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By Mike Buchanan at 3:16 pm, Dec 27, 2023

2020
ANNUAL GROUNDWATER MONITORING REPORT
(January to December 2020)

Draft Report Received for 2020 Annal Groundwater Monitoring Report for N. Monument G/SA Unit #2102: **Content Satisfactory**.

North Monument G/SA Unit #2102
Lea County, New Mexico
1RP-5677
Latitude: 32.61233°
Longitude: -103.27262°

LAI Project No. 19-0112-51

December 21, 2020

Prepared for:
Apache Corporation
2350 W. Marland Blvd
Hobbs, New Mexico 88240

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld, Suite 202
Midland, Texas 79701

Mark J. Larson, P.G.
Certified Professional Geologist #10490

Robert Nelson
Sr. Geoscientist

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Annual Groundwater Monitoring Report
(January through December 2020)
North Monument G/SA Unit #002
Lea County, New Mexico
December 21, 2020

1.0 EXECUTIVE SUMMARY

Larson & Associates, Inc. (LAI) has prepared this 2020 annual groundwater monitoring report for submittal to the New Mexico Oil Conservation Division (OCD) in Santa Fe and Hobbs, New Mexico, on behalf of Apache Corporation (Apache). This report presents quarterly (4 times per year) laboratory analysis of groundwater samples from three (3) monitoring wells (MW-2, TMW-1, and TMW-2) at the North Monument G San Andres Unit (NM G/SAU) #2102 (Site) located in Unit O (SW/4, SE/4), Section 32, Township 19 South, Range 37 East, in Lea County, New Mexico. The geodetic position is North 32.61233° and West -103.27262°.

The following activities occurred during 2020:

- March 12, 2020 – Monitor Well Development, First Quarter Gauging, and Groundwater Sample Event
- July 20, 2020 – Second Quarter Gauging and Groundwater Sampling Event
- October 1, 2020 – Thirst Quarter Gauging and Groundwater Sampling Event
- December 8, 2020 – Fourth Quarter Gauging and Groundwater Sampling Event

The following Observations are documented in this report:

- Two (2) monitoring wells (TMW-1 and TMW-2) were installed and sampled quarterly(4 times per year) for BTEX and chloride.
- Monitoring well MW-2 remains hydraulically up-gradient and representative of background conditions with chloride concentrations below the WQCC domestic water quality standard of 250 mg/L.
- BTEX was below the analytical method reporting limit (RL) and WQCC human health standards in groundwater samples during 2020.
- Chloride exceeded the WQCC domestic water quality standards of 250 mg/L in groundwater samples from wells TMW-1 and TMW-2.
- Apache will continue to monitor groundwater in all wells (MW-2, TMW-1, and TMW-2) on a quarterly (4 times per year) schedule.
- Gauge for presence of light non-aqueous phase liquid (LNAPL) and depth to groundwater, collect groundwater samples from all wells during each quarterly event and laboratory analysis for BTEX and chloride.

Apache proposes the following beginning in 2021:

- Resume quarterly (4 times per year) groundwater monitoring.
- Collect depth to groundwater and groundwater samples from four (4) monitoring wells during each quarterly.
- Analyze samples for BTEX and chloride.

Apache will submit the laboratory results to OCD in an annual report unless significant changes in analyte concentrations are detected at which time Apache will immediately report the results to OCD. Apache

will provide notice to the OCD in Hobbs and Santa Fe, New Mexico, at least 5 working days excluding weekends and holidays prior to each groundwater monitoring event.

2.0 INTRODUCTION

Larson & Associates, Inc. (LAI) has prepared this 2020 annual groundwater monitoring report for submittal to the New Mexico Oil Conservation Division (OCD) in Santa Fe and Hobbs, New Mexico, on behalf of Apache Corporation (Apache). This report presents quarterly (4 times per year) laboratory analysis of groundwater samples from 3 monitoring wells (MW-2, TMW-1, and TMW-2) at the North Monument G San Andres Unit (NMS/SAU Well #2102 (Site) located in Unit O (SW/4, SE/4), Section 32, Township 19 South, Range 37 East, in Lea County, New Mexico. The geodetic position is North 32.61233° and West -103.27262°. Figure 1 presents a topographic map.

2.1 Background

The crude oil and produced water release occurred on August 16, 2019, due to corrosion and failure of a buried 3-inch steel flowline. The failure allowed for an unknown volume of crude oil and produced water to be released. Approximately 2.5 barrels (bbls) of crude oil and produced water were recovered. The fluid pooled in the pasture south of the well pad and west of the lease road. Immediate notice was given to Mr. Dylan Rose-Cross (NMOCD) by Mr. Jeffery Broom (Apache Environmental Tech) via email on August 16, 2019. The surface ownership is private. The initial C-141 was submitted on August 29, 2019 and assigned remediation permit number of 1RP-5677. Appendix A presents the initial C-141.

On October 10, 2019, Apache applied for a variance to backfill the excavation due to the presence of groundwater at approximately 21 to 23 feet bgs and TPH and chloride contamination remaining in soil below the excavation at approximately 12 feet bgs. The request denoted that Apache would backfill the excavation with clean caliche to about 6 feet bgs, install a 20-mil polyethylene synthetic liner, and complete backfilling with clean topsoil containing chloride less than 600 mg/Kg. No response was received from OCD. On November 14, 2019, Apache backfill the excavation with clean caliche to about 6 feet bgs prior to installing the 20-mil polyethylene synthetic liner and completed backfilling above the liner with clean topsoil to the surface. The backfilled area measures approximately 16,024 square feet and was seeded with BLM Mix #2.

On March 11, 2020, Scarborough Drilling, Inc. (SDI) under supervision from LAI installed two (2) monitor wells (TMW-1 and TMW-2) utilizing an air rotary rig. The wells were drilled to depths of approximately 30 feet bgs. TMW-1 installed near the east side of the excavation and TMW-2 installed southeast of the

excavation, as close as possible to the source of the release. TMW-2 is positioned hydraulically down gradient and approximately 150 feet southeast of the excavation. The wells were completed with 2-inch schedule 40 threaded casing. About 20 feet of 0.010-inch factory slotted screen was positioned above and below the groundwater gauged at the time of drilling. The annular space above the sand was filled with bentonite chips to about 1-foot bgs. The wells were secured with locking steel protectors anchored in concrete. West Company, a State of New Mexico licensed professional land surveyor (License Number 23263) surveyed the monitoring wells for position and elevation including top of casing and natural ground surface. On December 21, 2010, a report titled "1RP-5677 Closure Report North Monument G/SA Unit #2102 Produced Water and Crude Oil Release" documenting the excavation closure and monitoring well installations was submitted to the OCD in Santa Fe and Hobbs, New Mexico.

2.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,564 feet above mean sea level (msl).
- The topography slopes gently towards the southeast.
- There are no surface water features within 1,000 feet of the Site.
- Karst data provided by the USGS describes this site as "Low Risk Potential".
- The soils are designated Berino-Cacique fine sandy loams association, 0 to 3 percent slopes, consisting of 8 inches of fine sandy loam and 52 inches of sandy clay loam in descending order.
- The surface geology consists of Eolian and piedmont deposits (Holocene to middle Pleistocene) interlayered eolian sands and piedmont-slop deposits.
- Groundwater occurs in the Ogallala Formation from about 21 to 23 feet below ground surface (bgs) based on depth to groundwater from two (2) monitoring wells installed near the excavation.

  Appendix C presents the Karst Potential Map

3.0 GROUNDWATER MONITORING

3.1 Depth to Groundwater and Groundwater Potentiometric Elevation

On March 12, 2020, depth to groundwater was recorded in the monitoring wells at 13.59 (MW-2), 24.37 (TMW-1), and 26.38 (TMW-2) feet below top of casing (TOC). The groundwater potentiometric surface elevation ranged from 3,555.93 feet above mean sea level (MSL) in MW-2 (up-gradient) to 3,538.09 feet above MSL in TMW-2 (down-gradient). The groundwater flow direction was generally from northwest to southeast at a gradient of approximately 0.029 feet per foot (ft/ft).

On July 20, 2020, depth to groundwater was recorded in the monitoring wells at 13.75 (MW-2), 24.95 (TMW-1), and 26.70 (TMW-2) feet below TOC. The groundwater potentiometric surface elevation ranged from 3,555.77 feet above MSL in MW-2 (up-gradient) to 3,537.77 feet above MSL in TMW-2 (down-gradient). The groundwater flow direction was generally from northwest to southeast at a gradient of approximately 0.029 feet per foot (ft/ft).

On October 1, 2020, depth to groundwater was recorded in the monitoring wells at 13.90 (MW-2), 24.90 (TMW-1), and 26.70 (TMW-2) feet below TOC. The groundwater potentiometric surface elevation ranged from 3,555.62 feet above MSL in MW-2 (up-gradient) to 3,537.77 feet above MSL in TMW-2 (down-gradient). The groundwater flow direction was generally from northwest to southeast at a gradient of approximately 0.029 feet per foot (ft/ft).

On December 8, 2020, depth to groundwater was recorded in the monitoring wells at 13.81 (MW-2), 24.65 (TMW-1), and 26.51 (TMW-2) feet below TOC. The groundwater potentiometric surface elevation ranged from 13.81 feet above MSL in MW-2 (up-gradient) to 26.51 feet above MSL in TMW-2 (down-gradient). The groundwater flow direction was generally from northwest to southeast at a gradient of approximately 0.029 feet per foot (ft/ft).

No significant change in groundwater potentiometric surface elevation, groundwater flow direction or gradient was observed throughout the quarterly sampling events of 2020. Figure 4a through 4d presents the groundwater potentiometric maps for March 12, 2020, July 20, 2020, October 1, 2020, and December 8, 2020, respectively. Table 1 presents the monitoring well construction and gauging summary.

3.2 Groundwater Samples and Laboratory Analysis

LAI personnel collected groundwater samples from three (3) monitoring wells (MW-2, TMW-1, and TMW-2) during each quarterly monitoring event. The groundwater samples were collected using the low stress or low flow method according to EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the water column and the well is pumped at a low rate until environmental parameters stabilize. Groundwater samples were collected from the discharge of the dedicated disposable Tygon tubing. The tubing was discarded after each use and the pump was thoroughly cleaned with a solution of potable water and laboratory grade detergent (Alconox®) and rinsed with distilled water. The samples were carefully transferred to laboratory containers that were labeled, packed in an ice filled chest affixed with custody seals, and delivered under chain of custody control to Xenco-Eurofins Laboratories (Xenco-Eurofins), a National Environmental Laboratory Accreditation Program (NELAP) accredited laboratory, located in Midland, Texas. A duplicate sample was collected from well MW-2 for laboratory quality assurance and quality control (QA/QC). Xenco analyzed the samples for benzene, toluene, ethylbenzene, xylene (BTEX) according to EPA SW-846 Method SW-8021B and chloride by EPA Method 300, respectively. Table 2 presents the laboratory analytical data summary. Appendix G presents the laboratory reports.

3.2.1 Organic Analysis

All BTEX values were below the analytical reporting limits (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards during 2020. No data quality exceptions were noted in the Xenco case narratives.

3.2.2 Inorganic Analysis

The groundwater samples were analyzed for chloride concentrations. The laboratory reported chloride above the WQCC domestic water quality standard (250 mg/L) in samples from the following monitoring wells:

Sample ID	March 12, 2020 (mg/L)	July 20, 2020 (mg/L)	October 1, 2020 (mg/L)	December 8, 2020 (mg/L)
TMW-1	360	432	452	449
TMW-2	423	664	591	473

Figure 5a through 5d presents drawings for chloride concentrations in groundwater during quarterly monitoring events on March 12, July 20, October 1, and December 8, 2020, respectively. Figure 6 presents a control chart for chloride concentrations in groundwater.

4.0 CONCLUSIONS

The following observations are documented in this report:

- Two (2) monitoring wells (TMW-1 and TMW-2) were installed and sampled quarterly for the presence of BTEX and chloride.
- Monitoring well MW-2 remains hydraulically up-gradient and representative of background chloride concentrations in groundwater below the WQCC domestic water quality standard of 250 mg/L.
- BTEX was below the analytical method reporting limit (RL) and WQCC human health standards during 2020.
- Chloride exceeded the WQCC domestic water quality standard of 250 mg/L in samples from wells TMW-1 and TMW-2.
- Apache will continue to monitor groundwater all wells (MW-2, TMW-1, and TMW-2) on a quarterly (4 times per year) basis.
- Gauge for LNAPL and depth to groundwater and collect groundwater samples from all wells during each quarterly event and laboratory analysis for BTEX and chloride.

Notice will be provided to the OCD in Hobbs and Santa Fe, New Mexico, at least 5 working days prior to each groundwater monitoring event. The OCD will be notified immediately upon receipt of laboratory analysis of any significant increases in analyte concentrations.

Tables

Table 1
Monitoring Well Completion and Gauging Summary
Apache Corportaion, NMGSAU 2102, Lea County, New Mexico

Well Information									Groundwater Data				
Well No.	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Surface Elevation (Feet AMSL)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	TOC Elevation (Feet AMSL)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Height (feet)	Groundwater Elevation (feet AMSL)
MW-2	Unknown	62.91	60.03	2	3566.64	Unknown	2.88	3,569.52	3/12/2020	13.59	10.71	49.32	3,555.93
									7/20/2020	13.75	10.87	49.16	3,555.77
									10/1/2020	13.90	11.02	49.01	3,555.62
									12/8/2020	13.81	10.93	49.10	3,555.71
TMW-1	3/11/2020	36.23	33.33	2	3561.92	9.83 - 29.49	2.90	3,564.82	3/12/2020	24.37	21.47	11.86	3,540.45
									7/20/2020	24.95	22.05	11.28	3,539.87
									10/1/2020	24.90	22.00	11.33	3,539.92
									12/8/2020	24.65	21.75	11.58	3,540.17
TWM-2	3/11/2020	37.07	34.03	2	3561.43	10.05 - 29.30	3.04	3,564.47	3/12/2020	26.38	23.34	10.69	3,538.09
									7/20/2020	26.70	23.66	10.37	3,537.77
									10/1/2020	26.70	23.66	10.37	3,537.77
									12/8/2020	26.51	23.47	10.56	3,537.96

Notes: MW-2 is hydraulically upgradient. TMW-1 is near release source. TMW-2 is hydraulically down gradient.
bgs: below ground surface
TOC: top of casing
AMSL: elevation above mean sea level

Table 2

Groundwater Sample Analytical Data Summary

Apache Corporation, NMGSAU 2102

Lea County, New Mexico

Sample	Collection Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)
WQCC Standard:		*0.01	*0.75	*0.75	*0.62	**250
MW-2	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	230
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	231
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	241
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	227
TMW-1	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	360
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	432
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	452
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	449
TMW-2	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	423
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	664
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	591
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	473
Dup-1 (MW-2)	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	223
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	242
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	245
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	226

Notes:

analysis performed by Xenco Laboratories, Midland, Texas by EPA SW-846 Method 8021B (BTEX) and Method 300 (chloride)

All values reported in milligrams per liter (mg/L) equivalent to parts per million (ppm)

< values - denotes concentration is less than method reporting limit (RL).

