
Ethylbenzene	U	T8	0.000574	0.00271	1	11/03/2019 21:26	WG1374328
Total Xylenes	U	T8	0.00518	0.00704	1	11/03/2019 21:26	WG1374328
(S) <i>Toluene-d8</i>	95.3			75.0-131		11/03/2019 21:26	WG1374328
(S) <i>4-Bromofluorobenzene</i>	92.5			67.0-138		11/03/2019 21:26	WG1374328
(S) <i>1,2-Dichloroethane-d4</i>	91.4			70.0-130		11/03/2019 21:26	WG1374328

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	2.95	J T8	1.74	4.33	1	11/01/2019 20:45	WG1373323
C28-C40 Oil Range	5.21	T8	0.297	4.33	1	11/01/2019 20:45	WG1373323
(S) <i>o</i> -Terphenyl	70.2			18.0-148		11/01/2019 20:45	WG1373323

Collected date/time: 10/07/19 13:40

L1155443

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis	Batch
	%			date / time	
Total Solids	91.3		1	11/06/2019 12:48	WG1375373

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Chloride	3450		8.70	109	10	11/03/2019 21:08	WG1373812

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
TPH (GC/FID) Low Fraction	0.0239	J T8	0.0238	0.109	1	11/08/2019 07:58	WG1377102
(S) a,a,a-Trifluorotoluene(FID)	98.2			77.0-120		11/08/2019 07:58	WG1377102

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
Benzene	U	T8	0.000438	0.00109	1	11/04/2019 05:37	WG1374392
Toluene	U	T8	0.00137	0.00547	1	11/04/2019 05:37	WG1374392
Ethylbenzene	U	T8	0.000580	0.00274	1	11/04/2019 05:37	WG1374392
Total Xylenes	U	T8	0.00523	0.00712	1	11/04/2019 05:37	WG1374392
(S) Toluene-d8	102			75.0-131		11/04/2019 05:37	WG1374392
(S) 4-Bromofluorobenzene	95.3			67.0-138		11/04/2019 05:37	WG1374392
(S) 1,2-Dichloroethane-d4	105			70.0-130		11/04/2019 05:37	WG1374392

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis	Batch
	mg/kg		mg/kg	mg/kg		date / time	
C10-C28 Diesel Range	3.24	J T8	1.76	4.38	1	11/01/2019 20:58	WG1373323
C28-C40 Oil Range	3.27	J T8	0.300	4.38	1	11/01/2019 20:58	WG1373323
(S) o-Terphenyl	64.2			18.0-148		11/01/2019 20:58	WG1373323

Collected date/time: 10/07/19 13:30

L1155443

Total Solids by Method 2540 G-2011

Analyte	Result	Qualifier	Dilution	Analysis date / time	Batch
Total Solids	89.4		1	11/06/2019 12:48	WG1375373

Wet Chemistry by Method 300.0

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
Chloride	2490		8.90	112	10	11/03/2019 21:17	WG1373812

Volatile Organic Compounds (GC) by Method 8015D/GRO

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
TPH (GC/FID) Low Fraction	U	T8	0.0243	0.112	1	11/08/2019 08:18	WG1377102
(S) a,a,a-Trifluorotoluene(FID)	97.5			77.0-120		11/08/2019 08:18	WG1377102

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
Benzene	U	T8	0.000448	0.00112	1	11/04/2019 06:01	WG1374392
Toluene	U	T8	0.00140	0.00560	1	11/04/2019 06:01	WG1374392
Ethylbenzene	U	T8	0.000593	0.00280	1	11/04/2019 06:01	WG1374392
Total Xylenes	U	T8	0.00535	0.00727	1	11/04/2019 06:01	WG1374392
(S) Toluene-d8	101			75.0-131		11/04/2019 06:01	WG1374392
(S) 4-Bromofluorobenzene	91.2			67.0-138		11/04/2019 06:01	WG1374392
(S) 1,2-Dichloroethane-d4	104			70.0-130		11/04/2019 06:01	WG1374392

