December 14, 2017

Ms. Olivia Yu
Environmental Specialist
New Mexico Oil Conservation Division
Hobbs District 1 Office
1625 French Drive
Hobbs, New Mexico 88240

SUBMITTED VIA EMAIL
Olivia.Yu@state.nm.us

APPROVED
By Olivia Yu at 1:44 pm, Jan 04, 2018

NMOCD approves of the proposed remediation for 1RP-4587 with the stipulations indicated in the email correspondence.

Re: Release Characterization Report and Proposed Remediation Work Plan – Addendum 2
Yates State #2 Tank Battery
NMOCD Case No. 1R-4587
Lea County, New Mexico

Dear Ms. Yu:

On July 31, 2017, Enviro Clean Cardinal, LLC (ECC) submitted a document titled ***Release Characterization Report and Proposed Remediation Work Plan*** to the New Mexico Oil Conservation Division (NMOCD) regarding the Yates State #2 Tank Battery site on behalf of our client RAM Energy Resources (RAM). On August 29 and 30, 2017, the NMOCD provided RAM and ECC with comments on this submitted document. On September 7, 2017, a conference call was held that included representatives of the NMOCD (Olivia Yu and Brad Billings), RAM (Darrell Pennington), and ECC (George Richardson) to discuss RAM's responses to the NMOCD's comments. On September 19, 2017, ECC submitted a document titled ***Release Characterization Report and Proposed Remediation Work Plan – Addendum*** which contained RAM's formal responses to the NMOCD's comments. On October 2, 2017, NMOCD approved of the proposed remediation plan and location of the proposed locations of the 2 temporary groundwater monitoring wells for 1RP-4587 with the following stipulations:

1. *If feasible, NMOCD prefers three bore volumes to be bailed out before sampling.*

2. *Due to the depth to groundwater and proximity of the playa, NMOCD requests that the groundwater be tested with the full list of constituents in Method 8260.*

3. *Provide the locations and the logs of the soil bores for the temporary monitoring wells in the subsequent report.*

4. *As the soil bores for the temporary groundwater monitoring wells can be used as a proxy to complete vertical delineation, laboratory analyses of chlorides in 5 ft. intervals of the soil bores are required until muddying up commences.*

5. *If feasible, NMOCD prefers 4 ft. excavation for the tank battery area before proper placement of a minimum 20 mil liner. If not, ensure that the liner is flushed up against the tanks.*

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6. *Laboratory analyses (TPH extended, chlorides) of confirmation bottom and sidewalls samples are required of the excavated areas. Sample locations should be no greater than 50 ft. apart.*

7. *Permissible chloride levels for remediation is 600 mg/kg.*

8. *Provide a scaled map with the confirmation sample locations demarcated and areas with differing excavation depths outlined and annotated.*

This document is a second addendum to the ***Release Characterization Report and Proposed Remediation Work Plan*** described above, and is intended to provide the NMOCD with the information obtained by the installation of the two (2) temporary groundwater monitoring wells at the locations selected by the NMOCD, and to request NMOCD's concurrence to proceed with the soil remediation previously approved (and as amended above by NMOCD's comments).

Supplement Soil and Groundwater Assessment

On November 2, 2017, ECC and their drilling subcontractor, Scarborough Drilling/Lamesa, Texas, mobilized to the Site and drilled/sampled two borings requested by the NMOCD. The locations of the two borings/temporary monitoring wells are shown on the attached **Figure 1**. It should be noted that the location of the southeastern boring had to be moved approximately 12 feet towards the south because the drilling rig could not access inside the containment wall on the southern side of the tank battery. Additional soil samples were not collected from TMW-2 because this boring was approximately 8 feet northwest of the previously sampled boring SSB-3. A copy of ECC's field notes are provided in the attached **Appendix A**.

The TMW-1 boring was located approximately 70 feet northwest of the northwest corner of the tank battery (geographic coordinates 33.279488º latitude and -103.094808º longitude). This location has been shown to be hydraulically upgradient of the tank battery based upon regional groundwater flows within the High Plains aquifer (USGS Hydrologic Investigations Atlas HA-679, 1985, Donald L. Hart, Jr. and Douglas P. McAda) which shows groundwater flows generally towards the east-southeast (S60ºE). The TMW-2 boring was located immediately south of the south-center of the tank battery (geographic coordinates 33.279254º latitude and -103.094528º longitude). The borings were drilled using air rotary methods. Both borings were drilled to total depths of 40 feet below ground level (BGL). Groundwater was encountered at 26.70 feet BGL in TMW-1 and 27.28 feet BGL in TMW-2. Boring records for these borings are provided in attached **Appendix B**. The lithologic materials encountered in both borings was predominantly fine-grained unconsolidated sand. Soil samples were collected on 5-foot depth intervals in boring TMW-1 to a depth of 25 feet BGL and submitted to Xenco Laboratory in Midland, Texas for chloride analysis. No soil samples were taken from the TMW-2 boring as previously discussed. The results of these chloride analyses are summarized on the attached **Table 1** and **Figure 1**. The complete laboratory report and chain-of-custody are provided in **Appendix C**.

When total depths had been reached in the two borings, new sections of 2-inch diameter PVC 0.010-inch slotted screens and casing were lowered into the boreholes and filter packed. The wells were bailed using dedicated bailers and monofilament line until 6 gallons of water were removed (calculated to be more than 3 well volumes). The groundwater was placed into 55-gallon steel drums and labeled. Following purging, the wells were sampled using the dedicated bailers and the groundwater was poured directly into containers prepared by the laboratory. The sample containers were labeled as to source, packed in ice in a cooler, placed under chain-of-custody control and transported to Xenco Laboratory where they were hand-delivered. A trip blank was also submitted with these samples. Field measurements were also made of aliquots of the groundwater for specific conductance, pH, and temperature. The water samples, including the trip blank, were submitted to the laboratory were analyzed for full volatile organic compounds

(VOCs) by Method 8260. The water samples from TMW-1 and TMW-2 were also analyzed for chloride (EPA Method 300) and sodium (EPA Method 6010B). The results of these laboratory analyses and field measurements are summarized on **Table 2** and **Figure 2**. The complete laboratory report and chain-of-custody are provided in **Appendix C**.

Results of Analyses

The chloride levels in the samples collected from the TMW-1 boring on 5-foot depth intervals ranged between <9.56 mg/kg to 42.5 mg/kg. These levels are well below the NMOCD's delineation and remediation levels and indicate that this active portion of the site has not been impacted by the release produced water.

Both groundwater samples taken from the TMW-1 and TMW-2 temporary monitoring wells were analyzed for full Method 8260 VOCs and no detections were reported. Assuming that TMW-2 is located hydraulically downgradient relative to TMW-1, it appears that the subject release of produced water, or the previous release which occurred in March 2012 (NMOCD Case No. 1RP-2781), may have slightly effected the groundwater raising the chloride levels from 114 mg/L to 1,090 mg/L, the sodium levels from 65.6 mg/L to 398 mg/L, and the TDS levels from 570 mg/L to 2,010 mg/L. These results indicate that the groundwater flowing onto the site contains levels of TDS that exceed EPA's Secondary Drinking Water Maximum Contaminant Level (SMCL) of 500 mg/L. However, guidance provided by the New Mexico State University Cooperative Extension Service in their Guide M-112, ***Water Quality for Livestock and Poultry*** (Runyan, C., Bader, J., Mathis, C., and Sallenave, R., revised 2016) state that waters with TDS less than 3,000 mg/L are considered very satisfactory for all classes of livestock and poultry. So, although slight impacts to groundwater may have occurred from the operations at this lease, the groundwater flowing onto the site does not meet levels acceptable for drinking water purposes and the impacts do not appear to have rendered the water unusable for agricultural purposes directly downgradient of the source area.

ECC is hopeful the NMOCD will now find RAM's Release Characterization Report and Proposed Remediation Work Plan (including its Addendum and Addendum 2) fully responsive to their C-141 directives, and with the submittal and implementation of this Addendum will concur that the soil remediation work should proceed as proposed. If you have questions regarding this document, please do not hesitate to contact Mr. Darrell Pennington at RAM at 918-947-6304, or myself at 918-794-7828.

Sincerely,
Enviro Clean Cardinal, LLC

George H. (Buddy) Richardson, P.G.
Manager Hydrogeology

Attachments: Table 1 – Summary of Laboratory Analytical Results for Soil Samples
Table 2 – Summary of Laboratory Analytical Results for Water Samples
Figure 1 – Analytical Results for Soils
Figure 2 – Analytical Results for Groundwater
Appendix A – ECC Field Notes
Appendix B – Boring Records
Appendix C – Laboratory Analytical Report

ATTACHMENTS

TABLE 1

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR SOIL SAMPLES

Table 1: Summary of Laboratory Analytical Results for Soil Samples
RAM Energy Resources, Yates State #2, NMOCD # 1R-4587
Lea County, New Mexico

Parameters	Regulatory Limit	Sample ID:	TMW-1 (0-1 ft)	TMW-1 (4-5 ft)	TMW-1 (9-10 ft)	TMW-1 (14-15 ft)	TMW-1 (19-20 ft)	TMW-1 (24-25 ft)
		Sample Date:	2-Nov-17	2-Nov-17	2-Nov-17	2-Nov-17	2-Nov-17	2-Nov-17
General Chemistry		***Units***						
Chloride	600	mg/kg	38.6	27.8	42.5	10.3	<9.56	16.4

Notes:

1. mg/kg : milligrams per kilogram.
2. < : Analyte not detected at the laboratory reporting limit (RL).
3. Blue shaded block denotes sample results greater than the laboratory RL.

TABLE 1

SUMMARY OF LABORATORY ANALYTICAL RESULTS FOR WATER SAMPLES

Table 2: Summary of Laboratory Analytical Results for Water Samples
RAM Energy Resources, Yates State #2, NMOCD # 1R-4587
Lea County, New Mexico

Parameters	Sample ID:	TMW-1	TMW-2
	Sample Date:	2-Nov-17	2-Nov-17
Volatile Organic Compounds (VOCs)	***Units***		
1,1,1,2-Tetrachloroethane	mg/L	<0.00500	<0.00500
1,1,1-Trichloroethane	mg/L	<0.00500	<0.00500
1,1,2,2-Tetrachloroethane	mg/L	<0.00500	<0.00500
1,1,2-Trichloroethane	mg/L	<0.00500	<0.00500
1,1-Dichloroethane	mg/L	<0.00500	<0.00500
1,1-Dichloroethene	mg/L	<0.00500	<0.00500
1,1-Dichloropropene	mg/L	<0.00500	<0.00500
1,2,3-Trichlorobenzene	mg/L	<0.00500	<0.00500
1,2,3-Trichloropropane	mg/L	<0.00500	<0.00500
1,2,4-Trichlorobenzene	mg/L	<0.00500	<0.00500
1,2,4-Trimethylbenzene	mg/L	<0.00500	<0.00500
1,2-Dibromo-3-chloropropane	mg/L	<0.00500	<0.00500
1,2-Dibromoethane	mg/L	<0.00500	<0.00500
1,2-Dichlorobenzene	mg/L	<0.00500	<0.00500
1,2-Dichloroethane	mg/L	<0.00500	<0.00500
1,2-Dichloropropane	mg/L	<0.00500	<0.00500
1,3-Dichloropropane	mg/L	<0.00500	<0.00500
1,3,5-Trimethylbenzene	mg/L	<0.00500	<0.00500
1,3-Dichlorobenzene	mg/L	<0.00500	<0.00500
1,4-Dichlorobenzene	mg/L	<0.00500	<0.00500
2,2-Dichloropropane	mg/L	<0.00500	<0.00500
2-Chlorotoluene	mg/L	<0.00500	<0.00500
4-Chlorotoluene	mg/L	<0.00500	<0.00500
4-Isopropyltoluene	mg/L	<0.00500	<0.00500
Benzene	mg/L	<0.00500	<0.00500
Bromobenzene	mg/L	<0.00500	<0.00500
Bromochloromethane	mg/L	<0.00500	<0.00500
Bromodichloromethane	mg/L	<0.00500	<0.00500
Bromoform	mg/L	<0.00500	<0.00500
Carbon tetrachloride	mg/L	<0.00500	<0.00500
Chlorobenzene	mg/L	<0.00500	<0.00500
Chlorodibromomethane	mg/L	<0.00500	<0.00500
Chloroethane	mg/L	<0.0100	<0.0100
Chloroform	mg/L	<0.00500	<0.00500
cis-1,2-Dichloroethene	mg/L	<0.00500	<0.00500
cis-1,3-Dichloropropene	mg/L	<0.00500	<0.00500
Dibromomethane	mg/L	<0.00500	<0.00500
Dichlorodifluoromethane	mg/L	<0.00500	<0.00500
Ethylbenzene	mg/L	<0.00500	<0.00500
Hexachlorobutadiene	mg/L	<0.00500	<0.00500
Isopropylbenzene	mg/L	<0.00500	<0.00500
m&p-Xylenes	mg/L	<0.0100	<0.0100
Methyl bromide	mg/L	<0.00500	<0.00500
Methyl chloride	mg/L	<0.0100	<0.0100
Methyl tert-butyl ether	mg/L	<0.00500	<0.00500
Methylene chloride	mg/L	<0.00500	<0.00500
Naphthalene	mg/L	<0.0100	<0.0100
n-Butylbenzene	mg/L	<0.00500	<0.00500
n-Propylbenzene	mg/L	<0.00500	<0.00500