* - NMWQCC human health standard

** - NMWQCC domestic water quality standard

BGS - below ground surface

Figures

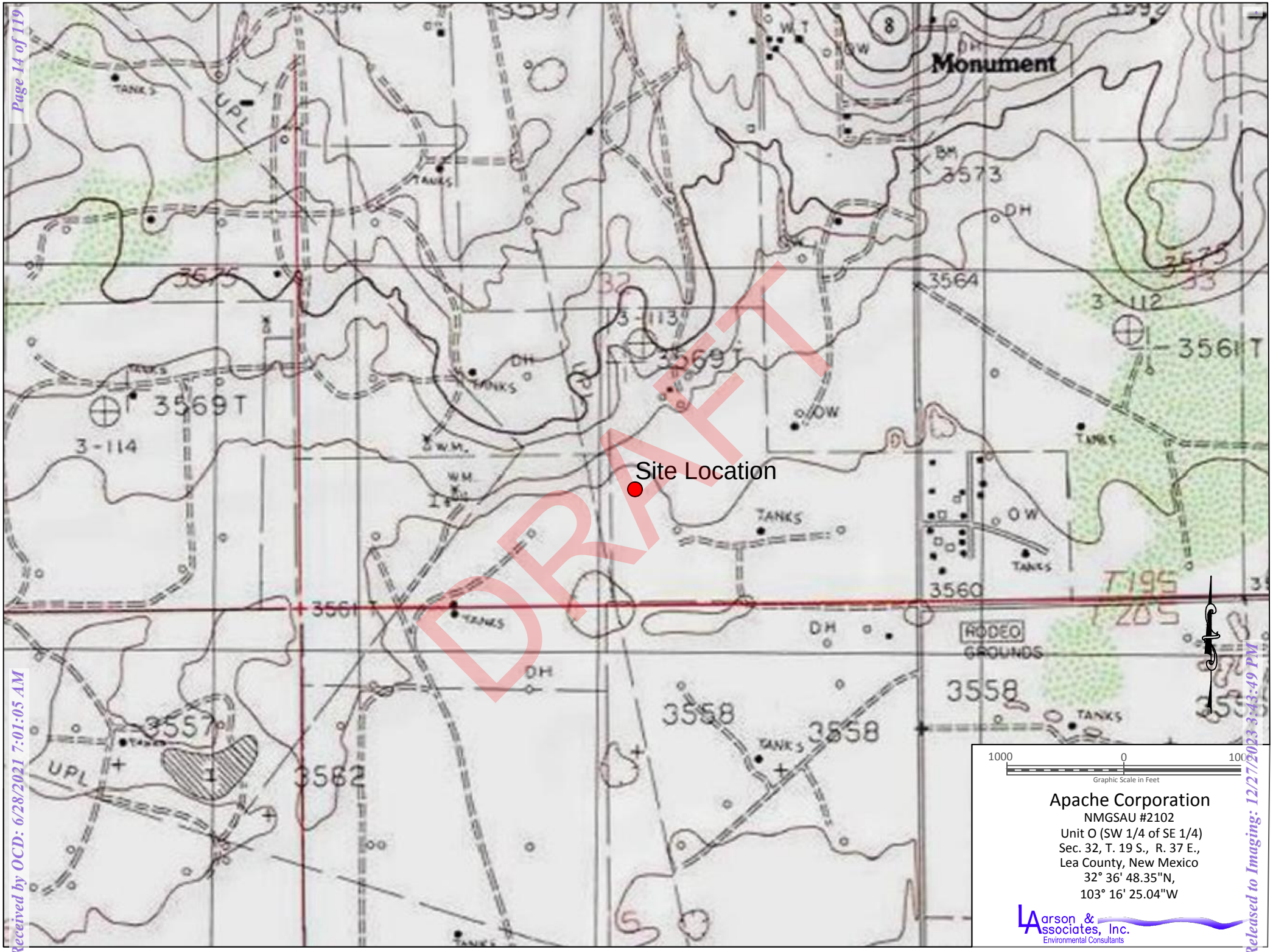


Figure 1 - Topographic Map

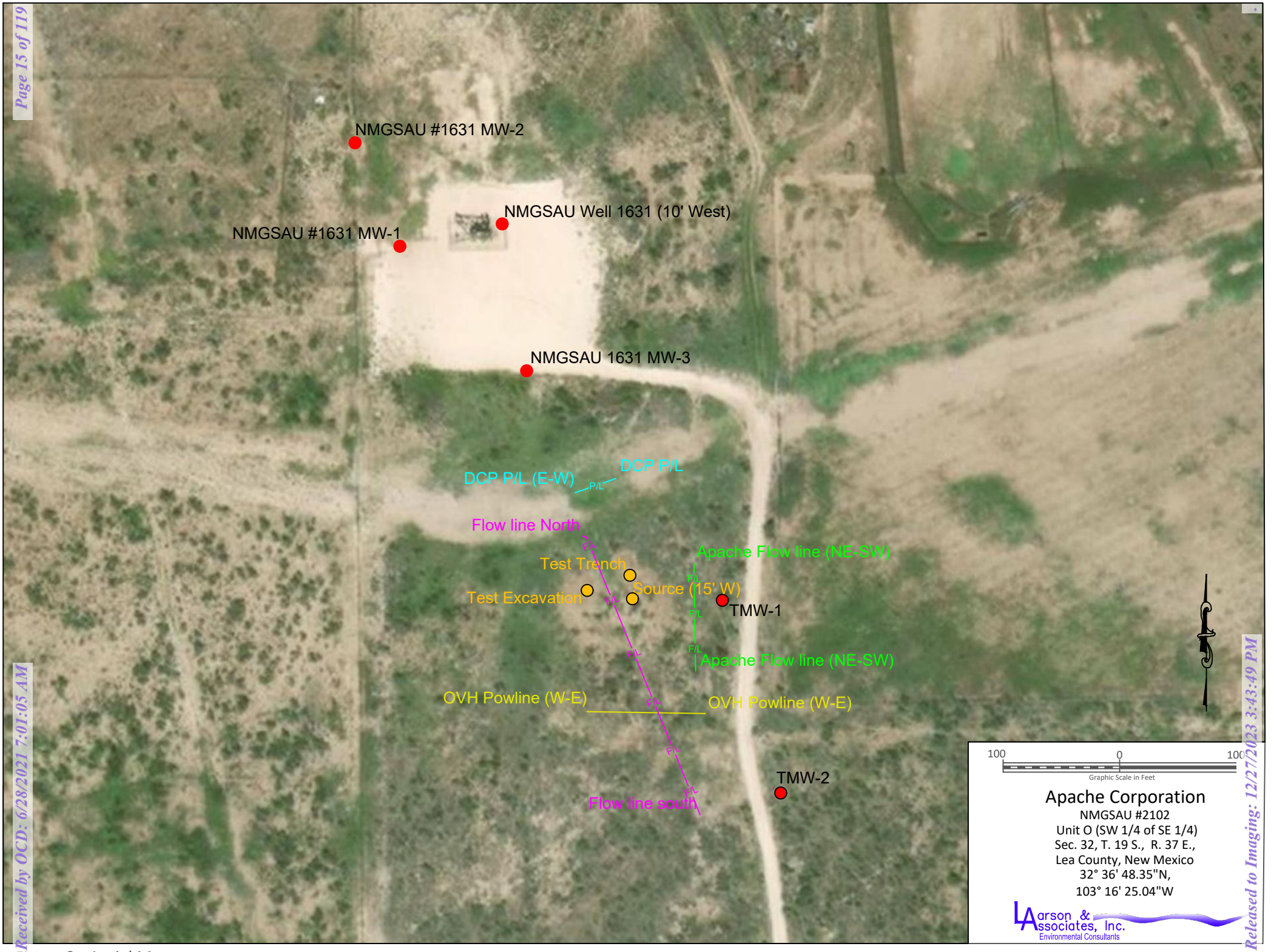
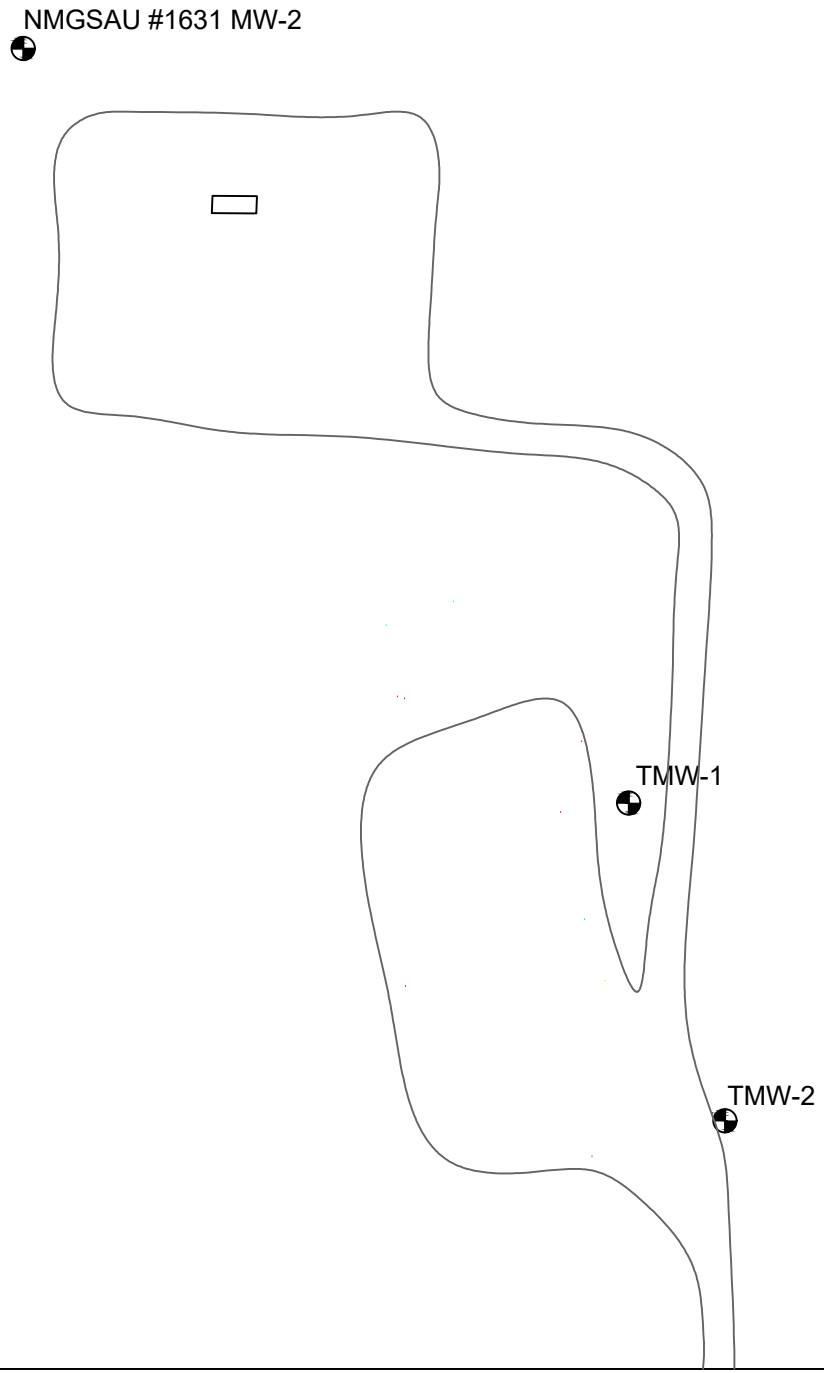


Figure 2 - Aerial Map



100 0 100
Graphic Scale in Feet

Apache Corporation
NMGSAU #2102
Unit O (SW 1/4 of SE 1/4)
Sec. 32, T. 19 S., R. 37 E.,
Lea County, New Mexico
32° 36' 48.35"N,
103° 16' 25.04"W