Semi-Volatile Organic Compounds (GC) by Method 8015

Analyte	Result (dry)	Qualifier	MDL (dry)	RDL (dry)	Dilution	Analysis date / time	Batch
C10-C28 Diesel Range	U	T8	1.80	4.48	1	11/01/2019 21:11	WG1373323
C28-C40 Oil Range	1.80	J T8	0.307	4.48	1	11/01/2019 21:11	WG1373323
(S) o-Terphenyl	61.1			18.0-148		11/01/2019 21:11	WG1373323

Total Solids by Method 2540 G-2011 [L1155443-01](#)

Method Blank (MB)

(MB) R3469317-1 11/06/19 13:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.00100			

L1155439-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1155439-02 11/06/19 13:48 • (DUP) R3469317-3 11/06/19 13:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	87.7	88.4	1	0.861		10

Laboratory Control Sample (LCS)

(LCS) R3469317-2 11/06/19 13:48

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	99.9	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Total Solids by Method 2540 G-2011 [L1155443-02,03,04,05,06](#)

Method Blank (MB)

(MB) R3469450-1 11/06/19 12:48

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	%		%	%
Total Solids	0.00100			

L1155443-04 Original Sample (OS) • Duplicate (DUP)

(OS) L1155443-04 11/06/19 12:48 • (DUP) R3469450-3 11/06/19 12:48

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	%	%		%		%
Total Solids	92.3	91.9	1	0.381		10

Laboratory Control Sample (LCS)

(LCS) R3469450-2 11/06/19 12:48

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	%	%	%	%	
Total Solids	50.0	50.0	100	85.0-115	

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Wet Chemistry by Method 300.0 [L1155443-01,02,03,04,05,06](#)

Method Blank (MB)

(MB) R3468123-1 11/03/19 17:24

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Chloride	3.54	⬇	0.795	10.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1155170-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1155170-05 11/03/19 18:35 • (DUP) R3468123-3 11/03/19 18:45

Analyte	Original Result mg/kg	DUP Result mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	90.1	85.5	1	5.15		20

L1155443-06 Original Sample (OS) • Duplicate (DUP)

(OS) L1155443-06 11/03/19 21:17 • (DUP) R3468123-6 11/03/19 21:27

Analyte	Original Result (dry) mg/kg	DUP Result (dry) mg/kg	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Chloride	2490	2620	10	5.10		20

Laboratory Control Sample (LCS)

(LCS) R3468123-2 11/03/19 17:34

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chloride	200	210	105	90.0-110	

L1155443-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155443-01 11/03/19 20:01 • (MS) R3468123-4 11/03/19 20:11 • (MSD) R3468123-5 11/03/19 20:20

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Chloride	538	1510	2220	2160	132	122	1	80.0-120	E J5	E J5	2.52	20

Volatile Organic Compounds (GC) by Method 8015D/GRO

L1155443-01,02,03,04,05,06

Method Blank (MB)

(MB) R3470250-3 11/08/19 05:54

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
TPH (GC/FID) Low Fraction	U		0.0217	0.100
(S) a,a,a-Trifluorotoluene(FID)	100			77.0-120

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3470250-1 11/08/19 04:53 • (LCSD) R3470250-2 11/08/19 05:13

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
TPH (GC/FID) Low Fraction	5.50	5.56	6.08	101	111	72.0-127			8.93	20
(S) a,a,a-Trifluorotoluene(FID)				112	117	77.0-120				

1Cp

2Tc

3Ss

4Cn

5Sr

6Qc

7Gl

8Al

9Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

[L1155443-01,02,03,04](#)

Method Blank (MB)

(MB) R3468652-2 11/03/19 11:48

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	95.9			75.0-131
(S) 4-Bromofluorobenzene	94.6			67.0-138
(S) 1,2-Dichloroethane-d4	94.7			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3468652-1 11/03/19 10:41 • (LCSD) R3468652-3 11/03/19 13:05

