

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	NRM2004557969
District RP	
Facility ID	
Application ID	

Release Notification

Responsible Party

Responsible Party Vanguard Operating	OGRID 258350
Contact Name Carmen E Pitt	Contact Telephone 432-248-8145
Contact email cpitt@grizzlyenergyllc.com	Incident # (assigned by OCD)
Contact mailing address 4001 Penbrook Suite 201, Odessa, TX, 79762	

Location of Release Source

Latitude 32.80445 Longitude -104.18824
(NAD 83 in decimal degrees to 5 decimal places)

Site Name Tigner State #3	Site Type Pumping Unit
Date Release Discovered 2/9/2020	API# (if applicable) 30-015-40067

Unit Letter	Section	Township	Range	County
L	28	17S	28E	Eddy

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

Nature and Volume of Release

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

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 7.6	Volume Recovered (bbls) 5
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 11.4	Volume Recovered (bbls) 2
	Is the concentration of dissolved chloride 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 The release was attributed to a gauge being left in an open 1 in. valve.

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Application ID	

<p>Was this a major release as defined by 19.15.29.7(A) NMAC?</p> <p><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No</p>	<p>If YES, for what reason(s) does the responsible party consider this a major release?</p>
<p>If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?</p>	

Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> 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: <u>Carmen E Pitt</u>	Title: <u>Senior HSE Specialist</u>
Signature: <u><i>Carmen E Pitt</i></u>	Date: <u>2/14/2020</u>
email: <u>cpitt@grizzlyenergyllc.com</u>	Telephone: <u>432-248-8145</u>
<u>OCD Only</u>	
Received by: <u>Ramona Marcus</u>	Date: <u>2/14/2020</u>

Incident ID	NRM2004557969
District RP	
Facility ID	
Application ID	

Site Assessment/Characterization

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

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

Oil Conservation Division

Incident ID	NRM2004557969
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I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Printed Name: Carmen E Pitt Title: Senior HSE Specialist

Signature: *Carmen E Pitt* Date: 5/12/2020

email: cpitt@grizzlyenergyllc.com Telephone: 432-248-8145

OCD Only

Received by: _____ Date: _____

Incident ID	NRM2004557969
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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: Carmen E Pitt Title: Senior HSE Specialist
Signature: Carmen E Pitt Date: 5/12/2020
email: cpitt@grizzlyenergyllc.com Telephone: 432-248-8145

OCD Only

Received by: _____ Date: _____

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

Signature: _____ Date: _____

Site Assessment Report and Proposed Remediation Workplan

Grizzly Energy, LLC

Tigner State #3

Eddy County, New Mexico

Unit Letter L, Section 28, Township 17 South, Range 28 East

Latitude 32.80445 North, Longitude 104.18824 West

NMOCD Reference No. 2RP-pending

NRM2004557969

Prepared By:

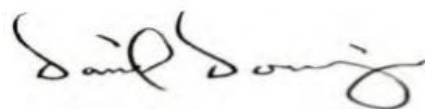
Etech Environmental & Safety Solutions, Inc.

3100 Plains Highway

Lovington, New Mexico 88260



Joel Lowry



Daniel Dominguez



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- Appendix C - Laboratory Analytical Reports
- Appendix D - Photographic Log

1.0 PROJECT INFORMATION

Etech Environmental & Safety Solutions, Inc. (Etech), on behalf of Grizzly Energy, LLC, has prepared this Report for the Release Site known as the Tigner State #3. Details of the release are summarized below:

Location of Release Source

Latitude: 32.80445 Longitude: -104.18824

Provided GPS are in WGS84 format.

Site Name:	Tigner State #3	Site Type:	Pumping Unit
Date Release Discovered:	2/9/2020	API # (if applicable):	30-015-40067

Unit Letter	Section	Township	Range	County
L	28	17S	28E	Eddy

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

Nature and Volume of Release

<input checked="" type="checkbox"/> Crude Oil	Volume Released (bbls) 7.6	Volume Recovered (bbls) 5
<input checked="" type="checkbox"/> Produced Water	Volume Released (bbls) 11.4	Volume Recovered (bbls) 2
	Is the concentration of dissolved chloride in the produced water > 10,000 mg/L?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A
<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	Volume/Weight Recovered

Cause of Release:

The release was attributed to a gauge being left open on a 1 In. valve.

Initial Response

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

Previously submitted portions of the NMOCD Form C-141 are available on the NMOCD Imaging System.

2.0 SITE CHARACTERIZATION

A search of groundwater databases maintained by the New Mexico Office of the State Engineer (NMOSE) and United States Geological Survey (USGS) was conducted in an effort to determine the horizontal distance to known water sources within a half mile radius of the Release Site. Probable groundwater depth was determined using data generated by numeric models based on available water well data and published information. Depth to groundwater information is provided as Appendix A.

What is the shallowest depth to groundwater beneath the area affected by the release?	~100'	
Did the release impact groundwater or surface water?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
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Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
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Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
Did the release impact areas not on an exploration, development, production or storage site?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No

NMOCD Siting Criteria data was gathered from available resources including Bureau of Land Management (BLM) shapefiles; topographic maps; NMOSE and USGS databases; and aerial imagery. The results are depicted on Figures 1 & 2.

3.0 CLOSURE CRITERIA FOR SOILS IMPACTED BY A RELEASE

Based on the volume and nature of the release, inferred depth to groundwater and NMOCD Siting Criteria, the NMOCD Closure Criteria for the Site is as follows:

Closure Criteria for Soil Impacted by a Release			
Probable Depth to Groundwater	Constituent	Method	Limit
~100'	Chloride	EPA 300.0 or SM4500 Cl B	10000 mg/kg
	TPH (GRO + DRO + MRO)	EPA SW-846 Method 8015M Ext	2500 mg/kg
	DRO + GRO	EPA SW-846 Method 8015M	1000 mg/kg
	BTEX	EPA SW-846 Methods 8021b or 8260b	50 mg/kg
	Benzene	EPA SW-846 Methods 8021b or 8260b	10 mg/kg

4.0 INITIAL SITE ASSESSMENT

On February 24, 2020, Etech conducted an initial site assessment. During the initial site assessment, a series of hand-augered soil bores were advanced within the release margins in an effort to determine the vertical extent of soil impacts. In addition, hand-augered soil bores were advanced at the inferred edges of the affected area in an effort to determine the horizontal extent of soil impacts. During the advancement of the hand-augered soil bores, field soil samples were collected and field-screened for the presence of Volatile Organic Compounds utilizing a Photoionization Detector (PID) and/or concentrations of chloride utilizing a Hach Quantab ® chloride test kit. A "Site & Sample Location Map" is provided as Figure 3. Field data and soil profile logs, if applicable, are provided as Appendix B.

Based on field observations and field test data, eleven (11) delineation soil samples (V1 @ Surf, V1 @ 1', V1 @ 2', NH @ Surf, NH @ 1', EHb @ Surf, EHb @ 1', SHb @ Surf, SHb @ 1', WH @ Surf, and WH @ 1') were submitted to the laboratory for analysis of BTEX, TPH and Chloride. Based on laboratory analytical results, soil was not affected above the NMOCD Closure Criteria beyond 1 Ft. bgs and the horizontal extent of affected soil impacted above the NMOCD Closure Criteria was adequately defined. A "Soil Chemistry Table" is provided as Table 1. Laboratory Analytical Reports are provided in Appendix C.

In addition, four (4) soil samples were collected from the affected pasture in an effort to determine if overspray from the release impacted soil above the NMOCD Reclamation Standard. The collected soil samples were submitted to the laboratory for analysis of BTEX, TPH and chloride concentrations. Laboratory analytical results indicated BTEX, TPH and chloride concentrations were below the NMOCD Reclamation Standard in each of the submitted soil samples.

