

NMOCD APPROVED
REMEDATION SUMMARY
AND
SITE CLOSURE
FOR THE
RHOMBUS UNION STATE COM 1
1RP-4671

APPROVED

By Olivia Yu at 12:05 pm, Dec 01, 2017

NMOCD approves of the
delineation for 1RP-4671 and
proposed remediation.

Frontier Field Services
65 Mercado St. Durango, CO 81301

October 26, 2017

Ms. Olivia Yu
NMOCD District 1
1625 N. French Drive
Hobbs, New Mexico 88240

REFERENCE: NMOCD APPROVED SOIL REMEDIATION WORK PLAN FOR
INCIDENT 1RP-4671 RHOMBUS UNION STATE #1 LEA COUNTY,
NEW MEXICO

Dear Ms. Yu:

Frontier Field Services (FFS) is pleased to submit the attached Remediation Summary for the Rhombus Union State Com #1, which provides recent analytical reports and excavation volumes. The remediation was completed in accordance with the enclosed New Mexico Oil Conservation Division (NMOCD) Approved Remediation Plan. The completion of the recent excavation and closure sampling meets NMOCD guidelines and regulations for remediation of the release that occurred on April 02, 2017.

Frontier responded immediately to evaluate and delineate the pipeline liquids released connected with the Rhombus Union State Com #1 location. Initial notifications to NMOCD were made internally by the FFS Environmental Group on April 03, 2017, at ~10:43 AM. Table 1 below summarizes information relevant to this release. Results of the assessment and delineation follow in the attached tables and laboratory analytical reports.

Table 1: Release Information and Site Ranking				
Name	Rhombus Union State Com #1			
Location	Incident Number	Section	Township	Range
	1RP-4671	32	18S	34E
Estimated Date of Release	April 3, 2017			
Date Reported to NMOCD	April 4, 2017			
Reported By	Frontier EHS Department, Harley Everhart			
Property Owner	State of New Mexico			
Reported To	New Mexico Conservation Division (NMOCD)			

Frontier Field Services
65 Mercado St. Durango, CO 81301

Source of Release	Pipeline
Released Material	Pipeline Liquids
Released Volumes	~10-15 bbl.
Recovery Volumes	0 bbl.
Nearest Surface Water	≥7.9 Miles South West of Location
Depth to Ground Water	≥ 50 Feet
Nearest Domestic Water Source	≥7500 Feet North and North East of Location
NMOCD Ranking	10
Estimated Volume Contaminated Soil Excavated and Disposal	Estimated 250 Cubic Yards
Chloride Soil Excavated and Disposal	Estimated 200 Cubic Yards
Disposal Location	R-360
Analytical Sampling Location	Cardinal Labs Hobbs, NM 88240

A copy of the Initial C-141 Release Notification and Corrective Action from this location will be categorized as Appendix A. Should you have any additional questions or comments in reference to this release or Work Plan, please do not hesitate to contact me.

Submitted By:

Frontier Field Service LLC

Harley Everhart
Project EHS

Reviewed By:

Southern Ute Growth Fund

Graham Stahnke, PE
Senior Environmental Compliance Specialist

Attached:

- 1) Site Remediation Work Plan

Frontier Field Services
65 Mercado St. Durango, CO 81301

NMOCD APPROVED SOIL REMEDIATION WORK PLAN FOR INCIDENT 1RP-4671

FRONTIER FIELD SERVICES LLC
RHOMBUS UNION STATE COM # 1
SECTION 32, TOWNSHIP 18S, RANGE 34E
LEA COUNTY, NEW MEXICO



Prepared by:
Frontier Field Service LLC
1001 Conoco Rd
Maljamar, NM 88264

July 7, 2017

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- Appendix A - Laboratory Analytical Reports including additional Analytical Reports
- Appendix B – C-141 Initial Report
- Appendix C – NMSE Well Data

I) Introduction:

Frontier Field Services (Frontier), a wholly owned subsidiary of Aka Energy Group, LLC, has prepared this report that describes the assessment and initial delineation of the release associated with the Rhombus Union State Com #1, in Lea County New Mexico, property owned by the State of New Mexico. Figure 1, provides the vicinity map for the site. This document embraces the proposed Work Plan to address the release.

II) Site Ranking and Land Jurisdiction:

This release site is located approximately 7.9 miles (>1,000 feet) southwest from Laguna Tonto, in an area owned by the State of New Mexico at an elevation of 3910 feet above sea level. By evaluating the site using aerial photography and topographic maps and by reviewing the New Mexico Office of the State Engineers online Water Rights Database the nearest ground water is estimated to be greater than 7500 feet north/northeast from the release site and estimated 50 feet or greater below ground surface (bgs.). Figure 1 depicts the site vicinity and Figure 2 depicts the site details and sample locations. The physical location of this release is within the jurisdiction of NMOCD.

This release location has been assigned an NMOCD ranking of 10 which requires a soil remediation standard of 10 parts per-million (ppm) benzene, 50 ppm combined benzene, toluene, ethyl-benzene, and total xylenes (BTEX), and 1000 ppm total petroleum hydrocarbons (TPH). Table 1 illustrates site ranking rational.

III) Assessment and Initial Results:

On May 19, 2017, samples were collected from 12 locations to a depth of approximately 2.5 to 3.0 feet bgs., as illustrated on Figure 2 and Figure 3, by Frontier EHS Group. All samples were collected and processed according to NMOCD soil sampling procedures. The laboratory samples were sent under chain-of-custody protocols to Cardinal Labs in Hobbs, NM for analysis for Benzene and Total BTEX using EPA Method 8021B, DRO and Extended DRO, GRO by EPA Method 8015M, and total Chlorides using EPA Method SM4500CI-B. The Analytical results are summarized in Table 2 and Table 3.

The initial affected area was found to be approximately 150 feet long by 10 feet wide by 3 feet deep. (Approximately 5100 square feet). The release impact area was found around the meter run moving south down a traveled roadway along an existing Rhombus well location.

IV) Initial Soil Remediation Work Plan:

On April 2, 2017, the pipeline (meter-run) was blocked in to replace a section of the pipeline that was leaking. Rocky Peak (Remediation Contractor) completed a New Mexico One-Call to ensure the safety of their employees and to prevent damage to existing utility lines. The impacted soil was removed and temporarily placed on plastic, then hauled for disposal to R-360.

A calibrated field PID was used to map the plume of impacted soil according to NMOCD guidelines. Analytical samples were taken and submitted to Cardinal Labs to confirm results.

Based on the Lab Analytical results the chlorides levels proved to be higher at the impacted area. NMOCD review the initial sample result and made specifications that chloride level >600 ppm would need to be delineated. This set limit affected sample location's 1, 2, 5, 6, and 10.

The chloride affected area(s) resulted in an additional 5400 cubic feet of delineated impacts. The chloride samples were collected over a period from June 26, 2017 to July 6, 2017, to reach the NMOCD acceptable chloride limits of ≤ 600 ppm. (Figure 3). All analytical results are provided in Appendix A. On July 7, 2017, all sample locations met the NMOCD chloride standard of ≤ 600 ppm. Analytical Chloride results are summarized in Table 3. A 20 mil liner will be laid before backfilling of any clean soil begins.

Additional Delineation and Remediation for 1RP-4671 on the following 8 pages



SOUTHERN UTE INDIAN TRIBE

SAFETY & ENVIRONMENTAL
COMPLIANCE MANAGEMENT GROUP

September 7, 2017

APPROVED

By Olivia Yu at 7:57 am, Sep 22, 2017

Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division, District 1
Olivia.yu@state.nm.us

NMOCD approves of the proposed
additional delineation and
remediation for 1RP-4671.