Larson & Associates, Inc.
Environmental Consultants

Figure 3 - Base Map

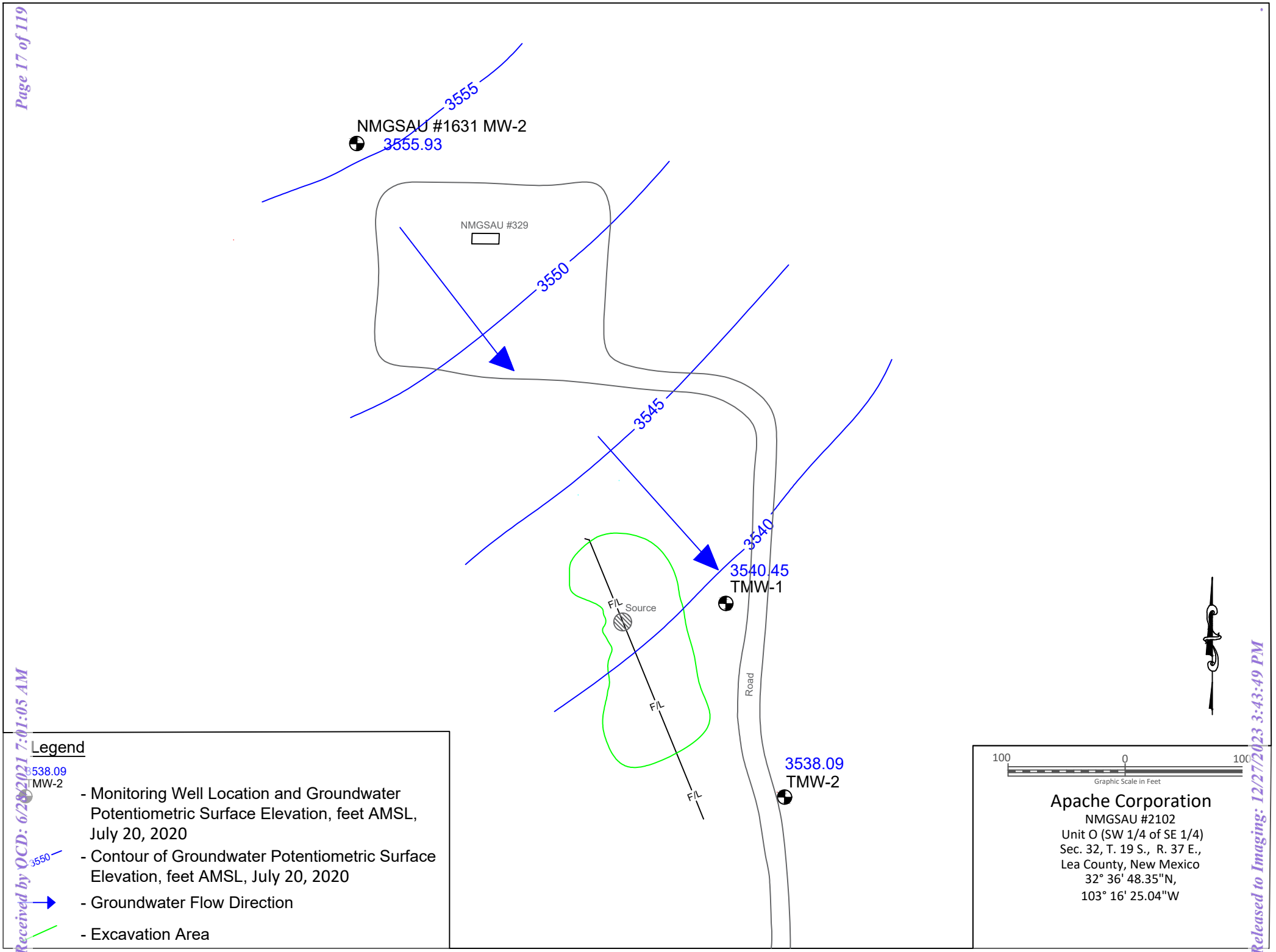


Figure 4a - Groundwater Potentiometric Surface Map, March 12, 2020

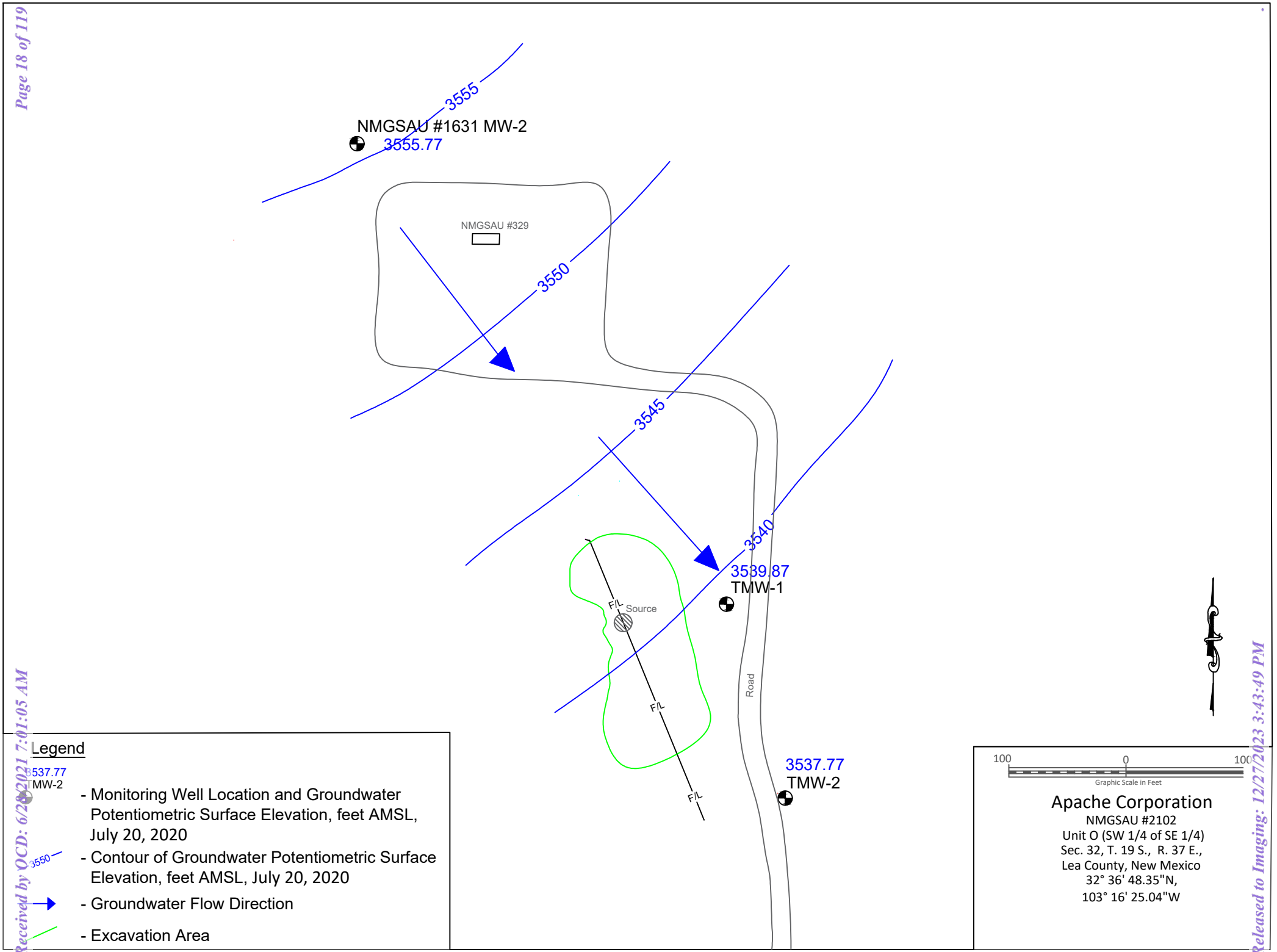


Figure 4b - Groundwater Potentiometric Surface Map, July 20, 2020

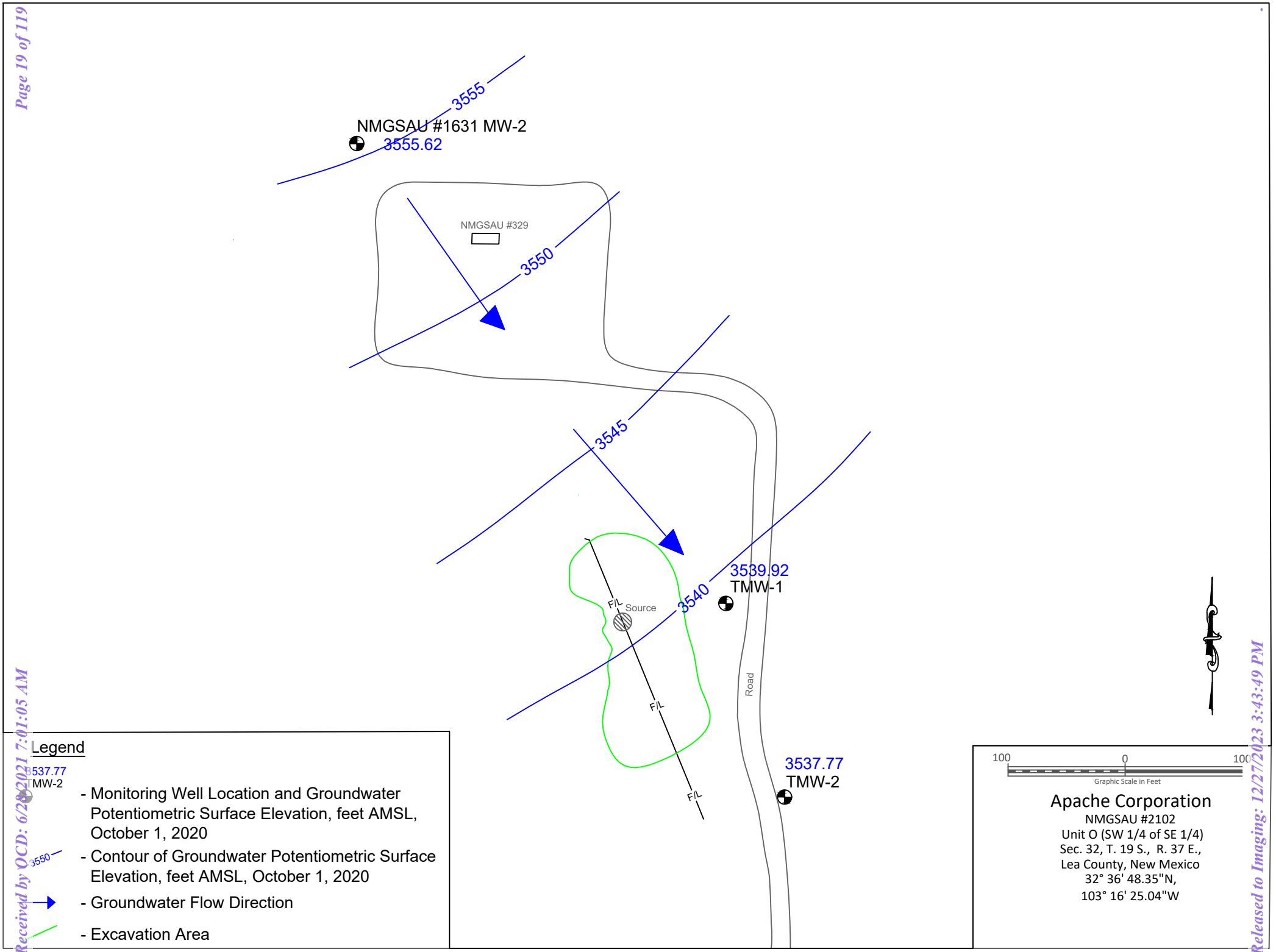


Figure 4c - Groundwater Potentiometric Surface Map, October 1, 2020

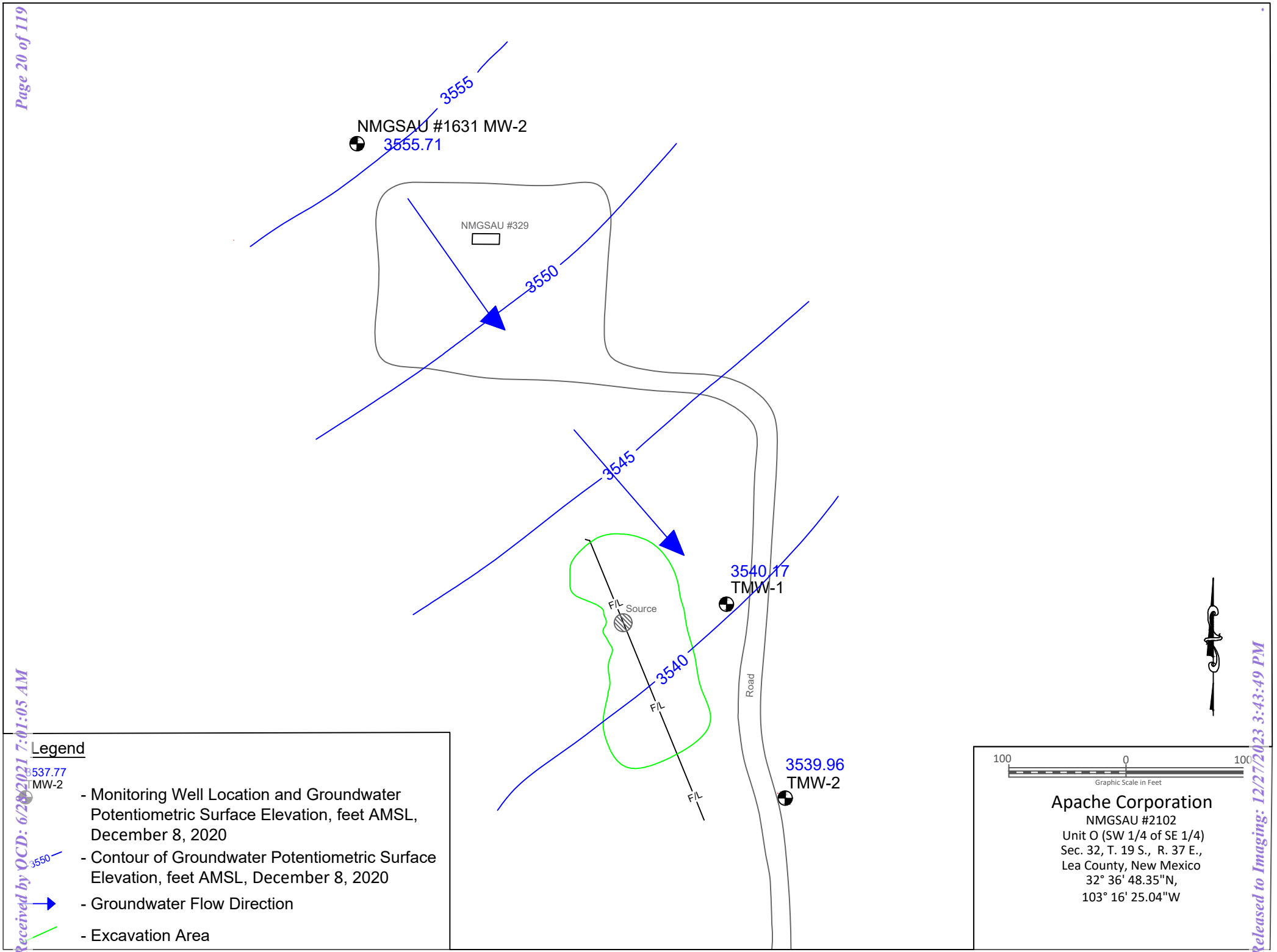


Figure 4d - Groundwater Potentiometric Surface Map, December 8, 2020

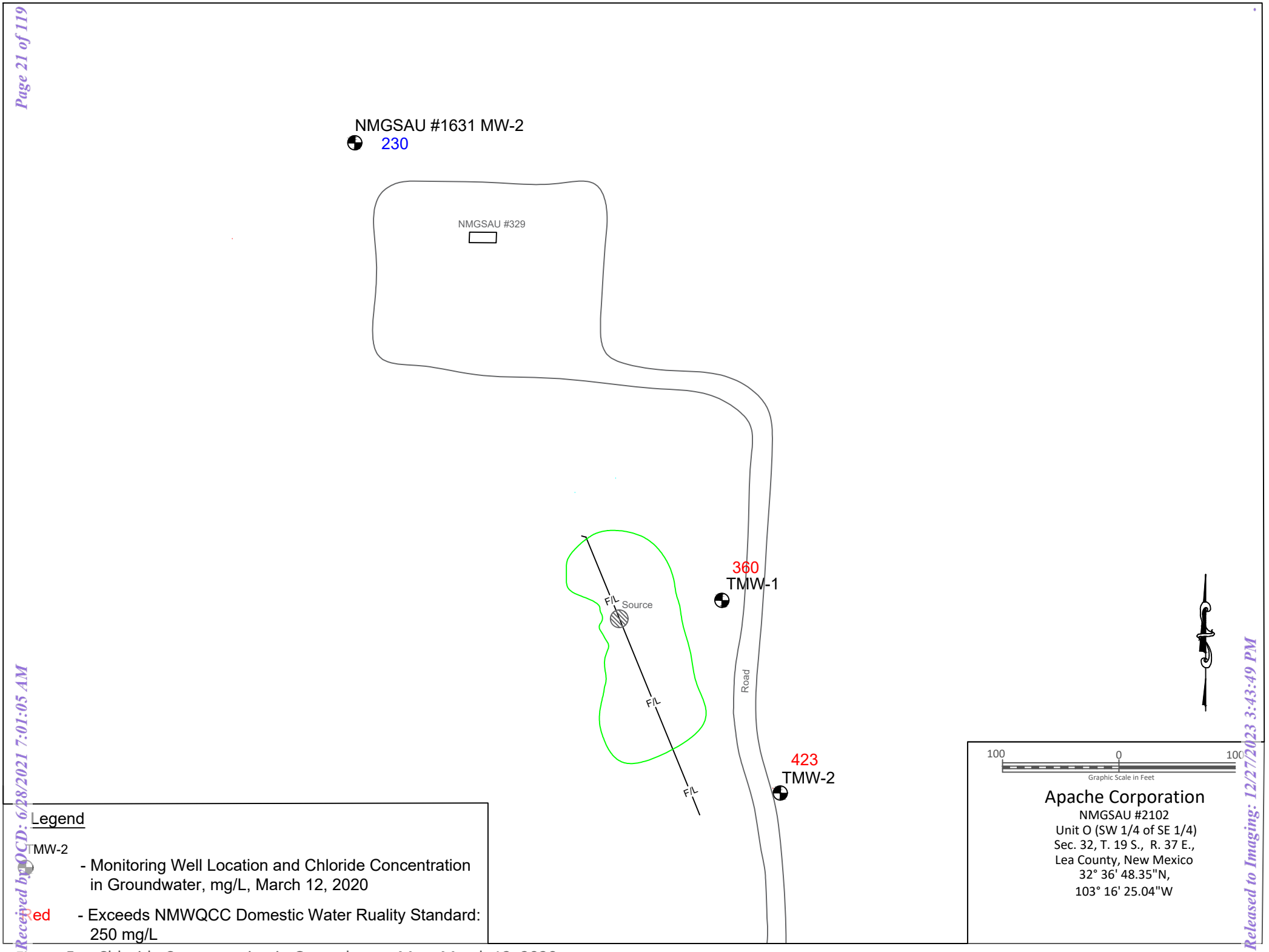


Figure 5a - Chloride Concentration in Groundwater Map, March 12, 2020

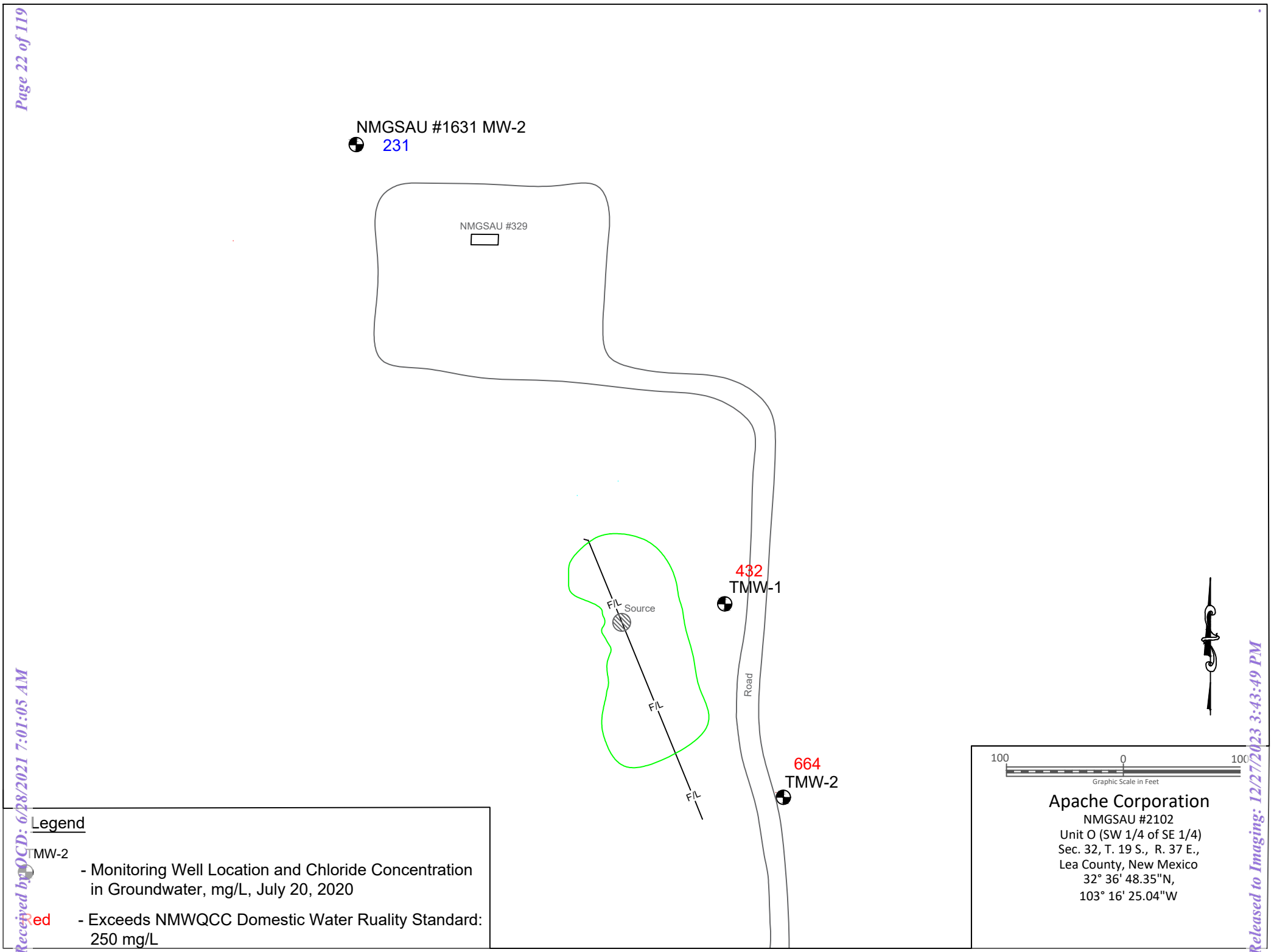


Figure 5b - Chloride Concentration in Groundwater Map, July 20, 2020

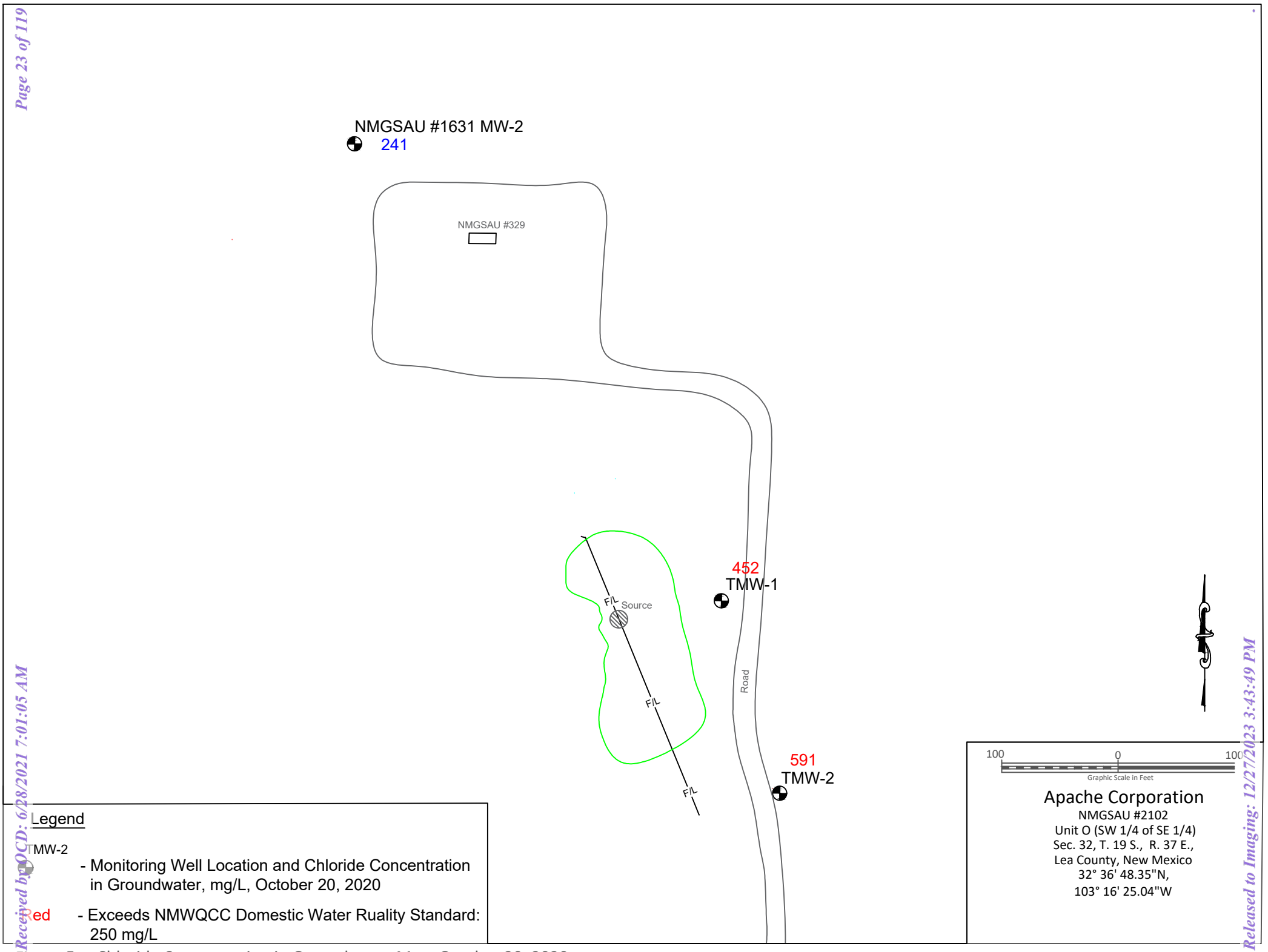


Figure 5c - Chloride Concentration in Groundwater Map, October 20, 2020

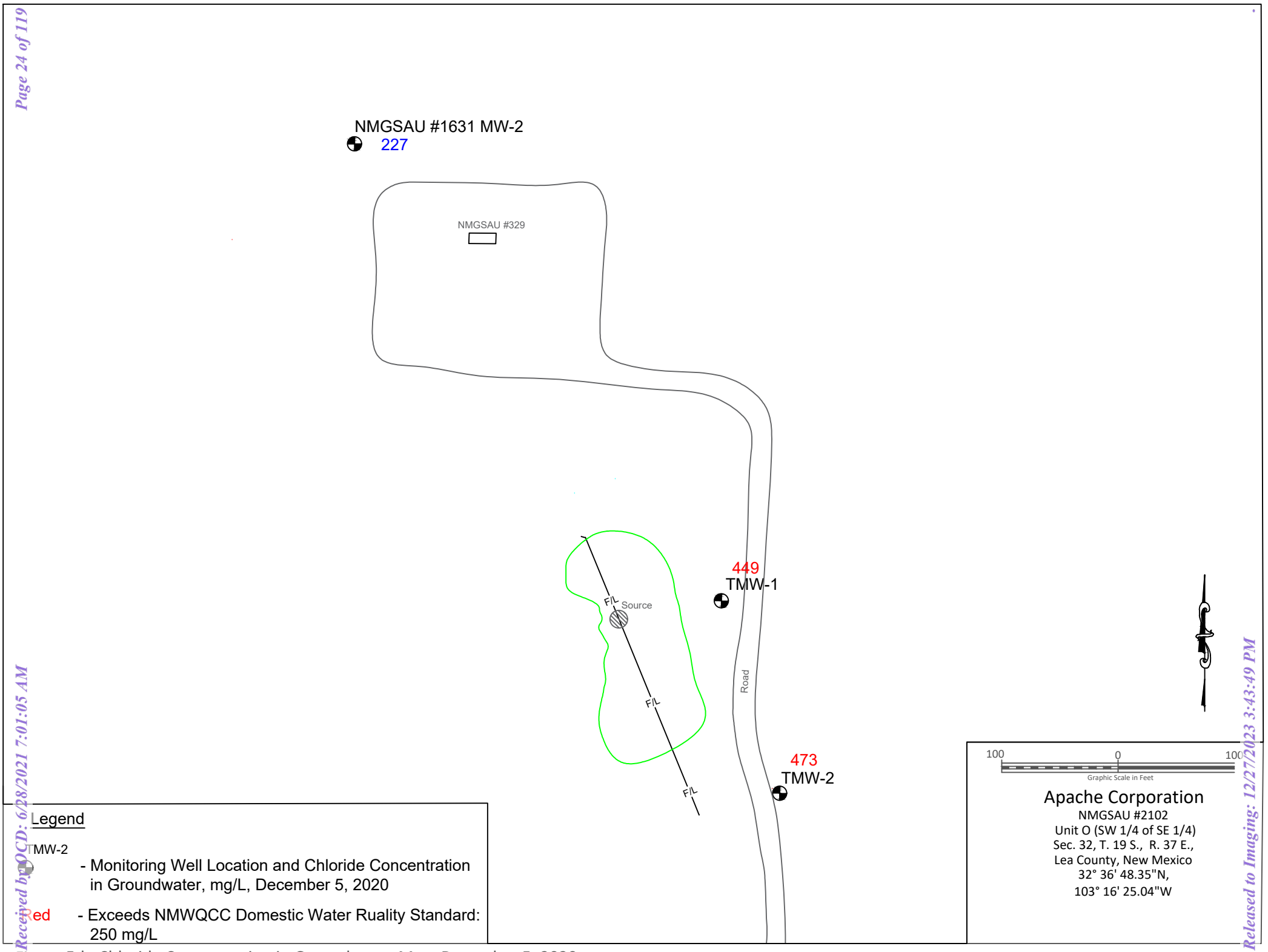


Figure 5d - Chloride Concentration in Groundwater Map, December 5, 2020

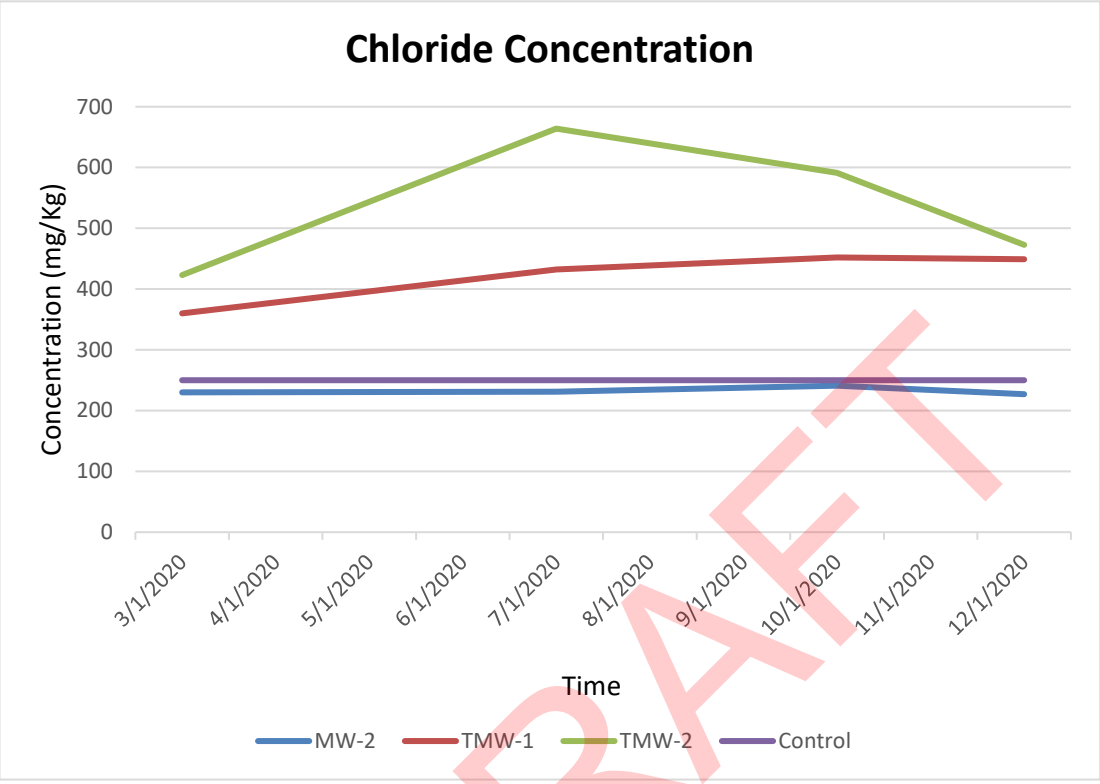


Figure 6 - Chloride Concentration Control Chart

Appendix A

Laboratory Reports

Certificate of Analysis Summary 655568

Larson and Associates, Inc., Midland, TX

Project Name: Apache-NM GSAU 2102

Project Id: 19-0112-51
Contact: Mark Larson
Project Location:

Date Received in Lab: Fri 03.13.2020 08:45
Report Date: 03.19.2020 14:19
Project Manager: Holly Taylor

Analysis Requested													
	Lab Id:	655568-001		655568-002		655568-003		655568-004					
	Field Id:	MW-2		DUP-1		TMW-2		TMW-1					
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER					
	Sampled:	03.12.2020 11:25		03.12.2020 11:30		03.12.2020 12:15		03.12.2020 13:00					
BTEX by EPA 8021B	***Extracted:***	03.17.2020 15:30		03.17.2020 15:30		03.17.2020 15:30		03.17.2020 15:30					
SUB: T104704219-19-21	***Analyzed:***	03.17.2020 21:04		03.17.2020 22:41		03.17.2020 23:06		03.17.2020 23:30					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Benzene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
Toluene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
Ethylbenzene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
m,p-Xylenes		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
o-Xylene		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
Total Xylenes		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
Total BTEX		<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100	<0.00100	0.00100				
Chloride by EPA 300	***Extracted:***	03.13.2020 18:30		03.13.2020 18:30		03.13.2020 18:30		03.13.2020 18:30					
	Analyzed:	03.13.2020 23:22		03.13.2020 22:14		03.13.2020 22:21		03.13.2020 22:28					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		230	2.50	223	2.50	423	5.00	360	5.00				

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Holly Taylor
Project Manager

Analytical Report 655568

for

Larson and Associates, Inc.

Project Manager: Mark Larson

Apache-NM GSAU 2102

19-0112-51

03.19.2020

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-19-30), Arizona (AZ0765), Florida (E871002-24), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (19-037-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (TX104704295-19-22), Arizona (AZ0809), Arkansas (17-063-0)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-19-16)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-19-21)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-19-5)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

03.19.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: XENCO Report No(s): **655568**
Apache-NM GSAU 2102
Project Address:

Mark Larson :

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) 655568. 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. 655568 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,

Holly Taylor

Holly Taylor
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Sample Cross Reference 655568

Larson and Associates, Inc., Midland, TX

Apache-NM GSAU 2102

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	03.12.2020 11:25		655568-001
DUP-1	W	03.12.2020 11:30		655568-002
TMW-2	W	03.12.2020 12:15		655568-003
TMW-1	W	03.12.2020 13:00		655568-004

CASE NARRATIVE

Client Name: Larson and Associates, Inc.

Project Name: Apache-NM GSAU 2102

Project ID: *19-0112-51*
Work Order Number(s): *655568*

Report Date: *03.19.2020*
Date Received: *03.13.2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3120085 BTEX by EPA 8021B

Surrogate 4-Bromofluorobenzene recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7699174-1-BKS,7699174-1-BLK,655568-001 S,655568-001 SD,655568-001,655568-003,655568-002.

Surrogate a,a,a-Trifluorotoluene recovered above QC limits Data confirmed by re-analysis. Samples affected are: 7699174-1-BKS,7699174-1-BLK,7699174-1-BSD,655568-001 S,655568-001 SD,655568-003,655568-004,655568-002,655568-001.

Ethylbenzene, Toluene, m,p-Xylenes, o-Xylene Relative Percent Difference (RPD) between matrix spike and duplicate were above quality control limits.
Samples in the analytical batch are: 655568-001, -002, -003, -004