5.0 PROPOSED REMEDIATION PLAN

Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment, Grizzly Energy, LLC proposes the following remediation activities designed to advance the Site toward an approved closure:

- Utilizing mechanical equipment, impacted soil affected above the NMOCD Closure Criteria will be excavated in the areas characterized by sample point V1.
- The floor and sidewalls of the excavated areas will be advanced until laboratory analytical results from confirmation soil samples indicate BTEX, TPH, and chloride concentrations are below the NMOCD Closure Criteria.
- Excavated material will be temporarily stockpiled on-site, then transported to an NMOCD-approved disposal facility.
- Upon excavating impacted soil affected above the NMOCD Closure Criteria, the requisite excavation confirmation soil samples will be collected.
- Upon receiving laboratory analytical results from excavation confirmation soil samples, the excavated areas will be backfilled with locally sourced, non-impacted "like" material.
- The affected pasture area will be treated with a fertilizer and surfactant solution in an effort to promote natural attenuation and continued vegetative growth.
- Upon completion of remediation activities, a Remediation Summary and Site Closure Request detailing remediation activities and the results of confirmation soil samples will be prepared.

6.0 SAMPLING PLAN

Upon completion of excavation activities, representative five-point composite excavation confirmation soil samples will be collected from the excavation sidewalls in each cardinal direction, representing no more than 50 linear ft. A minimum of eighteen (18) representative five-point composite excavation confirmation soil sample will be collected from the base of the excavated area representing every 400 square feet. Additional, discrete grab samples will be collected from wet or visibly stained areas inferred to have been affected by the release, as necessary.

7.0 TIMELINE AND ESTIMATED VOLUME OF SOIL TO BE REMEDIATED

Remediation activities are expected to be completed within 90 days of receiving necessary approval(s) of the Site Assessment Summary and Proposed Remediation Plan. Based on laboratory analytical results, site characteristics and field observations made during the initial site assessment it is estimated that approximately 280 cubic yards is in need of removal.

8.0 RESTORATION, RECLAMATION AND RE-VEGETATION PLAN

Areas affected by remediation and closure activities will be substantially restored to the condition that existed prior to the release, to the extent practicable. Excavated areas will be backfilled with locally sourced, non-impacted "like" material placed at or near original relative positions. The affected area will be contoured and/or compacted to achieve erosion control, stability and preservation of surface water flow to the extent practicable. Affected areas not on production pads and/or lease roads will be reseeded with an agency-approved seed mixture during the first favorable growing season following closure of the site.

9.0 LIMITATIONS

Etech Environmental & Safety Solutions, Inc., has prepared this Site Assessment Report and Proposed Remediation Plan to the best of its ability. No other warranty, expressed or implied, is made or intended. Etech has examined and relied upon documents reference in the report and on oral statements made by certain individuals. Basis has not conducted an independent examination of the facts contained in referenced materials and statements. Etech has presumed the genuineness of these documents and statements and that the information provided therein is true and accurate. Etech has prepared the report in a professional manner, using the degree of skill and care exercised by similar environmental consultants. Etech notes that the facts and conditions referenced in this report may change over time, and the conclusions and recommendations set forth herein are applicable only to the facts and conditions as described at the time of this report.

This report has been prepared for the benefit of Grizzly Energy, LLC. Use of the information contained in this report is prohibited without the consent of Etech and/or Grizzly Energy, LLC.

10.0 DISTRIBUTION

Grizzly Energy, LLC

4001 Penbrook

Suite 201

Odessa, TX 79762

New Mexico Energy, Minerals and Natural Resources Department

Oil Conservation Division, District 2

811 S. First Street

Artesia, NM 88210

Hobbs Field Office

New Mexico State Land Office

2827 North Dal Paso Street

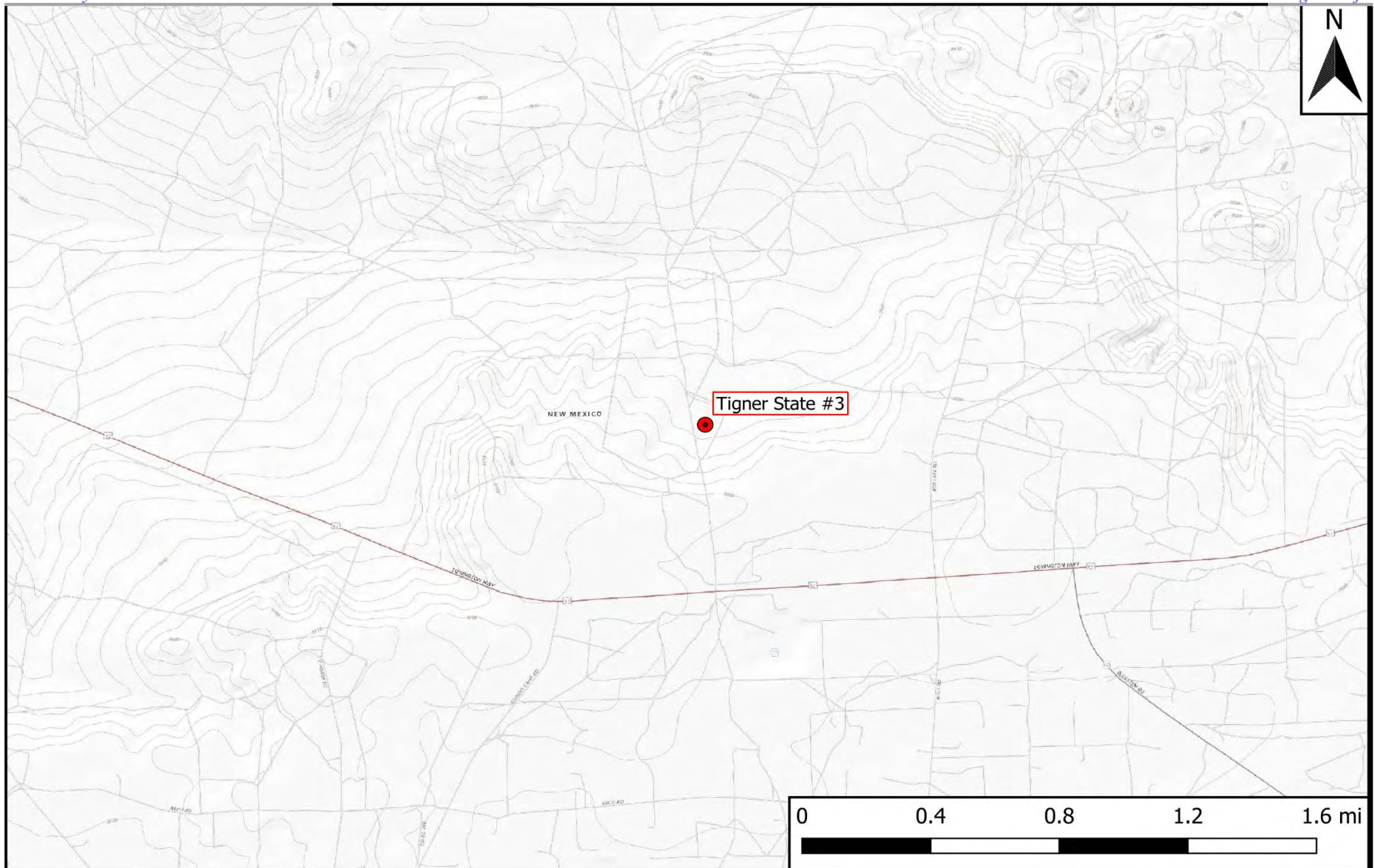
Suite 117

Hobbs, NM 88240

(Electronic Submission)

Figure 1

Topographic Map



Legend

● Site Location

Figure 1
Topographic Map
Grizzly Energy, LLC
Tigner State #3
GPS: 32.80445, -104.18824
Eddy County