Subject: Frontier Field Services, LLC
Remediation and Closure of Rhombus Union State Com 1
1RP-4671

Dear Ms. Yu,

On behalf of Frontier Field Services, LLC (Frontier), a wholly-owned subsidiary of the Southern Ute Indian Tribe, the following responses are provided to address questions posed in your email dated August 7, 2017, regarding the release at the Rhombus State Com 1. The questions from your email are numbered below and italicized, with Frontier's responses below each question.

- 1. The release volume has been revised. Provide calculations for this adjustment from 10-15 bbls reported on the initial C141 to the 5 bbls volume indicated in the report dated July 7, 2017.*

Frontier will revise the report to match the original estimated release volume of 10 - 15 bbl.
Frontier will submit the report to NMOCD once final cleanup activities are complete.

- 2. Explain the rationale for the June 27-30 series of sampling dates for Sample location 6, 10, Repeat #1 and #5. Was sampling on these days at the same spot? Repeat sampling at specific locations does not represent delineation. As explained in the email dated June 9, 2017, vertical delineation must show a minimal of 5 ft. of permissible chloride levels. In other words, NMOCD expects to see confirmatory laboratory results of the first depth with ≤ 600 mg/kg and the depth 5 ft. further with ≤ 600 mg/kg.*

The repeat samples collected between June 27th and June 30th were collected after additional impacted soil was excavated. Frontier mobilized heavy equipment to excavate the additional soil in the areas with elevated chloride levels (Sample locations #1, #2, #5, #6 and #10) and then resampled at the stated depths (A - surface, B - 2.5 feet below ground surface (bgs), C - 5 feet below ground surface). Repeat samples were not collected at the same locations, rather the repeat samples were collected as near to the original sample location as possible after excavation and removal of additional impacted soil. Each of the sample locations that had chloride concentrations which exceeded the NMOCD standard of 600 mg/kg are addressed individually below.

Sample #1 Location

Frontier excavated additional soil to a depth of seven (7) feet bgs from the Sample #1 location on June 27th - 29th, and then resampled. The final sample collected on July 6th was reported below the applicable chloride cleanup level. Frontier proposes collecting an additional sample from this

location at 12 feet bgs to demonstrate that there is five (5) feet of soil that meets the permissible chloride level.

Sample #2 Location

Frontier excavated additional soil from the Sample #2 location on June 27th and then resampled, with samples collected from the surficial soil (Sample 2-A) as well as 2.5 feet bgs (Sample 2-B) and five (5) feet bgs (Sample 2-C). All samples were reported below the chloride cleanup level of 600 mg/kg, and no additional excavation or sampling is proposed at this location as five (5) feet of soil which meet the chloride cleanup level has been demonstrated (Samples 2-A, 2-B and 2-C collected on June 27th).

Sample #5 Location

Frontier excavated additional soil from the Sample #5 location on June 27th and 28th and then resampled. The sample collected from five (5) feet bgs on June 29th (Sample Repeat #5) was reported below the applicable chloride cleanup level. Frontier proposes collecting an additional sample from this location at ten (10) feet bgs to demonstrate that there is five (5) feet of soil that meets the permissible chloride level.

Sample #6 Location

Frontier excavated additional soil from the Sample #6 location between June 27th and 29th and then resampled on June 30th, with samples collected from the surficial soil (Sample 6-A) as well as 2.5 feet bgs (Sample 6-B) and five (5) feet bgs (Sample 6-C). All samples were reported below the chloride cleanup level of 600 mg/kg, and no additional excavation or sampling is proposed at this location as five (5) feet of soil which meet the chloride cleanup level has been demonstrated (Sample 6-A, 6-B and 6-C collected on June 30th).

Sample #10 Location

Frontier excavated additional soil from the Sample #10 location on June 27th and 28th and then resampled on June 29th, with samples collected from the surficial soil (Sample 10-A) as well as two (2) feet bgs (Sample 10-B) and four (4) feet bgs (Sample 10-C). All samples were reported below the chloride cleanup level of 600 mg/kg, however, as five (5) feet of soil below the chloride cleanup level has not been demonstrated, Frontier proposes collecting an additional sample from this location at five (5) feet bgs.

3. What does A, B, and C denote in the Sample ID? Do these refer to the sampling depth?

A, B, and C denote different sampling depths for the analytical samples. Sampling depths are noted in Tables 2 and 3 of the *Remediation and Closure of Rhombus Union State Com 1 1RP-4671* report.

4. Samples 4, 7, 8, 9, X have total TPH levels above permissible 1000 mg/kg. Vertical delineation is not complete. Total TPH levels must be obtained and maintained for a minimum of 2 ft. further in depth.

Frontier proposes excavating additional soil from the locations of samples 4, 7, 8/X (Sample X is a blind duplicate of Sample #8), and 9. Once analytical closure samples collected from the bottom of the excavation are reported with TPH concentrations below the NMOCD TPH cleanup level of 1,000 mg/kg, Frontier will collect an additional analytical sample two (2) feet below the bottom of the excavation using a hand auger.

5. As per the appended to the reviewed initial C141, to confirm that permissible levels of BTEX, TPH, and chlorides are obtained horizontally, a minimum of 4 cardinal sample locations should be established laterally around the release area.

The previously collected samples include samples collected in three (3) of the cardinal directions around the release location including to the north (Sample #2), south (Sample #3) and west (Sample #1). Frontier will collect an additional sample to the east of the release location.

6. *What is the proposed remedial plan? Please be advised that sidewall and bottom confirmation samples are required for closure.*

The remedial plan is to excavate impacted soils to below NMOCD applicable levels. Additional excavation is proposed for the following locations with TPH levels above 1,000 mg/kg; Samples 4, 7, 8/X, and 9. Frontier will excavate additional soil from these locations and collect a closure sample from the bottom of the excavation. If the closure sample is below the NMOCD TPH cleanup level of 1,000 mg/kg, Frontier will use a hand auger to collect an additional analytical sample from two (2) feet below the bottom closure sample.

Once closure samples confirm that contaminants have been removed to below NMOCD levels (600 mg/kg for chlorides, 1,000 mg/kg TPH), the area will be backfilled. As this area is within a roadway, the backfilled area will be compacted to ensure structural stability of the roadway. No seeding will take place within the areas required for use as roadways. Frontier will seed the bar ditch and road shoulder as required.

7. *NMSLO may have differing requirements for the revegetation plan.*

The proposed seed mixture and application rates for the bar ditch and road shoulder are included below:

Table 1 – Proposed Seed Mix and Application Rates

Common Name	Scientific Name	Pounds of Pure Live Seed per Acre
Sand Bluestem	<i>Anthropogo hallii</i>	0.5
Little Bluestem	<i>Schizachyrium scoparium</i>	0.5
Sideoats grama	<i>Bouteloua curtipendula</i>	1.5
Sand Dropseed	<i>Sporobolus cryptandrus</i>	0.5
Spike Dropseed	<i>S. contrandus</i>	0.5
Mesa Dropseed	<i>S. flexuosus</i>	0.5
Plains Bristlegrass	<i>Sentaria macrostachya</i>	2.0
Desert or Scarlet Globermallow	<i>Sphaeralcea ambigua</i> or <i>S. coccinea</i>	0.5
Buckwheat	<i>Eriogonum</i> spp.	1.5

Conclusion

In summary, Frontier has addressed the questions posed in your August 7th, 2017 email and has developed the following tables with proposed sampling locations and depths for NMOCD approval prior to initiating additional excavation work and sampling.