Lab Sample ID 655568-001 was randomly selected for Matrix Spike/Matrix Spike Duplicate (MS/MSD). m,p-Xylenes, o-Xylene recovered below QC limits in the Matrix Spike and Matrix Spike Duplicate. Outlier/s are due to possible matrix interference. Samples in the analytical batch are: 655568-001, -002, -003, -004.
The Laboratory Control Sample for m,p-Xylenes, o-Xylene is within laboratory Control Limits, therefore the data was accepted.

Certificate of Analytical Results 655568

Larson and Associates, Inc., Midland, TX

Apache-NM GSAU 2102

Sample Id: **MW-2** Matrix: Water Date Received:03.13.2020 08:45

Lab Sample Id: 655568-001 Date Collected: 03.12.2020 11:25

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 03.13.2020 18:30

Seq Number: 3119665

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**230**	2.50	mg/L	03.13.2020 23:22		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MIT % Moisture:

Analyst: MIT Date Prep: 03.17.2020 15:30

Seq Number: 3120085 SUB: T104704219-19-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	03.17.2020 21:04	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	03.17.2020 21:04	UF	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	03.17.2020 21:04	UF	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.17.2020 21:04	UXF	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	03.17.2020 21:04	UXF	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	03.17.2020 21:04	U	1
Total BTEX		<0.00100	0.00100	mg/L	03.17.2020 21:04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	124	%	66-120	03.17.2020 21:04	**
4-Bromofluorobenzene	460-00-4	124	%	67-120	03.17.2020 21:04	**

Certificate of Analytical Results 655568

Larson and Associates, Inc., Midland, TX

Apache-NM GSAU 2102

Sample Id: **DUP-1** Matrix: Water Date Received:03.13.2020 08:45

Lab Sample Id: 655568-002 Date Collected: 03.12.2020 11:30

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 03.13.2020 18:30

Seq Number: 3119665

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**223**	2.50	mg/L	03.13.2020 22:14		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MIT % Moisture:

Analyst: MIT Date Prep: 03.17.2020 15:30

Seq Number: 3120085 SUB: T104704219-19-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	03.17.2020 22:41	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	03.17.2020 22:41	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	03.17.2020 22:41	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.17.2020 22:41	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	03.17.2020 22:41	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	03.17.2020 22:41	U	1
Total BTEX		<0.00100	0.00100	mg/L	03.17.2020 22:41	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	123	%	66-120	03.17.2020 22:41	**
4-Bromofluorobenzene	460-00-4	125	%	67-120	03.17.2020 22:41	**

Certificate of Analytical Results 655568

Larson and Associates, Inc., Midland, TX

Apache-NM GSAU 2102

Sample Id: **TMW-2** Matrix: Water Date Received:03.13.2020 08:45

Lab Sample Id: 655568-003 Date Collected: 03.12.2020 12:15

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 03.13.2020 18:30

Seq Number: 3119665

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**423**	5.00	mg/L	03.13.2020 22:21		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MIT % Moisture:

Analyst: MIT Date Prep: 03.17.2020 15:30

Seq Number: 3120085 SUB: T104704219-19-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	03.17.2020 23:06	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	03.17.2020 23:06	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	03.17.2020 23:06	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.17.2020 23:06	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	03.17.2020 23:06	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	03.17.2020 23:06	U	1
Total BTEX		<0.00100	0.00100	mg/L	03.17.2020 23:06	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	129	%	66-120	03.17.2020 23:06	**
4-Bromofluorobenzene	460-00-4	129	%	67-120	03.17.2020 23:06	**

Certificate of Analytical Results 655568

Larson and Associates, Inc., Midland, TX

Apache-NM GSAU 2102

Sample Id: **TMW-1** Matrix: Water Date Received:03.13.2020 08:45

Lab Sample Id: 655568-004 Date Collected: 03.12.2020 13:00

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 03.13.2020 18:30

Seq Number: 3119665

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**360**	5.00	mg/L	03.13.2020 22:28		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MIT % Moisture:

Analyst: MIT Date Prep: 03.17.2020 15:30

Seq Number: 3120085 SUB: T104704219-19-21

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00100	0.00100	mg/L	03.17.2020 23:30	U	1
Toluene	108-88-3	<0.00100	0.00100	mg/L	03.17.2020 23:30	U	1
Ethylbenzene	100-41-4	<0.00100	0.00100	mg/L	03.17.2020 23:30	U	1
m,p-Xylenes	179601-23-1	<0.00200	0.00200	mg/L	03.17.2020 23:30	U	1
o-Xylene	95-47-6	<0.00100	0.00100	mg/L	03.17.2020 23:30	U	1
Total Xylenes	1330-20-7	<0.00100	0.00100	mg/L	03.17.2020 23:30	U	1
Total BTEX		<0.00100	0.00100	mg/L	03.17.2020 23:30	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
a,a,a-Trifluorotoluene	98-08-8	126	%	66-120	03.17.2020 23:30	**
4-Bromofluorobenzene	460-00-4	96	%	67-120	03.17.2020 23:30	

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. **ND** Not Detected.

