August 6, 2018

Olivia Yu

NMOCD District 1

1625 N. French Drive

Hobbs, New Mexico 88240

Re: Work Plan

Transfer line from Terrapin Frac Pond to Arabian 30-19 Fed Com 1H

NMOCD Reference #: 1RP-4871

Ms. Olivia Yu:

RXSoil, Inc. is pleased to submit the work plan summarizing the on-site remediation of treated produced water impacted soil for the above release, associated with the Arabian 30-19 Fed Com 1H site located in Lea County, New Mexico. Remediation work plan follows in the attached report.

Sincerely,

Jace Caraway
Chief Operating Officer
RXSoil, Inc.
(940) 210-2051

Zach Robbins
Technical and Engineering Analyst
RXSoil, Inc.
(210) 400-7645

Table of Contents

Figures

Appendix

I. Introduction

On behalf of Devon Energy Production Co LP and Swiftwater Energy Services ("Swiftwater"), RXSoil, Inc. ("RXSoil") has prepared this work plan that describes the assessment and corrective action plan for remediation of the release of 1RP-4871 associated with the Arabian 30-19 Fed Com 1H site with API #30-025-43176.

The release occurred in Unit Letter I, Section 22, Township 25S, Range 31E (see *Figure 1* for Vicinity Map) at coordinates 32.114514, -103.758858, near the Shire 22 Fed 1H (API # 30-015-43222). The Release Notification and Corrective Action document (C-141, *Appendix A*), approved November 17, 2017, indicates a "victrolic [sic] connection" blew out of a hose on October 18, 2017. It was reported that 396 barrels of produced water were released, and 240 barrels were recovered during the initial response. This was reported to have affected approximately 1,458 square feet running all four directions from the rupture point. A drone image dated November 21, 2017 shows the release area (*Figure 2*).

II. Regulatory Guidelines

Figure 3 includes a 1,000-foot radius from the site showing no surface water within 1,000 feet of the release on the NM OCD Oil and Gas Map with Hydrology Layer. New Mexico Office of the State Engineer lists the nearest well is approximately 1.45 miles west of the release location (shown in *Figure* 3) and lists a groundwater depth of 390' (see *Appendix B*). An Eddy County depth to ground water map (2005, *Figure 4*) indicates groundwater is between 325' and 350' below ground surface (bgs). The total ranking score for this site's threat to public health, ground water and environmental therefore is 0.

Depth to Ground Water:			
(Vertical distance from contaminants to seasonal high water elevation of groundwater)	Less than 50 feet	20 points	
	50 feet to 99 feet	10 points	
	>100 feet	0 points	**X**
Wellhead Protection Area:			
(Less than 200 feet from a private domestic water source; or less than 1000 feet from all other water sources)	Yes	20 points	
	No	0 points	**X**
Distance to Surface Water:			
(Horizontal distance to perennial lakes, ponds, rivers, streams, creeks, irrigation canals and ditches)	Less than 200 feet	20 points	
	200 feet to 1000 feet	10 points	
	>1000 feet	0 points	**X**
RANKING SCORE (TOTAL POINTS)			**0**

The target cleanup levels are determined using *Guidelines for Remediation of Leaks, Spills and Releases* published by the NMOCD (August 13, 1993). The Recommended Remediation Action Levels (RRAL) are **10** parts per million (ppm) benzene, **50** ppm combined benzene, toluene, ethyl benzene, and total xylenes (BTEX), **5,000** ppm total petroleum hydrocarbons (TPH) and **600** ppm chlorides.

As discussed in the later portion of **Section IV**, post-remediation discrete confirmation samples will

be taken and properly packaged, preserved and transported to a third-party laboratory by chain of custody, and analyzed for chlorides via Method 300 or Method 4500, per revised Rule 29. The results will be included in the closure report along with chain of custody and quality control.

III. Delineation Report

Based on a spill map and visual evidence, two borehole locations were selected throughout the affected area. These locations, as well as an area of predicted affected material can be seen in *Figure 5*.

RXSoil contracted Atkins Engineering Associates to drill boreholes for vertical delineation. RXSoil had personnel present during the drilling of boreholes to guide delineation. Drilling occurred at each borehole until 10' of clean soil was discovered. Samples were field screened for chlorides to guide the delineation activity and then transported on ice to Cardinal Laboratories in Hobbs, NM, for confirmation.

Samples were taken at intervals no greater than 5' in depth, with one exception occurring at borehole B. At this location, there were consecutive samples taken at 20' and 25.5' depth (interval of 5.5') because the material was hard and only a portion of the 2' spoon could be captured.

Full results from vertical delineation can be found in *Appendix C*. This includes a data summary table, the laboratory reports, and a copy of the digital field notes.

Soil boring logs are currently being compiled and will be submitted to the NMOCD.

Further horizontal delineation will be completed during excavation and is specified in **Section IV**.

IV. Soil Remediation Work Plan

RXSoil's core process of on-site remediation will be used to address the contamination. RXSoil will supervise all excavation with approval from area utilities owners via NM 811.

RXSoil will truck clean material from construction of treatment cells associated with the remediation project for 1RP-4854 (separate Work Plan). This clean material will be staged outside of the affected area to prevent cross contamination. The affected material will be excavated and transported to the treatment cells (approximately 3.25 miles south). It is currently believed that 3,807 cubic yards will be transported.

Sidewall and bottom samples will be taken using a stainless-steel hand shovel while remediation samples will be taken using a stainless-steel bucket auger. All tools will be decontaminated before each sample, as specified in *Field Equipment Cleaning and Decontamination* (EPA, 2015). This includes wiping the equipment clean, water-rinsing the equipment, washing the equipment in detergent and water, and rinsing the equipment in water.

Delineation shows evidence that there is no BTEX or TPH contamination in the release area. Because of this, all samples will be tested for chlorides only.

Samples will be temporarily transferred to a new plastic bag in the field. Once in a location safer for handling glass, the samples will be transferred to glass jars, supplied by an approved laboratory. The threads on all jars will be wiped clean to allow an air-tight seal. Samples will be placed on ice and transferred to a third-party laboratory to ensure tests are completed within 28 days (as recommended in the EPA Method 300.0 handbook). RXSoil will make reasonable efforts to minimize this transfer time.

Sidewall samples in each cardinal direction will be collected (with samples no further than 50' apart) and transferred to a third-party lab for confirmation (via approved chloride tests) that all affected material has been excavated. Excavation will continue until all sidewall samples are below 600 ppm chlorides.