Table 2: Summary of Laboratory Analytical Results for Water Samples
RAM Energy Resources, Yates State #2, NMOCD # 1R-4587
Lea County, New Mexico

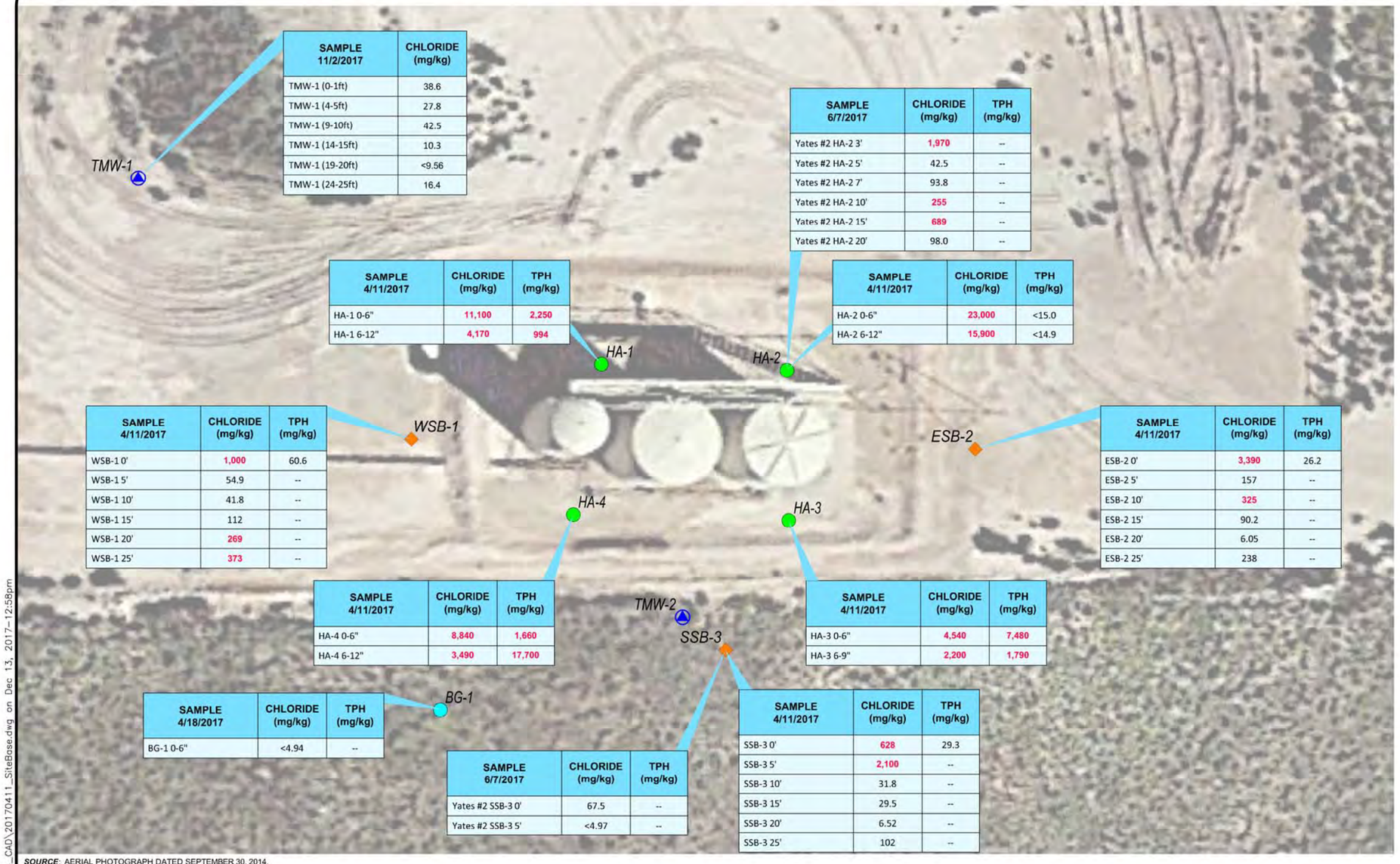
Parameters	Sample ID:	TMW-1	TMW-2
	Sample Date:	2-Nov-17	2-Nov-17
Volatile Organic Compounds (VOCs)	***Units***		
o-Xylene	mg/L	<0.00500	<0.00500
sec-Butylbenzene	mg/L	<0.00500	<0.00500
Styrene	mg/L	<0.00500	<0.00500
tert-Butylbenzene	mg/L	<0.00500	<0.00500
Tetrachloroethene	mg/L	<0.00500	<0.00500
Toluene	mg/L	<0.00500	<0.00500
trans-1,2-Dichloroethene	mg/L	<0.00500	<0.00500
trans-1,3-Dichloropropylene	mg/L	<0.00500	<0.00500
Trichloroethene	mg/L	<0.00500	<0.00500
Trichlorofhloromethane	mg/L	<0.00500	<0.00500
Vinyl chloride	mg/L	<0.00200	<0.00200
Xylenes, total	mg/L	<0.00500	<0.00500
Metals	***Units***		
Sodium	mg/L	65.6	398
General Chemistry	***Units***		
Chloride	mg/L	114	1,090
Total Dissolved Solids (TDS)	mg/L	570	2,010
Field Measurements	***Units***		
Depth to Groundwater	Ft-BGL	26.70	27.28
Specific Conductance	µmhos/cm	891.1	4,067

Notes:

1. mg/L : milligrams per liter.
2. µmhos/cm : micromhos per centimeter.
3. < : Analyte not detected at the laboratory reporting limit (RL).
4. Blue shaded block denotes sample results greater than the laboratory RL.
5. Ft-BGL : Feet below ground level.

FIGURE 1

ANALYTICAL RESULTS FOR SOILS



SAMPLE 11/2/2017	CHLORIDE (mg/kg)
TMW-1 (0-1ft)	38.6
TMW-1 (4-5ft)	27.8
TMW-1 (9-10ft)	42.5
TMW-1 (14-15ft)	10.3
TMW-1 (19-20ft)	<9.56
TMW-1 (24-25ft)	16.4

SAMPLE 6/7/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
Yates #2 HA-2 3'	1,970	--
Yates #2 HA-2 5'	42.5	--
Yates #2 HA-2 7'	93.8	--
Yates #2 HA-2 10'	255	--
Yates #2 HA-2 15'	689	--
Yates #2 HA-2 20'	98.0	--

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
HA-1 0-6"	11,100	2,250
HA-1 6-12"	4,170	994

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
HA-2 0-6"	23,000	<15.0
HA-2 6-12"	15,900	<14.9

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
WSB-1 0'	1,000	60.6
WSB-1 5'	54.9	--
WSB-1 10'	41.8	--
WSB-1 15'	112	--
WSB-1 20'	269	--
WSB-1 25'	373	--

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
ESB-2 0'	3,390	26.2
ESB-2 5'	157	--
ESB-2 10'	325	--
ESB-2 15'	90.2	--
ESB-2 20'	6.05	--
ESB-2 25'	238	--

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
HA-4 0-6"	8,840	1,660
HA-4 6-12"	3,490	17,700

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
HA-3 0-6"	4,540	7,480
HA-3 6-9"	2,200	1,790

SAMPLE 4/18/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
BG-1 0-6"	<4.94	--

SAMPLE 6/7/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
Yates #2 SSB-3 0'	67.5	--
Yates #2 SSB-3 5'	<4.97	--

SAMPLE 4/11/2017	CHLORIDE (mg/kg)	TPH (mg/kg)
SSB-3 0'	628	29.3
SSB-3 5'	2,100	--
SSB-3 10'	31.8	--
SSB-3 15'	29.5	--
SSB-3 20'	6.52	--
SSB-3 25'	102	--

LEGEND

- HA-1 — LOCATION OF SOIL BORING SAMPLE
- SSB-3 — LOCATION OF HAND AUGERED SAMPLE
- BG-1 — LOCATION OF BACKGROUND SOIL SAMPLE
- TMW-1 — LOCATION OF TEMPORARY MONITORING WELL

SOURCE: AERIAL PHOTOGRAPH DATED SEPTEMBER 30, 2014, GOOGLE EARTH PRO SCREEN CAPTURE

N

10 0 10 20
SCALE FEET

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ENVIRO CLEAN CARDINAL
Enviro Clean Cardinal, LLC
7060 South Yale Avenue, Suite 603
Tulsa, Oklahoma 74136
918.794.7828
www.ECCGRP.com

DOCUMENT TITLE: RELEASE CHARACTERIZATION REPORT

FIGURE TITLE: ***ANALYTICAL RESULTS FOR SOILS***

CLIENT: RAM ENERGY RESOURCES
TULSA, OKLAHOMA

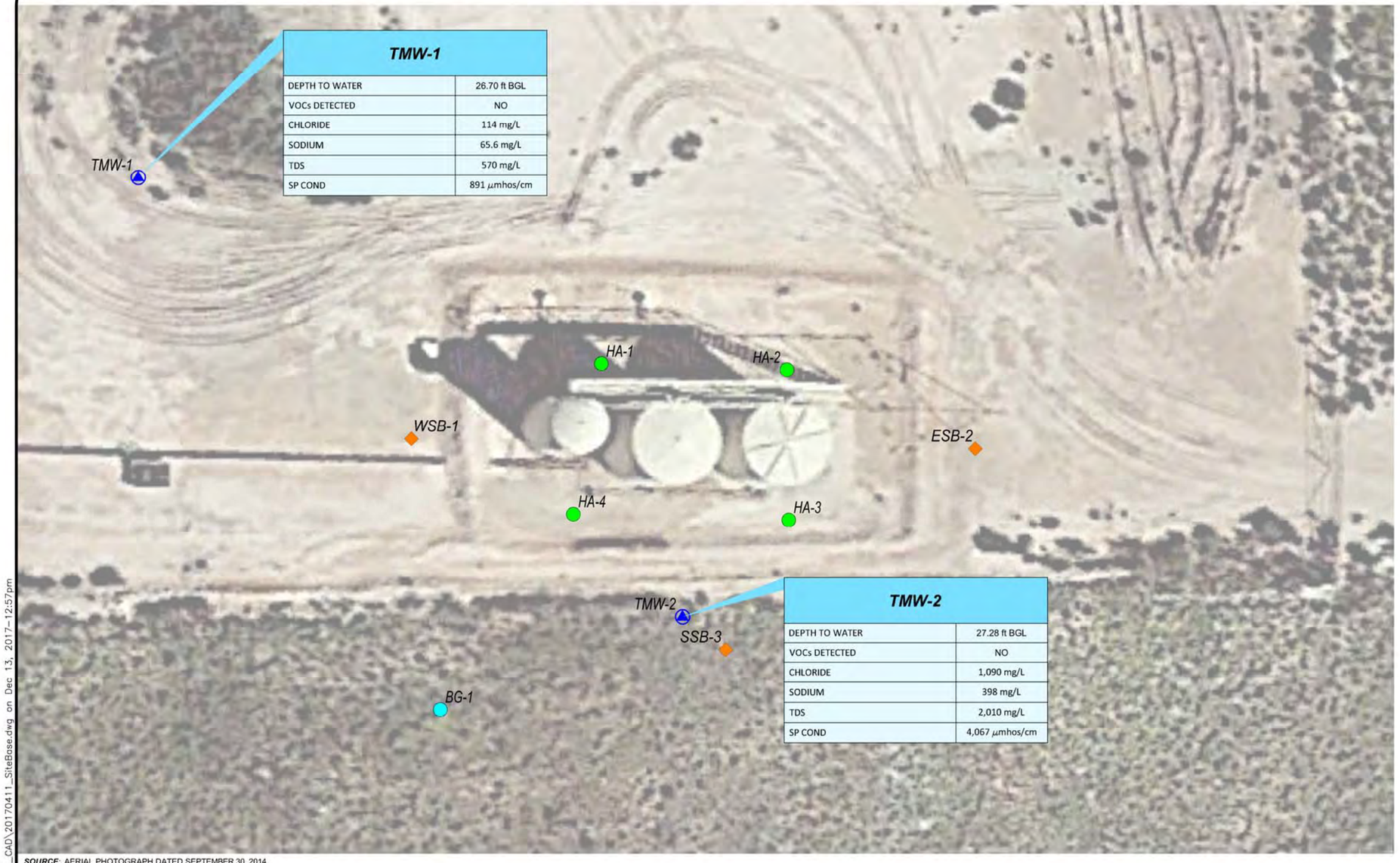
LOCATION: YATES STATE #2
SEC. 16, T12S R38E, LEA COUNTY, NEW MEXICO

DESIGNED BY	GHR		
APPROVED BY	GHR	SCALE	1"= 20'
DRAWN BY	SKG	DATE	12/13/2017

PROJECT NUMBER	FIGURE NUMBER
RAMRNM0002	1

FIGURE 2

ANALYTICAL RESULTS FOR GROUNDWATER



TMW-1	
DEPTH TO WATER	26.70 ft BGL
VOCs DETECTED	NO
CHLORIDE	114 mg/L
SODIUM	65.6 mg/L
TDS	570 mg/L
SP COND	891 µmhos/cm