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

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

QC Summary 655568

Larson and Associates, Inc.

Apache-NM GSAU 2102

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3119665 Matrix: Water Date Prep: 03.13.2020
MB Sample Id: 7698877-1-BLK LCS Sample Id: 7698877-1-BKS LCSD Sample Id: 7698877-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	0.0549	25.0	25.1	100	25.2	101	90-110	0	20	mg/L	03.13.2020 21:38	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3119665 Matrix: Water Date Prep: 03.13.2020
Parent Sample Id: 655568-001 MS Sample Id: 655568-001 S MSD Sample Id: 655568-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	230	125	352	98	351	97	90-110	0	20	mg/L	03.13.2020 23:27	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3119665 Matrix: Drinking Water Date Prep: 03.13.2020
Parent Sample Id: 655579-001 MS Sample Id: 655579-001 S MSD Sample Id: 655579-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	7.33	25.0	32.6	101	32.5	101	90-110	0	20	mg/L	03.13.2020 21:59	

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3120085 Matrix: Water Date Prep: 03.17.2020
MB Sample Id: 7699174-1-BLK LCS Sample Id: 7699174-1-BKS LCSD Sample Id: 7699174-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0994	99	0.0982	98	74-120	1	20	mg/L	03.17.2020 19:01	
Toluene	<0.00100	0.100	0.106	106	0.103	103	74-120	3	20	mg/L	03.17.2020 19:01	
Ethylbenzene	<0.00100	0.100	0.109	109	0.106	106	74-120	3	20	mg/L	03.17.2020 19:01	
m,p-Xylenes	<0.00200	0.200	0.219	110	0.212	106	73-120	3	25	mg/L	03.17.2020 19:01	
o-Xylene	<0.00100	0.100	0.108	108	0.106	106	73-120	2	25	mg/L	03.17.2020 19:01	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	124	**	124	**	121	**	66-120	%	03.17.2020 19:01
4-Bromofluorobenzene	123	**	123	**	118		67-120	%	03.17.2020 19:01

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

QC Summary 655568

Larson and Associates, Inc.

Apache-NM GSAU 2102

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3120085 Matrix: Water Date Prep: 03.17.2020

Parent Sample Id: 655568-001 MS Sample Id: 655568-001 S MSD Sample Id: 655568-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00100	0.100	0.0186	19	0.0234	23	15-147	23	25	mg/L	03.17.2020 21:28	
Toluene	<0.00100	0.100	0.0187	19	0.0242	24	11-147	26	25	mg/L	03.17.2020 21:28	F
Ethylbenzene	<0.00100	0.100	0.0186	19	0.0254	25	10-149	31	25	mg/L	03.17.2020 21:28	F
m,p-Xylenes	<0.00200	0.200	0.0295	15	0.0421	21	62-124	35	25	mg/L	03.17.2020 21:28	XF
o-Xylene	<0.00100	0.100	0.0180	18	0.0249	25	62-124	32	25	mg/L	03.17.2020 21:28	XF

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
a,a,a-Trifluorotoluene	123	**	122	**	66-120	%	03.17.2020 21:28
4-Bromofluorobenzene	123	**	124	**	67-120	%	03.17.2020 21:28

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

Q555568

Nº 0892

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 3/13/2020 PAGE 1 OF 1

PO#: LAB WORK ORDER#:

PROJECT LOCATION OR NAME: Apache - NMCSAU 2102

LAI PROJECT #: 19-0112-51 COLLECTOR: RN/DS

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: BTEX ☐ MTBE ☐	TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	OIL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TBLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☐ ANIONS ☐ ALKALINITY ☐	FIELD NOTES
MW-2		3/12/20	11:25	W	8	X			X	X																	X		
Dup-1		"	11:30	"	"	"			"	"																	"		
TMW-2		"	12:15	"	"	"			"	"																	"		
TMW-1		"	13:00	"	"	"			"	"																	"		
TOTAL																													

RECEIVED

RELINQUISHED BY:(Signature) DATE/TIME 3/13/20 8:45 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

LABORATORY: Xenco

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.3/5.0 THERM#: D9
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

Inter-Office Shipment

IOS Number : 60346

Date/Time:	03.16.2020	Created by:	Allison Johnson	Please send report to:	Holly Taylor
Lab# From:	**Midland**	Delivery Priority:		Address:	1211 W. Florida Ave
Lab# To:	**Lubbock**	Air Bill No.:	770044520695	E-Mail:	holly.taylor@xenco.com

Sample Id	Matrix	Client Sample Id	Sample Collection	Method	Method Name	Lab Due	HT Due	PM	Analytes	Sign
655568-001	W	MW-2	03.12.2020 11:25	SW8021B	BTEX by EPA 8021B	**03.19.2020**	03.26.2020	HTA	BR4FBZ BZ BZME EBZ	
655568-002	W	DUP-1	03.12.2020 11:30	SW8021B	BTEX by EPA 8021B	**03.19.2020**	03.26.2020	HTA	BR4FBZ BZ BZME EBZ	
655568-003	W	TMW-2	03.12.2020 12:15	SW8021B	BTEX by EPA 8021B	**03.19.2020**	03.26.2020	HTA	BR4FBZ BZ BZME EBZ	
655568-004	W	TMW-1	03.12.2020 13:00	SW8021B	BTEX by EPA 8021B	**03.19.2020**	03.26.2020	HTA	BR4FBZ BZ BZME EBZ	

Inter Office Shipment or Sample Comments:

Relinquished By: Allison Johnson

Date Relinquished: 03.16.2020

Received By: Ashley Derstine

Date Received: 03.17.2020

Cooler Temperature: 2.9

XENCO Laboratories

Inter Office Report- Sample Receipt Checklist

Sent To: Lubbock

IOS #: 60346

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

Sent By: Allison Johnson **Date Sent:** 03.16.2020 03.33 PM

Received By: Ashley Derstine **Date Received:** 03.17.2020 10.45 AM

Sample Receipt Checklist		Comments
#1 *Temperature of cooler(s)?	2.9	
#2 *Shipping container in good condition?	**Yes**	
#3 *Samples received with appropriate temperature?	**Yes**	
#4 *Custody Seals intact on shipping container/ cooler?	**N/A**	
#5 *Custody Seals Signed and dated for Containers/coolers	**N/A**	
#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: 03.17.2020

Ashley Derstine

XENCO Laboratories

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 03.13.2020 08.45.00 AM

Work Order #: 655568

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

Temperature Measuring device used : R9

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	5
#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)?	**N/A**
#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: AJA

PH Device/Lot#: 10BDH1991

Checklist completed by: Brianna Teel Date: 03.13.2020

Brianna Teel

Checklist reviewed by: Holly Taylor Date: 03.19.2020

Holly Taylor

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Certificate of Analysis Summary 667700

Larson and Associates, Inc., Midland, TX

Project Name: NMGSAU #2102

Project Id: 19-0112-51
Contact: Mark Larson
Project Location:

Date Received in Lab: Tue 07.21.2020 08:35
Report Date: 07.28.2020 16:46
Project Manager: Holly Taylor

Analysis Requested													
	Lab Id:	667700-001		667700-002		667700-003		667700-004					
	Field Id:	MW-2		DUP-1		TMW-1		TMW-2					
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER					
	Sampled:	07.20.2020 11:20		07.20.2020 11:40		07.20.2020 12:40		07.20.2020 12:50					
BTEX by EPA 8021B	***Extracted:***	07.25.2020 14:45		07.25.2020 14:45		07.25.2020 14:45		07.25.2020 14:45					
	Analyzed:	07.26.2020 05:32		07.26.2020 05:53		07.26.2020 06:13		07.26.2020 06:33					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Benzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Toluene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
m,p-Xylenes		<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400				
o-Xylene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total BTEX		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Chloride by EPA 300	***Extracted:***	07.22.2020 16:50		07.22.2020 16:50		07.22.2020 16:50		07.22.2020 16:50					
	Analyzed:	07.24.2020 09:55		07.24.2020 10:00		07.24.2020 10:05		07.24.2020 10:10					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		231	2.50	242	2.50	432	5.00	664	5.00				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Analytical Report 667700

for

Larson and Associates, Inc.

Project Manager: Mark Larson

NMGSAU #2102

19-0112-51

07.28.2020

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-36), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2019-058), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-25), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-17)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-22)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-19)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-7)
Xenco Phoenix (EPA Lab Code: AZ00901): Arizona (AZ0757)
Xenco-Tampa: Florida (E87429), North Carolina (483)

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07.28.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **667700**
NMGSAU #2102
Project Address:

Mark Larson :

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 Eurofins Xenco, LLC Report Number(s) 667700. 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 Eurofins Xenco, LLC. 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. 667700 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Holly Taylor

Holly Taylor
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Sample Cross Reference 667700

Larson and Associates, Inc., Midland, TX

NMGSAU #2102

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	07.20.2020 11:20		667700-001
DUP-1	W	07.20.2020 11:40		667700-002
TMW-1	W	07.20.2020 12:40		667700-003
TMW-2	W	07.20.2020 12:50		667700-004

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CASE NARRATIVE

Client Name: Larson and Associates, Inc.

Project Name: NMGSAU #2102

Project ID: *19-0112-51*
Work Order Number(s): *667700*

Report Date: *07.28.2020*
Date Received: *07.21.2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

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Certificate of Analytical Results 667700

Larson and Associates, Inc., Midland, TX

NMGSAU #2102

Sample Id: **MW-2** Matrix: Water Date Received:07.21.2020 08:35

Lab Sample Id: 667700-001 Date Collected: 07.20.2020 11:20

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 07.22.2020 16:50

Seq Number: 3132512

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**231**	2.50	mg/L	07.24.2020 09:55		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 07.25.2020 14:45

Seq Number: 3132608

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	07.26.2020 05:32	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	07.26.2020 05:32	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	07.26.2020 05:32	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	07.26.2020 05:32	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	07.26.2020 05:32	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	07.26.2020 05:32	U	1
Total BTEX		<0.00200	0.00200	mg/L	07.26.2020 05:32	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	96	%	70-130	07.26.2020 05:32	
4-Bromofluorobenzene	460-00-4	95	%	70-130	07.26.2020 05:32	

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Certificate of Analytical Results 667700

Larson and Associates, Inc., Midland, TX

NMGSAU #2102

Sample Id: **DUP-1** Matrix: Water Date Received:07.21.2020 08:35

Lab Sample Id: 667700-002 Date Collected: 07.20.2020 11:40

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 07.22.2020 16:50

Seq Number: 3132512

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**242**	2.50	mg/L	07.24.2020 10:00		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 07.25.2020 14:45

Seq Number: 3132608

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	07.26.2020 05:53	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	07.26.2020 05:53	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	07.26.2020 05:53	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	07.26.2020 05:53	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	07.26.2020 05:53	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	07.26.2020 05:53	U	1
Total BTEX		<0.00200	0.00200	mg/L	07.26.2020 05:53	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	07.26.2020 05:53	
4-Bromofluorobenzene	460-00-4	92	%	70-130	07.26.2020 05:53	

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Certificate of Analytical Results 667700

Larson and Associates, Inc., Midland, TX

NMGSAU #2102

Sample Id: **TMW-1** Matrix: Water Date Received:07.21.2020 08:35

Lab Sample Id: 667700-003 Date Collected: 07.20.2020 12:40

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 07.22.2020 16:50

Seq Number: 3132512

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**432**	5.00	mg/L	07.24.2020 10:05		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 07.25.2020 14:45

Seq Number: 3132608

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	07.26.2020 06:13	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	07.26.2020 06:13	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	07.26.2020 06:13	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	07.26.2020 06:13	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	07.26.2020 06:13	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	07.26.2020 06:13	U	1
Total BTEX		<0.00200	0.00200	mg/L	07.26.2020 06:13	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	70-130	07.26.2020 06:13	
4-Bromofluorobenzene	460-00-4	93	%	70-130	07.26.2020 06:13	

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Certificate of Analytical Results 667700

Larson and Associates, Inc., Midland, TX

NMGSAU #2102

Sample Id: **TMW-2** Matrix: Water Date Received:07.21.2020 08:35

Lab Sample Id: 667700-004 Date Collected: 07.20.2020 12:50

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE % Moisture:

Analyst: CHE Date Prep: 07.22.2020 16:50

Seq Number: 3132512

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**664**	5.00	mg/L	07.24.2020 10:10		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL % Moisture:

Analyst: KTL Date Prep: 07.25.2020 14:45

Seq Number: 3132608

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	07.26.2020 06:33	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	07.26.2020 06:33	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	07.26.2020 06:33	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	07.26.2020 06:33	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	07.26.2020 06:33	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	07.26.2020 06:33	U	1
Total BTEX		<0.00200	0.00200	mg/L	07.26.2020 06:33	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	101	%	70-130	07.26.2020 06:33	
4-Bromofluorobenzene	460-00-4	99	%	70-130	07.26.2020 06:33	

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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. **ND** Not Detected.

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

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

eurofins | Environment Testing Xenco

QC Summary 667700

Larson and Associates, Inc.

NMGSAU #2102

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3132512 — Matrix: Water — Date Prep: 07.22.2020
MB Sample Id: 7707864-1-BLK — LCS Sample Id: 7707864-1-BKS

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	Limits	Units	Analysis Date	Flag
Chloride	<0.500	25.0	26.0	104	90-110	mg/L	07.24.2020 08:41	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3132512 — Matrix: Drinking Water — Date Prep: 07.22.2020
Parent Sample Id: 667828-001 — MS Sample Id: 667828-001 S — MSD Sample Id: 667828-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12.8	25.0	40.2	110	41.3	114	90-110	3	20	mg/L	07.24.2020 09:02	X

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3132608 — Matrix: Water — Date Prep: 07.25.2020
MB Sample Id: 7708080-1-BLK — LCS Sample Id: 7708080-1-BKS — LCSD Sample Id: 7708080-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0935	94	0.0921	92	70-130	2	25	mg/L	07.26.2020 03:11	
Toluene	<0.00200	0.100	0.0903	90	0.0900	90	70-130	0	25	mg/L	07.26.2020 03:11	
Ethylbenzene	<0.00200	0.100	0.0919	92	0.0906	91	70-130	1	25	mg/L	07.26.2020 03:11	
m,p-Xylenes	<0.00400	0.200	0.180	90	0.178	89	70-130	1	25	mg/L	07.26.2020 03:11	
o-Xylene	<0.00200	0.100	0.0924	92	0.0898	90	70-130	3	25	mg/L	07.26.2020 03:11	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	91		101		103		70-130	%	07.26.2020 03:11
4-Bromofluorobenzene	84		98		98		70-130	%	07.26.2020 03:11

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3132608 — Matrix: Water — Date Prep: 07.25.2020
Parent Sample Id: 667805-005 — MS Sample Id: 667805-005 S — MSD Sample Id: 667805-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0952	95	0.0921	92	70-130	3	25	mg/L	07.26.2020 03:51	
Toluene	<0.00200	0.100	0.0929	93	0.0929	93	70-130	0	25	mg/L	07.26.2020 03:51	
Ethylbenzene	<0.00200	0.100	0.0931	93	0.0917	92	70-130	2	25	mg/L	07.26.2020 03:51	
m,p-Xylenes	<0.00400	0.200	0.183	92	0.181	91	70-130	1	25	mg/L	07.26.2020 03:51	
o-Xylene	<0.00200	0.100	0.0937	94	0.0914	91	70-130	2	25	mg/L	07.26.2020 03:51	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	103		101		70-130	%	07.26.2020 03:51
4-Bromofluorobenzene	98		94		70-130	%	07.26.2020 03:51

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

№ 1204

467700

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 7/20/20 PAGE 1 OF 1

PO#: LAB WORK ORDER#:

PROJECT LOCATION OR NAME: NMGSAU #2102

LAI PROJECT #: 19-0112-51 COLLECTOR: TJ+DS

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TBLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl (VOA)	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE (POLY)	UNPRESSERVED	BTEX	TRPH	GASOLINE	DIESEL	OIL	VOC	SVOC	8081	8082	TBLP	TCLP-PEST	TOTAL METALS	LEAD	RCI	TDS	pH	EXPLOSIVES	CHLORIDE	FIELD NOTES
MW-2		7/20/20	1120	W	4	X			X		X																	X	
DUP 1		|	1140	|	4	|			|		|																|	
TMW 1		|	1240	|	4	|			|		|																|	
TMW 2		|	1250	|	4	|			|		|																|	

TOTAL 16

RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
[signature]	7/21/20 855	[signature]
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)

LABORATORY: Xenco

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 2.6/2.4 THERM#: [illegible]
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED
☐ CARRIER BILL #
☐ HAND DELIVERED

DRAFT

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 07.21.2020 08.35.00 AM

Work Order #: 667700

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

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	2.2
#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)?	**N/A**
#18 Water VOC samples have zero headspace?	**Yes**

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

Analyst: AJA

PH Device/Lot#: 10BDH1991

Checklist completed by: Brianna Teel Date: 07.21.2020

Brianna Teel

Checklist reviewed by: Holly Taylor Date: 07.22.2020

Holly Taylor

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Certificate of Analysis Summary 674149

Larson and Associates, Inc., Midland, TX

Project Name: NMG SAU 2102

Project Id: 19-0112-51
Contact: Mark Larson
Project Location:

Date Received in Lab: Fri 10.02.2020 09:20
Report Date: 10.07.2020 16:39
Project Manager: Holly Taylor

Analysis Requested													
	Lab Id:	674149-001		674149-002		674149-003		674149-004					
	Field Id:	MW-2		DUP-1		TMW-1		TMW-2					
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER					
	Sampled:	10.01.2020 10:20		10.01.2020 13:00		10.01.2020 11:00		10.01.2020 12:00					
BTEX by EPA 8021B	***Extracted:***	10.04.2020 10:30		10.04.2020 10:30		10.04.2020 10:30		10.04.2020 10:30					
	Analyzed:	10.04.2020 16:04		10.04.2020 17:29		10.04.2020 17:50		10.04.2020 18:10					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Benzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Toluene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
m,p-Xylenes		<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400				
o-Xylene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total BTEX		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Chloride by EPA 300	***Extracted:***	10.06.2020 11:15		10.06.2020 11:15		10.06.2020 11:15		10.06.2020 11:15					
	Analyzed:	10.06.2020 14:30		10.06.2020 14:35		10.06.2020 14:41		10.06.2020 14:46					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		241	2.50	245	2.50	452	5.00	591	5.00				

BRL - Below Reporting Limit

Jessica Kramer

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Analytical Report 674149

for

Larson and Associates, Inc.