Whenever excavation depth changes, at least one bottom sample will be taken. If the bottom sampling should lead excavation to a depth of 4', excavation in that area will halt and a bottom sample will be collected. These samples will be appropriately transferred to a third-party lab for confirmation that excavation was to the appropriate depth. If chloride levels of the bottom samples are above 600 ppm, a 20-mil poly liner will be placed on the subsurface. This area will be then backfilled and demarcated in the Closure Report.

The clean material previously staged will be used to backfill the excavated area.

After completion of the remedial phase of the project composite samples of the restored area will be collected for agricultural analysis (CEC, SAR, ESP, anions and cations). These results will be provided to an agronomist so that proper soil amendments can be determined to provide for the landowner approved vegetative cover. The amendments and seed will be applied at the discretion of the land owner (Bureau of Land Management).

A closure report summarizing all remediation activities for this release (1RP-4871) will be submitted upon completion of the transfer of material.

A separate closure report describing the in-situ remediation will be submitted for 1RP-4854 upon completion of the project.

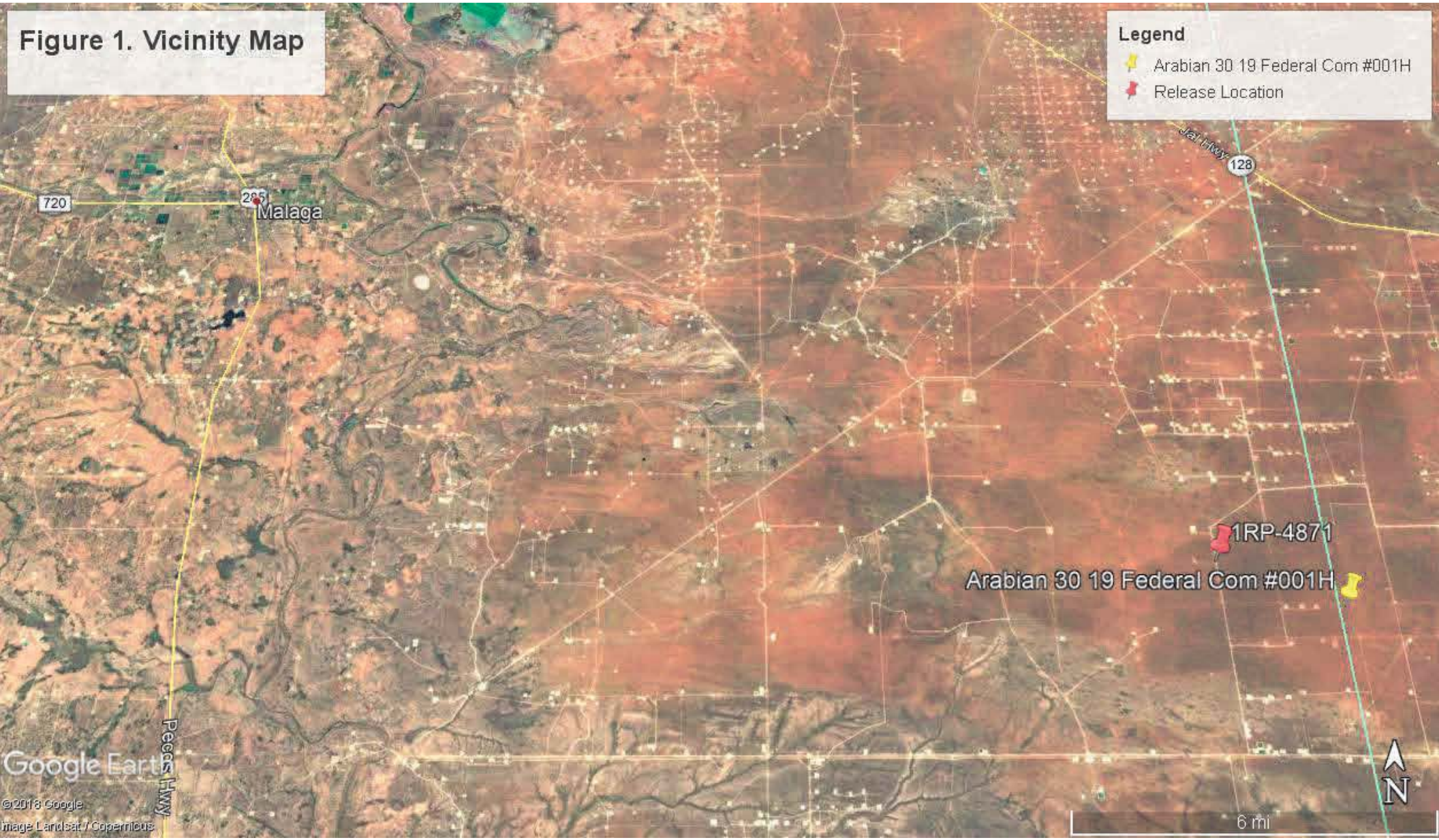
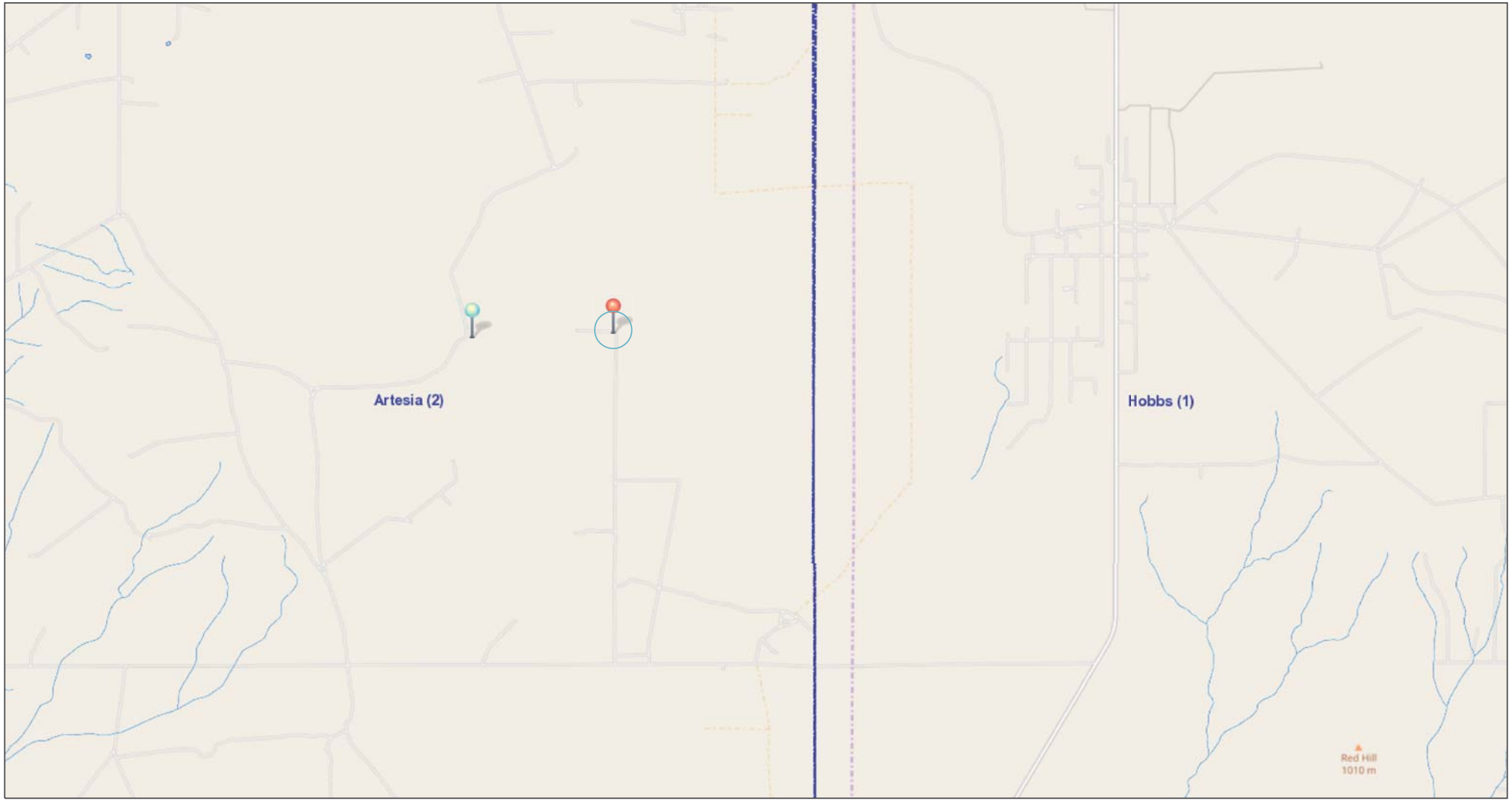