TMW-2	
DEPTH TO WATER	27.28 ft BGL
VOCs DETECTED	NO
CHLORIDE	1,090 mg/L
SODIUM	398 mg/L
TDS	2,010 mg/L
SP COND	4,067 µmhos/cm

LEGEND

- HA-1 — LOCATION OF SOIL BORING SAMPLE
- SSB-3 — LOCATION OF HAND AUGERED SAMPLE
- BG-1 — LOCATION OF BACKGROUND SOIL SAMPLE
- TMW-1 — LOCATION OF TEMPORARY MONITORING WELL

SOURCE: AERIAL PHOTOGRAPH DATED SEPTEMBER 30, 2014, GOOGLE EARTH PRO SCREEN CAPTURE

N

10 0 10 20

SCALE FEET

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DOCUMENT TITLE: RELEASE CHARACTERIZATION REPORT

FIGURE TITLE: *TEMPORARY MONITORING WELLS AND ANALYTICAL RESULTS FOR GROUNDWATER*

CLIENT: RAM ENERGY RESOURCES TULSA, OKLAHOMA

LOCATION: YATES STATE #2 SEC. 16, T12S R38E, LEA COUNTY, NEW MEXICO

DESIGNED BY	GHR		
APPROVED BY	GHR	SCALE	1"= 20'
DRAWN BY	SKG	DATE	12/13/2017

PROJECT NUMBER	FIGURE NUMBER
RAMRNM0002	2

APPENDIX A

ECC FIELD NOTES

RAM Energy - Yates #2 Tank Battery

RAM Energy
Resources, LLC

Rite in the Rain®
ALL-WEATHER
ENVIRONMENTAL FIELD BOOK
№ 550F

Yates #2 Tank
Battery
RAMRNM00002

MADE IN TACOMA
SINCE 1916
Rite in the Rain
DEFYING MOTHER NATURE

ALL-WEATHER
ENVIRONMENTAL FIELD BOOK
Numbered Pages

Name _____

Address _____

Phone _____

Project _____

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Tulsa, Oklahoma 74136
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12-14

PAGE

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Soil Salinity and Chloride Field Screening
Mettler Toledo 42Go Meter

For TSS (Salinity)
Mix 50 grams of soil with 50 grams of DI water in a 500 mL plastic bottle. Shake vigorously for 30 secs.
Measure mixture salinity with meter. Results are given in parts per thousand (ppt)
Convert salinity measurement to ppm (x1,000).
Multiply converted salinity measurement in ppm by 2.26 conversion factor to estimate lab paste extract.
Equals TSS (Salinity) in ppm paste extract equivilent.

For chloride
Divide TSS (Salinity) paste extract result from above by 1.8066

oring Well

ic
ation)

CONTENTS

PAGE	REFERENCE	DATE

Location Yates #2 Tank Battery Date 11/2/17

Project / Client RAM Energy

Sunny 52°F Wind NW 5mph

0800 Buddy Richardson and Matt Mugavero arrive on-site

0830 Scarborough Drilling arrives on-site. Stake locations of temp well borings TMW-1 and TMW-2 Tailgate H+S meeting.

0900 Set up on TMW-1 boring location, approx 90 ft NW of NW corner berm of tank battery.

0905 Soil Samples collected for chloride analysis:

Foot [redacted]0-1, 4-5, 9-10, 14-15, 19-20
Intervals: 24-25, ~~29-30~~

1005 Pulling drill rig off TMW-1 to set temp well.

1100 Collected groundwater sample from TMW-1 for Cl^-, Na^+, TDS, VOCs.

MW

Location _____ Date _____

Project / Client _____

TMW-1 - 2" PVC well + casing.

DTW TOC - 29.85'

SU - 3.05'

DTW - ~~29.10' BGL~~ 26.70' BGL

purge volume - 6 gals

Field measurements for Conductivity

Cal check { DI water - 3.1 µS/cm
1413 µS/cm standard - 1429 µS/cm

TMW-1 Conductivity = 891.1 µS/cm

1205 TMW-2

Collected groundwater sample for Cl^-, Na^+, TDS, VOCs analysis

Field Conductivity = 4,067 µS/cm

DTW TOC - 29.33

SU - 2.05

DTW BGL - 27.28

Location _____ Date _____

Project / Client _____

Coordinates

TMW-1 : 33.279488, -103.094808

TMW-2 : 33.279254, -103.094528

Total depth of each temporary well boring was 40 feet.

APPENDIX B

BORING RECORDS

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG
		Start: Stop: GROUND SURFACE:		
	0	CALICHE: PINKISH WHITE, 7.5YR 8/2, 100% CALICHE, HARD, DRY, NO ODOR	–	
	1.0	NOT COLLECTED:		
	4.0	SILT: DARK BROWN, 7.5YR 3/2, 100% SILT, FIRM, DRY, NO ODOR	SC	
	5	NOT COLLECTED:		
	9.0	SAND, CALICHE: LIGHT BROWN, 7.5YR 6/4, 90% SAND, 10% CALICHE, SOFT, SLIGHTLY MOIST, NO ODOR, MINOR CLAY COMPONENT	SC	
	10	NOT COLLECTED:		
	14.0	SAND: REDDISH YELLOW, 7.5YR 6/6, 100% VERY FINE SAND, SOFT, SLIGHTLY MOIST, NO ODOR	SC	
	15	NOT COLLECTED:		
	19.0	SAND: SAME AS 14'–15'	SC	
	20	NOT COLLECTED:		
	24.0	SAND: SAME AS 14'–15' BUT MOIST	SC	
	25	NOT COLLECTED:		
	29.0	SAND: REDDISH YELLOW, 7.5YR 6/6, 90% SAND, 10% ROUNDED NODULES OF SANDSTONE/CLAYSTONE, MOIST, SOFT, NO ODOR	SC	
	30	NOT COLLECTED:		
	34.0	SAND: REDDISH YELLOW, 7.5YR 6/6, 100% VERY FINE SAND, MOIST, SOFT, NO ODOR	SC	
	35			

OVM SOIL GAS PPM X 1.0 — 2 4 6 8 10 12 14 16 18

SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH
–		40.0	
	–		

REMARKS

BACKGROUND OVM READING:
SOIL: _____ PPM
AIR: _____ PPM

CME CONTINUOUS AUGER SAMPLER

WATER TABLE (TIME OF BORING)

WATER TABLE (24 HOURS)

NR: NO RECOVERY

RAM ENERGY – YATES #2 TB
JOB NAME/NUMBER ***RAMRNM0002***

BORING NUMBER ***TMW–1***

ENVIRO CLEAN CARDINAL
7060 S. Yale Ave., Suite 603 ▪ Tulsa, Oklahoma 74136 ▪ 918-794-7828
www.EnviroCleanPS.com

DATE DRILLED 11/2/2017
DRILLING METHOD AIR ROTARY
DRILLED BY SCARBOROUGH DRILLING
LOGGED BY M.MUGAVERO
CHECKED BY M.MUGAVERO
DRAWING NO. TMW–1_BORE
DRAWN BY: S.GRAUE
PAGE 1 OF 2

D:\Projects\RamEnergy\RAMRNM0002_YatesState2\04_CAD\TMW-1_BORE.dwg on Nov 30, 2017 - 11:46am

BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		Start: Stop: GROUND SURFACE:								BACKGROUND OVM READING: SOIL: _____ PPM AIR: _____ PPM
	35	NOT COLLECTED:						40.0		35
	39.0	SAND: SAME AS 34'–35'	SC						40.0	
	40	TOTAL DEPTH: 40.0 FEET								40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

CME CONTINUOUS AUGER SAMPLER

WATER TABLE (TIME OF BORING)

WATER TABLE (24 HOURS)

NR: NO RECOVERY

RAM ENERGY – YATES #2 TB

JOB NAME/NUMBER ***RAMRNM0002***

BORING NUMBER ***TMW–1***

ENVIRO CLEAN CARDINAL

7060 S. Yale Ave., Suite 603 ▪ Tulsa, Oklahoma 74136 ▪ 918-794-7828

www.EnviroCleanPS.com

DATE DRILLED 11/2/2017

DRILLING METHOD AIR ROTARY

DRILLED BY SCARBOROUGH DRILLING

LOGGED BY M.MUGAVERO

CHECKED BY M.MUGAVERO

DRAWING NO. TMW–1_BORE

DRAWN BY: S.GRAUE

PAGE 2 OF 2

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG
		Start: Stop: GROUND SURFACE:		
	0	CALICHE: PINKISH WHITE, 7.5YR 8/2, 100% CALICHE, HARD, DRY, NO ODOR	–	
	1.0	NOT COLLECTED:		
	4.0	SILT: DARK BROWN, 7.5YR 3/2, 100% SILT, FIRM, DRY, NO ODOR	SC	
	5	NOT COLLECTED:		
	9.0	SAND, CALICHE: LIGHT BROWN, 7.5YR 6/4, 90% SAND, 10% CALICHE, SOFT, SLIGHTLY MOIST, NO ODOR, MINOR CLAY COMPONENT	SC	
	10	NOT COLLECTED:		
	14.0	SAND: REDDISH YELLOW, 7.5YR 6/6, 100% VERY FINE SAND, SOFT, SLIGHTLY MOIST, NO ODOR	SC	
	15	NOT COLLECTED:		
	19.0	SAND: SAME AS 14'–15'	SC	
	20	NOT COLLECTED:		
	24.0	SAND: SAME AS 14'–15' BUT MOIST	SC	
	25	NOT COLLECTED:		
	29.0	SAND: REDDISH YELLOW, 7.5YR 6/6, 90% SAND, 10% ROUNDED NODULES OF SANDSTONE/CLAYSTONE, MOIST, SOFT, NO ODOR	SC	
	30	NOT COLLECTED:		
	34.0	SAND: REDDISH YELLOW, 7.5YR 6/6, 100% VERY FINE SAND, MOIST, SOFT, NO ODOR	SC	
	35			

OVM SOIL GAS PPM X 1.0 — 2 4 6 8 10 12 14 16 18

SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH
–		40.0	
	–		

REMARKS

BACKGROUND OVM READING:
SOIL: _____ PPM
AIR: _____ PPM

CME CONTINUOUS AUGER SAMPLER

WATER TABLE (TIME OF BORING)

WATER TABLE (24 HOURS)

NR: NO RECOVERY

RAM ENERGY – YATES #2 TB
JOB NAME/NUMBER ***RAMRNM0002***

BORING NUMBER ***TMW–2***

ENVIRO CLEAN CARDINAL
7060 S. Yale Ave., Suite 603 ▪ Tulsa, Oklahoma 74136 ▪ 918-794-7828
www.EnviroCleanPS.com

DATE DRILLED 11/2/2017
DRILLING METHOD AIR ROTARY
DRILLED BY SCARBOROUGH DRILLING
LOGGED BY M.MUGAVERO
CHECKED BY M.MUGAVERO
DRAWING NO. TMW–2_BORE
DRAWN BY: S.GRAUE
PAGE 1 OF 2

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BORING RECORD

GEOLOG. UNIT	DEPTH (FEET)	LITHOLOGIC DESCRIPTION	UNIFIED SOIL CLASSIFICATION	GRAPHIC LOG	OVM SOIL GAS PPM X 1.0 (2 4 6 8 10 12 14 16 18)	SAMPLE NUMBER	SAMPLE OVM READING	SAMPLE RECOVERY	SAMPLE DEPTH	REMARKS
		Start: Stop: GROUND SURFACE:								BACKGROUND OVM READING: SOIL: _____ PPM AIR: _____ PPM
	35	NOT COLLECTED:						40.0		35
	39.0	SAND: SAME AS 34'–35'	SC						40.0	
	40	TOTAL DEPTH: 40.0 FEET								40
	45									45
	50									50
	55									55
	60									60
	65									65
	70									70

CME CONTINUOUS AUGER SAMPLER

WATER TABLE (TIME OF BORING)

WATER TABLE (24 HOURS)

NR: NO RECOVERY

RAM ENERGY – YATES #2 TB

JOB NAME/NUMBER ***RAMRNM0002***

BORING NUMBER ***TMW–2***

ENVIRO CLEAN CARDINAL

7060 S. Yale Ave., Suite 603 ▪ Tulsa, Oklahoma 74136 ▪ 918-794-7828

www.EnviroCleanPS.com

DATE DRILLED 11/2/2017

DRILLING METHOD AIR ROTARY

DRILLED BY SCARBOROUGH DRILLING

LOGGED BY M.MUGAVERO

CHECKED BY M.MUGAVERO

DRAWING NO. TMW–2_BORE

DRAWN BY: S.GRAUE

PAGE 2 OF 2

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APPENDIX C

LABORATORY ANALYTICAL REPORT

Analytical Report 567387

for

Enviroclean- Midland

Project Manager: Julie Czech

Ram Yates #2 TB

RAMRNM0002

13-NOV-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

13-NOV-17

Project Manager: **Julie Czech**
Enviroclean- Midland
2405 ECR 123
Midland, TX 79706