Table 2 – Proposed Additional Excavation and Sampling for Chlorides

Sample ID	Description	Chloride Concentration of Deepest Sample	Proposed Action
Sample #1	Northeast floor	80 mg/kg @ 7 feet bgs	Collect additional sample at 12 feet bgs
Sample #5	Middle floor	480 mg/kg @ 5 feet bgs	Collect additional sample at ten (10) feet bgs
Sample #10	Southwest wall	112 mg/kg @ 4 feet bgs	Collect additional sample at five (5) feet bgs

Table 3 – Proposed Additional Excavation and Sampling for TPH

Sample ID	Description	TPH Concentration	Proposed Action
Sample #4	Northwest wall	2,244 mg/kg @ 2.5 feet bgs	Additional excavation until TPH concentration in closure sample is below 1,000 mg/kg and then additional sample two (2) feet below.
Sample #7	Middle west wall	1,457 mg/kg @2.5 feet bgs	Additional excavation until TPH concentration in closure sample is below 1,000 mg/kg and then additional sample two (2) feet below.
Sample #8/X	Middle south floor	1,730 and 1,210 mg/kg respectively @ 3 feet bgs	Additional excavation until TPH concentration in closure sample is below 1,000 mg/kg and then additional sample two (2) feet below.
Sample #9	Southeast wall	2,361 mg/kg @ 2.5 feet bgs	Additional excavation until TPH concentration in closure sample is below 1,000 mg/kg and then additional sample two (2) feet below.

Should you have any questions regarding this response or proposed additional excavation and sampling, please contact me at (970) 764-6484.

Respectfully Submitted,



Graham Stahnke, PE
Sr. Environmental Compliance Specialist
Southern Ute Growth Fund

cc: Harley Everhart, Frontier Field Services, LLC
Andy Young, Regulatory Compliance Manager, SUGF
Amber Groves, SLO

Amended Remediation Plan

Acronyms:

DPO - Diesel Power Organics (C6-C10)

DRO = Diesel Range Organics (C6 - C10)

CBO = Gasoline Range Organics (>C10 - C28)

GRU = Gasoline Range Organics (C₅-C₁₀)
 = Gasoline Range Organics (C₅-C₁₀)

DRD = Diesel Range Org

[illegible]

Acronyms:

NMOCD = New Mexico Oil Conservation Division

NRQ = Diesel Range Organics (C6 - C10)

DRO = Diesel Range Organics (C₉-C₁₆)
CRO = Cessline Range Organics (>C₁₀-C₂₈)

GRO = Gasoline Range Organics (>C10 - C20)

T DRO = Diesel Range Organics (>C28-C36)

TBD = To Be Determined

East Of Leak

Amended Remediation Work Plan

Acronyms:

NMOCD = New Mexico Oil Conservation Division
DRO = Diesel Range Organics (C6 - C10)
GRO = Gasoline Range Organics (>C10 - C28)
EXT DRO = Diesel Range Organics (>C28-C36)
TBD = To Be Determined

Frontier Field Services
65 Mercado St. Durango, CO 81301

V) Re-vegetation Plan:



SOUTHERN UTE INDIAN TRIBE

SAFETY & ENVIRONMENTAL COMPLIANCE MANAGEMENT GROUP

November 2, 2017

Ms. Amber Groves
Remediation Specialist
New Mexico State Land Office
2827 N. Dal Paso Suite 117
Hobbs, NM 88240
agroves@slo.state.nm.us

Subject: Frontier Field Services, LLC
Revegetation and Noxious Weed Management Plan - Rhombus Union State Com 1
1RP-4671

Dear Ms. Groves,

On behalf of Frontier Field Services, LLC (Frontier), a wholly-owned subsidiary of the Southern Ute Indian Tribe, the following Revegetation and Noxious Weed Management Plan is provided to address revegetation at the Rhombus Union State Com 1 release location.

On April 4, 2017, a release of 10-15 barrels of natural gas liquids was reported at the Rhombus Union State Com 1 located in Lea County, New Mexico. The release originated from a pipeline buried in the right-of-way beneath an existing dirt access road. The total area affected was approximately 2,500 square feet. The release was promptly cleaned up and remediated according to New Mexico Oil Conservation Division (NMOCD) requirements. Frontier is proposing to revegetate the disturbance associated with the remediation at the release site. The area to be revegetated is approximately 200 square feet, and consists of sparsely vegetated, roadside habitat.

Seed Mix and Rate

Frontier proposes to use the seed mix and application rates found in Table 1 below.

Table 1 - Proposed Seed Mix and Application Rates

Common Name	Scientific Name	Pounds of Pure Live Seed per Acre
Sand Bluestem	<i>Anthropogo hallii</i>	0.5
Little Bluestem	<i>Schizachyrium scoparium</i>	0.5
Sideoats grama	<i>Bouteloua curtipendula</i>	1.5
Sand Dropseed	<i>Sporobolus cryptandrus</i>	0.5
Spike Dropseed	<i>Sporobolus contractus</i>	0.5
Mesa Dropseed	<i>Sporobolus flexuosus</i>	0.5
Plains Bristlegrass	<i>Setaria macrostachya</i>	2.0
Desert or Scarlet Globemallow	<i>Sphaeralcea ambigua</i> or <i>S. coccinea</i>	0.5
Buckwheat	<i>Eriogonum spp.</i>	1.5

Method and Timing of Dispersal

The release site will be seeded by hand. Mulch will be placed on the re-seeded area to promote successful germination. Frontier plans to seed the area once confirmation samples indicate the soil is below applicable NMOCD cleanup levels. The areas to be reseeded are limited to the bar ditch and road shoulder as the majority of release impacts were within the existing roadway.

Monitoring Plan

Frontier plans to monitor the site on a quarterly basis. A sample inspection form is attached to this letter.

Reseeding Plan

If initial seeding and revegetation are unsuccessful after one growing season, reseeded of the area will be completed.

Noxious Weeds

Frontier will document the presence of noxious weeds within the release site during quarterly inspections. If noxious weeds are found on the release site and are listed by the New Mexico Department of Agriculture for control or eradication, they will be managed accordingly.

Final Report

Upon successful establishment of vegetation (defined as 70% of pre-disturbance vegetative cover), Frontier will prepare a final report detailing seeding and monitoring, and will include pre- and post-reclamation photos of the area.

Should you have any questions regarding this Revegetation and Noxious Weed Management Plan, please contact me at (970) 764-6484.

Respectfully Submitted,



Graham Stahnke, PE
Sr. Environmental Compliance Specialist
Southern Ute Growth Fund

cc: Harley Everhart, Frontier Field Services, LLC
Andy Young, Regulatory Compliance Manager, SUGF
Olivia Yu, NMOCD

Encl.