Figure 1. Vicinity Map
Legend
Arabian 30 19 Federal Com #001H
Release Location
720
285
Malaga
128
1RP-4871
Arabian 30 19 Federal Com #001H
Pecos Hwy
Google Earth
©2018 Google
Image Landsat / Copernicus
N
6 mi

Figure 2. Drone Image – North points to the left in this image

Figure 3. Hydrology Map



Legend

- 1000' Radius
- Nearest Well
- OCD Districts
- Release Location
- OCD District Offices
- OSE Water-bodies
- PLJV Probable Playas
- OSE Streams

1:72,224

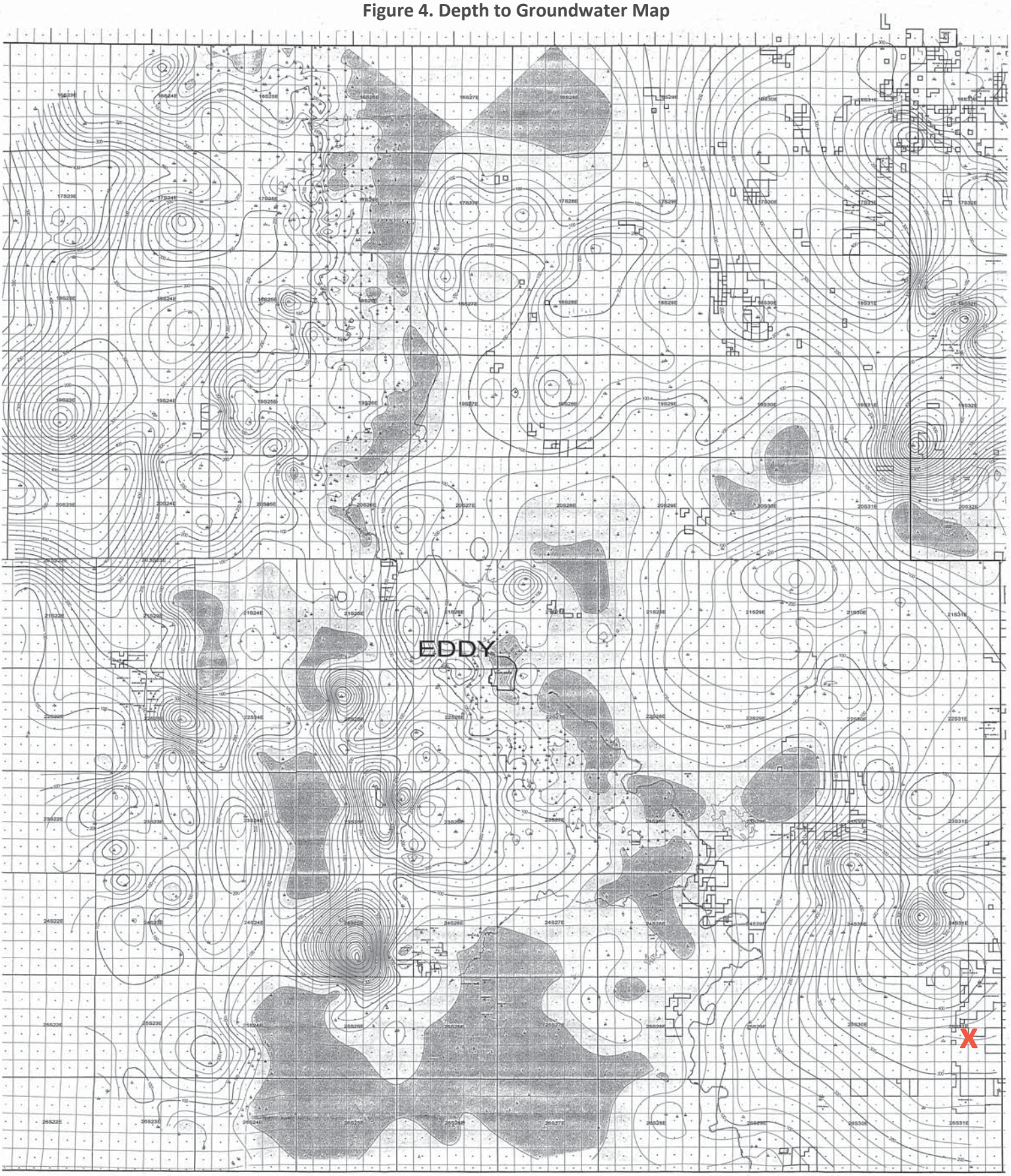
0 0.75 1.5 3 mi

0 1.25 2.5 5 km

New Mexico Oil Conservation Division

NM OCD Oil and Gas Map. http://nm-emnrd.maps.arcgis.com/apps/webappviewer/: New Mexico Oil Conservation Division