Reference: XENCO Report No(s): **567387**
Ram Yates #2 TB
Project Address: TX

Julie Czech:

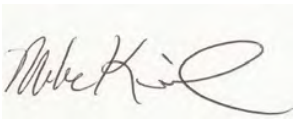
We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 567387. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 567387 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



Mike Kimmel
Client Services Manager

Sample Cross Reference 567387

Enviroclean- Midland, Midland, TX

Ram Yates #2 TB

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TMW-1	W	11-02-17 11:00		567387-001
TMW-2	W	11-02-17 12:05		567387-002
Trip Blank	W	11-02-17 00:00		567387-003

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 567387

Enviroclean- Midland, Midland, TX

Project Name: Ram Yates #2 TB

Project Id: RAMRNM0002
Contact: Julie Czech
Project Location: TX

Date Received in Lab: Thu Nov-02-17 04:21 pm
Report Date: 13-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	567387-001			567387-002			567387-003					
	Field Id:	TMW-1			TMW-2			Trip Blank					
	Depth:												
	Matrix:	WATER			WATER			WATER					
	Sampled:	Nov-02-17 11:00			Nov-02-17 12:05			Nov-02-17 00:00					
Inorganic Anions by EPA 300 **SUB: TX104704215-17-23**	***Extracted:***	Nov-09-17 16:00			Nov-09-17 16:00								
	Analyzed:	Nov-09-17 18:26			Nov-09-17 18:54								
	Units/RL:	mg/L	RL		mg/L	RL							
Chloride		114	0.500		1090 D	50.0							
TDS by SM2540C **SUB: TX104704215-17-23**	***Extracted:***												
	Analyzed:	Nov-07-17 11:00			Nov-07-17 11:00								
	Units/RL:	mg/L	RL		mg/L	RL							
Total Dissolved Solids		570	5.00		2010	5.00							
Total Metals by EPA 6010B **SUB: TX104704215-17-23**	***Extracted:***	Nov-08-17 13:00			Nov-08-17 13:00								
	Analyzed:	Nov-08-17 20:20			Nov-08-17 20:24								
	Units/RL:	mg/L	RL		mg/L	RL							
Sodium		65.6	0.500		398	25.0							

Mike Kimmel
Client Services Manager

Certificate of Analysis Summary 567387

Enviroclean- Midland, Midland, TX

Project Name: Ram Yates #2 TB

Project Id: RAMRNM0002
Contact: Julie Czech
Project Location: TX

Date Received in Lab: Thu Nov-02-17 04:21 pm
Report Date: 13-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	567387-001		567387-002		567387-003					
	Field Id:	TMW-1		TMW-2		Trip Blank					
	Depth:										
	Matrix:	WATER		WATER		WATER					
	Sampled:	Nov-02-17 11:00		Nov-02-17 12:05		Nov-02-17 00:00					
VOCs by SW864 8260B	***Extracted:***	Nov-05-17 16:50		Nov-06-17 20:00		Nov-05-17 16:50					
SUB: TX104704215-17-23	***Analyzed:***	Nov-05-17 17:36		Nov-06-17 22:44		Nov-05-17 17:13					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL				
Benzene		ND	0.00500	ND	0.00500	ND	0.00500				
Bromobenzene		ND	0.00500	ND	0.00500	ND	0.00500				
Bromochloromethane		ND	0.00500	ND	0.00500	ND	0.00500				
Bromodichloromethane		ND	0.00500	ND	0.00500	ND	0.00500				
Bromoform		ND	0.00500	ND	0.00500	ND	0.00500				
Methyl bromide		ND	0.00500	ND	0.00500	ND	0.00500				
n-Butylbenzene		ND	0.00500	ND	0.00500	ND	0.00500				
Sec-Butylbenzene		ND	0.00500	ND	0.00500	ND	0.00500				
tert-Butylbenzene		ND	0.00500	ND	0.00500	ND	0.00500				
Carbon Tetrachloride		ND	0.00500	ND	0.00500	ND	0.00500				
Chlorobenzene		ND	0.00500	ND	0.00500	ND	0.00500				
Chloroethane		ND	0.0100	ND	0.0100	ND	0.0100				
Chloroform		ND	0.00500	ND	0.00500	ND	0.00500				
Methyl Chloride		ND	0.0100	ND	0.0100	ND	0.0100				
2-Chlorotoluene		ND	0.00500	ND	0.00500	ND	0.00500				
4-Chlorotoluene		ND	0.00500	ND	0.00500	ND	0.00500				
p-Cymene (p-Isopropyltoluene)		ND	0.00500	ND	0.00500	ND	0.00500				
Dibromochloromethane		ND	0.00500	ND	0.00500	ND	0.00500				
1,2-Dibromo-3-Chloropropane		ND	0.00500	ND	0.00500	ND	0.00500				
1,2-Dibromoethane		ND	0.00500	ND	0.00500	ND	0.00500				
Methylene bromide		ND	0.00500	ND	0.00500	ND	0.00500				
1,2-Dichlorobenzene		ND	0.00500	ND	0.00500	ND	0.00500				
1,3-Dichlorobenzene		ND	0.00500	ND	0.00500	ND	0.00500				
1,4-Dichlorobenzene		ND	0.00500	ND	0.00500	ND	0.00500				

Mike Kimmel
Client Services Manager

Certificate of Analysis Summary 567387

Enviroclean- Midland, Midland, TX

Project Name: Ram Yates #2 TB

Project Id: RAMRNM0002
Contact: Julie Czech
Project Location: TX

Date Received in Lab: Thu Nov-02-17 04:21 pm
Report Date: 13-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested									
	Lab Id:	567387-001		567387-002		567387-003			
	Field Id:	TMW-1		TMW-2		Trip Blank			
	Depth:								
	Matrix:	WATER		WATER		WATER			
	Sampled:	Nov-02-17 11:00		Nov-02-17 12:05		Nov-02-17 00:00			
VOCs by SW864 8260B SUB: TX104704215-17-23	***Extracted:***	Nov-05-17 16:50		Nov-06-17 20:00		Nov-05-17 16:50			
	Analyzed:	Nov-05-17 17:36		Nov-06-17 22:44		Nov-05-17 17:13			
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL		
Dichlorodifluoromethane		ND	0.00500	ND	0.00500	ND	0.00500		
1,1-Dichloroethane		ND	0.00500	ND	0.00500	ND	0.00500		
1,2-Dichloroethane		ND	0.00500	ND	0.00500	ND	0.00500		
1,1-Dichloroethene		ND	0.00500	ND	0.00500	ND	0.00500		
cis-1,2-Dichloroethylene		ND	0.00500	ND	0.00500	ND	0.00500		
trans-1,2-dichloroethylene		ND	0.00500	ND	0.00500	ND	0.00500		
1,2-Dichloropropane		ND	0.00500	ND	0.00500	ND	0.00500		
1,3-Dichloropropane		ND	0.00500	ND	0.00500	ND	0.00500		
2,2-Dichloropropane		ND	0.00500	ND	0.00500	ND	0.00500		
1,1-Dichloropropene		ND	0.00500	ND	0.00500	ND	0.00500		
cis-1,3-Dichloropropene		ND	0.00500	ND	0.00500	ND	0.00500		
trans-1,3-dichloropropene		ND	0.00500	ND	0.00500	ND	0.00500		
Ethylbenzene		ND	0.00500	ND	0.00500	ND	0.00500		
Hexachlorobutadiene		ND	0.00500	ND	0.00500	ND	0.00500		
Isopropylbenzene		ND	0.00500	ND	0.00500	ND	0.00500		
Methylene Chloride		ND	0.00500	ND	0.00500	ND	0.00500		
MTBE		ND	0.00500	ND	0.00500	ND	0.00500		
Naphthalene		ND	0.0100	ND	0.0100	ND	0.0100		
n-Propylbenzene		ND	0.00500	ND	0.00500	ND	0.00500		
Styrene		ND	0.00500	ND	0.00500	ND	0.00500		
1,1,1,2-Tetrachloroethane		ND	0.00500	ND	0.00500	ND	0.00500		
1,1,2,2-Tetrachloroethane		ND	0.00500	ND	0.00500	ND	0.00500		
Tetrachloroethylene		ND	0.00500	ND	0.00500	ND	0.00500		
Toluene		ND	0.00500	ND	0.00500	ND	0.00500		

Certificate of Analysis Summary 567387

Enviroclean- Midland, Midland, TX

Project Name: Ram Yates #2 TB

Project Id: RAMRNM0002
Contact: Julie Czech
Project Location: TX

Date Received in Lab: Thu Nov-02-17 04:21 pm
Report Date: 13-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested											
	Lab Id:	567387-001		567387-002		567387-003					
	Field Id:	TMW-1		TMW-2		Trip Blank					
	Depth:										
	Matrix:	WATER		WATER		WATER					
	Sampled:	Nov-02-17 11:00		Nov-02-17 12:05		Nov-02-17 00:00					
VOCs by SW864 8260B SUB: TX104704215-17-23	***Extracted:***	Nov-05-17 16:50		Nov-06-17 20:00		Nov-05-17 16:50					
	Analyzed:	Nov-05-17 17:36		Nov-06-17 22:44		Nov-05-17 17:13					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL				
1,2,3-Trichlorobenzene		ND	0.00500	ND	0.00500	ND	0.00500				
1,2,4-Trichlorobenzene		ND	0.00500	ND	0.00500	ND	0.00500				
1,1,1-Trichloroethane		ND	0.00500	ND	0.00500	ND	0.00500				
1,1,2-Trichloroethane		ND	0.00500	ND	0.00500	ND	0.00500				
Trichloroethylene		ND	0.00500	ND	0.00500	ND	0.00500				
Trichlorofluoromethane		ND	0.00500	ND	0.00500	ND	0.00500				
1,2,3-Trichloropropane		ND	0.00500	ND	0.00500	ND	0.00500				
1,2,4-Trimethylbenzene		ND	0.00500	ND	0.00500	ND	0.00500				
1,3,5-Trimethylbenzene		ND	0.00500	ND	0.00500	ND	0.00500				
o-Xylene		ND	0.00500	ND	0.00500	ND	0.00500				
m,p-Xylenes		ND	0.0100	ND	0.0100	ND	0.0100				
Vinyl Chloride		ND	0.00200	ND	0.00200	ND	0.00200				
Total Xylenes		ND	0.00500	ND	0.00500	ND	0.00500				

Mike Kimmel
Client Services Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

Form 2 - Surrogate Recoveries

Project Name: Ram Yates #2 TB

Work Orders : 567387,

Project ID: RAMRNM0002

Lab Batch #: 3032625 **Sample:** 567387-003 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/05/17 17:13

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0496	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0559	0.0500	112	63-144	
Toluene-D8	0.0546	0.0500	109	80-117	
4-Bromofluorobenzene	0.0487	0.0500	97	74-124	

Lab Batch #: 3032625 **Sample:** 567387-001 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/05/17 17:36

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0501	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0544	0.0500	109	63-144	
Toluene-D8	0.0542	0.0500	108	80-117	
4-Bromofluorobenzene	0.0480	0.0500	96	74-124	

Lab Batch #: 3032517 **Sample:** 567387-002 / SMP **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/06/17 22:44

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0503	0.0500	101	75-131	
1,2-Dichloroethane-D4	0.0489	0.0500	98	63-144	
Toluene-D8	0.0509	0.0500	102	80-117	
4-Bromofluorobenzene	0.0523	0.0500	105	74-124	

Lab Batch #: 3032625 **Sample:** 7633969-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/05/17 16:50

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0498	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0549	0.0500	110	63-144	
Toluene-D8	0.0545	0.0500	109	80-117	
4-Bromofluorobenzene	0.0492	0.0500	98	74-124	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Ram Yates #2 TB

Work Orders : 567387,

Project ID: RAMRNM0002

Lab Batch #: 3032517 **Sample:** 7633902-1-BLK / BLK **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/06/17 21:59

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0497	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0473	0.0500	95	63-144	
Toluene-D8	0.0521	0.0500	104	80-117	
4-Bromofluorobenzene	0.0524	0.0500	105	74-124	

Lab Batch #: 3032625 **Sample:** 7633969-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/05/17 13:41

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0474	0.0500	95	75-131	
1,2-Dichloroethane-D4	0.0524	0.0500	105	63-144	
Toluene-D8	0.0522	0.0500	104	80-117	
4-Bromofluorobenzene	0.0490	0.0500	98	74-124	

Lab Batch #: 3032517 **Sample:** 7633902-1-BKS / BKS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/06/17 19:21

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0494	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0481	0.0500	96	63-144	
Toluene-D8	0.0501	0.0500	100	80-117	
4-Bromofluorobenzene	0.0498	0.0500	100	74-124	

Lab Batch #: 3032625 **Sample:** 7633969-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/05/17 14:49

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0476	0.0500	95	75-131	
1,2-Dichloroethane-D4	0.0532	0.0500	106	63-144	
Toluene-D8	0.0524	0.0500	105	80-117	
4-Bromofluorobenzene	0.0497	0.0500	99	74-124	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

Form 2 - Surrogate Recoveries

Project Name: Ram Yates #2 TB

Work Orders : 567387,

Project ID: RAMRNM0002

Lab Batch #: 3032517 **Sample:** 7633902-1-BSD / BSD **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/06/17 20:06

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0493	0.0500	99	75-131	
1,2-Dichloroethane-D4	0.0483	0.0500	97	63-144	
Toluene-D8	0.0497	0.0500	99	80-117	
4-Bromofluorobenzene	0.0499	0.0500	100	74-124	

Lab Batch #: 3032625 **Sample:** 567387-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/05/17 15:16

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0469	0.0500	94	75-131	
1,2-Dichloroethane-D4	0.0531	0.0500	106	63-144	
Toluene-D8	0.0526	0.0500	105	80-117	
4-Bromofluorobenzene	0.0506	0.0500	101	74-124	

Lab Batch #: 3032517 **Sample:** 567539-001 S / MS **Batch:** 1 **Matrix:** Water

Units: mg/L **Date Analyzed:** 11/06/17 20:29

SURROGATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Dibromofluoromethane	0.0500	0.0500	100	75-131	
1,2-Dichloroethane-D4	0.0499	0.0500	100	63-144	
Toluene-D8	0.0503	0.0500	101	80-117	
4-Bromofluorobenzene	0.0501	0.0500	100	74-124	

* Surrogate outside of Laboratory QC limits

** Surrogates outside limits; data and surrogates confirmed by reanalysis

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

All results are based on MDL and validated for QC purposes.