Project Manager: Mark Larson

NMG SAU 2102

19-0112-51

10.07.2020

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

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10.07.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **674149**
NMG SAU 2102
Project Address:

Mark Larson :

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 Eurofins Xenco, LLC Report Number(s) 674149. 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 Eurofins Xenco, LLC. 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. 674149 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Jessica Kramer

Jessica Kramer
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Sample Cross Reference 674149

Larson and Associates, Inc., Midland, TX

NMG SAU 2102

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	10.01.2020 10:20		674149-001
DUP-1	W	10.01.2020 13:00		674149-002
TMW-1	W	10.01.2020 11:00		674149-003
TMW-2	W	10.01.2020 12:00		674149-004

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CASE NARRATIVE

Client Name: Larson and Associates, Inc.

Project Name: NMG SAU 2102

Project ID: *19-0112-51*
Work Order Number(s): *674149*

Report Date: *10.07.2020*
Date Received: *10.02.2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

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Certificate of Analytical Results 674149

Larson and Associates, Inc., Midland, TX

NMG SAU 2102

Sample Id: **MW-2** Matrix: Water Date Received:10.02.2020 09:20

Lab Sample Id: 674149-001 Date Collected: 10.01.2020 10:20

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 10.06.2020 11:15 % Moisture:

Seq Number: 3139032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**241**	2.50	mg/L	10.06.2020 14:30		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 10.04.2020 10:30 % Moisture:

Seq Number: 3138793

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	10.04.2020 16:04	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	10.04.2020 16:04	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	10.04.2020 16:04	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	10.04.2020 16:04	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	10.04.2020 16:04	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	10.04.2020 16:04	U	1
Total BTEX		<0.00200	0.00200	mg/L	10.04.2020 16:04	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	10.04.2020 16:04	
4-Bromofluorobenzene	460-00-4	106	%	70-130	10.04.2020 16:04	

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Certificate of Analytical Results 674149

Larson and Associates, Inc., Midland, TX

NMG SAU 2102

Sample Id: **DUP-1** Matrix: Water Date Received:10.02.2020 09:20

Lab Sample Id: 674149-002 Date Collected: 10.01.2020 13:00

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 10.06.2020 11:15 % Moisture:

Seq Number: 3139032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**245**	2.50	mg/L	10.06.2020 14:35		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 10.04.2020 10:30 % Moisture:

Seq Number: 3138793

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	10.04.2020 17:29	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	10.04.2020 17:29	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	10.04.2020 17:29	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	10.04.2020 17:29	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	10.04.2020 17:29	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	10.04.2020 17:29	U	1
Total BTEX		<0.00200	0.00200	mg/L	10.04.2020 17:29	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	70-130	10.04.2020 17:29	
4-Bromofluorobenzene	460-00-4	109	%	70-130	10.04.2020 17:29	

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Certificate of Analytical Results 674149

Larson and Associates, Inc., Midland, TX

NMG SAU 2102

Sample Id: **TMW-1** Matrix: Water Date Received:10.02.2020 09:20

Lab Sample Id: 674149-003 Date Collected: 10.01.2020 11:00

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 10.06.2020 11:15 % Moisture:

Seq Number: 3139032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**452**	5.00	mg/L	10.06.2020 14:41		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 10.04.2020 10:30 % Moisture:

Seq Number: 3138793

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	10.04.2020 17:50	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	10.04.2020 17:50	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	10.04.2020 17:50	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	10.04.2020 17:50	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	10.04.2020 17:50	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	10.04.2020 17:50	U	1
Total BTEX		<0.00200	0.00200	mg/L	10.04.2020 17:50	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	102	%	70-130	10.04.2020 17:50	
4-Bromofluorobenzene	460-00-4	104	%	70-130	10.04.2020 17:50	

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Certificate of Analytical Results 674149

Larson and Associates, Inc., Midland, TX

NMG SAU 2102

Sample Id: **TMW-2** Matrix: Water Date Received:10.02.2020 09:20

Lab Sample Id: 674149-004 Date Collected: 10.01.2020 12:00

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 10.06.2020 11:15 % Moisture:

Seq Number: 3139032

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**591**	5.00	mg/L	10.06.2020 14:46		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 10.04.2020 10:30 % Moisture:

Seq Number: 3138793

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	10.04.2020 18:10	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	10.04.2020 18:10	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	10.04.2020 18:10	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	10.04.2020 18:10	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	10.04.2020 18:10	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	10.04.2020 18:10	U	1
Total BTEX		<0.00200	0.00200	mg/L	10.04.2020 18:10	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	103	%	70-130	10.04.2020 18:10	
4-Bromofluorobenzene	460-00-4	103	%	70-130	10.04.2020 18:10	

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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. **ND** Not Detected.

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

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

eurofins | Environment Testing Xenco

QC Summary 674149

Larson and Associates, Inc.

NMG SAU 2102

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3139032 — Matrix: Water — Date Prep: 10.06.2020
MB Sample Id: 7712703-1-BLK — LCS Sample Id: 7712703-1-BKS — LCSD Sample Id: 7712703-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.500	25.0	26.2	105	26.2	105	90-110	0	20	mg/L	10.06.2020 13:53	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3139032 — Matrix: Drinking Water — Date Prep: 10.06.2020
Parent Sample Id: 674336-001 — MS Sample Id: 674336-001 S — MSD Sample Id: 674336-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	8.54	25.0	35.5	108	35.3	107	90-110	1	20	mg/L	10.06.2020 14:15	

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3138793 — Matrix: Water — Date Prep: 10.04.2020
MB Sample Id: 7712592-1-BLK — LCS Sample Id: 7712592-1-BKS — LCSD Sample Id: 7712592-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0934	93	0.0908	91	70-130	3	25	mg/L	10.04.2020 10:56	
Toluene	<0.00200	0.100	0.0899	90	0.0871	87	70-130	3	25	mg/L	10.04.2020 10:56	
Ethylbenzene	<0.00200	0.100	0.0983	98	0.0939	94	70-130	5	25	mg/L	10.04.2020 10:56	
m,p-Xylenes	<0.00400	0.200	0.201	101	0.192	96	70-130	5	25	mg/L	10.04.2020 10:56	
o-Xylene	<0.00200	0.100	0.0980	98	0.0946	95	70-130	4	25	mg/L	10.04.2020 10:56	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	98		97		98		70-130	%	10.04.2020 10:56
4-Bromofluorobenzene	100		96		97		70-130	%	10.04.2020 10:56

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3138793 — Matrix: Ground Water — Date Prep: 10.04.2020
Parent Sample Id: 674046-014 — MS Sample Id: 674046-014 S — MSD Sample Id: 674046-014 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0958	96	0.104	104	70-130	8	25	mg/L	10.04.2020 11:37	
Toluene	<0.00200	0.100	0.0921	92	0.0992	99	70-130	7	25	mg/L	10.04.2020 11:37	
Ethylbenzene	<0.00200	0.100	0.100	100	0.110	110	70-130	10	25	mg/L	10.04.2020 11:37	
m,p-Xylenes	<0.00400	0.200	0.206	103	0.224	112	70-130	8	25	mg/L	10.04.2020 11:37	
o-Xylene	<0.00200	0.100	0.100	100	0.110	110	70-130	10	25	mg/L	10.04.2020 11:37	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	95		96		70-130	%	10.04.2020 11:37
4-Bromofluorobenzene	93		97		70-130	%	10.04.2020 11:37

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

674149 674149 1359

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 10/2/20 PAGE 1 OF 1

PO#: LAB WORK ORDER#:

PROJECT LOCATION OR NAME: NMGSAU 3102

LAI PROJECT #: 19-0112-51 COLLECTOR: DS / TJ

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MNT

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	PRESERVATION: HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	ANALYSES: BTEX ☒ MTBE ☐	TPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐	GASOLINE MOD 8015 ☐	DIESEL - MOD 8015 ☐	OIL - MOD 8015 ☐	VOC 8260 ☐	SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐	8081 PESTICIDES ☐ 8151 HERBICIDES ☐	8082 PCBS ☐	TBLP - METALS (RCRA) ☐ TCLP VOC ☐	TCLP - PEST ☐ HERB ☐ Semi-VOC ☐	TOTAL METALS (RCRA) ☐ OTHER LIST ☐	LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐	RCI ☐ TOX ☐ FLASHPOINT ☐	TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐	pH ☐ HEXAVALENT CHROMIUM ☐	EXPLOSIVES ☐ PECHLORATE ☐	CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐	FIELD NOTES
MW-2		10/1/20	1020	W	5	X			X		X																X		
DUP-1		10/1/20	1300	W	5	X			X		X																X		
TMW-1		10/1/20	1100	W	5	X			X		X																X		
TMW-2		10/1/20	1200	W	5	X			X		X																X		
																												BILL DIRECT TO APACHE	

TOTAL 4

RELINQUISHED BY:(Signature) DATE/TIME 10/2/20 0920 RECEIVED BY: (Signature) B Richman

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

LABORATORY: XENCO

TURN AROUND TIME

NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:

RECEIVING TEMP: 3.2°C THERM#:

CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☐ NOT USED

☐ CARRIER BILL #

☐ HAND DELIVERED

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 10.02.2020 09.20.00 AM

Work Order #: 674149

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

Temperature Measuring device used : IR-8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	3.2
#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)?	**N/A**
#18 Water VOC samples have zero headspace?	**Yes**

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

Analyst: AJA

PH Device/Lot#: 10BDH1991

Checklist completed by: Brianna Teel Date: 10.02.2020

Brianna Teel

Checklist reviewed by: Holly Taylor Date: 10.07.2020

Holly Taylor

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Certificate of Analysis Summary 680333

Larson and Associates, Inc., Midland, TX

Project Name: NMGSAU 2102

Project Id: 19-0112-51
Contact: Mark Larson
Project Location:

Date Received in Lab: Wed 12.09.2020 08:51
Report Date: 12.15.2020 11:42
Project Manager: Holly Taylor

Analysis Requested													
	Lab Id:	680333-001		680333-002		680333-003		680333-004					
	Field Id:	TMW-02		TMW-1		MW-2		DUP-1					
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER					
	Sampled:	12.08.2020 10:09		12.08.2020 10:34		12.08.2020 10:58		12.08.2020 00:00					
BTEX by EPA 8021B	***Extracted:***	12.10.2020 15:00		12.10.2020 15:00		12.10.2020 15:00		12.10.2020 15:00					
	Analyzed:	12.11.2020 07:43		12.11.2020 08:09		12.11.2020 08:35		12.11.2020 09:00					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Benzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Toluene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
m,p-Xylenes		<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400				
o-Xylene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.002000	0.002000	<0.002000	0.002000	<0.002000	0.002000	<0.002000	0.002000				
Total BTEX		<0.002000	0.002000	<0.002000	0.002000	<0.002000	0.002000	<0.002000	0.002000				
Chloride by EPA 300	***Extracted:***	12.10.2020 15:15		12.10.2020 15:15		12.10.2020 15:15		12.10.2020 15:15					
	Analyzed:	12.10.2020 17:19		12.10.2020 17:27		12.10.2020 17:52		12.10.2020 17:57					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		473	5.00	449	5.00	227	2.50	226	2.50				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

Holly Taylor

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Analytical Report 680333

for

Larson and Associates, Inc.

Project Manager: Mark Larson

NMGSAU 2102

19-0112-51

12.15.2020

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-23)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-19-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

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12.15.2020

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **680333**
NMGSAU 2102
Project Address:

Mark Larson:

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 Eurofins Xenco, LLC Report Number(s) 680333. 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 Eurofins Xenco, LLC. 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. 680333 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Holly Taylor

Holly Taylor
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Sample Cross Reference 680333

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
TMW-02	W	12.08.2020 10:09		680333-001
TMW-1	W	12.08.2020 10:34		680333-002
MW-2	W	12.08.2020 10:58		680333-003
DUP-1	W	12.08.2020 00:00		680333-004

CASE NARRATIVE

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Client Name: Larson and Associates, Inc.

Project Name: NMGSAU 2102

Project ID: *19-0112-51*
Work Order Number(s): *680333*

Report Date: *12.15.2020*
Date Received: *12.09.2020*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

Analytical non conformances and comments:

Batch: LBA-3144538 BTEX by EPA 8021B

Surrogate 1,4-Difluorobenzene recovered above QC limits . Samples affected are: 7716864-1-BKS,7716864-1-BSD,680330-001 S,680330-001 SD,680333-002,680333-001,680333-003,680333-004.

Surrogate 4-Bromofluorobenzene recovered above QC limits . Samples affected are: 7716864-1-BSD,680333-001,680333-002,680333-003,680333-004.

Toluene RPD was outside laboratory control limits.

Samples in the analytical batch are: 680333-001, -002, -003, -004

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Certificate of Analytical Results 680333

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **TMW-02** Matrix: Water Date Received:12.09.2020 08:51

Lab Sample Id: 680333-001 Date Collected: 12.08.2020 10:09

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 12.10.2020 15:15 % Moisture:

Seq Number: 3144579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**473**	5.00	mg/L	12.10.2020 17:19		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MNR

Analyst: MNR Date Prep: 12.10.2020 15:00 % Moisture:

Seq Number: 3144538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	12.11.2020 07:43	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	12.11.2020 07:43	UF	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	12.11.2020 07:43	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	12.11.2020 07:43	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	12.11.2020 07:43	U	1
Total Xylenes	1330-20-7	<0.002000	0.002000	mg/L	12.11.2020 07:43	U	1
Total BTEX		<0.002000	0.002000	mg/L	12.11.2020 07:43	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	195	%	70-130	12.11.2020 07:43	**
4-Bromofluorobenzene	460-00-4	138	%	70-130	12.11.2020 07:43	**

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Certificate of Analytical Results 680333

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **TMW-1** Matrix: Water Date Received:12.09.2020 08:51

Lab Sample Id: 680333-002 Date Collected: 12.08.2020 10:34

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 12.10.2020 15:15 % Moisture:

Seq Number: 3144579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**449**	5.00	mg/L	12.10.2020 17:27		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MNR

Analyst: MNR Date Prep: 12.10.2020 15:00 % Moisture:

Seq Number: 3144538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	12.11.2020 08:09	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	12.11.2020 08:09	UF	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	12.11.2020 08:09	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	12.11.2020 08:09	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	12.11.2020 08:09	U	1
Total Xylenes	1330-20-7	<0.002000	0.002000	mg/L	12.11.2020 08:09	U	1
Total BTEX		<0.002000	0.002000	mg/L	12.11.2020 08:09	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	187	%	70-130	12.11.2020 08:09	**
4-Bromofluorobenzene	460-00-4	135	%	70-130	12.11.2020 08:09	**

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Certificate of Analytical Results 680333

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **MW-2** Matrix: Water Date Received:12.09.2020 08:51

Lab Sample Id: 680333-003 Date Collected: 12.08.2020 10:58

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 12.10.2020 15:15 % Moisture:

Seq Number: 3144579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**227**	2.50	mg/L	12.10.2020 17:52		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MNR

Analyst: MNR Date Prep: 12.10.2020 15:00 % Moisture:

Seq Number: 3144538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	12.11.2020 08:35	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	12.11.2020 08:35	UF	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	12.11.2020 08:35	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	12.11.2020 08:35	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	12.11.2020 08:35	U	1
Total Xylenes	1330-20-7	<0.002000	0.002000	mg/L	12.11.2020 08:35	U	1
Total BTEX		<0.002000	0.002000	mg/L	12.11.2020 08:35	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	176	%	70-130	12.11.2020 08:35	**
4-Bromofluorobenzene	460-00-4	136	%	70-130	12.11.2020 08:35	**

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Certificate of Analytical Results 680333

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **DUP-1** Matrix: Water Date Received:12.09.2020 08:51

Lab Sample Id: 680333-004 Date Collected: 12.08.2020 00:00

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 12.10.2020 15:15 % Moisture:

Seq Number: 3144579

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**226**	2.50	mg/L	12.10.2020 17:57		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: MNR

Analyst: MNR Date Prep: 12.10.2020 15:00 % Moisture:

Seq Number: 3144538

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	12.11.2020 09:00	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	12.11.2020 09:00	UF	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	12.11.2020 09:00	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	12.11.2020 09:00	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	12.11.2020 09:00	U	1
Total Xylenes	1330-20-7	<0.002000	0.002000	mg/L	12.11.2020 09:00	U	1
Total BTEX		<0.002000	0.002000	mg/L	12.11.2020 09:00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	164	%	70-130	12.11.2020 09:00	**
4-Bromofluorobenzene	460-00-4	135	%	70-130	12.11.2020 09:00	**

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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. **ND** Not Detected.