Figure 4. Depth to Groundwater Map



X - Release Location

ChevronTexaco

Eddy Co. Depth To Ground Water
Water Wells
Facilities

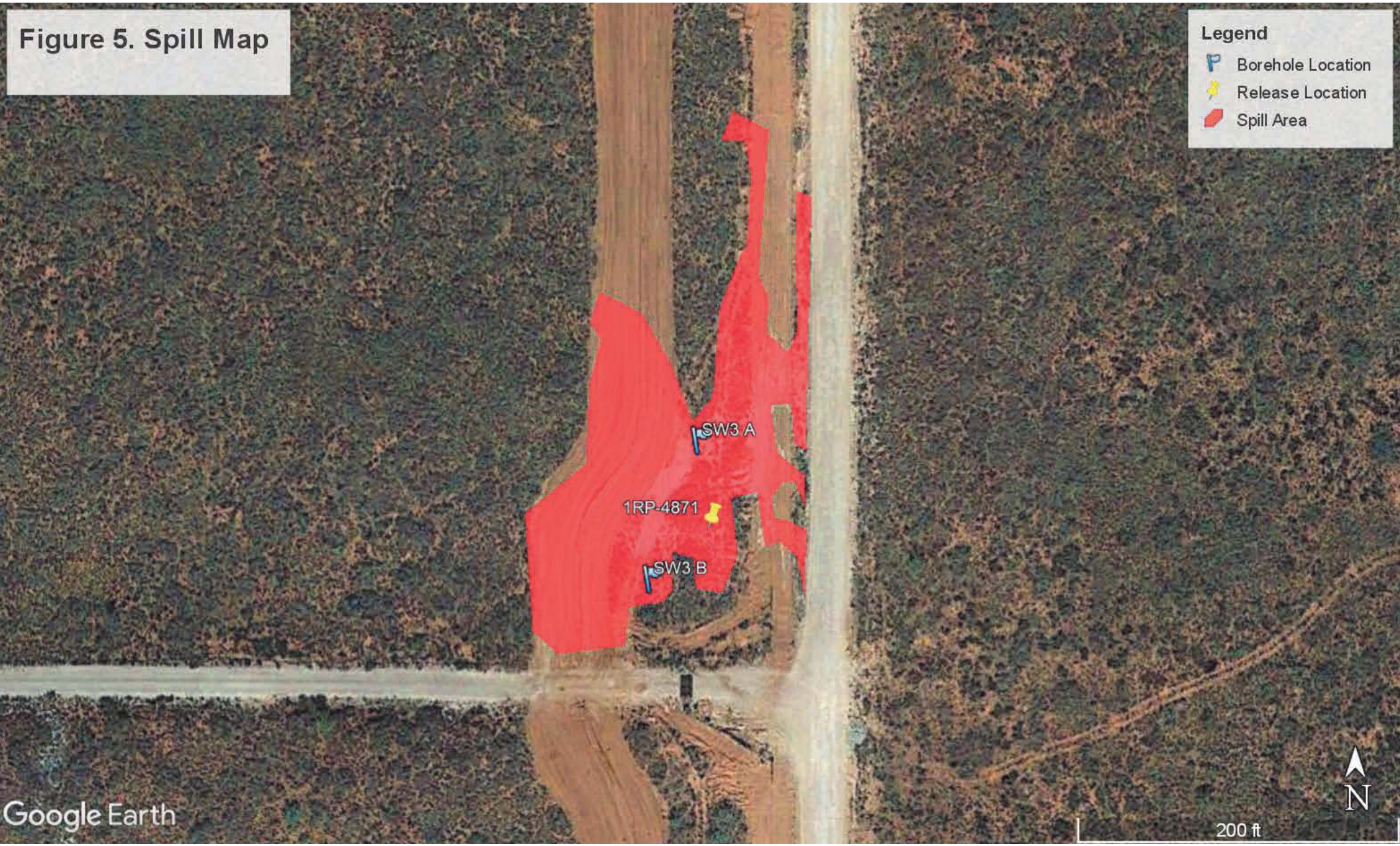


Figure 5. Spill Map
Legend
Borehole Location
Release Location
Spill Area
SW3 A
1RP-4871
SW3 B
Google Earth
N
200 ft

APPENDIX A

C-141, RELEASE NOTIFICATION AND CORRECTIVE ACTION DOCUMENT

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

State of New Mexico
Energy Minerals and Natural Resources

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

Form C-141
Revised April 3, 2017

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

Release Notification and Corrective Action

OPERATOR

☒ Initial Report ☐ Final Report

Name of Company Devon Energy Production Co LP (6137)	Contact Stephen Richards, Devon Completions Foreman
Address PO BOX 250, Artesia, NM 88211	Telephone No. (575) 252-3717
Facility Name: Transfer line from Trionyx Frac Pond to Arabian 30-19 Fed Com 1H – Spill 1 (Near the Shire 22 Fed 1H (API #30-015-43222)	Facility Type Oil well

Surface Owner: Federal	Mineral Owner: Federal	API No. 30-025-43176

LOCATION OF RELEASE

Unit Letter	Section	Township	Range	Feet from the	North/South Line	Feet from the	East/West Line	County
I	22	25S	31E					Eddy