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: DHE **Date Prepared:** 11/09/2017 **Date Analyzed:** 11/09/2017

Lab Batch ID: 3032887 **Sample:** 7634113-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<0.500	10.0	10.1	101	10.0	9.91	99	2	90-110	20	

Analyst: YAV **Date Prepared:** 11/07/2017 **Date Analyzed:** 11/07/2017

Lab Batch ID: 3032558 **Sample:** 3032558-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

TDS by SM2540C Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Total Dissolved Solids	<5.00	1000	966	97	1000	995	100	3	80-120	10	

Analyst: DEP **Date Prepared:** 11/08/2017 **Date Analyzed:** 11/08/2017

Lab Batch ID: 3032786 **Sample:** 7634024-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Total Metals by EPA 6010B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Sodium	<0.500	25.0	27.1	108	25.0	27.1	108	0	75-125	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: SAD **Date Prepared:** 11/06/2017 **Date Analyzed:** 11/06/2017

Lab Batch ID: 3032517 **Sample:** 7633902-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00500	0.0500	0.0452	90	0.0500	0.0503	101	11	68-123	25	
Bromobenzene	<0.00500	0.0500	0.0466	93	0.0500	0.0523	105	12	83-124	25	
Bromochloromethane	<0.00500	0.0500	0.0443	89	0.0500	0.0505	101	13	68-119	25	
Bromodichloromethane	<0.00500	0.0500	0.0477	95	0.0500	0.0526	105	10	72-132	25	
Bromoform	<0.00500	0.0500	0.0435	87	0.0500	0.0477	95	9	65-136	25	
Methyl bromide	<0.00500	0.0500	0.0403	81	0.0500	0.0447	89	10	48-120	25	
n-Butylbenzene	<0.00500	0.0500	0.0480	96	0.0500	0.0529	106	10	82-128	25	
Sec-Butylbenzene	<0.00500	0.0500	0.0479	96	0.0500	0.0528	106	10	83-130	25	
tert-Butylbenzene	<0.00500	0.0500	0.0471	94	0.0500	0.0530	106	12	83-131	25	
Carbon Tetrachloride	<0.00500	0.0500	0.0472	94	0.0500	0.0505	101	7	68-135	25	
Chlorobenzene	<0.00500	0.0500	0.0447	89	0.0500	0.0500	100	11	78-124	25	
Chloroethane	<0.0100	0.0500	0.0426	85	0.0500	0.0465	93	9	55-120	25	
Chloroform	<0.00500	0.0500	0.0450	90	0.0500	0.0507	101	12	71-119	25	
Methyl Chloride	<0.0100	0.0500	0.0424	85	0.0500	0.0467	93	10	54-114	25	
2-Chlorotoluene	<0.00500	0.0500	0.0461	92	0.0500	0.0514	103	11	83-128	25	
4-Chlorotoluene	<0.00500	0.0500	0.0453	91	0.0500	0.0513	103	12	81-125	25	
p-Cymene (p-Isopropyltoluene)	<0.00500	0.0500	0.0477	95	0.0500	0.0534	107	11	85-129	25	
Dibromochloromethane	<0.00500	0.0500	0.0476	95	0.0500	0.0530	106	11	74-135	25	
1,2-Dibromo-3-Chloropropane	<0.00500	0.0500	0.0418	84	0.0500	0.0474	95	13	62-134	25	
1,2-Dibromoethane	<0.00500	0.0500	0.0457	91	0.0500	0.0521	104	13	77-129	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: SAD **Date Prepared:** 11/06/2017 **Date Analyzed:** 11/06/2017

Lab Batch ID: 3032517 **Sample:** 7633902-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

VOCs by SW864 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Methylene bromide	<0.00500	0.0500	0.0456	91	0.0500	0.0507	101	11	71-124	25	
1,2-Dichlorobenzene	<0.00500	0.0500	0.0457	91	0.0500	0.0515	103	12	81-123	25	
1,3-Dichlorobenzene	<0.00500	0.0500	0.0452	90	0.0500	0.0508	102	12	82-126	25	
1,4-Dichlorobenzene	<0.00500	0.0500	0.0454	91	0.0500	0.0502	100	10	80-119	25	
Dichlorodifluoromethane	<0.00500	0.0500	0.0422	84	0.0500	0.0446	89	6	59-121	25	
1,1-Dichloroethane	<0.00500	0.0500	0.0457	91	0.0500	0.0507	101	10	75-125	25	
1,2-Dichloroethane	<0.00500	0.0500	0.0444	89	0.0500	0.0499	100	12	64-130	25	
1,1-Dichloroethene	<0.00500	0.0500	0.0446	89	0.0500	0.0476	95	7	68-116	25	
cis-1,2-Dichloroethylene	<0.00500	0.0500	0.0457	91	0.0500	0.0516	103	12	74-130	25	
trans-1,2-dichloroethylene	<0.00500	0.0500	0.0442	88	0.0500	0.0491	98	11	64-109	25	
1,2-Dichloropropane	<0.00500	0.0500	0.0465	93	0.0500	0.0515	103	10	72-127	25	
1,3-Dichloropropane	<0.00500	0.0500	0.0445	89	0.0500	0.0508	102	13	79-133	25	
2,2-Dichloropropane	<0.00500	0.0500	0.0482	96	0.0500	0.0515	103	7	71-134	25	
1,1-Dichloropropene	<0.00500	0.0500	0.0457	91	0.0500	0.0498	100	9	69-124	25	
cis-1,3-Dichloropropene	<0.00500	0.0500	0.0490	98	0.0500	0.0540	108	10	74-138	25	
trans-1,3-dichloropropene	<0.00500	0.0500	0.0484	97	0.0500	0.0539	108	11	70-132	25	
Ethylbenzene	<0.00500	0.0500	0.0459	92	0.0500	0.0513	103	11	69-131	25	
Hexachlorobutadiene	<0.00500	0.0500	0.0450	90	0.0500	0.0503	101	11	74-130	25	
Isopropylbenzene	<0.00500	0.0500	0.0480	96	0.0500	0.0527	105	9	66-133	25	
Methylene Chloride	<0.00500	0.0500	0.0437	87	0.0500	0.0483	97	10	60-121	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: SAD **Date Prepared:** 11/06/2017 **Date Analyzed:** 11/06/2017

Lab Batch ID: 3032517 **Sample:** 7633902-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

VOCs by SW864 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
MTBE	<0.00500	0.0500	0.0454	91	0.0500	0.0527	105	15	60-152	25	
Naphthalene	<0.0100	0.0500	0.0420	84	0.0500	0.0497	99	17	69-140	25	
n-Propylbenzene	<0.00500	0.0500	0.0475	95	0.0500	0.0525	105	10	86-129	25	
Styrene	<0.00500	0.0500	0.0471	94	0.0500	0.0531	106	12	79-128	25	
1,1,1,2-Tetrachloroethane	<0.00500	0.0500	0.0472	94	0.0500	0.0528	106	11	78-131	25	
1,1,2,2-Tetrachloroethane	<0.00500	0.0500	0.0447	89	0.0500	0.0503	101	12	80-133	25	
Tetrachloroethylene	<0.00500	0.0500	0.0453	91	0.0500	0.0495	99	9	79-122	25	
Toluene	<0.00500	0.0500	0.0450	90	0.0500	0.0504	101	11	62-132	25	
1,2,3-Trichlorobenzene	<0.00500	0.0500	0.0426	85	0.0500	0.0498	100	16	76-126	25	
1,2,4-Trichlorobenzene	<0.00500	0.0500	0.0432	86	0.0500	0.0498	100	14	77-127	25	
1,1,1-Trichloroethane	<0.00500	0.0500	0.0454	91	0.0500	0.0511	102	12	72-124	25	
1,1,2-Trichloroethane	<0.00500	0.0500	0.0445	89	0.0500	0.0510	102	14	71-135	25	
Trichloroethylene	<0.00500	0.0500	0.0463	93	0.0500	0.0509	102	9	74-123	25	
Trichlorofluoromethane	<0.00500	0.0500	0.0427	85	0.0500	0.0441	88	3	70-143	25	
1,2,3-Trichloropropane	<0.00500	0.0500	0.0452	90	0.0500	0.0525	105	15	75-134	25	
1,2,4-Trimethylbenzene	<0.00500	0.0500	0.0478	96	0.0500	0.0537	107	12	79-132	25	
1,3,5-Trimethylbenzene	<0.00500	0.0500	0.0466	93	0.0500	0.0519	104	11	72-139	25	
o-Xylene	<0.00500	0.0500	0.0467	93	0.0500	0.0520	104	11	67-132	25	
m,p-Xylenes	<0.0100	0.100	0.0922	92	0.100	0.102	102	10	69-132	25	
Vinyl Chloride	<0.00200	0.0500	0.0425	85	0.0500	0.0454	91	7	59-124	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: SAD **Date Prepared:** 11/05/2017 **Date Analyzed:** 11/05/2017

Lab Batch ID: 3032625 **Sample:** 7633969-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

VOCs by SW864 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Benzene	<0.00500	0.0500	0.0451	90	0.0500	0.0479	96	6	68-123	25	
Bromobenzene	<0.00500	0.0500	0.0520	104	0.0500	0.0555	111	7	83-124	25	
Bromochloromethane	<0.00500	0.0500	0.0425	85	0.0500	0.0442	88	4	68-119	25	
Bromodichloromethane	<0.00500	0.0500	0.0480	96	0.0500	0.0504	101	5	72-132	25	
Bromoform	<0.00500	0.0500	0.0491	98	0.0500	0.0526	105	7	65-136	25	
Methyl bromide	<0.00500	0.0500	0.0339	68	0.0500	0.0350	70	3	48-120	25	
n-Butylbenzene	<0.00500	0.0500	0.0537	107	0.0500	0.0565	113	5	82-128	25	
Sec-Butylbenzene	<0.00500	0.0500	0.0519	104	0.0500	0.0547	109	5	83-130	25	
tert-Butylbenzene	<0.00500	0.0500	0.0511	102	0.0500	0.0548	110	7	83-131	25	
Carbon Tetrachloride	<0.00500	0.0500	0.0452	90	0.0500	0.0471	94	4	68-135	25	
Chlorobenzene	<0.00500	0.0500	0.0487	97	0.0500	0.0520	104	7	78-124	25	
Chloroethane	<0.0100	0.0500	0.0340	68	0.0500	0.0365	73	7	55-120	25	
Chloroform	<0.00500	0.0500	0.0435	87	0.0500	0.0458	92	5	71-119	25	
Methyl Chloride	<0.0100	0.0500	0.0379	76	0.0500	0.0398	80	5	54-114	25	
2-Chlorotoluene	<0.00500	0.0500	0.0506	101	0.0500	0.0531	106	5	83-128	25	
4-Chlorotoluene	<0.00500	0.0500	0.0510	102	0.0500	0.0545	109	7	81-125	25	
p-Cymene (p-Isopropyltoluene)	<0.00500	0.0500	0.0495	99	0.0500	0.0527	105	6	85-129	25	
Dibromochloromethane	<0.00500	0.0500	0.0503	101	0.0500	0.0534	107	6	74-135	25	
1,2-Dibromo-3-Chloropropane	<0.00500	0.0500	0.0394	79	0.0500	0.0413	83	5	62-134	25	
1,2-Dibromoethane	<0.00500	0.0500	0.0487	97	0.0500	0.0517	103	6	77-129	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: SAD **Date Prepared:** 11/05/2017 **Date Analyzed:** 11/05/2017

Lab Batch ID: 3032625 **Sample:** 7633969-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