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

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

eurofins | Environment Testing Xenco

QC Summary 680333

Larson and Associates, Inc.

NMGSAU 2102

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3144579 Matrix: Water Date Prep: 12.10.2020
MB Sample Id: 7716819-1-BLK LCS Sample Id: 7716819-1-BKS LCSD Sample Id: 7716819-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.500	25.0	26.4	106	26.4	106	90-110	0	20	mg/L	12.10.2020 16:22	

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3144579 Matrix: Drinking Water Date Prep: 12.10.2020
Parent Sample Id: 680611-001 MS Sample Id: 680611-001 S MSD Sample Id: 680611-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	15.9	25.0	44.5	114	43.4	110	90-110	3	20	mg/L	12.10.2020 16:47	X

Analytical Method: **Chloride by EPA 300** Prep Method: E300P
Seq Number: 3144579 Matrix: Drinking Water Date Prep: 12.10.2020
Parent Sample Id: 680614-001 MS Sample Id: 680614-001 S MSD Sample Id: 680614-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	12.8	25.0	40.8	112	40.2	110	90-110	1	20	mg/L	12.10.2020 18:26	X

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B
Seq Number: 3144538 Matrix: Water Date Prep: 12.10.2020
MB Sample Id: 7716864-1-BLK LCS Sample Id: 7716864-1-BKS LCSD Sample Id: 7716864-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.107	107	0.0935	94	70-130	13	25	mg/L	12.11.2020 02:07	
Toluene	<0.00200	0.100	0.112	112	0.0813	81	70-130	32	25	mg/L	12.11.2020 02:07	F
Ethylbenzene	<0.00200	0.100	0.110	110	0.0900	90	70-130	20	25	mg/L	12.11.2020 02:07	
m,p-Xylenes	<0.00400	0.200	0.223	112	0.185	93	70-130	19	25	mg/L	12.11.2020 02:07	
o-Xylene	<0.00200	0.100	0.111	111	0.0983	98	70-130	12	25	mg/L	12.11.2020 02:07	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	90		147	**	163	**	70-130	%	12.11.2020 02:07
4-Bromofluorobenzene	105		118		133	**	70-130	%	12.11.2020 02:07

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

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QC Summary 680333

Larson and Associates, Inc.

NMGSAU 2102

Analytical Method: **BTEX by EPA 8021B** Prep Method: SW5030B

Seq Number: 3144538 Matrix: Water Date Prep: 12.10.2020

Parent Sample Id: 680330-001 MS Sample Id: 680330-001 S MSD Sample Id: 680330-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.112	112	0.110	110	70-130	2	25	mg/L	12.11.2020 02:59	
Toluene	<0.00200	0.100	0.0939	94	0.112	112	70-130	18	25	mg/L	12.11.2020 02:59	
Ethylbenzene	<0.00200	0.100	0.108	108	0.111	111	70-130	3	25	mg/L	12.11.2020 02:59	
m,p-Xylenes	<0.00400	0.200	0.221	111	0.228	114	70-130	3	25	mg/L	12.11.2020 02:59	
o-Xylene	<0.00200	0.100	0.112	112	0.115	115	70-130	3	25	mg/L	12.11.2020 02:59	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	160	**	151	**	70-130	%	12.11.2020 02:59
4-Bromofluorobenzene	120		130		70-130	%	12.11.2020 02:59

MS/MSD Percent Recovery [D] = 100*(C-A) / B
Relative Percent Difference RPD = 200* | (C-E) / (C+E) |
LCS/LCSD Recovery [D] = 100 * (C) / [B]
Log Difference Log Diff. = Log(Sample Duplicate) - Log(Original Sample)

LCS = Laboratory Control Sample
A = Parent Result
C = MS/LCS Result
E = MSD/LCSD Result

MS = Matrix Spike
B = Spike Added
D = MSD/LCSD % Rec

№ 1430

680333 **CHAIN-OF-CUSTODY**

Larson & Associates, Inc.
Environmental Consultants

507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 12/8/20 PAGE 1 OF 1
PO#: LAB WORK ORDER#:
PROJECT LOCATION OR NAME: NMGSAU 2102
LAI PROJECT #: 19-0112-51 COLLECTOR: TJ+RN

TRRP report? ☐ Yes ☒ No

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

TIME ZONE: Time zone/State: MST

PRESERVATION: HCl, HNO_3, H_2SO_4 ☐ NaOH ☐, ICE, UNPRESSERVED

ANALYSES: BTEX ☒ MTBE ☐; TRPH 418.1 ☐ TPH 1005 ☐ TPH 1006 ☐; GASOLINE MOD 8015 ☐; DIESEL - MOD 8015 ☐; OIL - MOD 8015 ☐; VOC 8260 ☐; SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐; 8081 PESTICIDES ☐ 8151 HERBICIDES ☐; 8082 PCBS ☐; TBLP - METALS (RCRA) ☐ TCLP VOC ☐; TCLP - PEST ☐ HERB ☐ Semi-VOC ☐; TOTAL METALS (RCRA) ☐ OTHER LIST ☐; LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐; RCI ☐ TOX ☐ FLASHPOINT ☐; TDS ☐ TSS ☐ % MOISTURE ☐ CYANIDE ☐; pH ☐ HEXAVALENT CHROMIUM ☐; EXPLOSIVES ☐ PECHLORATE ☐; CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 ☐ NaOH ☐	ICE	UNPRESSERVED	BTEX/MTBE	TRPH/TPH	GASOLINE	DIESEL	OIL	VOC	SVOC/PAH	8081/8151	8082	TBLP	TCLP	TOTAL METALS	LEAD	RCI/TOX/FLASHPOINT	TDS/TSS/MOISTURE/CYANIDE	pH/HEX CHROM	EXPLOSIVES/PECHLORATE	CHLORIDE/ANIONS/ALKALINITY	FIELD NOTES
TMW-2		12/8/20	1009	W	5	X			X		X																	X	
TMW-1		〃	1034	〃	〃	〃			〃		〃																	〃	
MW-2		〃	1058	〃	〃	〃			〃		〃																	〃	
DUP-1				〃	〃	〃			〃		〃																	〃	

TOTAL 4

RELINQUISHED BY:(Signature) [signature]	DATE/TIME	RECEIVED BY: (Signature)	
RELINQUISHED BY:(Signature) [signature]	DATE/TIME 12/09/20 8:51am	RECEIVED BY: (Signature)	
RELINQUISHED BY:(Signature)	DATE/TIME	RECEIVED BY: (Signature)	
LABORATORY: Xenco			

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 5.9°C THERM#: IR-8
CUSTODY SEALS - ☐ BROKEN ☐ INTACT ☒ NOT USED
☒ CARRIER BILL #
☒ HAND DELIVERED

DRAFT

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 12.09.2020 08.51.00 AM

Work Order #: 680333

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

Temperature Measuring device used : IR8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	5.9
#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)?	**N/A**
#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#: 10BDH1991

Checklist completed by: Brianna Teel Date: 12.09.2020

Brianna Teel

Checklist reviewed by: Holly Taylor Date: 12.09.2020

Holly Taylor

Appendix B

Boring Logs

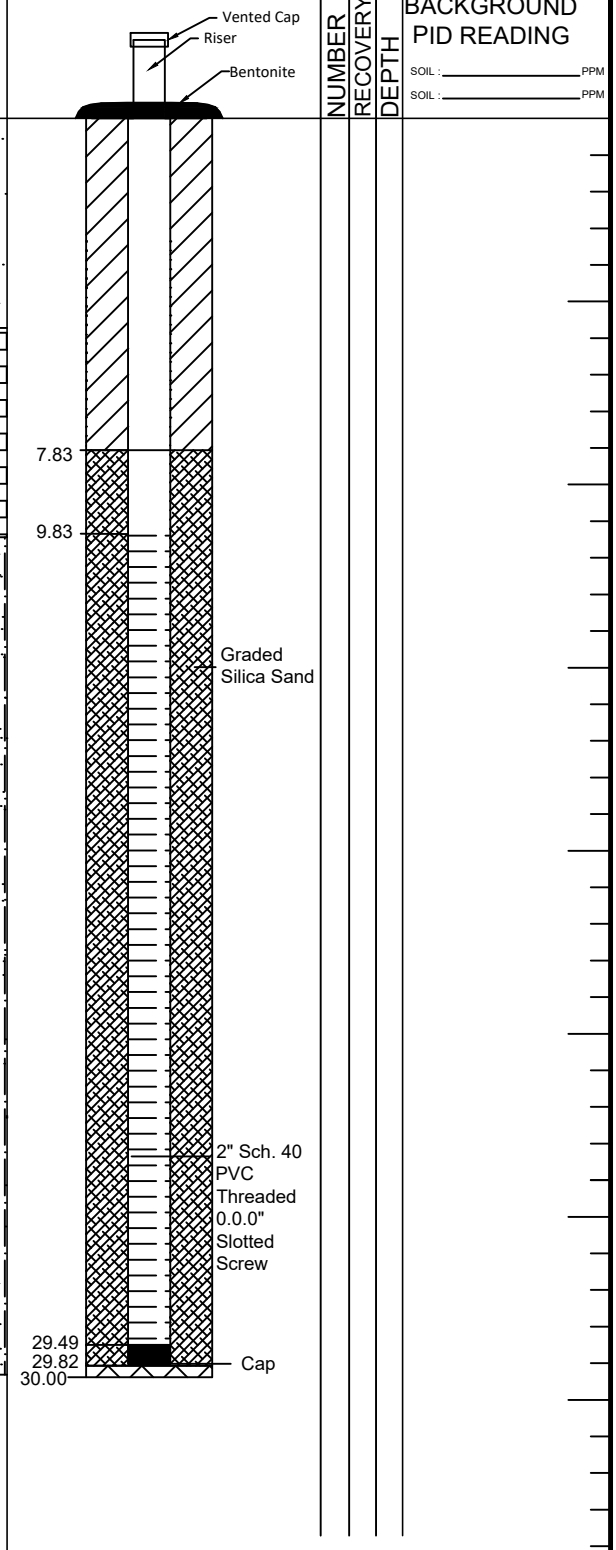
BORING RECORD

Start: 10:29
Finish: 11:45

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Grained Quartz Sand, Light Brown	ML
	5	Caliche, 7.5YR, 8/3, Pink, 2-10mm Subangular Clast Inclusions, Fine Grained	Caliche
	10	Silty Sand, 7.5YR, 8/4, Pink, Moderately Sorted with Subangular 1-6mm Clast Inclusions	
	15	7.5YR, 8/6, Reddish Yellow, Moderately Sorted with Subangular 2-6mm Clast Inclusions	ML
	20		
	25		
	30	TD: 30'	

GRAPHIC LOG

Surface Elevation:
TOC Elecation:



NUMBER | RECOVERY | DEPTH

REMARKS

BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

Larson & Associates, Inc.
Environmental Consultants

DRILL DATE : 03-11-2020

BORING NUMBER : TMW-1

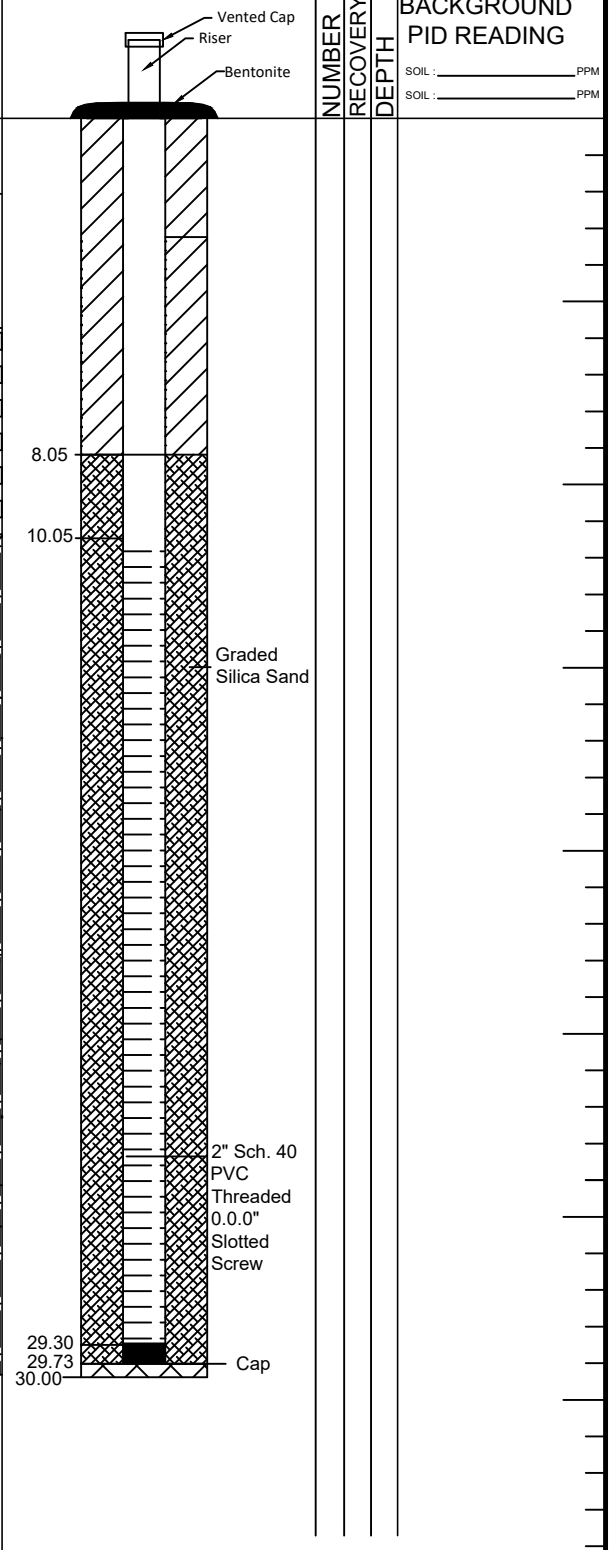
JOB NUMBER : 19-0112-51 / Apache Corp.
HOLE DIAMETER : 2"
LOCATION : NMGSAU 2102
LAI GEOLOGIST : R. Nelson
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

BORING RECORD

Start: 12:36
Finish: 1:09

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Quartz Grained Sand, Light Brown	ML	
	5	Caliche, 7.5YR, 8/3, Pink, 2-10mm Subangular Clast Inclusions, Fine Grained	Caliche	
	10	Silty Sand, 7.5YR, 8/4, Pink, Moderately Sorted with Subangular 1-6mm Clast Inclusions		
	15	7.5YR, 8/6, Reddish Yellow, Moderately Sorted with Subangular 2-6mm Clast Inclusions	ML	
	20			
	25			
	30	TD: 30'		

Surface Elevation:
TOC Elecation:



NUMBER	RECOVERY	DEPTH	REMARKS
			BACKGROUND PID READING SOIL : _____ PPM SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 19-0112-51 / Apache Corp.
HOLE DIAMETER : 2"
LOCATION : NMGSAU 2102
LAI GEOLOGIST : R. Nelson
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 03-11-2020

BORING NUMBER : TMW-2

Appendix C

Karst Risk Potential

*New Mexico Kart or No Karst - QGIS

Project Edit View Layer Settings Plugins Vector Raster Database Web Mesh Processing Help

Browser

- Favorites
- Spatial Bookmarks
- Project Home
- Home
- C:\
- D:\
- L:\
- Z:\
- GeoPackage
- SpatiaLite
- PostGIS
- MSSQL
- Oracle
- DB2
- WMS/WMTS
- XYZ Tiles
- WCS
- WFS / OGC API - Features
- OWS
- ArcGisMapServer
- ArcGisFeatureServer
- GeoNode

Layers

- Added geom info
- carlsbad_west
- Karst_or_No_Karst
  - High
  - Low
  - Medium
  -
- Bing Satellite

Type to locate (Ctrl+K)

Coordinate 662471,3609979 Scale 1:4407 Magnifier 100% Rotation 0.0 ° Render EPSG:26913

REVIEWED
By Mike Buchanan at 3:34 pm, Dec 27, 2023

1RP-5677

2021

First (1st) Quarter
GROUNDWATER MONITORING REPORT
(January - March)

North Monument G/SA Unit #2102
Lea County, New Mexico

Latitude: 32.61233
Longitude: -103.27262

LAI Project No. 19-0112-51

March 31, 2021

Review of the 1Q 2021 Groundwater Monitoring Report for N. Monument G/SA Unit #2102: Content Satisfactory
1. Continue to conduct groundwater monitoring on a quarterly basis as prescribed by OCD.
2. Continue to submit reports on an annual basis to NMOCD with recommendations and conclusions based on analytical results.
3. Submit Annual Reports no later than April 1 of each year.
4. Groundwater Reports and documents only related to groundwater impacts may be submitted under "GWA" and not as a C-141 for future submissions.