Latitude 32.114514 N Longitude 103.758858 W NAD83

NATURE OF RELEASE

Type of Release: Treated Produced Water	Volume of Release: 396 bbls	Volume Recovered: 240 bbls
Source of Release: Lay Flat Transfer Line	Date and Hour of Occurrence: 10/18/2017, 11:46 PM	Date and Hour of Discovery 10/18/2017, 11:46 PM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? OCD: Crystal Weaver & Mike Bratcher BLM: Shelly Tucker	
By Whom? Mike Shoemaker, EHS Professional	Date and Hour: OCD: 10/19/17, 5:46 PM BLM: 10/19/17, 5:46 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacting the Watercourse. NA	

If a Watercourse was Impacted, Describe Fully.* NA

RECEIVED
By Olivia Yu at 10:19 am, Nov 17, 2017

Describe Cause of Problem and Remedial Action Taken.*
During rigging up of layflat hose a victrolic end connector was removed from hose in order to fit hose under cattle guard. When the contract company reassembled the end to the hose they failed to tighten the clamp bolts. After hydro testing the line to 100 PSI they began the frac job. During stage 2 the victrolic connection blew out of the hose. Approximately 396 bbls of produced water was released with 240 bbls of produced water being recovered. The pump was shut down and the clamps were tightened.

Describe Area Affected and Cleanup Action Taken.*
The spill affected approximately 1,458 square feet running all four directions from the rupture point located approximately at 32.114514 N, 103.758858 W (Point 1 on GIS Map), and is approximately 2.3 miles NW from the Arabian 30-19 Fed Com 1H well pad. An estimated 396 barrels of treated produced water was spilled and 240 barrels were recovered. A remediation contractor will be contacted to assist with the delineation and remediation efforts.

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

Signature: Denise Menoud	OIL CONSERVATION DIVISION Approved by Environmental Specialist:
Printed Name: Denise Menoud	
Title: Admin Field Support	Approval Date: 11/17/2017 Expiration Date:
E-mail Address: denise.menoud@dvn.com	Conditions of Approval: see attached directive ☑ Attached

12

nOY1732138560

pOY1732140683

1RP-4871

Date: 10/24/2017 Phone: (575)746-5544		

* Attach Additional Sheets If Necessary

APPENDIX B

WATER COLUMN/AVERAGE DEPTH TO WATER

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	Code	POD Sub-basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Distance	Depth Well	Depth Water	Water Column
C 02250		CUB	ED	3	1	4	21	25S	31E	614912	3553620*	2313	400	390	10

Average Depth to Water: **390 feet**

Minimum Depth: **390 feet**

Maximum Depth: **390 feet**

Record Count: 1

UTMNAD83 Radius Search (in meters):

Easting (X): 617222.69 **Northing (Y):** 3553727.86 **Radius:** 2500

***UTM location was derived from PLSS - see Help**

7/2/18 11:20 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER

APPENDIX C.1

DELINEATION REPORT

DELINEATION SUMMARY TABLE

Delineation Data: Swiftwater - 1RP-4871							
Sample Date: 06/06/2018			Submittal Date: 06/08/2018		Laboratory: Cardinal Laboratories		
Borehole	Depth (ft)	Lab ID Sample	Chloride		Benzene	BTEX	TPH
			Field Screening	Method 4500	8021B		8015M
A	1	SW3A-1'	**4400**	**4720**	-	-	-
A	2	SW3A-2'	**3460**	**3920**	-	-	-
A	3	SW3A-3'	**3752**	**4240**	-	-	-
A	4	SW3A-4'	**2280**	**2560**	-	-	-
A	6	SW3A-6'	**980**	**1340**	-	-	-
A	11	SW3A-11'	224	288	-	-	-
A	16	SW3A-16'	228	304	-	-	-
A	21	SW3A-21'	196	224	-	-	-
B	1	SW3B-1'	**1568**	**944**	-	-	-
B	2	SW3B-2'	**3752**	**4120**	-	-	-
B	3	SW3B-3'	**2704**	**3880**	-	-	-
B	4	SW3B-4'	**1904**	**2840**	-	-	-
B	6	SW3B-6'	**3752**	**5200**	-	-	-
B	11	SW3B-11'	**1272**	**832**	-	-	-
B	15.5	SW3B-15.5'	ND	80.0	-	-	-
B	20	SW3B-20'	ND	80.0	-	-	-
B	25.5	SW3B-25.5'	172	176	-	-	-
NMOCD Thresholds			**600**	**600**	**10**	**50**	**5000**

BOLD results indicate results above RRAL

- indicates tests were not ran

APPENDIX C.2

DELINEATION REPORT

DELINEATION LABORATORY REPORT

CARDINAL Laboratories

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

June 14, 2018

JACE CARAWAY

RX-SOIL INC.

201 MAIN STREET, SUITE 1360

FORT WORTH, TX 76102

RE: SWIFTWATER

Enclosed are the results of analyses for samples received by the laboratory on 06/08/18 9:35.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-17-10. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (*). For a complete list of accredited analytes and matrices visit the TCEQ website at www.tceq.texas.gov/field/qa/lab_accred_certif.html.

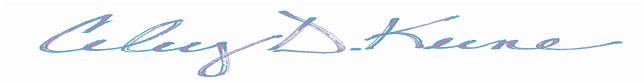
Cardinal Laboratories is accreditated through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Celey D. Keene

Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/06/2018
Reported:	06/14/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#3	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW3 A - 1' (H801577-01)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4720**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 A - 2' (H801577-02)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3920**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 A - 3' (H801577-03)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4240**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 A - 4' (H801577-04)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2560**	16.0	06/12/2018	ND	448	112	400	3.64	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/06/2018
Reported:	06/14/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#3	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW3 A - 6' (H801577-05)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**1340**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 A - 11' (H801577-06)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**288**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 A - 16' (H801577-07)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**304**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 A - 21' (H801577-08)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**224**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 B - 1' (H801577-09)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**944**	16.0	06/12/2018	ND	448	112	400	3.64	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/06/2018
Reported:	06/14/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#3	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW3 B - 2' (H801577-10)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**4120**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 B - 3' (H801577-11)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**3880**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 B - 4' (H801577-12)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**2840**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 B - 6' (H801577-13)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**5200**	16.0	06/12/2018	ND	448	112	400	3.64	

Sample ID: SW3 B - 11' (H801577-14)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**832**	16.0	06/12/2018	ND	448	112	400	3.64	

Cardinal Laboratories *=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

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

Analytical Results For:

RX-SOIL INC.
JACE CARAWAY
201 MAIN STREET, SUITE 1360
FORT WORTH TX, 76102
Fax To: NA

Received:	06/08/2018	Sampling Date:	06/06/2018
Reported:	06/14/2018	Sampling Type:	Soil
Project Name:	SWIFTWATER	Sampling Condition:	Cool & Intact
Project Number:	#3	Sample Received By:	Tamara Oldaker
Project Location:	BAKER RANCH		

Sample ID: SW3 B - 15.5' (H801577-15)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	06/12/2018	ND	416	104	400	3.77	

Sample ID: SW3 B - 20' (H801577-16)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**80.0**	16.0	06/12/2018	ND	416	104	400	3.77	

Sample ID: SW3 B - 25.5' (H801577-17)

Chloride, SM4500Cl-B **mg/kg** **Analyzed By: AC**

Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	**176**	16.0	06/12/2018	ND	416	104	400	3.77	

Cardinal Laboratories

*=Accredited Analyte

Celey D. Keene, Lab Director/Quality Manager

Notes and Definitions

QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

Celey D. Keene, Lab Director/Quality Manager

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

1 of 2
4 of 5 — T.O. 6/8/18

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

Company Name:	RXSOIL	**BILL TO**	
Project Manager:	JALE CARAWAY	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	940-210-2051 Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	SWIFTWATER #3	State: Zip:	
Project Location:		Phone #:	
Sampler Name:	JACOB MICKLE	Fax #:	

FOR LAB USE ONLY				MATRIX							PRESERV.			SAMPLING		ANALYSIS REQUEST
Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	ACID/BASE:	ICE / COOL	OTHER :	DATE	TIME	CHLORIDES
H801577															
1	SW3A - 1'	G				X					X		06/06	1500	
2	SW3A - 2'														
3	SW3A - 3'														
4	SW3A - 4'														
5	SW3A - 6'														
6	SW3A - 11'														
7	SW3A - 16'														
8	SW3A - 21'													1700	

Relinquished By:	Date: 6-8-18	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 9:35		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One) 2.8°C
Sampler - UPS - Bus - Other: Corrected 2.7°C

Sample Condition		CHECKED BY: (Initials)
Cool	Intact	
☑ Yes ☐ No	☑ Yes ☐ No	T.O. #15

+ Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

CARDINAL Laboratories

CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

2 of 2 T.O. 6/8/18
5 of 5

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

Company Name:	RXSOIL	**BILL TO**	
Project Manager:	JALE CARAWAY	P.O. #:	
Address:		Company:	
City:	State: Zip:	Attn:	
Phone #:	940-210-2051 Fax #:	Address:	
Project #:	Project Owner:	City:	
Project Name:	SWIFTWATER #3	State: Zip:	
Project Location:		Phone #:	
Sampler Name:	JACOB MICKLE	Fax #:	

FOR LAB USE ONLY Lab I.D.	Sample I.D.	(G)RAB OR (C)OMP.	# CONTAINERS	MATRIX: GROUNDWATER	WASTEWATER	SOIL	OIL	SLUDGE	OTHER :	PRESERV.: ACID/BASE:	ICE / COOL	OTHER :	SAMPLING: DATE	TIME	ANALYSIS REQUEST: CHLORIDES
H801577															
9	SW3B - 1'	G				X					X		06/06	1130	X
10	SW3B - 2'														
11	SW3B - 3'														
12	SW3B - 4'														
13	SW3B - 6'														
14	SW3B - 11'														
15	SW3B - 15.5'														
16	SW3B - 20'														
17	SW3B - 25.5'	↓				↓					↓		↓	1500	↓

Relinquished By:	Date: 6-8-18	Received By:	Phone Result: ☐ Yes ☐ No Add'l Phone #:
	Time: 9:35		Fax Result: ☐ Yes ☐ No Add'l Fax #:
Relinquished By:	Date:	Received By:	REMARKS:
	Time:		

Delivered By: (Circle One) Sampler - UPS - Bus - Other: 2.8°C Corrected 2.7°C

Sample Condition: Cool ☑ Yes ☐ No; Intact ☐ Yes ☐ No

CHECKED BY: (Initials) TO. #75

† Cardinal cannot accept verbal changes. Please fax written changes to (575) 393-2326

APPENDIX C.3

DELINEATION REPORT

DELINEATION DIGITAL FIELD NOTES

RXSOIL

Form Information

Form Name:	**RXSoil Field Test**
Submitter Name:	Jacob Mickle (jacob.mickle@rxsoil.solutions)
Submission Date:	Jun 8, 2018 12:02:48 AM MDT
Server Receive Date:	Jun 8, 2018 12:03:01 AM MDT
Reference Number:	20180608-1880312478
Location:	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:25:50 PM MDT [View Map]

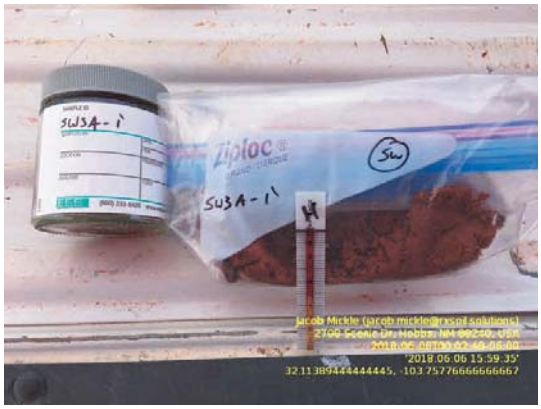
Project Overview

Client Name	Travelers Insurance
Project Name	SwiftWater #3
Type of Form	Field Test
Date/Time	Jun 7, 2018 11:30:40 PM MDT
RXSoil Sampler	Jacob Mickle

Sample 1

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-1’
Method of Sample Collecting	DRILL RIG
Depth (inches)	12"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 5.2 = 4,400 PPM

Picture of Result or Sample Taken



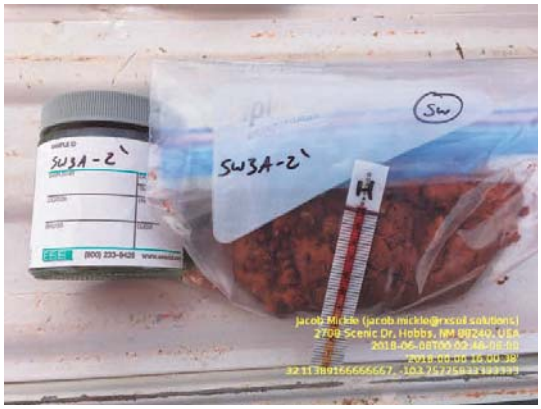
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:40:12 PM MDT [View Map]