FRONTIER FIELD SERVICES, LLC
RHOMBUS UNION STATE COM 1
REMEDATION MONITORING
FIELD INSPECTION REPORT

Project Name: Rhombus Union State Com 1 Remediation Project
Inspection Date:
Inspector Names and Titles:
Current Weather:
Any Discharges at time of inspection: <input type="checkbox"/> Yes <input type="checkbox"/> No
If Yes, describe:
Description of completed maintenance from previous inspection:
Description & Location(s) of erosion problems or discharges of sediment from the site:
Location(s) of BMPs that need maintenance:
Description & location(s) where additional BMPs are needed at the time of the inspection:
Remediation & Reclamation Assessment at the time of inspection:
Weed Control Assessment (description of noxious/invasion weeds on-site) at the time of inspection:

FRONTIER FIELD SERVICES, LLC
RHOMBUS UNION STATE COM 1
REMEDATION MONITORING
FIELD INSPECTION REPORT

Other comments/observations:

INSPECTOR CERTIFICATION

Qualified Inspector's signature certifying that the project location was thoroughly monitored and observations of the remediation/reclaimed areas were accurately recorded within this inspection report.

Signature: _____

Date _____

Everhart, Harley

From: Groves, Amber <agroves@slo.state.nm.us>
Sent: Wednesday, November 15, 2017 1:18 PM
To: Stahnke, Graham
Cc: Everhart, Harley; Yu, Olivia, EMNRD; Young, Andy
Subject: RE: 1RP-4671 Rhombus Remediation Project - Revegetation and Noxious Weed Management Plan

Good Afternoon, Graham,

Your re-vegetation plan is approved.

Thank you,

Amber Groves

Remediation Specialist
Field Operations Division
(575)392-3697
(575)263-3209 cell
New Mexico State Land Office
2827 N. Dal Paso Suite 117
Hobbs, NM 88240



.....
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Frontier Field Services
65 Mercado St. Durango, CO 81301

VI) Conclusion:

According to NMOCD Guidelines for Remediation of Leaks, Spills, and Releases, the established action levels for constituents of concern for a site ranking of 10: 10 ppm (mg/kg) Benzene, 50 ppm Total BTEX, and 1000 ppm TPH. This remediation is completed in accordance with the enclosed New Mexico Oil Conservation Division (NMOCD) Approved Remediation Plan. The completion of the recent excavation and closure sampling meets NMOCD guidelines and regulations for remediation of the release that occurred on April 02, 2017.

Frontier Field Services
65 Mercado St. Durango, CO 81301

VIII)Distribution:

Olivia Yu
Environmental Specialist
NMOCD
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1625 N French Drive
Hobbs, NM 88240
O: 575-393-6161x113

Graham Stahnke, PE, ASP
Sr. Environmental Compliance Specialist
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Amber Groves
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Hobbs, NM 88240

This concludes this report.

Frontier Field Services
65 Mercado St. Durango, CO 81301

FIGURE 1

VICINITY MAP

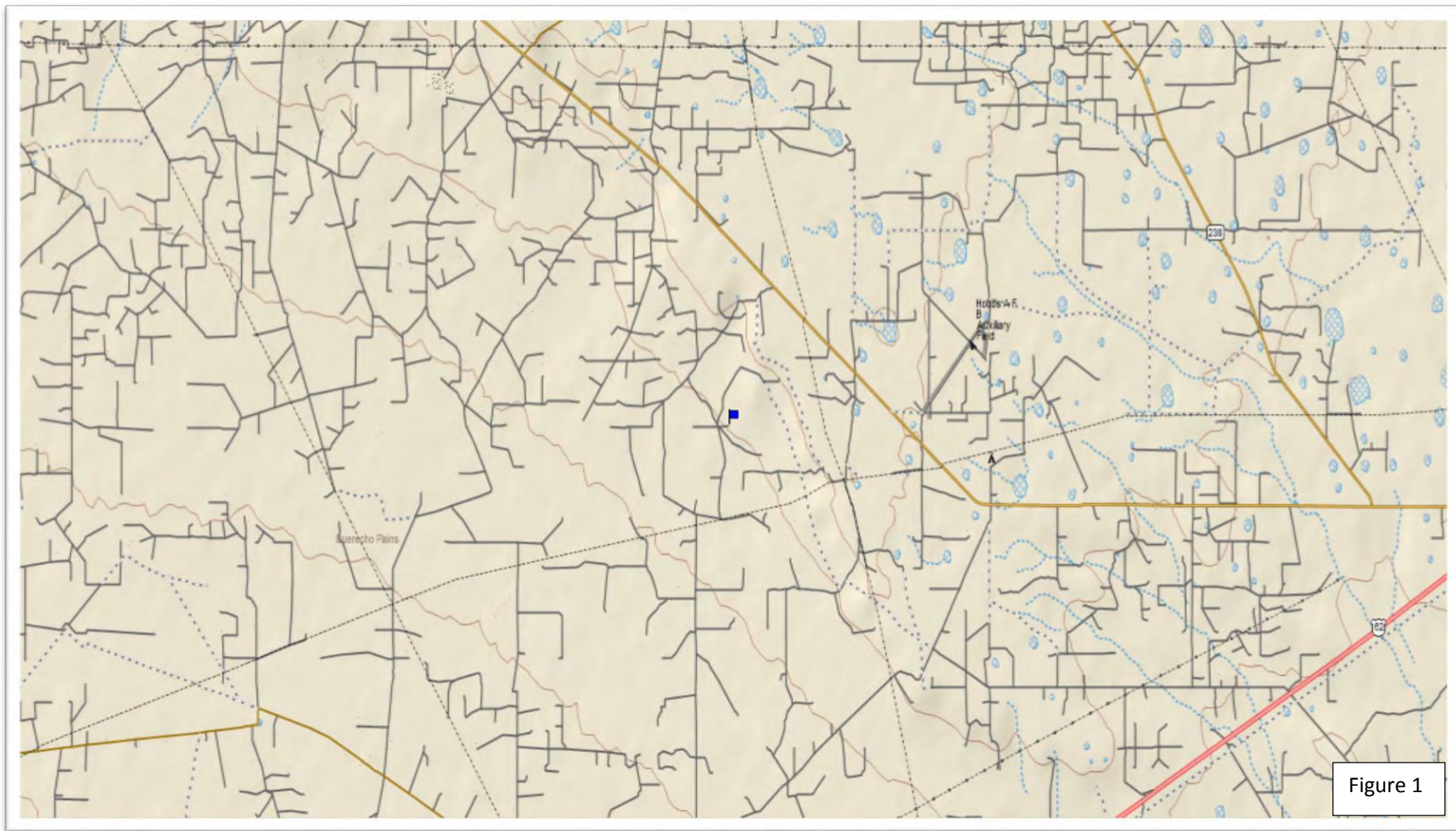
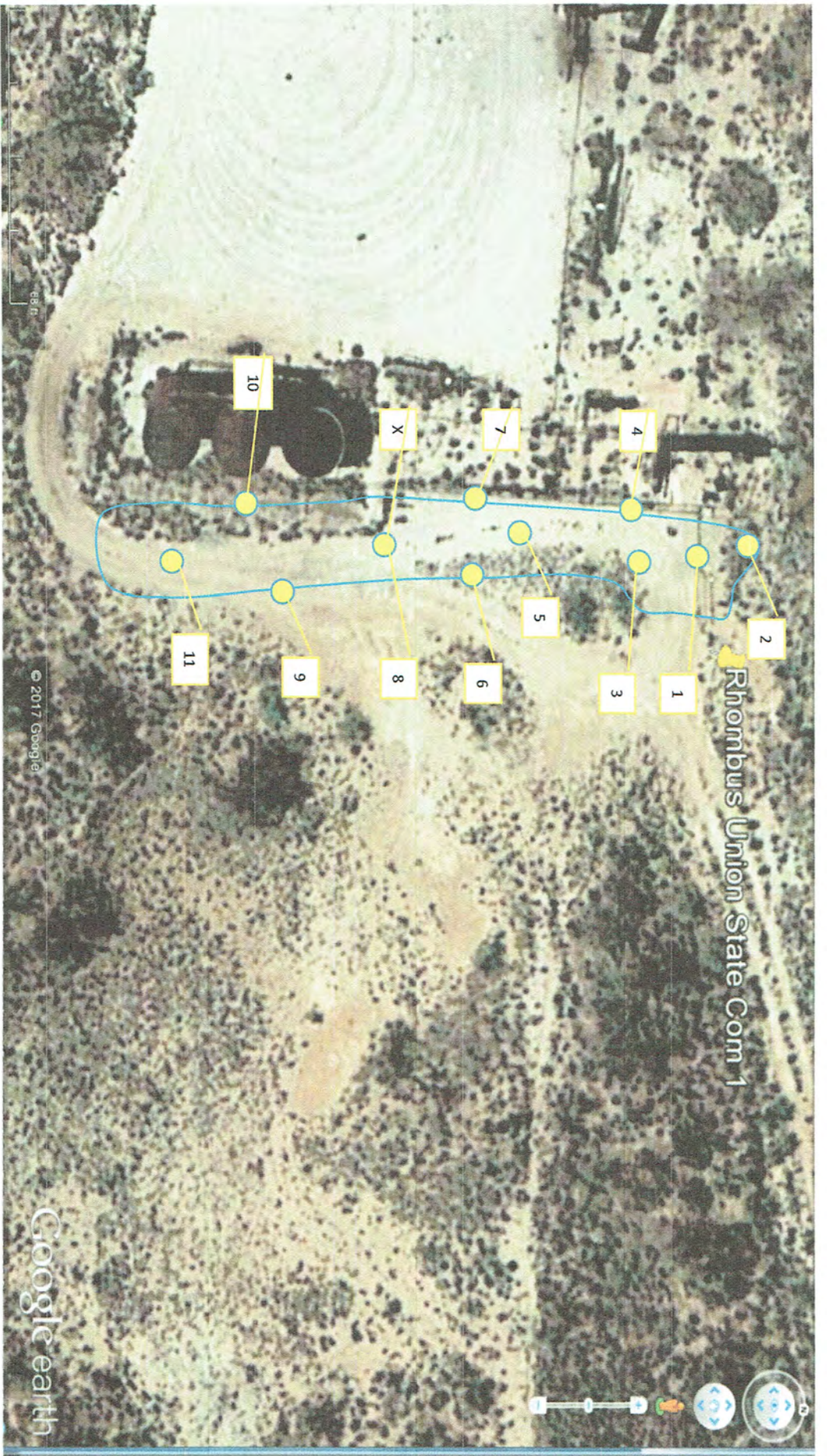