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.127	0.121	102	96.8	70.0-123			4.84	20
Ethylbenzene	0.125	0.131	0.130	105	104	74.0-126			0.766	20
Toluene	0.125	0.125	0.122	100	97.6	75.0-121			2.43	20
Xylenes, Total	0.375	0.387	0.380	103	101	72.0-127			1.83	20
(S) Toluene-d8				94.3	94.5	75.0-131				
(S) 4-Bromofluorobenzene				97.7	91.6	67.0-138				
(S) 1,2-Dichloroethane-d4				99.1	97.1	70.0-130				

L1155443-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1155443-04 11/03/19 21:26 • (MS) R3468652-4 11/03/19 21:49 • (MSD) R3468652-5 11/03/19 22:11

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	0.135	U	0.0701	0.0873	51.8	64.5	1	10.0-149			21.9	37
Ethylbenzene	0.135	U	0.0710	0.0938	52.4	69.3	1	10.0-160			27.7	38
Toluene	0.135	U	0.0693	0.0939	51.2	69.4	1	10.0-156			30.1	38
Xylenes, Total	0.406	U	0.226	0.300	55.7	73.9	1	10.0-160			28.0	38
(S) Toluene-d8					92.8	96.2		75.0-131				
(S) 4-Bromofluorobenzene					93.9	94.9		67.0-138				
(S) 1,2-Dichloroethane-d4					95.8	93.8		70.0-130				

Volatile Organic Compounds (GC/MS) by Method 8260B

L1155443-05.06

Method Blank (MB)

(MB) R3468428-3 11/04/19 00:08

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
Benzene	U		0.000400	0.00100
Ethylbenzene	U		0.000530	0.00250
Toluene	U		0.00125	0.00500
Xylenes, Total	U		0.00478	0.00650
(S) Toluene-d8	101			75.0-131
(S) 4-Bromofluorobenzene	97.1			67.0-138
(S) 1,2-Dichloroethane-d4	104			70.0-130

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3468428-1 11/03/19 22:11 • (LCSD) R3468428-2 11/03/19 22:35

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCSD Result mg/kg	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Benzene	0.125	0.116	0.115	92.8	92.0	70.0-123			0.866	20
Ethylbenzene	0.125	0.119	0.118	95.2	94.4	74.0-126			0.844	20
Toluene	0.125	0.117	0.115	93.6	92.0	75.0-121			1.72	20
Xylenes, Total	0.375	0.345	0.343	92.0	91.5	72.0-127			0.581	20
(S) Toluene-d8				104	103	75.0-131				
(S) 4-Bromofluorobenzene				97.1	96.9	67.0-138				
(S) 1,2-Dichloroethane-d4				101	104	70.0-130				

L1153641-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1153641-02 11/04/19 06:24 • (MS) R3468428-4 11/04/19 08:22 • (MSD) R3468428-5 11/04/19 08:46

Analyte	Spike Amount (dry) mg/kg	Original Result (dry) mg/kg	MS Result (dry) mg/kg	MSD Result (dry) mg/kg	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Benzene	5.97	14.4	16.7	14.2	38.7	0.000	40	10.0-149		J6	15.8	37
Ethylbenzene	5.97	44.8	41.1	37.7	0.000	0.000	40	10.0-160	V	V	8.47	38
Toluene	5.97	12.6	15.4	12.6	46.2	0.000	40	10.0-156		J6	19.9	38
Xylenes, Total	18.0	66.6	68.3	61.5	9.29	0.000	40	10.0-160	J6	J6	10.5	38
(S) Toluene-d8					104	103		75.0-131				
(S) 4-Bromofluorobenzene					96.8	98.8		67.0-138				
(S) 1,2-Dichloroethane-d4					104	105		70.0-130				

Semi-Volatile Organic Compounds (GC) by Method 8015 [L1155443-01,02,03,04,05,06](#)

Method Blank (MB)