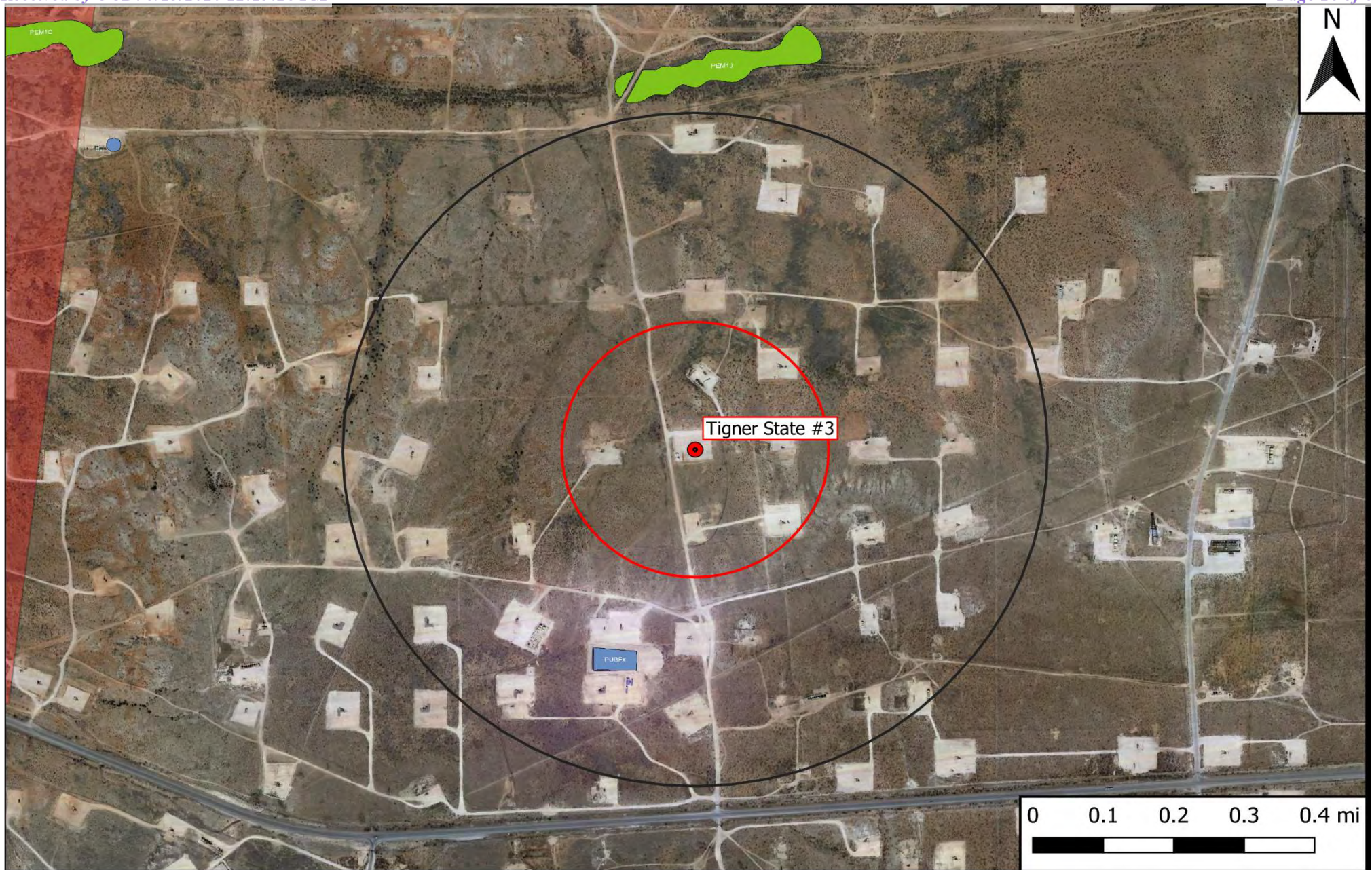
Drafted: mag

Checked: jwl

Date: 2/13/20

Figure 2

Aerial Proximity Map



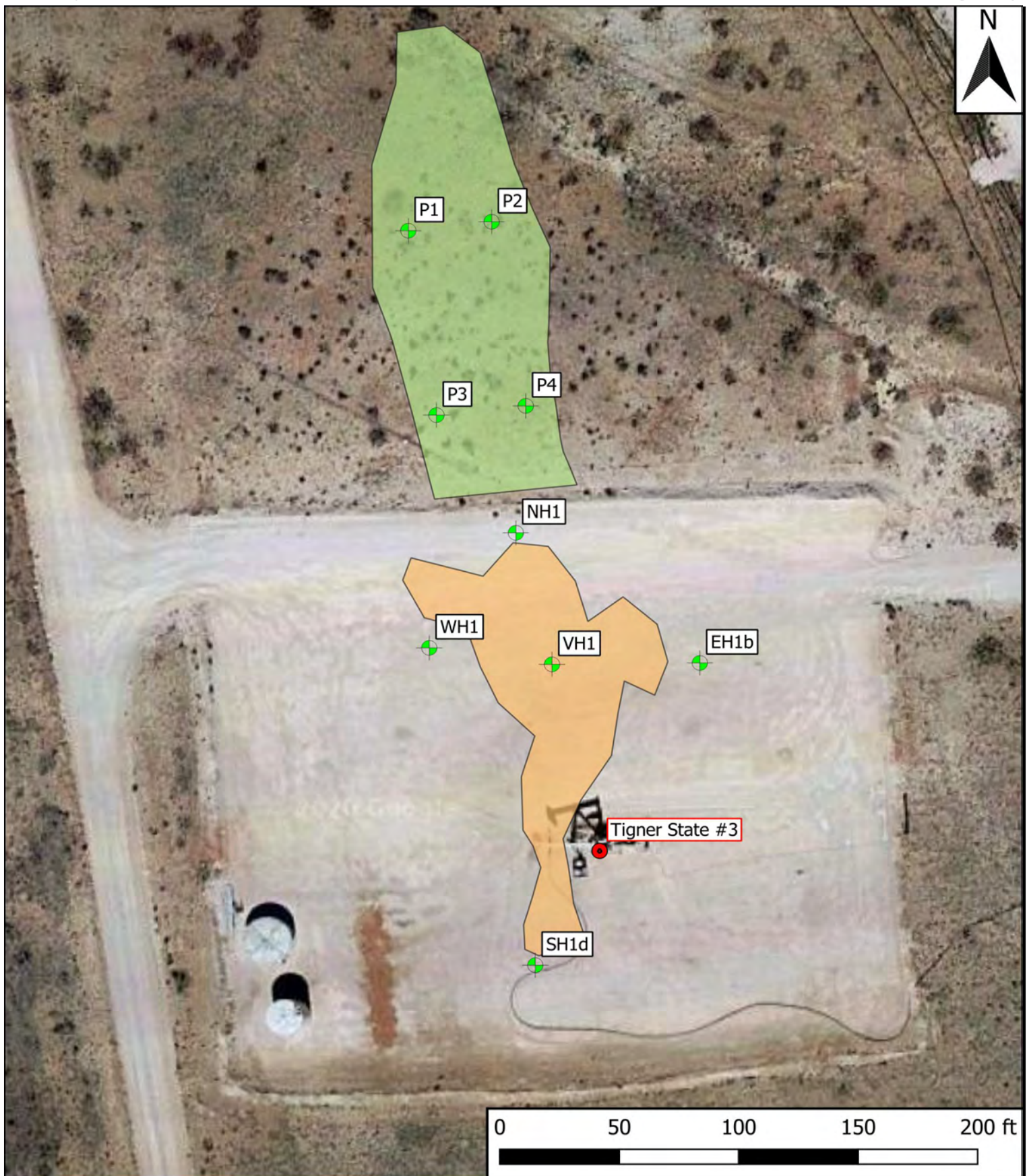
Legend

- | | |
|----------------------|----------------------------|
| Site Location | 0.5 Mi Radius |
| Well - USGS | 1000 Ft Radius |
| Well - NMOSE | 1% Annual Flood Chance |
| High Karst | Lake/Freshwater Pond |
| Potash Mine Workings | Emergent/Forested Wetlands |
| | Riverine |

Figure 2
 Aerial Map
 Grizzly Energy, LLC
 Tigner State #3
 GPS: 32.80445, -104.18824
 Eddy County

Figure 3

Site and Sample Location Map



Legend

- Site Location
- Spill - 7,361 sq ft
- Overspray - 11,977 sq ft

Figure 3

Site and Sample Location Map
 Grizzly Energy, LLC
 Tigner State #3
 GPS: 32.80445, -104.18824
 Eddy County



Drafted: mag

Checked: jwl

Date: 3/5/20

Table 1
Concentrations of BTEX, TPH, and/or Chloride in Soil

TABLE 1
CONCENTRATIONS OF BENZENE, BTEX, TPH AND CHLORIDE IN SOIL
Grizzly Energy, LLC
Tigner State #3
NMOCD Ref. #: 2RP-pending