Figure 1

<p>Vicinity Map Frontier Field Services Maljamar NM 88264</p>						<p>Legend ■ Location</p>	
<p>Revision</p>						<p>Drawn: DeLorm Xmaps</p>	
By:		Date:		Desct:		Checked:	
By:		Date:		Desct:		Approved	

Figure 2

Site Map



Detailed Site and Sample Map
Rhombus Union State Com 1
UL D 18S 34E

Figure 2

Revision

By: _____
By: _____

Date: _____
Date: _____

Desc: _____
Desc: _____

Drawn: H Everhart

Checked: _____
Approved: _____

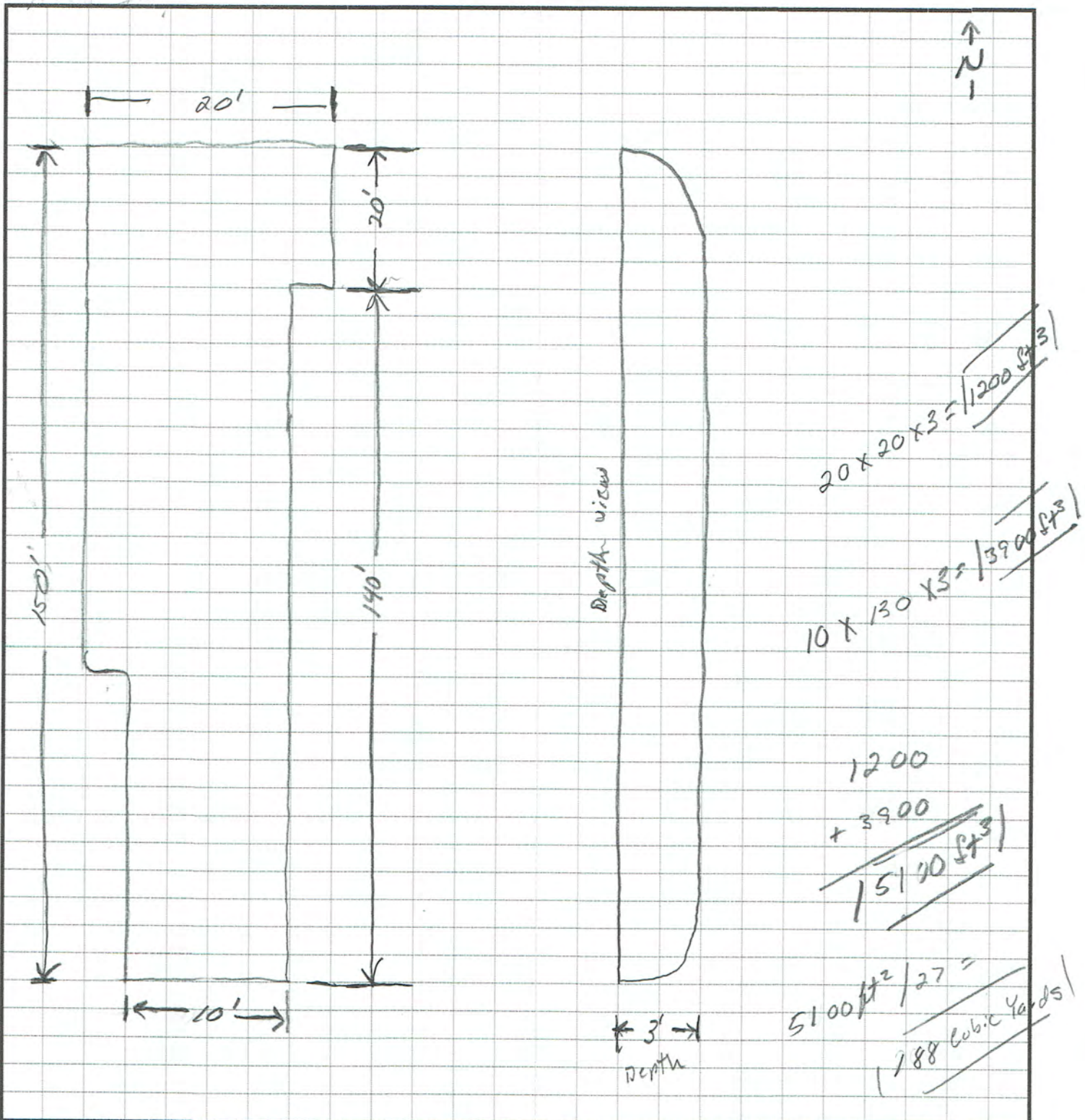
FRONTIER

fluid services, llc
SINCE 1982

Legend
Sample Location
Spill Area

Figure 3

Chloride Sampling Location



PROJECTS: IRP-4671 Rhombus
Area of Impact (Initial),
Frontier Field Services.