(MB) R3467668-1 11/01/19 18:52

Analyte	MB Result mg/kg	MB Qualifier	MB MDL mg/kg	MB RDL mg/kg
C10-C28 Diesel Range	U		1.61	4.00
C28-C40 Oil Range	U		0.274	4.00
(S) o-Terphenyl	62.6			18.0-148

Laboratory Control Sample (LCS)

(LCS) R3467668-2 11/01/19 19:04

Analyte	Spike Amount mg/kg	LCS Result mg/kg	LCS Rec. %	Rec. Limits %	LCS Qualifier
C10-C28 Diesel Range	50.0	37.7	75.4	50.0-150	
(S) o-Terphenyl			89.6	18.0-148	

1

Cp

2

Tc

3

Ss

4

Cn

5

Sr

6

Qc

7

Gl

8

Al

9

Sc

Guide to Reading and Understanding Your Laboratory Report

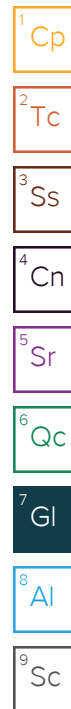
The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

(dry)	Results are reported based on the dry weight of the sample. [this will only be present on a dry report basis for soils].
MDL	Method Detection Limit.
MDL (dry)	Method Detection Limit.
RDL	Reported Detection Limit.
RDL (dry)	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
J6	The sample matrix interfered with the ability to make any accurate determination; spike value is low.
T8	Sample(s) received past/too close to holding time expiration.
V	The sample concentration is too high to evaluate accurate spike recoveries.



Pace National is the only environmental laboratory accredited/certified to support your work nationwide from one location. One phone call, one point of contact, one laboratory. No other lab is as accessible or prepared to handle your needs throughout the country. Our capacity and capability from our single location laboratory is comparable to the collective totals of the network laboratories in our industry. The most significant benefit to our one location design is the design of our laboratory campus. The model is conducive to accelerated productivity, decreasing turn-around time, and preventing cross contamination, thus protecting sample integrity. Our focus on premium quality and prompt service allows us to be YOUR LAB OF CHOICE.

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace National.

State Accreditations

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN-03-2002-34
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	n/a
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1 6}	90010	South Carolina	84004
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1 4}	2006
Louisiana ¹	LA180010	Texas	T104704245-18-15
Maine	TN0002	Texas ⁵	LAB0152
Maryland	324	Utah	TN00003
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	460132
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	9980939910
Montana	CERT0086	Wyoming	A2LA