NMOCD Closure Criteria				10	50	-	-	1000	-	2500	10000
Sample ID	Date	Depth	Soil Status	SW 846 8021B		SW 846 8015M Ext.					4500 Cl
				Benzene (mg/kg)	BTEX (mg/kg)	GRO C ₆ -C ₁₀ (mg/kg)	DRO C ₁₀ -C ₂₈ (mg/kg)	GRO + DRO C ₆ -C ₂₈ (mg/kg)	ORO C ₂₈ -C ₃₆ (mg/kg)	TPH C ₆ -C ₃₆ (mg/kg)	Chloride (mg/kg)
P1	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	16.0
P2	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	16.0
P3	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	16.0
P4	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0
V1 @ Surf	2/24/2020	Surf	In-Situ	<1.00	80.6	959	6,860	7,820	1,100	8,920	7,920
V1 @ 1'	2/24/2020	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	160
V1 @ 2'	2/24/2020	2'	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	128
NH @ Surf	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	81.3	81.3	13.2	94.5	144
NH @ 1'	2/24/2020	1'	In-Situ	<0.050	<0.300	<10.0	43.9	43.9	<10.0	43.9	160
EHb @ Surf	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	234	234	40.4	274	416
EHb @ 1'	2/24/2020	1'	In-Situ	<0.050	<0.300	<10.0	163	163	30.6	194	368
SHb @ Surf	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0
SHb @ 1'	2/24/2020	1'	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	32.0
WH @ Surf	2/24/2020	Surf	In-Situ	<0.050	<0.300	<10.0	<10.0	<20.0	<10.0	<30.0	224
WH @ 1'	2/24/2020	1'	In-Situ	<0.050	<0.300	<10.0	36.5	36.5	<10.0	36.5	256

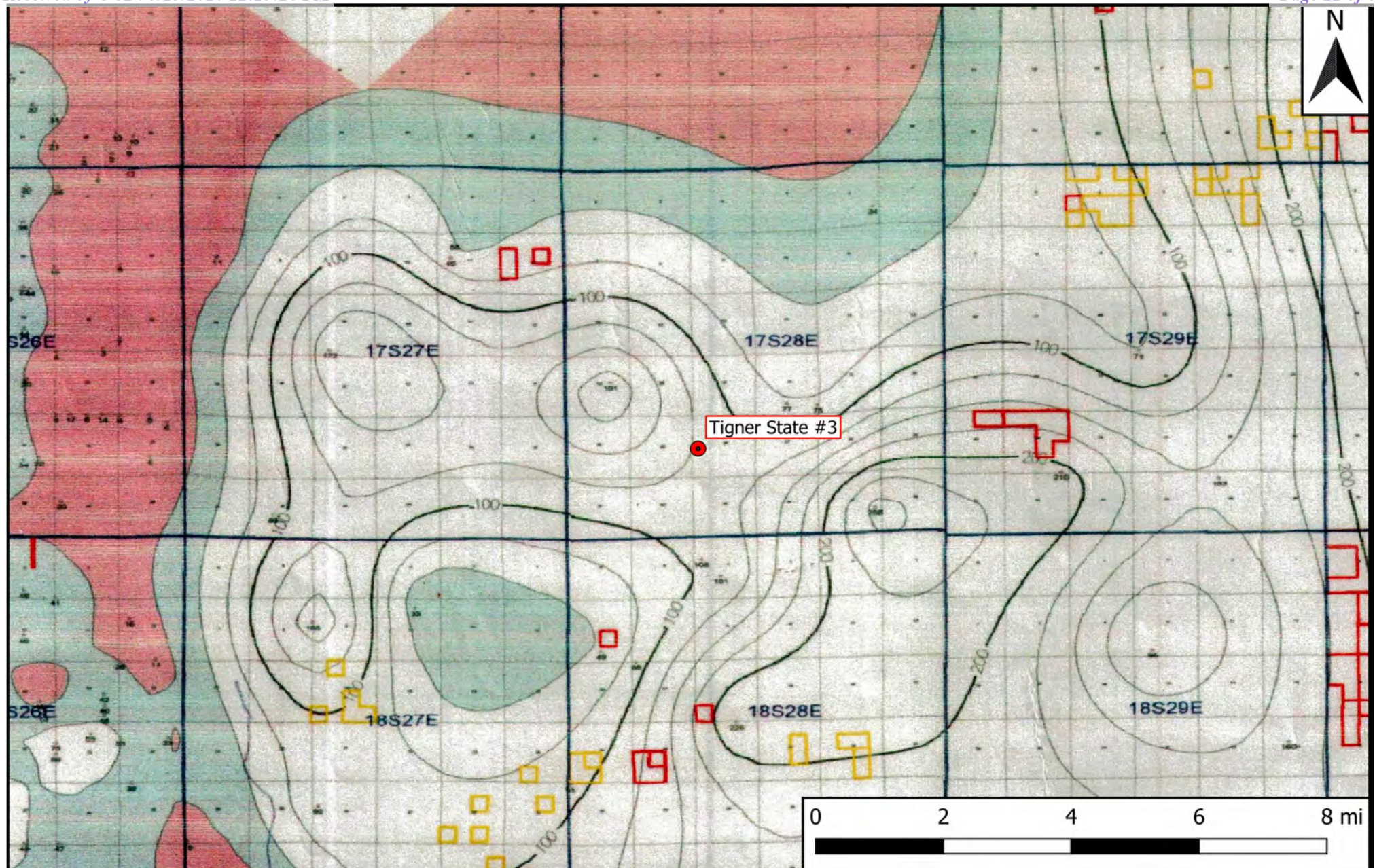
NOTES:

- = Sample not analyzed for that constituent.

Bold text denotes a concentration that exceeds the NMOCD Closure Criteria

Appendix A

Depth to Groundwater Information



Legend

● Site Location

Figure 4

Inferred Depth to Groundwater Trend Map
 Grizzly Energy, LLC
 Tigner State #3
 GPS: 32.80445, -104.18824
 Eddy County



Drafted: mag

Checked: jwl

Date: 2/13/20



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	DepthWell	DepthWater	Water Column
RA 12456 POD1		RA	ED	1	4	4	24	17S	27E	572348	3630969	3804	220	92	128
RA 11857 POD1		RA	ED	1	1	2	05	18S	26E	577784	3625988	4299	235	95	140

Average Depth to Water: **93 feet**

Minimum Depth: **92 feet**

Maximum Depth: **95 feet**

Record Count: 2

UTM NAD83 Radius Search (in meters):

Easting (X): 575999.13

Northing (Y): 3629900.28

Radius: 4828

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.

2/13/20 8:04 AM

WATER COLUMN/ AVERAGE DEPTH TO WATER



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
RA	11857 POD1	1	1	2	05	18S	26E	577784	3625988

x

Driller License: 1064 **Driller Company:** DELFORD W. MARTIN

Driller Name: MARTIN, DELFORD

Drill Start Date: 09/25/2012	Drill Finish Date: 10/01/2012	Plug Date:
Log File Date: 10/15/2012	PCW Rcv Date:	Source: Shallow
Pump Type:	Pipe Discharge Size:	Estimated Yield: 95 GPM
Casing Size: 5.00	Depth Well: 235 feet	Depth Water: 95 feet

x

Water Bearing Stratifications:	Top	Bottom	Description
	95	130	Sandstone/Gravel/Conglomerate
	160	235	Sandstone/Gravel/Conglomerate

x

Casing Perforations:	Top	Bottom
	140	235

x

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.