DESIGNER:

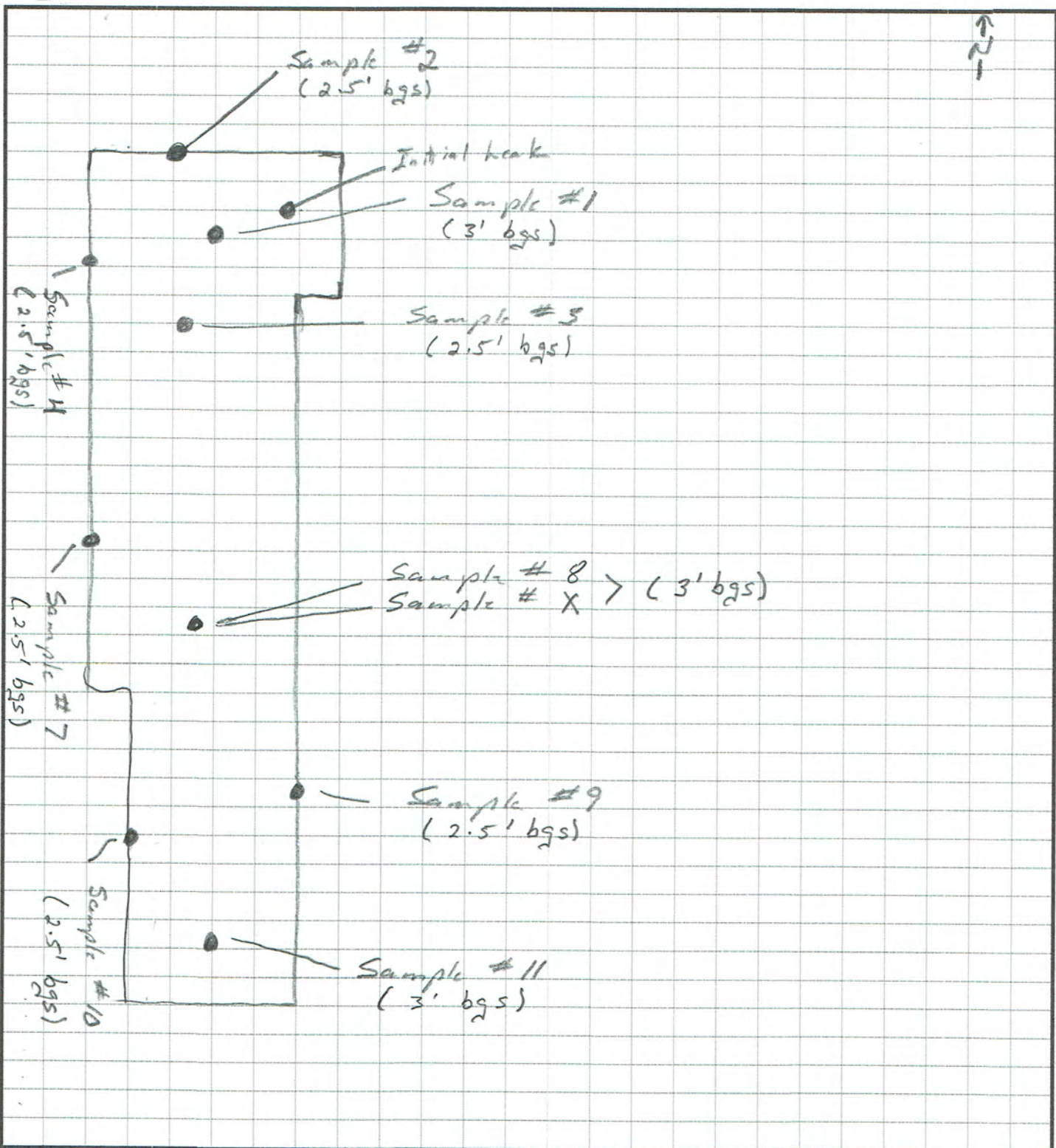
EHS Dept

SCALE:

N/A

DATE:

5/19/2017



PROJECTS: IRP-4671 Rhombus
Sample Locations (Initial)
Frontier Field Services

DESIGNER:

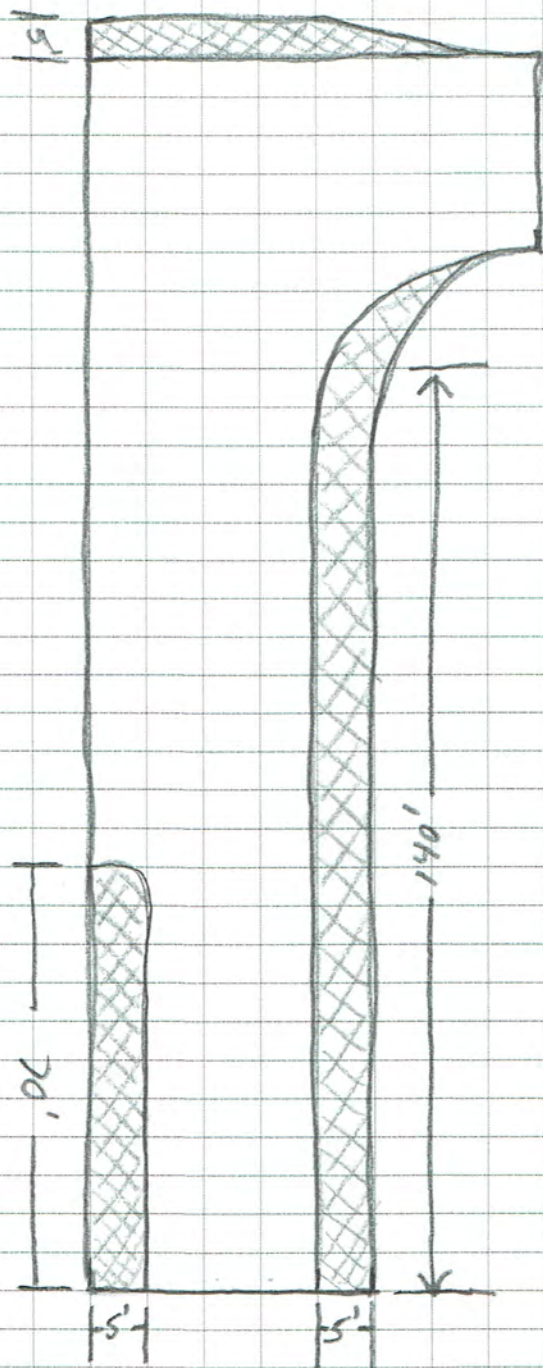
SHS Dept.