VOCs by SW864 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Methylene bromide	<0.00500	0.0500	0.0455	91	0.0500	0.0487	97	7	71-124	25	
1,2-Dichlorobenzene	<0.00500	0.0500	0.0512	102	0.0500	0.0550	110	7	81-123	25	
1,3-Dichlorobenzene	<0.00500	0.0500	0.0515	103	0.0500	0.0550	110	7	82-126	25	
1,4-Dichlorobenzene	<0.00500	0.0500	0.0513	103	0.0500	0.0548	110	7	80-119	25	
Dichlorodifluoromethane	<0.00500	0.0500	0.0452	90	0.0500	0.0457	91	1	59-121	25	
1,1-Dichloroethane	<0.00500	0.0500	0.0434	87	0.0500	0.0462	92	6	75-125	25	
1,2-Dichloroethane	<0.00500	0.0500	0.0456	91	0.0500	0.0490	98	7	64-130	25	
1,1-Dichloroethene	<0.00500	0.0500	0.0472	94	0.0500	0.0484	97	3	68-116	25	
cis-1,2-Dichloroethylene	<0.00500	0.0500	0.0425	85	0.0500	0.0448	90	5	74-130	25	
trans-1,2-dichloroethylene	<0.00500	0.0500	0.0433	87	0.0500	0.0458	92	6	64-109	25	
1,2-Dichloropropane	<0.00500	0.0500	0.0460	92	0.0500	0.0484	97	5	72-127	25	
1,3-Dichloropropane	<0.00500	0.0500	0.0477	95	0.0500	0.0509	102	6	79-133	25	
2,2-Dichloropropane	<0.00500	0.0500	0.0405	81	0.0500	0.0422	84	4	71-134	25	
1,1-Dichloropropene	<0.00500	0.0500	0.0429	86	0.0500	0.0451	90	5	69-124	25	
cis-1,3-Dichloropropene	<0.00500	0.0500	0.0467	93	0.0500	0.0503	101	7	74-138	25	
trans-1,3-dichloropropene	<0.00500	0.0500	0.0535	107	0.0500	0.0565	113	5	70-132	25	
Ethylbenzene	<0.00500	0.0500	0.0501	100	0.0500	0.0535	107	7	69-131	25	
Hexachlorobutadiene	<0.00500	0.0500	0.0521	104	0.0500	0.0545	109	5	74-130	25	
Isopropylbenzene	<0.00500	0.0500	0.0492	98	0.0500	0.0520	104	6	66-133	25	
Methylene Chloride	<0.00500	0.0500	0.0437	87	0.0500	0.0469	94	7	60-121	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387 **Project ID:** RAMRNM0002

Analyst: SAD **Date Prepared:** 11/05/2017 **Date Analyzed:** 11/05/2017

Lab Batch ID: 3032625 **Sample:** 7633969-1-BKS **Batch #:** 1 **Matrix:** Water

Units: mg/L

VOCs by SW864 8260B Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
MTBE	<0.00500	0.0500	0.0418	84	0.0500	0.0444	89	6	60-152	25	
Naphthalene	<0.0100	0.0500	0.0398	80	0.0500	0.0421	84	6	69-140	25	
n-Propylbenzene	<0.00500	0.0500	0.0515	103	0.0500	0.0552	110	7	86-129	25	
Styrene	<0.00500	0.0500	0.0523	105	0.0500	0.0562	112	7	79-128	25	
1,1,1,2-Tetrachloroethane	<0.00500	0.0500	0.0490	98	0.0500	0.0517	103	5	78-131	25	
1,1,2,2-Tetrachloroethane	<0.00500	0.0500	0.0486	97	0.0500	0.0505	101	4	80-133	25	
Tetrachloroethylene	<0.00500	0.0500	0.0508	102	0.0500	0.0525	105	3	79-122	25	
Toluene	<0.00500	0.0500	0.0494	99	0.0500	0.0521	104	5	62-132	25	
1,2,3-Trichlorobenzene	<0.00500	0.0500	0.0379	76	0.0500	0.0403	81	6	76-126	25	
1,2,4-Trichlorobenzene	<0.00500	0.0500	0.0436	87	0.0500	0.0466	93	7	77-127	25	
1,1,1-Trichloroethane	<0.00500	0.0500	0.0450	90	0.0500	0.0469	94	4	72-124	25	
1,1,2-Trichloroethane	<0.00500	0.0500	0.0498	100	0.0500	0.0529	106	6	71-135	25	
Trichloroethylene	<0.00500	0.0500	0.0452	90	0.0500	0.0475	95	5	74-123	25	
Trichlorofluoromethane	<0.00500	0.0500	0.0394	79	0.0500	0.0399	80	1	70-143	25	
1,2,3-Trichloropropane	<0.00500	0.0500	0.0473	95	0.0500	0.0505	101	7	75-134	25	
1,2,4-Trimethylbenzene	<0.00500	0.0500	0.0506	101	0.0500	0.0538	108	6	79-132	25	
1,3,5-Trimethylbenzene	<0.00500	0.0500	0.0515	103	0.0500	0.0565	113	9	72-139	25	
o-Xylene	<0.00500	0.0500	0.0518	104	0.0500	0.0548	110	6	67-132	25	
m,p-Xylenes	<0.0100	0.100	0.0999	100	0.100	0.106	106	6	69-132	25	
Vinyl Chloride	<0.00200	0.0500	0.0346	69	0.0500	0.0368	74	6	59-124	25	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Version: 1.%

Form 3 - MS Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387

Lab Batch #: 3032517 **Project ID:** RAMRNM0002

Date Analyzed: 11/06/2017 **Date Prepared:** 11/06/2017 **Analyst:** SAD

QC- Sample ID: 567539-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

VOCs by SW-846 8260B Analytes	MATRIX / MATRIX SPIKE RECOVERY STUDY					
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Benzene	<0.00500	0.0500	0.0523	105	76-110	
Bromobenzene	<0.00500	0.0500	0.0538	108	77-114	
Bromochloromethane	<0.00500	0.0500	0.0520	104	72-112	
Bromodichloromethane	<0.00500	0.0500	0.0558	112	75-116	
Bromoform	<0.00500	0.0500	0.0500	100	66-119	
Methyl bromide	<0.00500	0.0500	0.0479	96	60-110	
n-Butylbenzene	<0.00500	0.0500	0.0569	114	74-128	
Sec-Butylbenzene	<0.00500	0.0500	0.0564	113	76-126	
tert-Butylbenzene	<0.00500	0.0500	0.0563	113	77-124	
Carbon Tetrachloride	<0.00500	0.0500	0.0547	109	77-119	
Chlorobenzene	<0.00500	0.0500	0.0515	103	78-110	
Chloroethane	<0.0100	0.0500	0.0494	99	62-113	
Chloroform	<0.00500	0.0500	0.0522	104	79-111	
Methyl Chloride	<0.0100	0.0500	0.0554	111	64-115	
2-Chlorotoluene	<0.00500	0.0500	0.0539	108	79-113	
4-Chlorotoluene	<0.00500	0.0500	0.0528	106	76-114	
p-Cymene (p-Isopropyltoluene)	<0.00500	0.0500	0.0575	115	71-123	
Dibromochloromethane	<0.00500	0.0500	0.0550	110	74-117	
1,2-Dibromo-3-Chloropropane	<0.00500	0.0500	0.0565	113	70-124	
1,2-Dibromoethane	<0.00500	0.0500	0.0527	105	75-117	
Methylene bromide	<0.00500	0.0500	0.0521	104	72-114	
1,2-Dichlorobenzene	<0.00500	0.0500	0.0542	108	77-115	
1,3-Dichlorobenzene	<0.00500	0.0500	0.0533	107	79-112	
1,4-Dichlorobenzene	<0.00500	0.0500	0.0518	104	76-112	
Dichlorodifluoromethane	<0.00500	0.0500	0.0507	101	64-138	
1,1-Dichloroethane	<0.00500	0.0500	0.0530	106	71-121	
1,2-Dichloroethane	<0.00500	0.0500	0.0521	104	72-111	
1,1-Dichloroethene	<0.00500	0.0500	0.0520	104	74-124	
cis-1,2-Dichloroethylene	<0.00500	0.0500	0.0518	104	72-121	
trans-1,2-dichloroethylene	<0.00500	0.0500	0.0507	101	72-117	
1,2-Dichloropropane	<0.00500	0.0500	0.0567	113	75-113	
1,3-Dichloropropane	<0.00500	0.0500	0.0516	103	74-113	
2,2-Dichloropropane	<0.00500	0.0500	0.0575	115	58-131	
1,1-Dichloropropene	<0.00500	0.0500	0.0531	106	77-116	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version: 1.%

Form 3 - MS Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387

Lab Batch #: 3032517 **Project ID:** RAMRNM0002

Date Analyzed: 11/06/2017 **Date Prepared:** 11/06/2017 **Analyst:** SAD

QC- Sample ID: 567539-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

VOCs by SW-846 8260B	MATRIX / MATRIX SPIKE RECOVERY STUDY					
Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
cis-1,3-Dichloropropene	<0.00500	0.0500	0.0568	114	75-119	
trans-1,3-dichloropropene	<0.00500	0.0500	0.0558	112	75-123	
Ethylbenzene	<0.00500	0.0500	0.0525	105	80-116	
Hexachlorobutadiene	<0.00500	0.0500	0.0577	115	79-123	
Isopropylbenzene	<0.00500	0.0500	0.0549	110	79-117	
Methylene Chloride	<0.00500	0.0500	0.0484	97	67-116	
MTBE	<0.00500	0.0500	0.0536	107	70-125	
Naphthalene	<0.0100	0.0500	0.0649	130	72-157	
n-Propylbenzene	<0.00500	0.0500	0.0553	111	75-121	
Styrene	<0.00500	0.0500	0.0148	30	74-124	X
1,1,1,2-Tetrachloroethane	<0.00500	0.0500	0.0540	108	75-114	
1,1,2,2-Tetrachloroethane	<0.00500	0.0500	0.0529	106	75-113	
Tetrachloroethylene	<0.00500	0.0500	0.0526	105	78-117	
Toluene	<0.00500	0.0500	0.0514	103	77-112	
1,2,3-Trichlorobenzene	<0.00500	0.0500	0.0639	128	70-140	
1,2,4-Trichlorobenzene	<0.00500	0.0500	0.0567	113	71-135	
1,1,1-Trichloroethane	<0.00500	0.0500	0.0534	107	75-118	
1,1,2-Trichloroethane	<0.00500	0.0500	0.0502	100	75-114	
Trichloroethylene	<0.00500	0.0500	0.0533	107	70-123	
Trichlorofluoromethane	<0.00500	0.0500	0.0506	101	69-118	
1,2,3-Trichloropropane	<0.00500	0.0500	0.0541	108	73-115	
1,2,4-Trimethylbenzene	<0.00500	0.0500	0.0551	110	74-118	
1,3,5-Trimethylbenzene	<0.00500	0.0500	0.0507	101	77-119	
o-Xylene	<0.00500	0.0500	0.0525	105	78-122	
m,p-Xylenes	<0.0100	0.100	0.106	106	79-118	
Vinyl Chloride	<0.00200	0.0500	0.0480	96	65-114	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version: 1.%

Form 3 - MS Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387

Lab Batch #: 3032625 **Project ID:** RAMRNM0002

Date Analyzed: 11/05/2017 **Date Prepared:** 11/05/2017 **Analyst:** SAD

QC- Sample ID: 567387-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

VOCs by SW-846 8260B Analytes	MATRIX / MATRIX SPIKE RECOVERY STUDY					
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
Benzene	<0.00500	0.0500	0.0449	90	76-110	
Bromobenzene	<0.00500	0.0500	0.0523	105	77-114	
Bromochloromethane	<0.00500	0.0500	0.0416	83	72-112	
Bromodichloromethane	<0.00500	0.0500	0.0474	95	75-116	
Bromoform	<0.00500	0.0500	0.0487	97	66-119	
Methyl bromide	<0.00500	0.0500	0.0352	70	60-110	
n-Butylbenzene	<0.00500	0.0500	0.0552	110	74-128	
Sec-Butylbenzene	<0.00500	0.0500	0.0539	108	76-126	
tert-Butylbenzene	<0.00500	0.0500	0.0522	104	77-124	
Carbon Tetrachloride	<0.00500	0.0500	0.0448	90	77-119	
Chlorobenzene	<0.00500	0.0500	0.0487	97	78-110	
Chloroethane	<0.0100	0.0500	0.0348	70	62-113	
Chloroform	<0.00500	0.0500	0.0424	85	79-111	
Methyl Chloride	<0.0100	0.0500	0.0376	75	64-115	
2-Chlorotoluene	<0.00500	0.0500	0.0503	101	79-113	
4-Chlorotoluene	<0.00500	0.0500	0.0513	103	76-114	
p-Cymene (p-Isopropyltoluene)	<0.00500	0.0500	0.0510	102	71-123	
Dibromochloromethane	<0.00500	0.0500	0.0496	99	74-117	
1,2-Dibromo-3-Chloropropane	<0.00500	0.0500	0.0426	85	70-124	
1,2-Dibromoethane	<0.00500	0.0500	0.0485	97	75-117	
Methylene bromide	<0.00500	0.0500	0.0442	88	72-114	
1,2-Dichlorobenzene	<0.00500	0.0500	0.0530	106	77-115	
1,3-Dichlorobenzene	<0.00500	0.0500	0.0520	104	79-112	
1,4-Dichlorobenzene	<0.00500	0.0500	0.0523	105	76-112	
Dichlorodifluoromethane	<0.00500	0.0500	0.0431	86	64-138	
1,1-Dichloroethane	<0.00500	0.0500	0.0426	85	71-121	
1,2-Dichloroethane	<0.00500	0.0500	0.0457	91	72-111	
1,1-Dichloroethene	<0.00500	0.0500	0.0452	90	74-124	
cis-1,2-Dichloroethylene	<0.00500	0.0500	0.0423	85	72-121	
trans-1,2-dichloroethylene	<0.00500	0.0500	0.0426	85	72-117	
1,2-Dichloropropane	<0.00500	0.0500	0.0462	92	75-113	
1,3-Dichloropropane	<0.00500	0.0500	0.0468	94	74-113	
2,2-Dichloropropane	<0.00500	0.0500	0.0389	78	58-131	
1,1-Dichloropropene	<0.00500	0.0500	0.0426	85	77-116	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version: 1.%