Team Leader Signature

Sample 2

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-2’
Method of Sample Collecting	DRILL RIG
Depth (inches)	24"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.6 = 3,460 PPM

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:41:43 PM MDT [View Map]

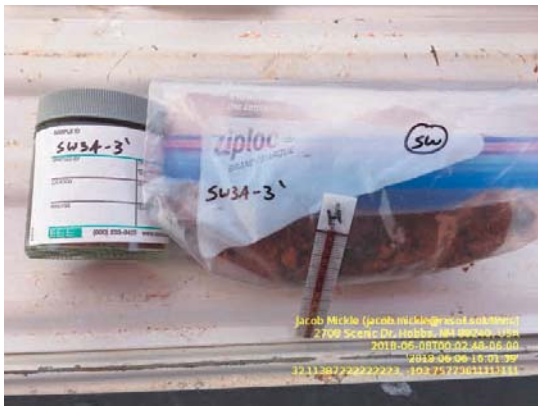
Team Leader Signature

Sample 3

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-3’

Method of Sample Collecting	DRILL RIG
Depth (inches)	36"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.8 = 3,752 PPM

Picture of Result or Sample Taken



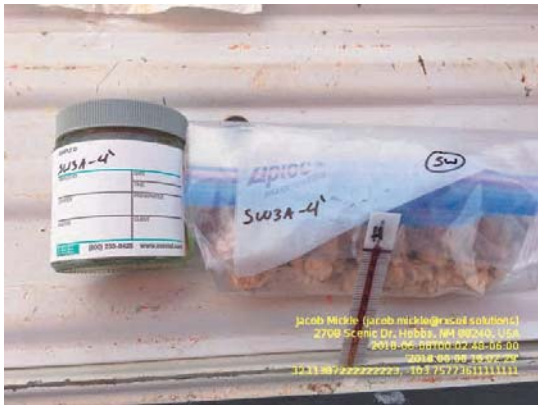
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:42:44 PM MDT [View Map]

Team Leader Signature

Sample 4

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-4’
Method of Sample Collecting	DRILL RIG
Depth (inches)	48"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 3.6 = 2,280 PPM

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:44:20 PM MDT [View Map]

Team Leader Signature

Sample 5

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-6’
Method of Sample Collecting	DRILL RIG
Depth (inches)	6’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 5.2 = 980 PPM HIGH: ND

Picture of Result or Sample Taken

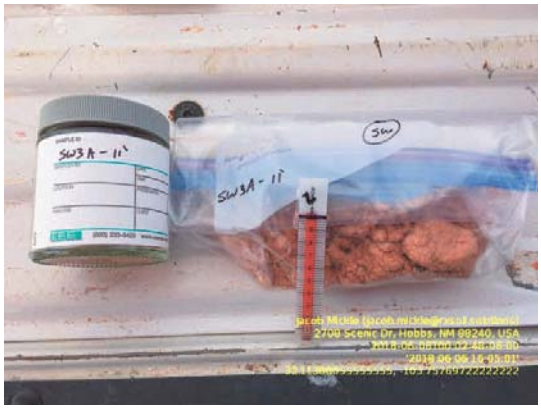
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:45:32 PM MDT [View Map]

Team Leader Signature

Sample 6

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-11’
Method of Sample Collecting	DRILL RIG
Depth (inches)	11’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 2.2 = 224 PPM HIGH: -

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:46:55 PM MDT [View Map]

Team Leader Signature

Sample 7

Type of Field Test	Soil
Method of Testing	Sample to Lab

Name of Sample Point	SW3A-16’
Method of Sample Collecting	DRILL RIG
Depth (inches)	16’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 2.0 = 228 PPM HIGH: -

Picture of Result or Sample Taken

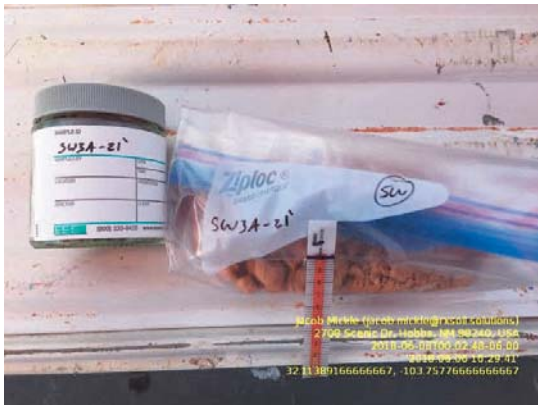
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:47:52 PM MDT [View Map]

Team Leader Signature

Sample 8

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3A-21’
Method of Sample Collecting	DRILL RIG
Depth (inches)	21’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 2.2 = 196 PPM HIGH: -

Picture of Result or Sample Taken



Lab Name — Cardinal Labs

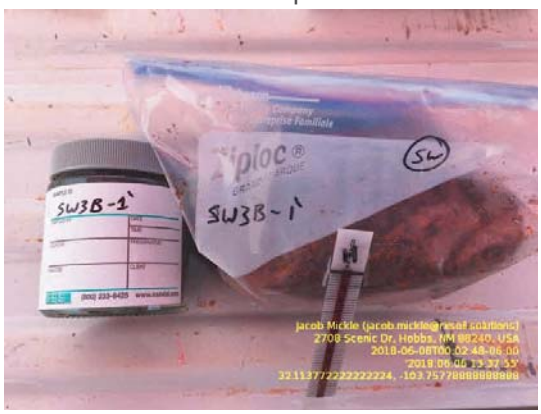
sample location — 2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 7, 2018 11:50:43 PM MDT [View Map]

Team Leader Signature

Sample 9

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-1’
Method of Sample Collecting	DRILL RIG
Depth (inches)	12"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 2.8 = 1,568 PPM