2/13/20 8:05 AM

POINT OF DIVERSION SUMMARY



New Mexico Office of the State Engineer

Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

Well Tag	POD Number	Q64	Q16	Q4	Sec	Tws	Rng	X	Y
RA	12456 POD1	1	4	4	24	17S	27E	572348	3630969



x

Driller License: 1058 **Driller Company:** KEY'S DRILLING & PUMP SERVICE

Driller Name: DON KUEHN III

Drill Start Date: 09/07/2016

Drill Finish Date: 09/09/2016

Plug Date:

Log File Date: 09/15/2016

PCW Rcv Date:

Source: Shallow

Pump Type:

Pipe Discharge Size:

Estimated Yield: 10 GPM

Casing Size: 4.50

Depth Well: 220 feet

Depth Water: 92 feet

x

Water Bearing Stratifications:

Top	Bottom	Description
90	110	Sandstone/Gravel/Conglomerate
160	180	Shale/Mudstone/Siltstone
180	200	Sandstone/Gravel/Conglomerate
200	210	Sandstone/Gravel/Conglomerate
210	220	Sandstone/Gravel/Conglomerate

x

Casing Perforations:

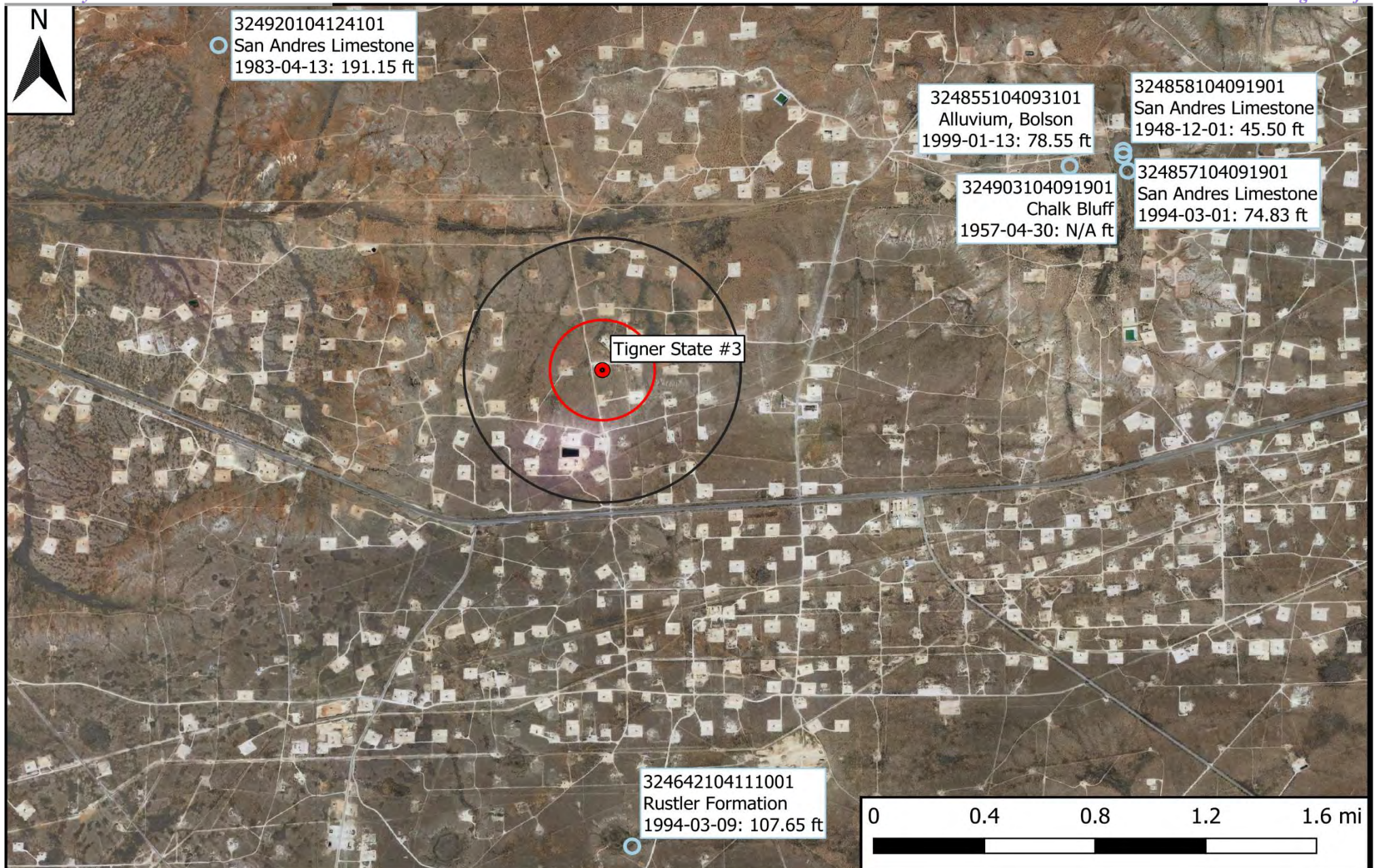
Top	Bottom
200	220

x

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.

2/13/20 8:05 AM

POINT OF DIVERSION SUMMARY



Legend

- Site Location
- Well - USGS
- 0.5 Mi Radius
- 1000 Ft Radius

Figure 5

USGS Well Proximity Map
Grizzly Energy, LLC
Tigner State #3
GPS: 32.80445, -104.18824
Eddy County



Drafted: mag

Checked: jwl

Date: 2/13/20



National Water Information System: Web Interface

USGS Water Resources

Data Category:
Groundwater

Geographic Area:
United States

GO

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Groundwater levels for the Nation

Search Results -- 1 sites found

Agency code = usgs
site_no list =

- 324642104111001

Minimum number of levels = 1

Save file of selected sites to local disk for future upload

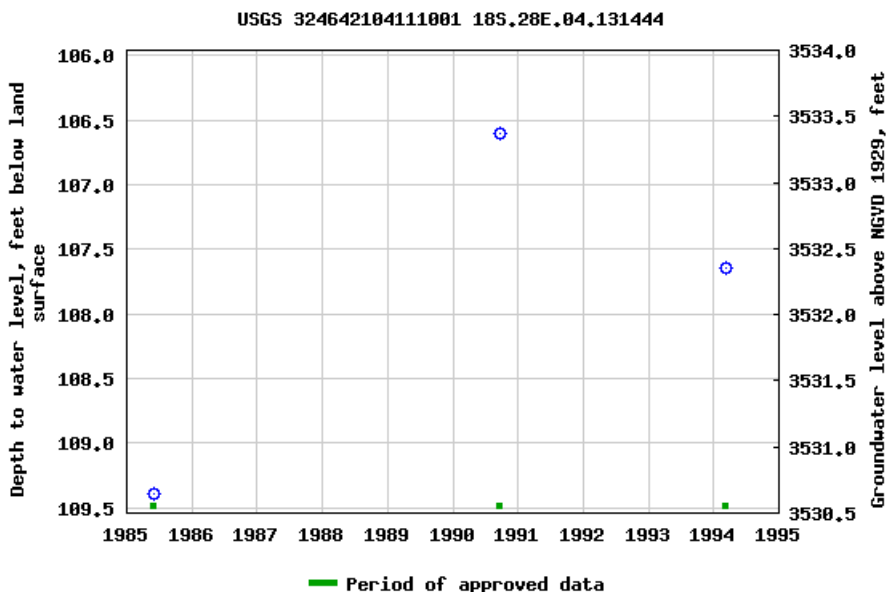
USGS 324642104111001 18S.28E.04.131444

Available data for this site Groundwater: Field measurements GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°46'42", Longitude 104°11'10" NAD27
Land-surface elevation 3,640 feet above NGVD29
The depth of the well is 145.00 feet below land surface.
This well is completed in the Rustler Formation (312RSLR) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.

Download a presentation-quality graph

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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



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

Page Last Modified: 2020-02-13 09:43:56 EST

0.53 0.47 nadww01



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USGS Water Resources

Data Category:
Groundwater

Geographic Area:
United States

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- Full News

Groundwater levels for the Nation

Search Results -- 1 sites found

Agency code = usgs
site_no list =

- 324855104093101

Minimum number of levels = 1
[Save file of selected sites](#) to local disk for future upload

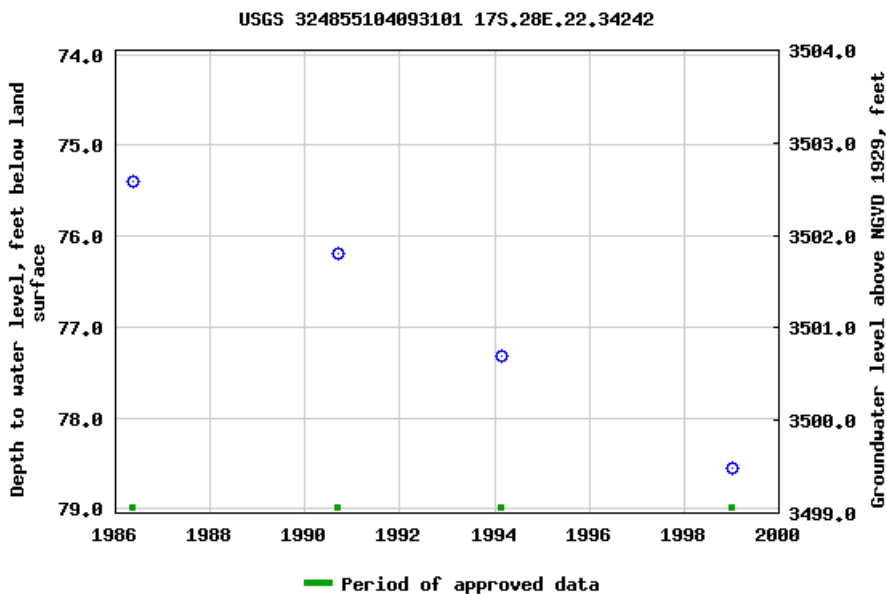
USGS 324855104093101 17S.28E.22.34242

Available data for this site Groundwater: Field measurements GO

Eddy County, New Mexico
Hydrologic Unit Code 13060011
Latitude 32°48'55", Longitude 104°09'31" NAD27
Land-surface elevation 3,578 feet above NGVD29
The depth of the well is 95.00 feet below land surface.
This well is completed in the Alluvium, Bolson Deposits and Other Surface Deposits (110AVMB) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.