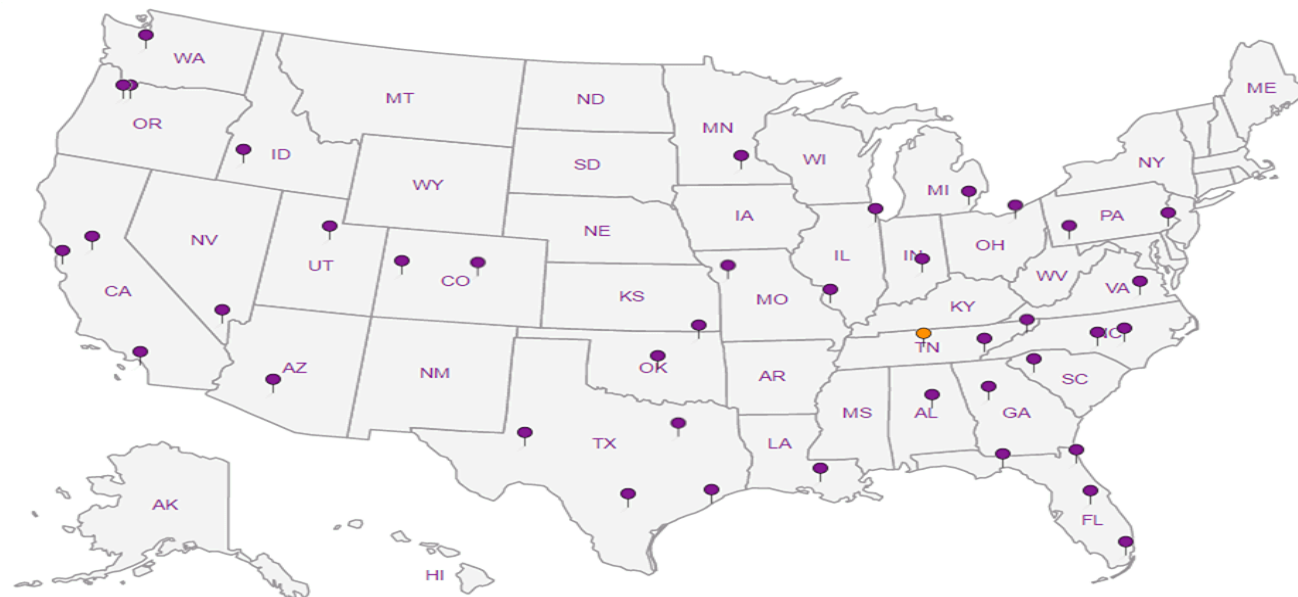
Third Party Federal Accreditations

A2LA – ISO 17025	1461.01	AIHA-LAP, LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

Our Locations

Pace National has sixty-four client support centers that provide sample pickup and/or the delivery of sampling supplies. If you would like assistance from one of our support offices, please contact our main office. Pace National performs all testing at our central laboratory.



Analysis Request of Chain of Custody Record



Tetra Tech, Inc.

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

F199

Client Name:	Conoco Phillips	Site Manager:	Christian Llull
Project Name:	COP Golden Spur to Wilder Release		
Project Location: (county, state)	Lea County, New Mexico	Project #:	212C-MD-01867
Invoice to:	Accounts Payable 901 West Wall Street, Suite 100 Midland, Texas 79701		
Receiving Laboratory:	Pace Analytical	Sampler Signature:	<i>[Signature]</i>

Comments: Run deeper samples if GRO+DRO exceeds 100 mg/kg or if benzene exceeds 10 mg/kg or if total BTEX exceeds 50 mg/kg or if chlorides exceed 600 mg/kg.

COPTETRA Acctnum

LAB # (LAB USE ONLY)	SAMPLE IDENTIFICATION	SAMPLING		MATRIX			PRESERVATIVE METHOD				# CONTAINERS	FILTERED (Y/N)	ANALYSIS REQUEST (Circle or Specify Method No.)																		HOLD		
		YEAR: 2019		WATER	SOIL		HCL	HNO ₃	ICE	NONE			BTEX 8021B	BTEX 8260B / TPH TX1005 (Ext to C35)	TPH 8015M (GRO - DRO - ORO - MRO)	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 300.0	Chloride Sulfate TDS	General Water Chemistry (see attached list)	Anion/Cation Balance		TPH 8015R	
		DATE	TIME																														
	BH-1 (0'- 1')	10/7/2019	1000	X			X			1	N																						X
	BH-1 (2'- 3')	10/7/2019	1005	X			X			1	N																						X
	BH-1 (4'- 5')	10/7/2019	1010	X			X			1	N																						X
	BH-1 (6'- 7')	10/7/2019	1020	X			X			1	N																						X
	BH-1 (9'- 10')	10/7/2019	1030	X			X			1	N																						X
	BH-1 (14'- 15')	10/7/2019	1035	X			X			1	N																						X
	BH-1 (19'- 20')	10/7/2019	1040	X			X			1	N																						X
	BH-1 (24'- 25')	10/7/2019	1050	X			X			1	N																						X
	BH-1 (29'- 30')	10/7/2019	1055	X			X			1	N																						X
	BH-1 (34'- 35')	10/7/2019	1100	X			X			1	N																						X
												REMARKS:																					

Relinquished by:	Date:	Time:	Received by:	Date:	Time:
<i>[Signature]</i>	10-14-19	14:00	<i>[Signature]</i>	10-14-19	1400
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
Relinquished by:	Date:	Time:	Received by:	Date:	Time:
			<i>[Signature]</i>	10/15/19	9:15