SCALE:

1/4

DATE:

5/19/2017



Below Ground Surface (bgs)

$$\begin{array}{r}
 20 \times 5 \times 4 = 1400 \\
 140 \times 5 \times 5 = 3500 \\
 20 \times 5 \times 5 = 500 \\
 \hline
 5400
 \end{array}$$

$$\begin{aligned}
 &H^2 / 27 \\
 &= \sqrt{200} \text{ Cubic Yards}
 \end{aligned}$$

PROJECTS: IRP-4671 Rhombos
Chloride Delamination
Frontier Field Services

DESIGNER:

SMS

SCALE:

N/A

DATE:

7/6/2017



Final Chloride Sample # 2



348°N (M) 13 N 632290 3620001 ±19.7ft ▲ 3910ft



Frontier Field Services
Alta Energy Group

Rhombus Remediation
27 Jun 2017 06:20

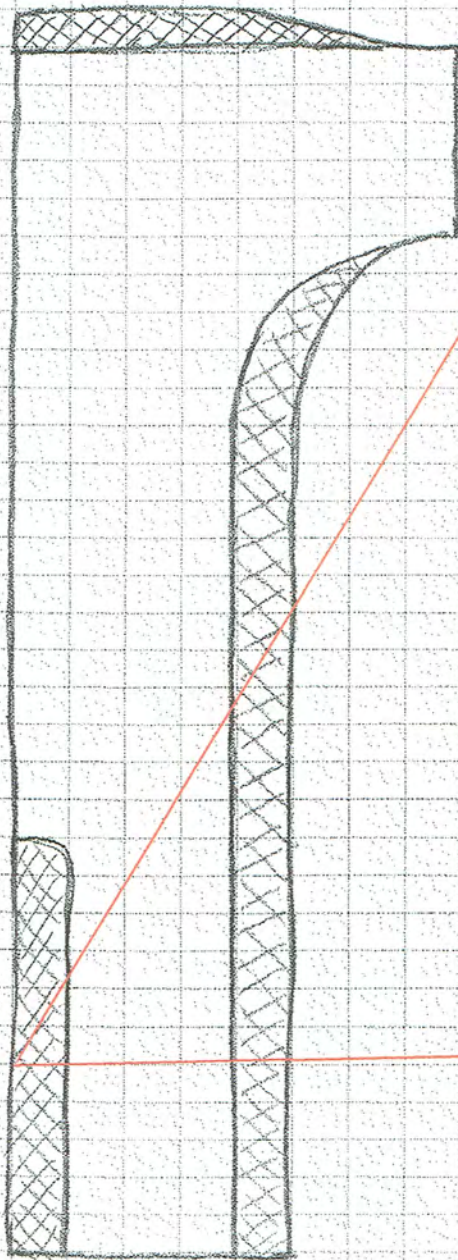
2-A Surface @ 80 ppm

2-B 2.5 feet bgs @ 112 ppm

2-C 5 feet bgs @ 576 ppm

Soil + Calcic MIF

PROJECTS: IRP - 4671 Rhombus Final Chloride Sample #2 Frontier Field Services	DESIGNER: EHS Group	
	SCALE: N/A	DATE: June 27, 2017



Final Chloride Sample # 10

10-A Surface @ 208 ppm

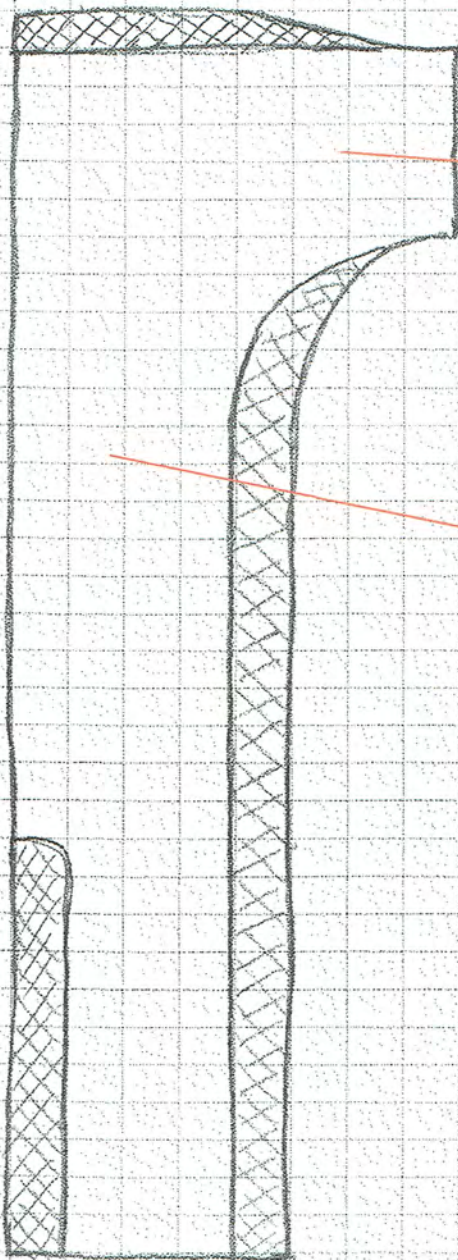


10-B 2 feet bgs @ 80 ppm

10-C 4 feet bgs @ 112 ppm

Soil/Catch mixed

PROJECTS: IRP - 4671 Rhombus Final Chloride Sample #10 Frontier Field Services	DESIGNER: EHS Group SCALE: N/A DATE: June 29, 2017
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Final Chloride Sample # 5

Leak Location

Sample # 5 - 5.5 feet bgs @ 480 ppm

PROJECTS: IRP - 4671 Rhombus
Final Chloride Sample # 5
Frontier Field Services

DESIGNER:

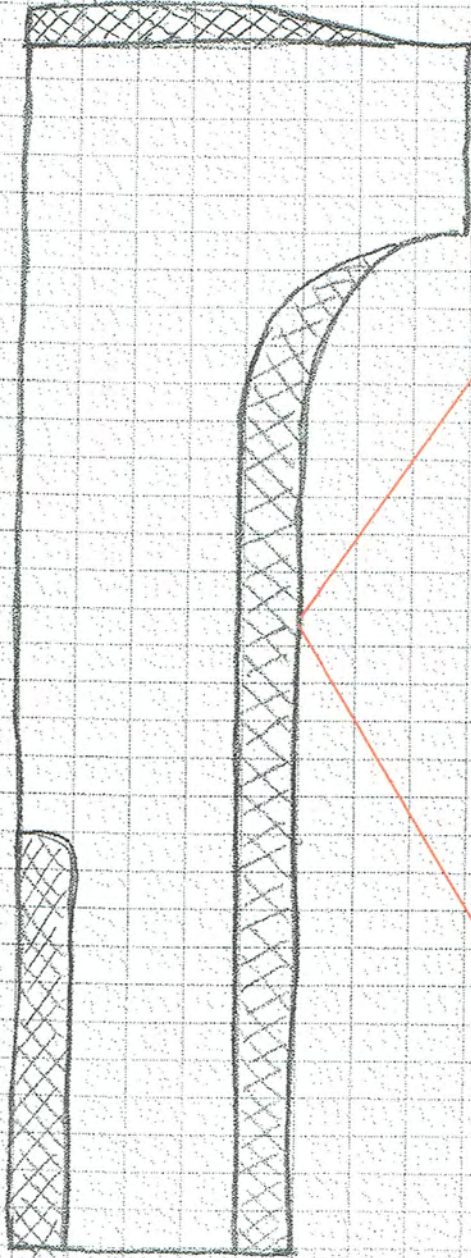
EHS Group

SCALE:

N/A

DATE:

June 29, 2017



Final Chloride Sample # 6



252°W (M) 13 N 632281 3619976 ±19.7ft ▲ 3909ft



2-A Surface @ 384 ppm

2-B 2.5 feet bgs @ 464 ppm

2-C 5 feet bgs @ 208 ppm

PROJECTS: 1RP-4671 Rhombus
Final Chloride Sample #6
Frontier Field Services

DESIGNER:

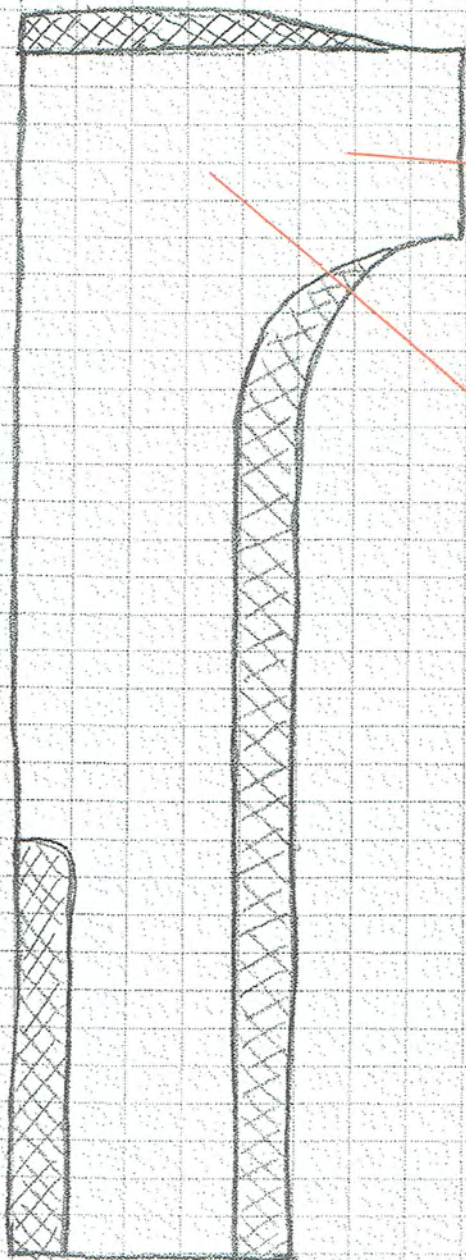
EHS Group

SCALE:

N/A

DATE:

June 30, 2017



Final Chloride Sample # 1

Leak Location

Sample # 1 - 7 feet bgs @ 80 ppm

PROJECTS: IRP - 4671 Rhombus
Final Chloride Sample # 1
Frontier Field Services

DESIGNER:

EHS Group

SCALE:

N/A

DATE:

July 6, 2017

Table 1
Released Information
and
Site Ranking

FRONTIER FIELD SERVICES

Table1- Site Ranking

Site Ranking Determination Table			
Depth to Groundwater	NMOCD Numeric Rank for this Site	Source for Ranking	Notes
<50 BGS =20	N/A	USGS Topo Maps, Google Earth Elavation Difference from the site and	the nearest ground water is estimated to be greater than 7500 feet North and North East. The well elevation is 4050 feet above sea level and the site is 3910 elevation is above sea level
50' to 99' = 10	10		
>100' =0	N/A		
Ranking Criteria for Horizontal Distance to Nearest Surface Water	NMOCD Numeric Rank for this Site	Source for Ranking	Notes
<200' =20	N/A	USGS Topo Maps, Google Earth	The Luguna Tonto surface water is 7.9 miles SW of location
200' - 100' = 10	N/A		
>1000'=0	0		
Ranking Criteria for Horizontal Distance to Water Well or Water Source	NMOCD Numeric Rank for this Site	Source for Ranking	Notes
<100' from water source? ,200' from a private domestic water source? YES OF NO to BOTH. YES = 2-, NO = 0	0	NM State Engineer Water Well Database	The nearest well is greater than 7500' NNW from location
	0		
Total Site Ranking	10		
Soil Remediation Standards	0 to 9	10 to 19	>19
Benzene	10 PPM	10 PPM	10 PPM
BTEX	50 PPM	50 PPM	50 PPM
TPH	5000 PPM	1000 PPM	100 PPM

Table 2

Summary of Initial Soil Sampling Results

Aka Energy Group
1RP-4671 / Rhombus Union State Com #1

Soil Samples

Sample ID	Sample #1	Sample #2	Sample #3	Sample #4	Sample #5	Sample #6	Sample #7	Sample #8	Sample #9	Sample #10	Sample #11	Sample X	MS	Units	NMOCD Cleanup Levels
Description	NE Floor	N Wall	NE Wall	NW Wall	M Floor	ME Wall	MW Wall	MS Floor	SE Wall	SW Wall	S Floor	Floor	MS		
Sample Depth (feet bgs)	3'	2.5'	2.5'	2.5'	3'	2.5'	2.5'	3'	2.5'	2.5'	3'	3'	3'		
Date	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017	5/19/2017		
Benzene	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	mg/kg	TBD
Toluene	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	mg/kg	TBD
Ethylbenzene	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	mg/kg	TBD
Total Xylenes	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	<0.150	mg/kg	TBD
Total BTEX	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	<0.300	mg/kg	TBD
Chloride	1630	3880	176	288.0	1150	11700	48.0	384.0	496	1,500	272	336	336	mg/kg	TBD
GRO	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	mg/kg	TBD
DRO	285.0	<10.0	66.3	1900	60.6	<10.0	977	1430	1970	14.1	22.3	998	998	mg/kg	TBD
EXT DRO	80.4	<10.0	19.3	344	34.0	<10.0	480	300	391	23.1	31.7	212	212	mg/kg	TBD

Note: This remediation site was not detrimental to public health, fresh water, animals, plant life, or to property

Acronyms:

NMOCD = New Mexico Oil Conservation Division

DRO = Diesel Range Organics (C6 - C10)

GRO = Gasoline Range Organics (>C10 - C28)

EXT DRO = Diesel Range Organics (>C28-C36)

TBD = To Be Determined

Table 2

Table 3

Summary of Chloride Sampling Results

Aka Energy Group
1RP-4671 / Rhombus Union State Com #1
Chloride Soil Samples

Sample ID Description	2-A	2-B	2-C	6-A	6-B	6-C	10-A	10-B	10-C	Reapeat #1	Reapeat # 5	Units	NMOCD Cleanup Levels
Sample Depth (feet bgs)	Surface	2.5'	5'	Surface	2'	4'	Surface	2'	4'	4.5'	4.5'		
Date	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017	6/27/2017		
Chlorides	80	112	576	864	432	528	224	96	1040	688	1310	mg/Kg	≤600

Sample ID Description	2-A	2-B	2-C	6-A	6-B	6-C	10-A	10-B	10-C	Reapeat #1	Reapeat # 5	Units	NMOCD Cleanup Levels
Sample Depth (feet bgs)	Surface	2.5'	5'	Surface	2.5'	5'	Surface	2'	4'	5'	5'		
Date	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017	6/29/2017		
Chlorides	800	1440	784	208	80	112	1220	480	mg/Kg				≤600

Sample ID Description	2-A	2-B	2-C	6-A	6-B	6-C	10-A	10-B	10-C	Reapeat #1	Reapeat # 5	Units	NMOCD Cleanup Levels
Sample Depth (feet bgs)	Surface	2.5'	5'	Surface	2.5'	5'	Surface	2'	4'	6'	5'		
Date	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017	6/30/2017		
Chlorides	384	464	208	848	mg/Kg								≤600

Sample ID Description	2-A	2-B	2-C	6-A	6-B	6-C	10-A	10-B	10-C	Reapeat #1	Reapeat # 5	Units	NMOCD Cleanup Levels
Sample Depth (feet bgs)	Surface	2.5'	5'	Surface	2.5'	5'	Surface	2'	4'	7'	5'		
Date	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017	7/6/2017		
Chlorides	80	mg/Kg											≤600

Note: This remediation site was not detrimental to public health, fresh water, animals, plant life, or to property

Acronyms:

NMOCD = New Mexico Oil Conservation Division

Table 3