Picture of Result or Sample Taken



Lab Name — Cardinal Labs

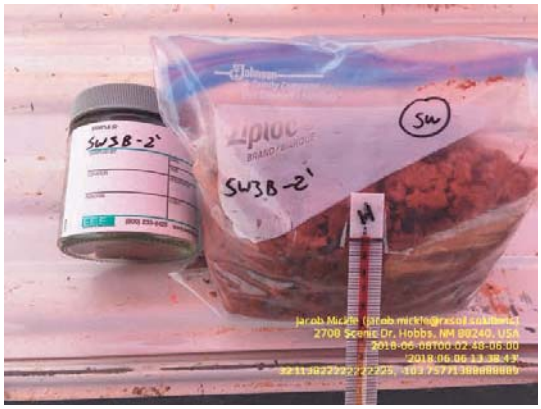
sample location — 2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 7, 2018 11:52:17 PM MDT [View Map]

Team Leader Signature

Sample 10

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-2’
Method of Sample Collecting	DRILL RIG
Depth (inches)	24"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.8 = 3,752 PPM

Picture of Result or Sample Taken



Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:53:32 PM MDT [View Map]

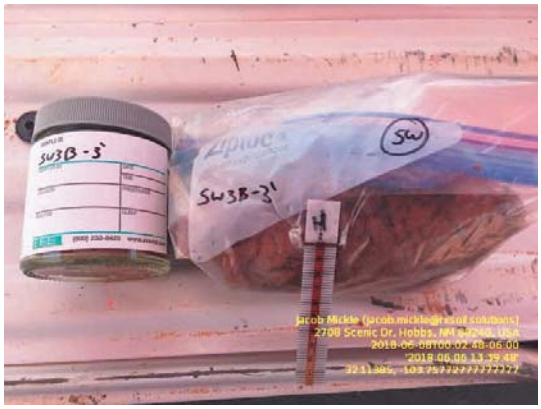
Team Leader Signature

Sample 11

Type of Field Test	Soil
Method of Testing	Sample to Lab

Name of Sample Point	SW3B-3’
Method of Sample Collecting	DRILL RIG
Depth (inches)	36"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.0 = 2,704 PPM

Picture of Result or Sample Taken



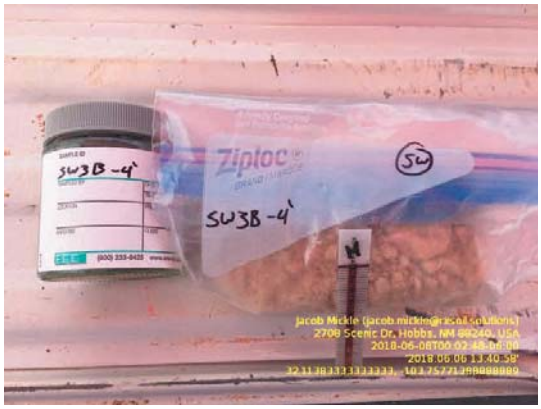
Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:54:37 PM MDT [View Map]

Team Leader Signature

Sample 12

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-4’
Method of Sample Collecting	DRILL RIG
Depth (inches)	48"
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 3.2 = 1,904 PPM

Picture of Result or Sample Taken



Lab Name — Cardinal Labs

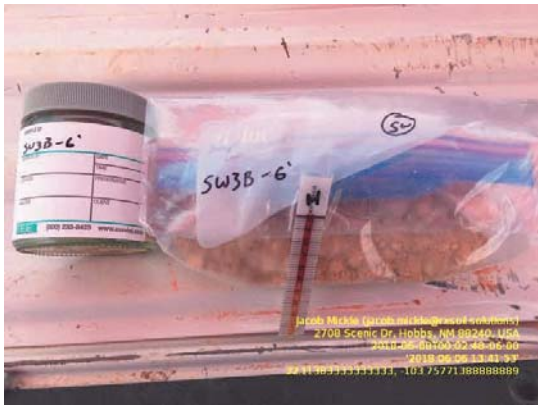
sample location — 2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 7, 2018 11:55:56 PM MDT [View Map]

Team Leader Signature

Sample 13

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-6’
Method of Sample Collecting	DRILL RIG
Depth (inches)	6’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 4.8 = 3,752 PPM

Picture of Result or Sample Taken



Lab Name — Cardinal Labs

sample location — 2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 7, 2018 11:57:23 PM MDT [View Map]

Team Leader Signature

Sample 14

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-11’
Method of Sample Collecting	DRILL RIG
Depth (inches)	11’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: - HIGH: 2.4 = 1,272 PPM

Picture of Result or Sample Taken

Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:58:42 PM MDT [View Map]

Team Leader Signature

Sample 15

Type of Field Test	Soil
Method of Testing	Sample to Lab

Name of Sample Point	SW3B-15.5’
Method of Sample Collecting	DRILL RIG
Depth (inches)	15.5’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 1.0 = ND HIGH: -

Picture of Result or Sample Taken

Lab Name	Cardinal Labs
sample location	2708 Scenic Dr, Hobbs, NM 88240, USA Jun 7, 2018 11:59:54 PM MDT [View Map]

Team Leader Signature

Sample 16

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-20’
Method of Sample Collecting	DRILL RIG
Depth (inches)	20’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 1.0 = ND HIGH: -

Picture of Result or Sample Taken

Lab Name — Cardinal Labs

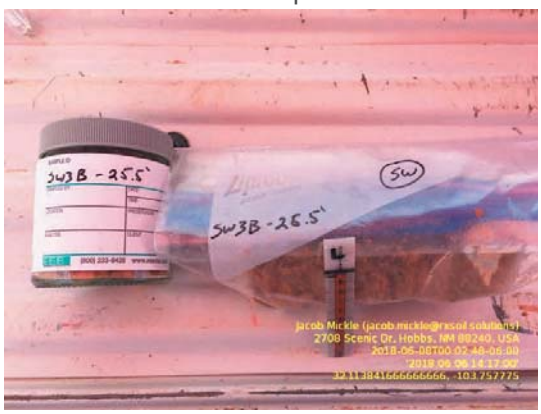
sample location — 2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 8, 2018 12:00:46 AM MDT [View Map]

Team Leader Signature

Sample 17

Type of Field Test	Soil
Method of Testing	Sample to Lab
Name of Sample Point	SW3B-25.5’
Method of Sample Collecting	DRILL RIG
Depth (inches)	25.5’
Comments	FIELD TEST: CHLORIDES (1:4) LOW: 1.6 = 172 PPM HIGH: -

Picture of Result or Sample Taken



Lab Name — Cardinal Labs

sample location — 2708 Scenic Dr, Hobbs, NM 88240, USA
Jun 8, 2018 12:02:11 AM MDT [View Map]

Team Leader Signature