LAB USE ONLY

REMARKS:

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

(Circle) HAND DELIVERED FEDEX UPS Tracking #:

RAD SCREEN: <0.5 mR/hr

ORIGINAL COPY

0.2-0.2 ASR

 1154103 K0
 1155443 10/30
 Page: 1 of 4

 10/30
 01
 02
 03

Page : 3 of 4

RAD SCREEN: <0.5 mR/hr

ORIGINAL COPY

$$0.2 - 0 = 0.2 \text{ AS}$$

Katie Ingram

L1155443

From: Chris McCord <CMcCord@pacenational.com>

Sent: Wednesday, October 30, 2019 5:01 PM

To: Project Service <ProjServ@pacenational.com>

Subject: L1150103 *COP TETRA* relog from hold 10-0091

Please relog hold samples BH-1 (0'-1'), BH-1 (2'-3'), BH-1 (4'-5'), BH-4 (0'-1'), BH-4 (2'-3'), and BH-4 (4'-5') for CHLORIDE-300, GRO, V8260BTEX, DRORLA, TS. Log as R5 due 11/6.

Thanks,

Christopher McCord

Project Manager

Pace Analytical National Center for Testing & Innovation

12065 Lebanon Road | Mt. Juliet, TN 37122

615.773.3281 | Cell 615.504.3183

cmccord@pacenational.com | pacenational.com

ESC Lab Sciences is now Pace Analytical National Center for Testing & Innovation! Please make note of my new email address and website.

From: Furse, Nik [mailto:Nik.Furse@tetratech.com]

Sent: Wednesday, October 30, 2019 10:44 AM

To: Chris McCord

Subject: Pace National SDG: L1150103

CAUTION: This email originated from outside Pace Analytical. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Email regarding SDG: L1150103

Chris,

Laboratory analysis for samples: BH-1 (0'-1'), BH-1 (2'-3'), BH-1 (4'-5'), BH-4 (0'-1'), BH-4 (2'-3'), and BH-4 (4'-5') are currently on hold. We are requesting those six (6) samples to be analyzed.

Project Name: COP Golden Spur to Wilder Release

Project #: 212C-MD-01867

Regards,

Nicholas Furse | Staff Environmental Chemist

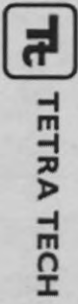
Direct: 512.338.2863 | Main: 512.338.1667 | Cell: 480.297.7928 | nik.furse@tetratech.com

TETRA TECH | Leading with Science® | Oil and Gas Division
8911 N. Capitals of Texas Hwy, Bldg. 2, Suite 2310 | Austin, TX 78759 | tetratech.com

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L1155443

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**



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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 SR—Simona-Upton association..... 15

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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

Custom Soil Resource Report

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

Custom Soil Resource Report

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




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 16, Sep 15, 2019

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

Date(s) aerial images were photographed: Dec 31, 2009—Sep 17, 2017

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.

Custom Soil Resource Report

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
PT	Pyote loamy fine sand	0.0	0.0%
SE	Simona fine sandy loam, 0 to 3 percent slopes	1.1	67.2%
SR	Simona-Upton association	0.5	32.8%
Totals for Area of Interest		1.6	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

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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.

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Lea County, New Mexico

PT—Pyote loamy fine sand

Map Unit Setting

National map unit symbol: dmqp

Elevation: 3,000 to 3,900 feet

Mean annual precipitation: 10 to 12 inches

Mean annual air temperature: 60 to 62 degrees F

Frost-free period: 190 to 200 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Pyote and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pyote

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 25 inches: loamy fine sand

Bt - 25 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Negligible

Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Gypsum, maximum in profile: 1 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 2.0

Available water storage in profile: Low (about 5.3 inches)

Interpretive groups

Land capability classification (irrigated): 6e

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: A

Ecological site: Loamy Sand (R042XC003NM)