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0.73 0.57 nadww01



National Water Information System: Web Interface


USGS Water Resources

Data Category:
Groundwater

Geographic Area:
United States

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Groundwater levels for the Nation

Search Results -- 1 sites found

Agency code = usgs
site_no list =

- 324857104091901

Minimum number of levels = 1
[Save file of selected sites](#) to local disk for future upload

USGS 324857104091901 17S.28E.22.44244

Available data for this site

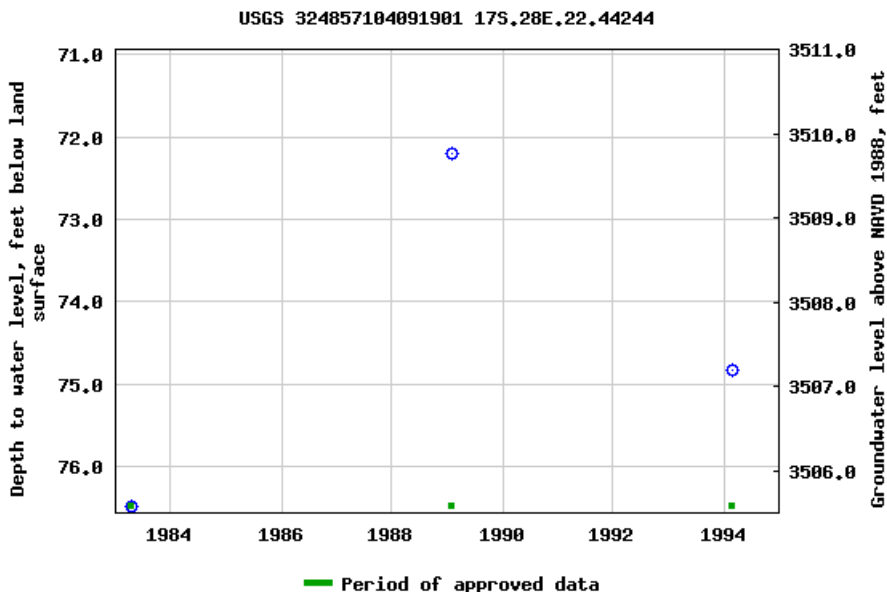
Groundwater: Field measurements

GO

Eddy County, New Mexico
Hydrologic Unit Code 13060007
Latitude 32°48'57", Longitude 104°09'19" NAD27
Land-surface elevation 3,582 feet above NAVD88
This well is completed in the San Andres Limestone (313SADR) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
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0.68 0.52 nadww01



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Search Results -- 1 sites found

Agency code = usgs
site_no list =

- 324858104091901

Minimum number of levels = 1
[Save file of selected sites](#) to local disk for future upload

USGS 324858104091901 17S.28E.22.442442

Available data for this site

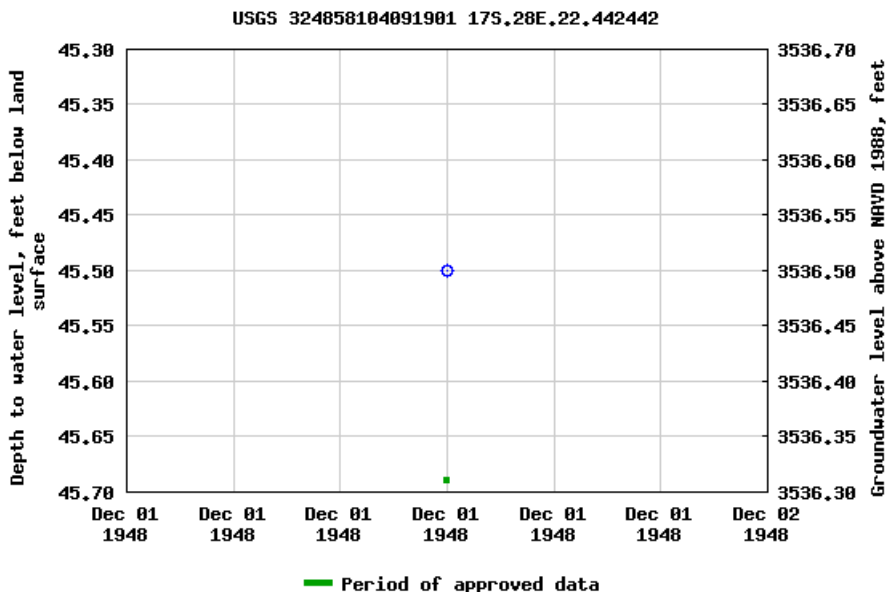
Groundwater: Field measurements

GO

Eddy County, New Mexico
Hydrologic Unit Code 13060007
Latitude 32°48'58", Longitude 104°09'19" NAD27
Land-surface elevation 3,582 feet above NAVD88
This well is completed in the San Andres Limestone (313SADR) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



Breaks in the plot represent a gap of at least one year between field measurements.
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Title: Groundwater for USA: Water Levels

URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



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0.59 0.51 nadww01



National Water Information System: Web Interface


USGS Water Resources

Data Category:
Groundwater

Geographic Area:
United States

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Groundwater levels for the Nation

Search Results -- 1 sites found

Agency code = usgs
site_no list =

- 324920104124101

Minimum number of levels = 1
[Save file of selected sites](#) to local disk for future upload

USGS 324920104124101 17S.28E.19.234233

Available data for this site

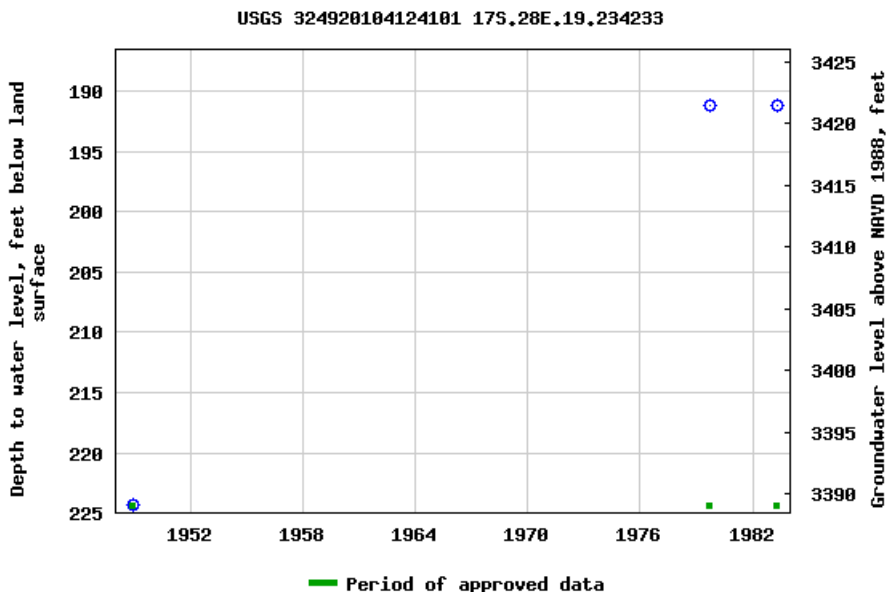
Groundwater: Field measurements

GO

Eddy County, New Mexico
Hydrologic Unit Code 13060007
Latitude 32°49'20", Longitude 104°12'41" NAD27
Land-surface elevation 3,613 feet above NAVD88
This well is completed in the San Andres Limestone (313SADR) local aquifer.