Form 3 - MS Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567387

Lab Batch #: 3032625 **Project ID:** RAMRNM0002

Date Analyzed: 11/05/2017 **Date Prepared:** 11/05/2017 **Analyst:** SAD

QC- Sample ID: 567387-001 S **Batch #:** 1 **Matrix:** Water

Reporting Units: mg/L

VOCs by SW-846 8260B Analytes	MATRIX / MATRIX SPIKE RECOVERY STUDY					
	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	%R [D]	Control Limits %R	Flag
cis-1,3-Dichloropropene	<0.00500	0.0500	0.0470	94	75-119	
trans-1,3-dichloropropene	<0.00500	0.0500	0.0528	106	75-123	
Ethylbenzene	<0.00500	0.0500	0.0504	101	80-116	
Hexachlorobutadiene	<0.00500	0.0500	0.0564	113	79-123	
Isopropylbenzene	<0.00500	0.0500	0.0491	98	79-117	
Methylene Chloride	<0.00500	0.0500	0.0423	85	67-116	
MTBE	<0.00500	0.0500	0.0415	83	70-125	
Naphthalene	<0.0100	0.0500	0.0564	113	72-157	
n-Propylbenzene	<0.00500	0.0500	0.0531	106	75-121	
Styrene	<0.00500	0.0500	0.0519	104	74-124	
1,1,1,2-Tetrachloroethane	<0.00500	0.0500	0.0484	97	75-114	
1,1,2,2-Tetrachloroethane	<0.00500	0.0500	0.0483	97	75-113	
Tetrachloroethylene	<0.00500	0.0500	0.0505	101	78-117	
Toluene	<0.00500	0.0500	0.0485	97	77-112	
1,2,3-Trichlorobenzene	<0.00500	0.0500	0.0511	102	70-140	
1,2,4-Trichlorobenzene	<0.00500	0.0500	0.0503	101	71-135	
1,1,1-Trichloroethane	<0.00500	0.0500	0.0437	87	75-118	
1,1,2-Trichloroethane	<0.00500	0.0500	0.0486	97	75-114	
Trichloroethylene	<0.00500	0.0500	0.0454	91	70-123	
Trichlorofluoromethane	<0.00500	0.0500	0.0398	80	69-118	
1,2,3-Trichloropropane	<0.00500	0.0500	0.0486	97	73-115	
1,2,4-Trimethylbenzene	<0.00500	0.0500	0.0510	102	74-118	
1,3,5-Trimethylbenzene	<0.00500	0.0500	0.0537	107	77-119	
o-Xylene	<0.00500	0.0500	0.0518	104	78-122	
m,p-Xylenes	<0.0100	0.100	0.0998	100	79-118	
Vinyl Chloride	<0.00200	0.0500	0.0357	71	65-114	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference [E] = 200*(C-A)/(C+B)
All Results are based on MDL and Validated for QC Purposes

BRL - Below Reporting Limit

Version: 1.%

Form 3 - MS / MSD Recoveries

Project Name: Ram Yates #2 TB

Work Order # : 567387 **Project ID:** RAMRNM0002

Lab Batch ID: 3032887 **QC- Sample ID:** 567262-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 11/09/2017 **Date Prepared:** 11/09/2017 **Analyst:** DHE

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	386	200	569	92	200	574	94	1	90-110	20	

Lab Batch ID: 3032887 **QC- Sample ID:** 567445-001 S **Batch #:** 1 **Matrix:** Water

Date Analyzed: 11/09/2017 **Date Prepared:** 11/09/2017 **Analyst:** DHE

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	166	50.0	215	98	50.0	214	96	0	90-110	20	

Lab Batch ID: 3032786 **QC- Sample ID:** 567307-001 S **Batch #:** 1 **Matrix:** Ground Water

Date Analyzed: 11/08/2017 **Date Prepared:** 11/08/2017 **Analyst:** DEP

Reporting Units: mg/L

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Total Metals by EPA 6010B Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Sodium	372	25.0	399	108	25.0	399	108	0	75-125	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B
Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable
N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

Sample Duplicate Recovery

Project Name: Ram Yates #2 TB

Work Order #: 567387

Lab Batch #: 3032558 **Project ID:** RAMRNM0002

Date Analyzed: 11/07/2017 11:00 **Date Prepared:** 11/07/2017 **Analyst:** YAV

QC- Sample ID: 567261-001 D **Batch #:** 1 **Matrix:** Ground Water

Reporting Units: mg/L

TDS by SM2540C Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total Dissolved Solids	12800	12600	2	10	

Lab Batch #: 3032558

Date Analyzed: 11/07/2017 11:00 **Date Prepared:** 11/07/2017 **Analyst:** YAV

QC- Sample ID: 567305-001 D **Batch #:** 1 **Matrix:** Drinking Water

Reporting Units: mg/L

TDS by SM2540C Analyte	SAMPLE / SAMPLE DUPLICATE RECOVERY Parent Sample Result [A]	Sample Duplicate Result [B]	RPD	Control Limits %RPD	Flag
Total Dissolved Solids	605	606	0	10	

Spike Relative Difference RPD 200 * | (B-A)/(B+A) |
All Results are based on MDL and validated for QC purposes.

BRL - Below Reporting Limit

Version: 1.%

CHAIN OF CUSTODY RECORD 567387 No. 03376

ENVIRO CLEAN SERVICES, LLC
(918) 794-7828

PROJECT NUMBER: RAMRNM0002	PROJECT NAME: RAM YATES #2 TB
SHIPPED TO: XENCO	PROJECT MANAGER: MATT MUGAVERO
COC 1 of 1	TAT: Standard

SAMPLER'S PRINTED NAME: Matthew N. Mugavero
SAMPLER'S SIGNATURE:

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE	SODIUM	TDS	TCL-VOCs - 8260	REMARKS
11/2/17	1100	TMW-1	WT	7	X	X	X	X	
11/2/17	1205	TMW-2	WT	7	X	X	X	X	
		TRIP BLANK	WT	2				X	

Temp: 1.4 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.2

TOTAL NUMBER OF CONTAINERS → 7

RELINQUISHED BY:	DATE 11/2/17	RECEIVED BY:	DATE 11/02/17
	TIME 1621		TIME 16:21
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
	TIME		TIME

METHOD OF SHIPMENT: HAND DELIVERED
AIRBILL NUMBER:

RECEIVED IN LABORATORY BY: DATE / TIME

Send PDF, EDD, and INVOICE (if applicable) to:
JULIE CZECH at julie.czech@eccgrp.com

LABORATORY CONTACT: Kelsey Brooks
LABORATORY ADDRESS: 1211 W. Florida Ave. Midland, TX 79701

POINT OF ORIGIN: ☐ OKLAHOMA CITY ☐ TULSA ☐ NORMAN ☐ WOODWARD ☐ ARLINGTON ☐ MIDLAND ☐ OTHER:

PAGE #1 - RECEIVING LAB PAGE #2 - ENVIRO CLEAN PROJECT FILE PAGE #3 - ENVIRO CLEAN QA/QC DEPT

Inter-Office Shipment

IOS Number **1051319**

Date/Time: 11/03/17 10:47
Lab# From: **Midland**
Lab# To: **Houston**

Created by: Jessica Kramer
Delivery Priority:
Air Bill No.: 770668844250

Please send report to: Kelsey Brooks
Address: 1211 W. Florida Ave, Midland TX 79701
Phone:
E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
567387-001	W	TMW-1	11/02/17 11:00	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567387-001	W	TMW-1	11/02/17 11:00	SW6010B	Total Metals by EPA 6010B	11/08/17	05/01/18	KEB	NA	
567387-001	W	TMW-1	11/02/17 11:00	SW8260B	VOCs by SW864 8260B	11/08/17	11/16/17	KEB	BDCME BRBZ BRCLME]	
567387-001	W	TMW-1	11/02/17 11:00	SM2540C	TDS by SM2540C	11/08/17	11/09/17	KEB	TDS	
567387-002	W	TMW-2	11/02/17 12:05	SW6010B	Total Metals by EPA 6010B	11/08/17	05/01/18	KEB	NA	
567387-002	W	TMW-2	11/02/17 12:05	SM2540C	TDS by SM2540C	11/08/17	11/09/17	KEB	TDS	
567387-002	W	TMW-2	11/02/17 12:05	SW8260B	VOCs by SW864 8260B	11/08/17	11/16/17	KEB	BDCME BRBZ BRCLME]	
567387-002	W	TMW-2	11/02/17 12:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567387-003	W	Trip Blank	11/02/17 00:00	SW8260B	VOCs by SW864 8260B	11/08/17	11/16/17	KEB	BDCME BRBZ BRCLME]	

Inter Office Shipment or Sample Comments:

Relinquished By: Jessica Kramer
Jessica Kramer

Date Relinquished: 11/03/2017

Received By:
Jean Quila

Date Received: 11/04/2017 10:30

Cooler Temperature: 3.6

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 1051319

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used :

Sent By: Jessica Kramer **Date Sent:** 11/03/2017 10:47 AM

Received By: Jean Quila **Date Received:** 11/04/2017 10:30 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	3.6	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**No**	
#5 *Custody Seals Signed and dated for Containers/coolers	**No**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: _____ Date: 11/04/2017

Jean Quila

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Enviroclean- Midland

Date/ Time Received: 11/02/2017 04:21:00 PM

Work Order #: 567387

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.2	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**Yes**	Houston
#18 Water VOC samples have zero headspace?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: JKR

PH Device/Lot#: 213315

Checklist completed by: Jessica Kramer
Jessica Kramer
Date: 11/03/2017

Checklist reviewed by: Kelsey Brooks
Kelsey Brooks
Date: 11/03/2017

Analytical Report 567389

for

Enviroclean- Midland

Project Manager: Julie Czech

Ram Yates #2 TB

RAMRNM0002

09-NOV-17

Collected By: Client

1211 W. Florida Ave, Midland TX 79701

Xenco-Houston (EPA Lab code: TX00122):
Texas (T104704215-17-23), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2017-142)

Xenco-Dallas (EPA Lab code: TX01468):
Texas (T104704295-17-15), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab code: TX00127): Texas (T104704221-17-12)
Xenco-Lubbock (EPA Lab code: TX00139): Texas (T104704219-17-16)
Xenco-Odessa (EPA Lab code: TX00158): Texas (T104704400-17-13)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-17-3)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona(AZ0757)
Xenco-Phoenix Mobile (EPA Lab code: AZ00901): Arizona (AZM757)

09-NOV-17

Project Manager: **Julie Czech**
Enviroclean- Midland
2405 ECR 123
Midland, TX 79706

Reference: XENCO Report No(s): **567389**
Ram Yates #2 TB
Project Address: TX

Julie Czech:

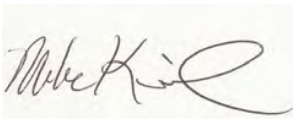
We are reporting to you the results of the analyses performed on the samples received under the project name referenced above and identified with the XENCO Report Number(s) 567389. All results being reported under this Report Number apply to the samples analyzed and properly identified with a Laboratory ID number. Subcontracted analyses are identified in this report with either the NELAC certification number of the subcontract lab in the analyst ID field, or the complete subcontracted report attached to this report.

Unless otherwise noted in a Case Narrative, all data reported in this Analytical Report are in compliance with NELAC standards. The uncertainty of measurement associated with the results of analysis reported is available upon request. Should insufficient sample be provided to the laboratory to meet the method and NELAC Matrix Duplicate and Matrix Spike requirements, then the data will be analyzed, evaluated and reported using all other available quality control measures.

The validity and integrity of this report will remain intact as long as it is accompanied by this letter and reproduced in full, unless written approval is granted by XENCO Laboratories. This report will be filed for at least 5 years in our archives after which time it will be destroyed without further notice, unless otherwise arranged with you. The samples received, and described as recorded in Report No. 567389 will be filed for 45 days, and after that time they will be properly disposed without further notice, unless otherwise arranged with you. We reserve the right to return to you any unused samples, extracts or solutions related to them if we consider so necessary (e.g., samples identified as hazardous waste, sample sizes exceeding analytical standard practices, controlled substances under regulated protocols, etc).