Hydric soil rating: No

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Minor Components**Maljamar***Percent of map unit:* 8 percent*Ecological site:* Loamy Sand (R042XC003NM)*Hydric soil rating:* No**Palomas***Percent of map unit:* 7 percent*Ecological site:* Loamy Sand (R042XC003NM)*Hydric soil rating:* No**SE—Simona fine sandy loam, 0 to 3 percent slopes****Map Unit Setting***National map unit symbol:* dmr2*Elevation:* 3,000 to 4,200 feet*Mean annual precipitation:* 10 to 15 inches*Mean annual air temperature:* 58 to 62 degrees F*Frost-free period:* 190 to 205 days*Farmland classification:* Not prime farmland**Map Unit Composition***Simona and similar soils:* 85 percent*Minor components:* 15 percent*Estimates are based on observations, descriptions, and transects of the mapunit.***Description of Simona****Setting***Landform:* Plains*Landform position (three-dimensional):* Rise*Down-slope shape:* Linear*Across-slope shape:* Linear*Parent material:* Calcareous eolian deposits derived from sedimentary rock**Typical profile***A - 0 to 8 inches:* fine sandy loam*Bk - 8 to 16 inches:* gravelly fine sandy loam*Bkm - 16 to 26 inches:* cemented material**Properties and qualities***Slope:* 0 to 3 percent*Depth to restrictive feature:* 7 to 20 inches to petrocalcic*Natural drainage class:* Well drained*Runoff class:* Very high*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

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Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Very low (about 2.0 inches)

Interpretive groups

Land capability classification (irrigated): 6s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Shallow Sandy (R042XC002NM)
Hydric soil rating: No

Minor Components**Kimbrough**

Percent of map unit: 8 percent
Ecological site: Very Shallow 16-21" PZ (R077CY037TX)
Hydric soil rating: No

Lea

Percent of map unit: 7 percent
Ecological site: Limy Upland 16-21" PZ (R077CY028TX)
Hydric soil rating: No

SR—Simona-Upton association**Map Unit Setting**

National map unit symbol: dmr3
Elevation: 3,000 to 4,400 feet
Mean annual precipitation: 10 to 16 inches
Mean annual air temperature: 58 to 62 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Simona and similar soils: 50 percent
Upton and similar soils: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Simona**Setting**

Landform: Ridges
Landform position (two-dimensional): Shoulder
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear

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Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 8 inches: gravelly fine sandy loam

Bk - 8 to 16 inches: fine sandy loam

Bkm - 16 to 26 inches: cemented material

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 7 to 20 inches to petrocalcic

Natural 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 in profile: 50 percent

Gypsum, maximum in profile: 1 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Sodium adsorption ratio, maximum in profile: 2.0

Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7s

Hydrologic Soil Group: D

Ecological site: Shallow Sandy (R042XC002NM)

Hydric soil rating: No

Description of Upton**Setting**

Landform: Ridges

Landform position (two-dimensional): Shoulder

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Calcareous eolian deposits derived from sedimentary rock

Typical profile

A - 0 to 8 inches: gravelly loam

Bkm - 8 to 18 inches: cemented material

BCK - 18 to 60 inches: very gravelly loam

Properties and qualities

Slope: 0 to 3 percent

Depth to restrictive feature: 7 to 20 inches to petrocalcic

Natural drainage class: Well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Low to moderately high (0.01 to 0.60 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 75 percent

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Gypsum, maximum in profile: 1 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 2.0
Available water storage in profile: Very low (about 0.9 inches)

Interpretive groups

Land capability classification (irrigated): 6e
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Shallow (R042XC025NM)
Hydric soil rating: No

Minor Components**Kimbrough**

Percent of map unit: 6 percent
Ecological site: Very Shallow 16-21" PZ (R077CY037TX)
Hydric soil rating: No

Stegall

Percent of map unit: 5 percent
Ecological site: Limy Upland 16-21" PZ (R077CY028TX)
Hydric soil rating: No

Slaughter

Percent of map unit: 4 percent
Ecological site: Limy Upland 16-21" PZ (R077CY028TX)
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.