Output formats

Table of data
Tab-separated data
Graph of data
Reselect period



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URL: <https://nwis.waterdata.usgs.gov/nwis/gwlevels?>



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

Page Last Modified: 2020-02-13 09:43:59 EST

0.6 0.49 nadww01

Appendix B

Field Data and Soil Profile Logs



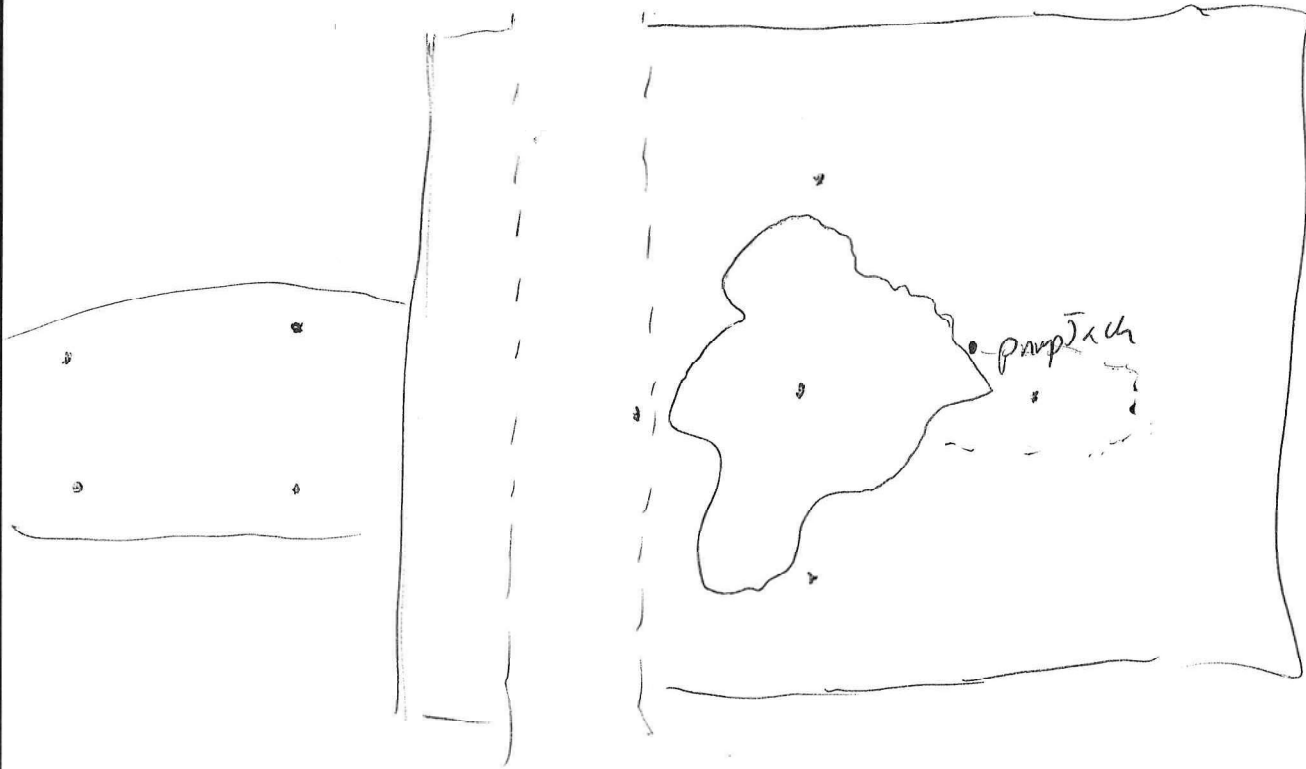
Initial Release Assessment Form

Project: Tigner State #3
 Project Number: 11967

Clean Up Level: _____
 Latitude: 32.80445

Date: 2/24/20
 600 mg/kg Cl-, 100 mg/kg TPH
 Longitude: -104.18824

Site Diagram



Notes:

Positive upper class.
 Spill extends south of pumpish based what GPS map shows

~Length:

~Width:

~Area:

~Depth:

3-4 Representative Pictures of the Affected Area including sample locations?

Necessary Samples Field Screened and on Ice?

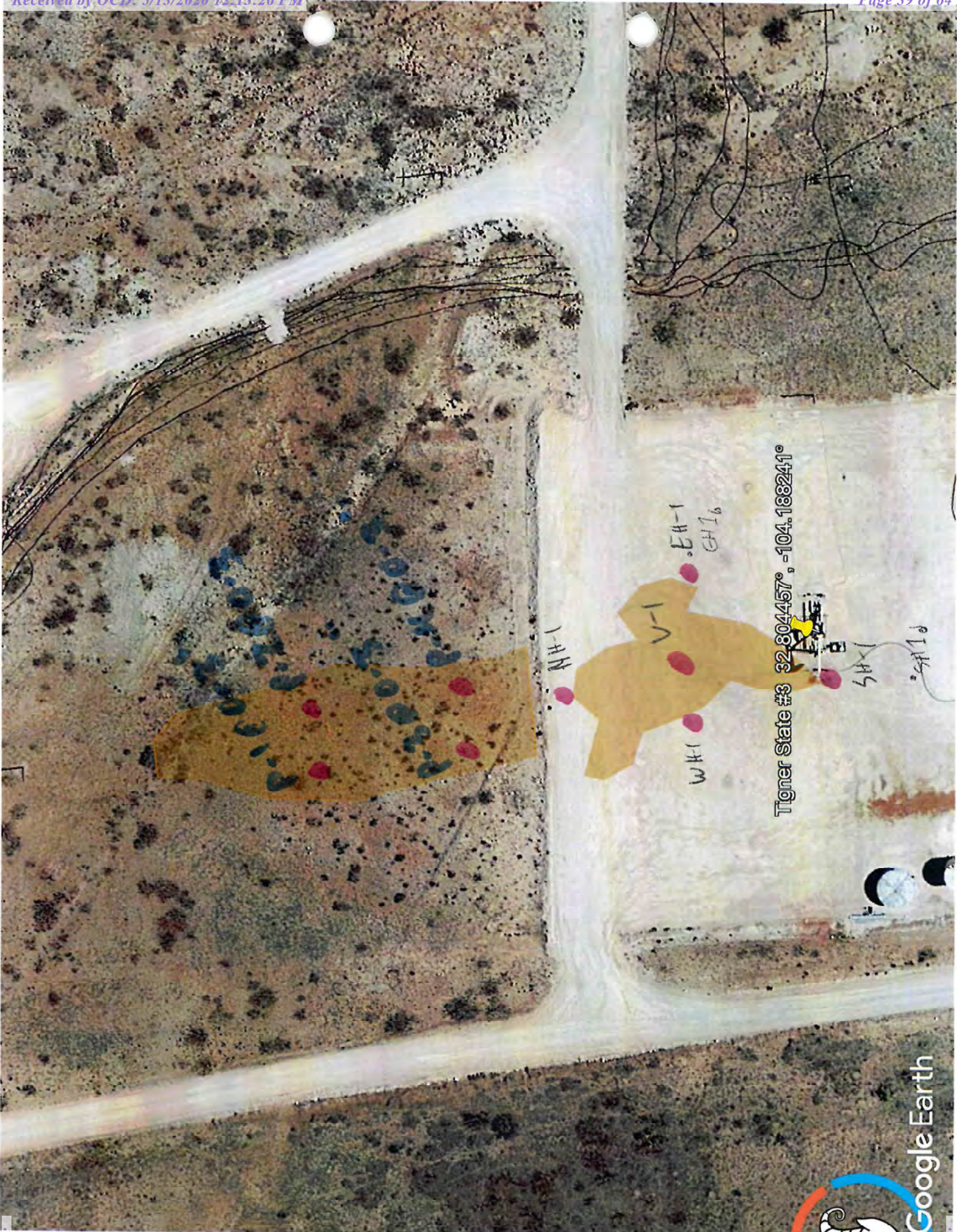
Sample and Field Screen Data Entered on Sample Log?