We thank you for selecting XENCO Laboratories to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,



Mike Kimmel
Client Services Manager

Sample Cross Reference 567389

Enviroclean- Midland, Midland, TX

Ram Yates #2 TB

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TMW-1	S	11-02-17 09:05	0 - 1 ft	567389-001
TMW-1	S	11-02-17 09:05	4 - 5 ft	567389-002
TMW-1	S	11-02-17 09:05	9 - 10 ft	567389-003
TMW-1	S	11-02-17 09:05	14 - 15 ft	567389-004
TMW-1	S	11-02-17 09:05	19 - 20 ft	567389-005
TMW-1	S	11-02-17 09:05	24 - 25 ft	567389-006

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Certificate of Analysis Summary 567389

Enviroclean- Midland, Midland, TX

Project Name: Ram Yates #2 TB

Project Id: RAMRNM0002
Contact: Julie Czech
Project Location: TX

Date Received in Lab: Thu Nov-02-17 04:21 pm
Report Date: 09-NOV-17
Project Manager: Kelsey Brooks

Analysis Requested													
	Lab Id:	567389-001		567389-002		567389-003		567389-004		567389-005		567389-006	
	Field Id:	TMW-1		TMW-1		TMW-1		TMW-1		TMW-1		TMW-1	
	Depth:	0-1 ft		4-5 ft		9-10 ft		14-15 ft		19-20 ft		24-25 ft	
	Matrix:	SOIL		SOIL		SOIL		SOIL		SOIL		SOIL	
	Sampled:	Nov-02-17 09:05		Nov-02-17 09:05		Nov-02-17 09:05		Nov-02-17 09:05		Nov-02-17 09:05		Nov-02-17 09:05	
Inorganic Anions by EPA 300 **SUB: TX104704215-17-23**	***Extracted:***	Nov-04-17 12:32		Nov-04-17 12:32		Nov-04-17 12:32		Nov-04-17 12:32		Nov-04-17 12:32		Nov-04-17 12:32	
	Analyzed:	Nov-05-17 08:44		Nov-05-17 08:52		Nov-05-17 08:59		Nov-05-17 09:21		Nov-05-17 09:28		Nov-05-17 09:35	
	Units/RL:	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL	mg/kg	RL
Chloride		38.6	9.62	27.8	9.63	42.5	9.40	10.3	9.49	ND	9.56	16.4	9.88

Mike Kimmel
Client Services Manager

Flagging Criteria

X In our quality control review of the data a QC deficiency was observed and flagged as noted. MS/MSD recoveries were found to be outside of the laboratory control limits due to possible matrix /chemical interference, or a concentration of target analyte high enough to affect the recovery of the spike concentration. This condition could also affect the relative percent difference in the MS/MSD.

B A target analyte or common laboratory contaminant was identified in the method blank. Its presence indicates possible field or laboratory contamination.

D The sample(s) were diluted due to targets detected over the highest point of the calibration curve, or due to matrix interference. Dilution factors are included in the final results. The result is from a diluted sample.

E The data exceeds the upper calibration limit; therefore, the concentration is reported as estimated.

F RPD exceeded lab control limits.

J The target analyte was positively identified below the quantitation limit and above the detection limit.

U Analyte was not detected.

L The LCS data for this analytical batch was reported below the laboratory control limits for this analyte. The department supervisor and QA Director reviewed data. The samples were either reanalyzed or flagged as estimated concentrations.

H The LCS data for this analytical batch was reported above the laboratory control limits. Supporting QC Data were reviewed by the Department Supervisor and QA Director. Data were determined to be valid for reporting.

K Sample analyzed outside of recommended hold time.

JN A combination of the "N" and the "J" qualifier. The analysis indicates that the analyte is "tentatively identified" and the associated numerical value may not be consistent with the amount actually present in the environmental sample.

** Surrogate recovered outside laboratory control limit.

BRL Below Reporting Limit.

RL Reporting Limit

MDL Method Detection Limit **SDL** Sample Detection Limit **LOD** Limit of Detection

PQL Practical Quantitation Limit **MQL** Method Quantitation Limit **LOQ** Limit of Quantitation

DL Method Detection Limit

NC Non-Calculable

+ NELAC certification not offered for this compound.

***** (Next to analyte name or method description) = Outside XENCO's scope of NELAC accreditation

	Phone	Fax
4147 Greenbriar Dr, Stafford, TX 77477	(281) 240-4200	(281) 240-4280
9701 Harry Hines Blvd , Dallas, TX 75220	(214) 902 0300	(214) 351-9139
5332 Blackberry Drive, San Antonio TX 78238	(210) 509-3334	(210) 509-3335
1211 W Florida Ave, Midland, TX 79701	(432) 563-1800	(432) 563-1713
2525 W. Huntington Dr. - Suite 102, Tempe AZ 85282	(602) 437-0330	

BS / BSD Recoveries

Project Name: Ram Yates #2 TB

Work Order #: 567389 **Project ID:** RAMRNM0002

Analyst: MAB **Date Prepared:** 11/04/2017 **Date Analyzed:** 11/05/2017

Lab Batch ID: 3032484 **Sample:** 7633865-1-BKS **Batch #:** 1 **Matrix:** Solid

Units: mg/kg

BLANK /BLANK SPIKE / BLANK SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Blank Sample Result [A]	Spike Added [B]	Blank Spike Result [C]	Blank Spike %R [D]	Spike Added [E]	Blank Spike Duplicate Result [F]	Blk. Spk Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	<10.0	100	91.5	92	100	96.4	96	5	80-120	20	

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|
Blank Spike Recovery [D] = 100*(C)/[B]
Blank Spike Duplicate Recovery [G] = 100*(F)/[E]
All results are based on MDL and Validated for QC Purposes

Form 3 - MS / MSD Recoveries

Project Name: Ram Yates #2 TB

Work Order # : 567389 **Project ID:** RAMRNM0002

Lab Batch ID: 3032484 **QC- Sample ID:** 567388-061 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/05/2017 **Date Prepared:** 11/04/2017 **Analyst:** MAB

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	234	189	426	102	189	437	107	3	80-120	20	

Lab Batch ID: 3032484 **QC- Sample ID:** 567389-003 S **Batch #:** 1 **Matrix:** Soil

Date Analyzed: 11/05/2017 **Date Prepared:** 11/04/2017 **Analyst:** MAB

Reporting Units: mg/kg

MATRIX SPIKE / MATRIX SPIKE DUPLICATE RECOVERY STUDY

Inorganic Anions by EPA 300 Analytes	Parent Sample Result [A]	Spike Added [B]	Spiked Sample Result [C]	Spiked Sample %R [D]	Spike Added [E]	Duplicate Spiked Sample Result [F]	Spiked Dup. %R [G]	RPD %	Control Limits %R	Control Limits %RPD	Flag
Chloride	42.5	190	229	98	188	233	101	2	80-120	20	

Matrix Spike Percent Recovery [D] = 100*(C-A)/B

Matrix Spike Duplicate Percent Recovery [G] = 100*(F-A)/E

Relative Percent Difference RPD = 200*|(C-F)/(C+F)|

ND = Not Detected, J = Present Below Reporting Limit, B = Present in Blank, NR = Not Requested, I = Interference, NA = Not Applicable

N = See Narrative, EQL = Estimated Quantitation Limit, NC = Non Calculable - Sample amount is > 4 times the amount spiked.

CHAIN OF CUSTODY RECORD 5067389 No. 03374

ENVIRO CLEAN SERVICES, LLC
(918) 794-7828

PROJECT NUMBER: RAMRNM0002
PROJECT NAME: RAM YATES #2 TB
COC 1 of 1
SHIPPED TO: XENCO
PROJECT MANAGER: MATT MUGAVERO
TAT: Standard

SAMPLER'S PRINTED NAME: Matthew N. Mugavero
SAMPLER'S SIGNATURE:

Date	Time	Sample ID	Sample Matrix	# of Sample Containers	CHLORIDE
11/2/17	0905	TMW-1 (0-1 ft)	SOIL	1	X
		TMW-1 (4-5 ft)		1	X
		TMW-1 (9-10 ft)		1	X
		TMW-1 (14-15 ft)		1	X
		TMW-1 (19-20 ft)		1	X
		TMW-1 (24-25 ft)		1	X
		~~TMW-1 (29-30 ft)~~		~~1~~	~~X~~
TOTAL NUMBER OF CONTAINERS				6	

REMARKS

Temp: 1.4 IR ID:R-8
CF:(0-6: -0.2°C)
(6-23: +0.2°C)
Corrected Temp: 1.2

RELINQUISHED BY: DATE 11/2/17 TIME 1621
RECEIVED BY: DATE 11/02/17 TIME 1621

RELINQUISHED BY: DATE TIME
RECEIVED BY: DATE TIME

METHOD OF SHIPMENT: HAND DELIVERED
AIRBILL NUMBER:

RECEIVED IN LABORATORY BY: DATE TIME

Send PDF, EDD, and INVOICE (if applicable) to:
JULIE CZECH at julie.czech@eccgrp.com

LABORATORY CONTACT: Kelsey Brooks
LABORATORY ADDRESS: 1211 W. Florida Ave. Midland, TX 79701

POINT OF ORIGIN: ☐ OKLAHOMA CITY ☒ TULSA ☐ NORMAN ☐ WOODWARD ☐ ARLINGTON ☐ MIDLAND ☐ OTHER:

PAGE #1 - RECEIVING LAB PAGE #2 - ENVIRO CLEAN PROJECT FILE PAGE #3 - ENVIRO CLEAN QA/QC DEPT

Inter-Office Shipment

IOS Number **1051322**

Date/Time: 11/03/17 10:49
Lab# From: **Midland**
Lab# To: **Houston**

Created by: Jessica Kramer
Delivery Priority:
Air Bill No.: 770668844250

Please send report to: Kelsey Brooks
Address: 1211 W. Florida Ave, Midland TX 79701
Phone:
E-Mail: kelsey.brooks@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
567389-001	S	TMW-1	11/02/17 09:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567389-002	S	TMW-1	11/02/17 09:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567389-003	S	TMW-1	11/02/17 09:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567389-004	S	TMW-1	11/02/17 09:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567389-005	S	TMW-1	11/02/17 09:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	
567389-006	S	TMW-1	11/02/17 09:05	E300	Inorganic Anions by EPA 300	11/08/17	11/30/17	KEB	CL	

Inter Office Shipment or Sample Comments:

Relinquished By: Jessica Kramer
Jessica Kramer

Date Relinquished: 11/03/2017

Received By:
Jean Quila

Date Received: 11/04/2017 10:30

Cooler Temperature: 3.6

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Houston

IOS #: 1051322

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient
Temperature Measuring device used :

Sent By: Jessica Kramer **Date Sent:** 11/03/2017 10:49 AM

Received By: Jean Quila **Date Received:** 11/04/2017 10:30 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	3.6	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**No**	
#5 *Custody Seals Signed and dated for Containers/coolers	**No**	
#6 *IOS present?	**Yes**	
#7 Any missing/extra samples?	**No**	
#8 IOS agrees with sample label(s)/matrix?	**Yes**	
#9 Sample matrix/ properties agree with IOS?	**Yes**	
#10 Samples in proper container/ bottle?	**Yes**	
#11 Samples properly preserved?	**Yes**	
#12 Sample container(s) intact?	**Yes**	
#13 Sufficient sample amount for indicated test(s)?	**Yes**	
#14 All samples received within hold time?	**Yes**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

NonConformance:

Corrective Action Taken:

Nonconformance Documentation

Contact: _____ **Contacted by :** _____ **Date:** _____

Checklist reviewed by: _____ Date: 11/04/2017

Jean Quila

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Enviroclean- Midland

Date/ Time Received: 11/02/2017 04:21:00 PM

Work Order #: 567389

Acceptable Temperature Range: 0 - 6 degC
Air and Metal samples Acceptable Range: Ambient

Temperature Measuring device used : R8

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	1.2	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received on ice?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 Custody Seals intact on sample bottles?	**N/A**	
#6*Custody Seals Signed and dated?	**N/A**	
#7 *Chain of Custody present?	**Yes**	
#8 Any missing/extra samples?	**No**	
#9 Chain of Custody signed when relinquished/ received?	**Yes**	
#10 Chain of Custody agrees with sample labels/matrix?	**Yes**	
#11 Container label(s) legible and intact?	**Yes**	
#12 Samples in proper container/ bottle?	**Yes**	
#13 Samples properly preserved?	**Yes**	
#14 Sample container(s) intact?	**Yes**	
#15 Sufficient sample amount for indicated test(s)?	**Yes**	
#16 All samples received within hold time?	**Yes**	
#17 Subcontract of sample(s)?	**Yes**	Houston
#18 Water VOC samples have zero headspace?	**N/A**	

*** Must be completed for after-hours delivery of samples prior to placing in the refrigerator**

Analyst: PH Device/Lot#:

Checklist completed by: Jessica Kramer Date: 11/03/2017
Jessica Kramer

Checklist reviewed by: Kelsey Brooks Date: 11/03/2017
Kelsey Brooks