Was horizontal and vertical delineation achieved?

Yes

No





Tigner State #3 32.804457°, -104.188241°



~ 10' offsets
for high gain
reflexes

Sample Log

Date:

2/24/20 - 2/25/20

Project: Tigner State #3

Project Number: 11967

Latitude: 32.80445

Longitude: -104.18824

[illegible]

Sample Point = SP #1 @ ## etc

Floor = FL #1 etc

Sidewall = SW #1 etc

Test Trench = TT #1 @ ##

Refusal = SP #1 @ 4'-R

Soil Intended to be Deferred = SP #1 @ 4' In-Situ

Resamples= SP #1 @ 5b or SW #1b

Stockpile = Stockpile #1

GPS Sample Points, Center of Comp Areas



Soil Profile

Date:

2/24/20

Project: Tigner State #3

Project Number: 11967

Latitude: 32.80445

Longitude: -104.18824

Depth (ft. bgs)

Description

1		
2		
3		
4		
5		
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40		

caliche sand / red sand in presence
red soil

Appendix C

Laboratory Analytical Reports



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

March 02, 2020

JOEL LOWRY

Etech Environmental & Safety Solutions

P.O. Box 301

Lovington, NM 88260

RE: TIGNER STATE 3

Enclosed are the results of analyses for samples received by the laboratory on 02/26/20 8:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-19-12. 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 accredited through the State of Colorado Department of Public Health and Environment for:

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

Accreditation applies to public drinking water matrices.

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

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene". The signature is written in a cursive style with a large, stylized 'C' and 'K'.

Celey D. Keene

Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: P1 (H000611-01)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03	
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11	
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92	
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93	
Total BTX	<0.300	0.300	02/28/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	16.0	16.0	02/28/2020	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 89.3 % 44.3-144

Surrogate: 1-Chlorooctadecane 94.2 % 42.2-156

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: P2 (H000611-02)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEx	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.4 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 93.5 % 44.3-144

Surrogate: 1-Chlorooctadecane 96.9 % 42.2-156

Cardinal Laboratories

*=Accredited Analyte

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Celey D. Keene, Lab Director/Quality Manager



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

Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: P3 (H000611-03)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEx	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	16.0	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 98.0 % 44.3-144

Surrogate: 1-Chlorooctadecane 101 % 42.2-156

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Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: P4 (H000611-04)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEx	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 98.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 99.1 % 44.3-144

Surrogate: 1-Chlorooctadecane 102 % 42.2-156

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Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: V 1 @ SURFACE (H000611-05)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<1.00	1.00	02/28/2020	ND	1.88	94.1	2.00	6.03	
Toluene*	12.5	1.00	02/28/2020	ND	1.90	95.0	2.00	6.11	
Ethylbenzene*	29.5	1.00	02/28/2020	ND	1.92	95.9	2.00	5.92	
Total Xylenes*	38.6	3.00	02/28/2020	ND	5.62	93.7	6.00	5.93	
Total BTX	80.6	6.00	02/28/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 116 % 73.3-129

Chloride, SM4500CI-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	7920	16.0	02/28/2020	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: CK				S-06	
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	959	50.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	6860	50.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	1100	50.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 185 % 44.3-144

Surrogate: 1-Chlorooctadecane 265 % 42.2-156

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 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: V 1 @ 1' (H000611-06)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 101 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	02/28/2020	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 98.5 % 44.3-144

Surrogate: 1-Chlorooctadecane 102 % 42.2-156

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Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: V 1 @ 2' (H000611-07)

BTX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	128	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 97.0 % 44.3-144

Surrogate: 1-Chlorooctadecane 99.0 % 42.2-156

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 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: NH @ SURFACE (H000611-08)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEx	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	144	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	81.3	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	13.2	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 89.9 % 44.3-144

Surrogate: 1-Chlorooctadecane 94.5 % 42.2-156

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Analytical Results For:

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 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: NH @ 1' (H000611-09)

BTX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	160	16.0	02/28/2020	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	43.9	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 78.7 % 44.3-144

Surrogate: 1-Chlorooctadecane 81.8 % 42.2-156

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 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: Ehb @ SURFACE (H000611-10)

BTX 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	416	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	234	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	40.4	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 94.5 % 44.3-144

Surrogate: 1-Chlorooctadecane 102 % 42.2-156

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Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: Ehb @ 1' (H000611-11)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 99.6 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	368	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	163	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	30.6	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 84.9 % 44.3-144

Surrogate: 1-Chlorooctadecane 88.7 % 42.2-156

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Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: SHb @ SURFACE (H000611-12)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Chloride	32.0	16.0	02/28/2020	ND	400	100	400	3.92		

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 87.6 % 44.3-144

Surrogate: 1-Chlorooctadecane 90.4 % 42.2-156

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: SHb @ 1' (H000611-13)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	32.0	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 92.4 % 44.3-144

Surrogate: 1-Chlorooctadecane 93.3 % 42.2-156

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Celey D. Keene, Lab Director/Quality Manager



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Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: WH @ SURFACE (H000611-14)

BTX 8021B		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03	
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11	
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92	
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93	
Total BTX	<0.300	0.300	02/28/2020	ND					

Surrogate: 4-Bromofluorobenzene (PID) 98.9 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	224	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	<10.0	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 91.0 % 44.3-144

Surrogate: 1-Chlorooctadecane 93.0 % 42.2-156

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Analytical Results For:

Etech Environmental & Safety Solutions
 JOEL LOWRY
 P.O. Box 301
 Lovington NM, 88260
 Fax To: (575) 396-1429

Received:	02/26/2020	Sampling Date:	02/24/2020
Reported:	03/02/2020	Sampling Type:	Soil
Project Name:	TIGNER STATE 3	Sampling Condition:	Cool & Intact
Project Number:	11967	Sample Received By:	Tamara Oldaker
Project Location:	VANGUARD / GRIZZLY ENERGY - EDDY C		

Sample ID: WH @ 1' (H000611-15)

BTEx 8021B		mg/kg		Analyzed By: CK						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
Benzene*	<0.050	0.050	02/28/2020	ND	1.88	94.1	2.00	6.03		
Toluene*	<0.050	0.050	02/28/2020	ND	1.90	95.0	2.00	6.11		
Ethylbenzene*	<0.050	0.050	02/28/2020	ND	1.92	95.9	2.00	5.92		
Total Xylenes*	<0.150	0.150	02/28/2020	ND	5.62	93.7	6.00	5.93		
Total BTEX	<0.300	0.300	02/28/2020	ND						

Surrogate: 4-Bromofluorobenzene (PID) 100 % 73.3-129

Chloride, SM4500Cl-B		mg/kg		Analyzed By: GM					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
Chloride	256	16.0	02/28/2020	ND	400	100	400	3.92	

TPH 8015M		mg/kg		Analyzed By: CK					
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier
GRO C6-C10*	<10.0	10.0	02/29/2020	ND	224	112	200	3.29	
DRO >C10-C28*	36.5	10.0	02/29/2020	ND	240	120	200	4.40	
EXT DRO >C28-C36	<10.0	10.0	02/29/2020	ND					

Surrogate: 1-Chlorooctane 96.7 % 44.3-144

Surrogate: 1-Chlorooctadecane 101 % 42.2-156

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Notes and Definitions

S-06	The recovery of this surrogate is outside control limits due to sample dilution required from high analyte concentration and/or matrix interference's.
ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C Samples reported on an as received basis (wet) unless otherwise noted on report

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A handwritten signature in black ink, appearing to read "Celey D. Keene".

Celey D. Keene, Lab Director/Quality Manager



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Sample I.D.

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(Initials)

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CHAIN-OF-CUSTODY AND ANALYSIS REQUEST

[illegible]

Appendix D

Photographic Log

Photographic Log

Dates: 02/24/2020 - 02/24/2020



Photo Number: 1	 <div>Feb 24, 2020 at 1:09:19 PM +32.804576,-104.188214 ±5.00m 356° N</div>
Photo Direction: North	
Photo Description: Spill area as seen from pumpjack.	

Photo Number: 2	 <div>Feb 24, 2020 at 3:07:34 PM +32.804865,-104.188292 ±5.00m 172° S</div>
Photo Direction: South	
Photo Description: Northern spill area looking at pumpjack.	