Prepared for:
Apache Corporation
2350 W. Marland Blvd
Hobbs, New Mexico 88240

Prepared by:
Larson & Associates, Inc.
507 North Marienfeld, Suite 202
Midland, Texas 79701

Mark J. Larson
Certified Professional Geologist #10490

Daniel A. St. Germain
Staff Geologist

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1.0 EXECUTIVE SUMMARY

Larson & Associates, Inc. (LAI) submits this report to the New Mexico Oil Conservation Division (OCD) on behalf of Apache Corporation (Apache) to report the results of 2021 first (1st) quarter (January-March) groundwater monitoring results for the North Monument G/SA Unit #2102 (Site). The Site is located in Unit O (SW/4, SE/4), Section 32, Township 19 South, Range 37 East, in Lea County, New Mexico. The geodetic position is north 32.61233° and west -103.27262°.

The following activities occurred on March 10, 2021:

- Gauged three (3) monitor wells (MW-2, TMW-1, and TMW-2) for depth to groundwater.
- Purged and sample groundwater from three (3) monitor wells (MW-2, TMW-1, and TMW-2) utilizing the low stress (low flow) method.
- Analyzed groundwater samples for benzene, toluene, ethylbenzene, and xylenes (BTEX) and chloride.

The following observations are documented in this report:

- Depth to groundwater ranged from 10.71 feet beneath ground surface (bgs) in monitor well MW-2 to 23.36 feet bgs in monitor well TMW-2.
- Groundwater flows from northwest to southeast at a gradient of about 0.0264 feet per foot (ft/ft). No significant changes in groundwater flow direction or gradient were observed on March 10, 2021.
- Monitoring well MW-2 remains hydraulically up-gradient.
- BTEX was below the analytical method reporting limit (RL) and New Mexico Water Quality Control Commission (WQCC) human health standards in all monitor wells on March 10, 2021.
- Chloride concentrations were above the WQCC domestic water quality standard of 250 mg/L in TMW-1 (418 mg/L) and TMW-2 (428 mg/L).
- A duplicate water sample (DUP-1) was collected from MW-2 to evaluate the variability in analytical methods.

Apache proposes the following:

- Continue groundwater monitoring on a quarterly (4 times per year) schedule during 2021.
- Collect depth to groundwater and groundwater samples from all monitoring wells during each quarterly event.
- Analyze samples for BTEX and chloride.
- Report the laboratory results to OCD in quarterly reports, unless significant changes in analyte concentrations are detected, at which time Apache will immediately report the results to OCD.
- Apache will provide notice to the OCD in Hobbs and Santa Fe, New Mexico, at least 7 working days prior to each monitoring event.

2.0 INTRODUCTON

Larson & Associates, Inc. (LAI) submits this report to the New Mexico Oil Conservation Division (OCD) on behalf of Apache Corporation (Apache), to report the results of 2021 first (1st) quarter (January-March) groundwater monitoring event for the North Monument G/SA Unit #2102 (Site). The Site is located in Unit O (SW/4, SE/4), Section 32, Township 19 South, Range 37 East, in Lea County, New Mexico. The geodetic position is north 32.61233° and west -103.27262°. Figure 1 presents a topographic map. Figure 2 presents an aerial map. Figure 3 presents a Site drawing.

2.1 Background

A crude oil and produced water release occurred on August 16, 2019, due to corrosion and failure of a buried 3-inch steel flowline. The failure allowed for an unknown volume of crude oil and produced water to be released. Approximately 2.5 barrels (bbls) of crude oil and produced water were recovered. The fluid pooled in the pasture south of the well and west of the lease road. Immediate notice was given to Mr. Dylan Rose-Cross (OCD) by Mr. Jeffery Broom (Apache Environmental Tech) via email on August 16, 2019. The surface ownership is private. The initial C-141 was submitted on August 29, 2019 and assigned remediation permit number of 1RP-5677. Appendix A presents the initial C-141.

On October 10, 2019, Apache applied for a variance to backfill the excavation due to the presence of groundwater between 21 to 23 feet bgs, and high TPH and chloride concentrations in the soil at approximately 12 feet bgs. The request noted that Apache would backfill the excavation with clean caliche to about 6 feet bgs, install a 20-mil polyethylene synthetic liner, and complete backfilling with clean topsoil containing chloride concentrations of less than 600 mg/Kg. No response was received from OCD. On November 14, 2019, Apache backfill the excavation with clean caliche to about 6 feet bgs prior to installing the 20-mil polyethylene synthetic liner and completed backfilling above the liner with clean topsoil to the surface. The backfilled area measures approximately 16,024 square feet and was seeded with BLM Mix #2.

On March 11, 2020, Scarborough Drilling, Inc. (SDI) under the supervision of LAI, installed two (2) monitor wells (TMW-1 and TMW-2) utilizing an air rotary drill rig under permits issued by the State of New Mexico Office of the State Engineer. The wells were drilled to depths of about 33 feet bgs (TMW-1) and 34 feet bgs (TMW-2). TMW-1 was installed near the east side of the excavation. TMW-2 was installed approximately 150 feet southeast of the excavation, as close to the origin of release as possible. TMW-2 is positioned hydraulically down-gradient. The wells were completed with 2-inch schedule 40 threaded casing and about 20 feet of 0.010-inch factory slotted screen, positioned above and below groundwater gauged at the time of drilling. The annular space above the sand was filled with bentonite chips to about 1-foot bgs. The wells were secured with locking steel sleeves anchored in concrete. West Company, a State of New Mexico licensed professional land surveyor (License Number 23263) surveyed the monitoring wells for position and elevation including top of casing and natural ground surface. On

December 21, 2010, a report titled "1RP-5677 Closure Report North Monument G/SA Unit #2102 Produced Water and Crude Oil Release" documenting the excavation closure and monitoring well installations was submitted to the OCD in Santa Fe and Hobbs, New Mexico.

3.0 DEPTH TO GROUNDWATER AND GROUNDWATER POTENTIOMETRIC SURFACE ELEVATION

On March 10, 2021, LAI personnel gauged monitor wells MW-2, TMW-1, and TMW-2 for depth to groundwater. Groundwater was gauged at 13.80 (MW-2), 24.60 (TMW-1), and 26.40 (TMW-2) feet below top of casing (TOC). Groundwater potentiometric surface elevations ranged from 3,555.72 feet above mean sea level (MSL) at MW-1 (up gradient) to 3,538.07 above MSL at TMW-2 (down gradient). Groundwater flows from northwest to southeast at a gradient of about 0.0264 feet per foot (ft/ft). No significant changes in groundwater flow direction or gradient were observed on March 10, 2021. Figure 4 presents the potentiometric surface map on March 10, 2021.

4.0 GROUNDWATER SAMPLES AND ANALYSIS

On March 10, 2021 LAI personnel collected groundwater samples from monitor wells MW-2, TMW-1, and TMW-2, using the low stress or low flow method following EPA protocol (EQASOP-GW4, Revision 4, September 19, 2017) where an environmental pump is submerged near the middle of the water column and the well is pumped at a low flow rate until environmental parameters stabilize.

Groundwater samples were collected from discharge through dedicated disposable Tygon tubing. The tubing was discarded after each use and the pump was thoroughly cleaned with a solution of potable water and laboratory grade detergent (alconox) and rinsed with distilled water. The samples were transferred to labeled laboratory containers, packed in an ice chest filled with ice, and delivered under chain of custody control to Xenco Laboratories (Xenco), a National Environmental Laboratory Accreditation Conference (NELAC) accredited laboratory, located in Midland, Texas. A duplicate sample was collected from well MW-2 for laboratory quality assurance and quality control (QA/QC).

Xenco analyzed the samples for benzene, toluene, ethylbenzene, xylene (BTEX) according to EPA SW-846 Method SW-8260D and chloride by EPA Method 300. Table 2 presents the laboratory analytical summary. Appendix B presents the laboratory report.

4.1 Organic Analysis

Xenco reported BTEX concentrations below the laboratory analytical reporting limit (RL) and below New Mexico Water Quality Control Commission (WQCC) human health standards from the groundwater samples collected from MW-2, TMW-1, and TMW-2 on March 10, 2021. The results are consistent with the results from previous groundwater monitoring events.

4.2 Inorganic Analysis

Chloride concentrations remain above the WQCC domestic water quality standard (250 mg/L) in samples collected from TWM-1 (418 mg/L) and TMW-2 (428 mg/L). Chloride concentrations remained below WQCC domestic water quality standards in MW-2 (235 mg/L). The duplicate (QA/QC) sample (Dup-1) collected from MW-2 is within 0.85 percent (237 mg/L) of the original chloride value (235 mg/L) for MW-2. No data quality exceptions were noted in Xenco case narratives. Figure 5 presents the chloride isopleth map for March 10, 2021.

5.0 CONCLUSIONS

The following observations are documented in this report:

- Monitoring well MW-2 remains hydraulically up gradient and representative of background chloride in groundwater.
- BTEX was reported below the analytical method RL and New Mexico WQCC human health standards in wells MW-2, TMW-1, and TMW-2.
- Chloride Exceeded the WQCC domestic water quality standard of 250 mg/L in samples collected from TMW-1 (418 mg/L) and TMW-2 (428 mg/L).
- Chloride concentrations remained below the WQCC domestic water quality standard of 250 mg/L in the sample collected from MW-2.

6.0 RECOMMENDATIONS

Apache proposes the following modifications to the monitoring program:

- Continue groundwater monitoring on a quarterly (4 times per year) schedule during 2021.
- Collect depth to groundwater and groundwater samples from all monitoring wells during each quarterly event.
- Report the laboratory results to OCD in quarterly reports, unless significant changes in analyte concentrations are detected, at which time Apache will immediately report the results to OCD.

Apache will provide notice to the OCD in Hobbs and Santa Fe, New Mexico, at least 7 working days prior to each monitoring event.

Tables

Table 1
Monitor Well Completion and Gauging Summary
Apache Corporation, NMGSAU 2102
Lea County, New Mexico

Well Information									Groundwater Data				
Well No.	Date Drilled	Well Depth (Feet TOC)	Drilled Depth (Feet BGS)	Well Diameter (inches)	Surface Elevation (Feet AMSL)	Screen Interval (Feet BGS)	Casing Stickup (Feet)	TOC Elevation (Feet AMSL)	Date Gauged	Depth to Water (feet TOC)	Depth to Water (feet BGS)	Water Column Height (feet)	Groundwater Elevation (feet AMSL)
MW-2	Unknown	62.91	60.03	2	3566.64	Unknown	2.88	3,569.52	03/12/2020	13.59	10.71	49.32	3,555.93
									07/20/2020	13.75	10.87	49.16	3,555.77
									10/01/2020	13.90	11.02	49.01	3,555.62
									12/08/2020	13.81	10.93	49.10	3,555.71
									03/10/2020	13.80	10.92	49.11	3,555.72
TMW-1	3/11/2020	36.23	33.33	2	3561.92	9.83 - 29.49	2.90	3,564.82	03/12/2020	24.37	21.47	11.86	3,540.45
									07/20/2020	24.95	22.05	11.28	3,539.87
									10/01/2020	24.90	22.00	11.33	3,539.92
									12/08/2020	24.65	21.75	11.58	3,540.17
									03/10/2021	24.60	21.70	11.63	3,540.22
TWM-2	3/11/2020	37.07	34.03	2	3561.43	10.05 - 29.30	3.04	3,564.47	03/12/2020	26.38	23.34	10.69	3,538.09
									07/20/2020	26.70	23.66	10.37	3,537.77
									10/01/2020	26.70	23.66	10.37	3,537.77
									12/08/2020	26.51	23.47	10.56	3,537.96
									03/10/2021	26.40	23.36	10.67	3,538.07

Notes: MW-2 is hydraulically upgradient. TMW-1 is near release source. TMW-2 is hydraulically down gradient.
bgs: below ground surface
TOC: top of casing
AMSL: elevation above mean sea level

Table 2
Groundwater Sample Analytical Data Summary
Apache Corporation, NMGSAU 2102
Lea County, New Mexico

Sample	Collection Date	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes (mg/L)	Chloride (mg/L)
WQCC Standard:		*0.005	* 1	*0.7	*0.62	**250
MW-2	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	230
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	231
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	241
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	227
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	235
TMW-1	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	360
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	432
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	452
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	449
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	418
TMW-2	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	423
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	664
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	591
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	473
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	428
Dup-1 (MW-2)	3/12/2020	<0.00100	<0.00100	<0.00100	<0.00300	223
	7/20/2020	<0.00200	<0.00200	<0.00200	<0.00600	242
	10/1/2020	<0.00200	<0.00200	<0.00200	<0.00200	245
	12/8/2020	<0.00200	<0.00200	<0.00200	<0.00200	226
	3/10/2021	<0.00200	<0.00200	<0.00200	<0.00200	237

Notes:
analysis performed by Xenco Laboratories, Midland, Texas by EPA SW-846 Method 8021B (BTEX)
and Method 300 (chloride)
All values reported in milligrams per liter (mg/L) equivalent to parts per million (ppm)
< values - denotes concentration is less than method reporting limit (RL).
* - NMWQCC human health standard
** - NMWQCC domestic water quality standard
BGS - below ground surface

Figures

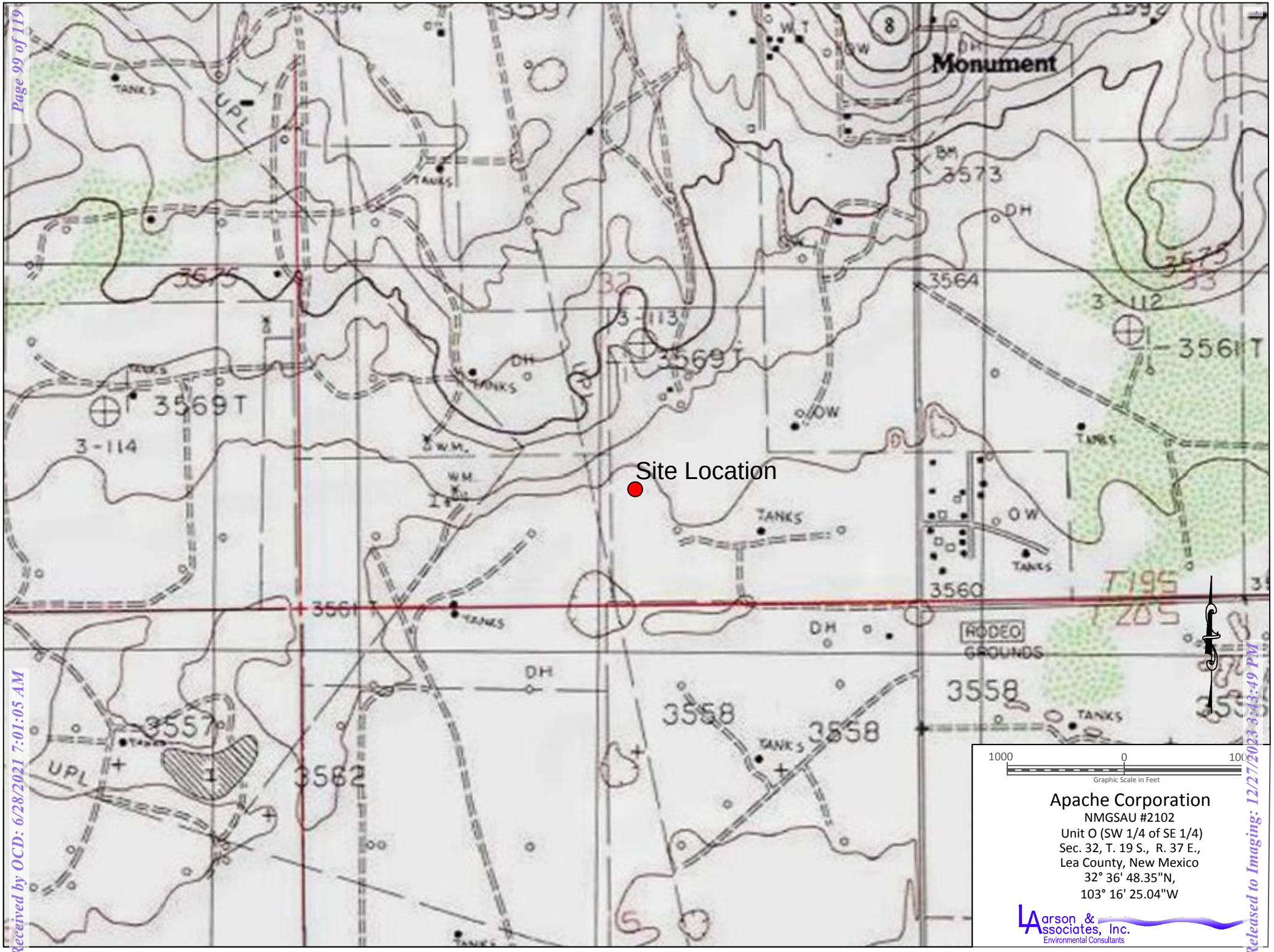


Figure 1 - Topographic Map

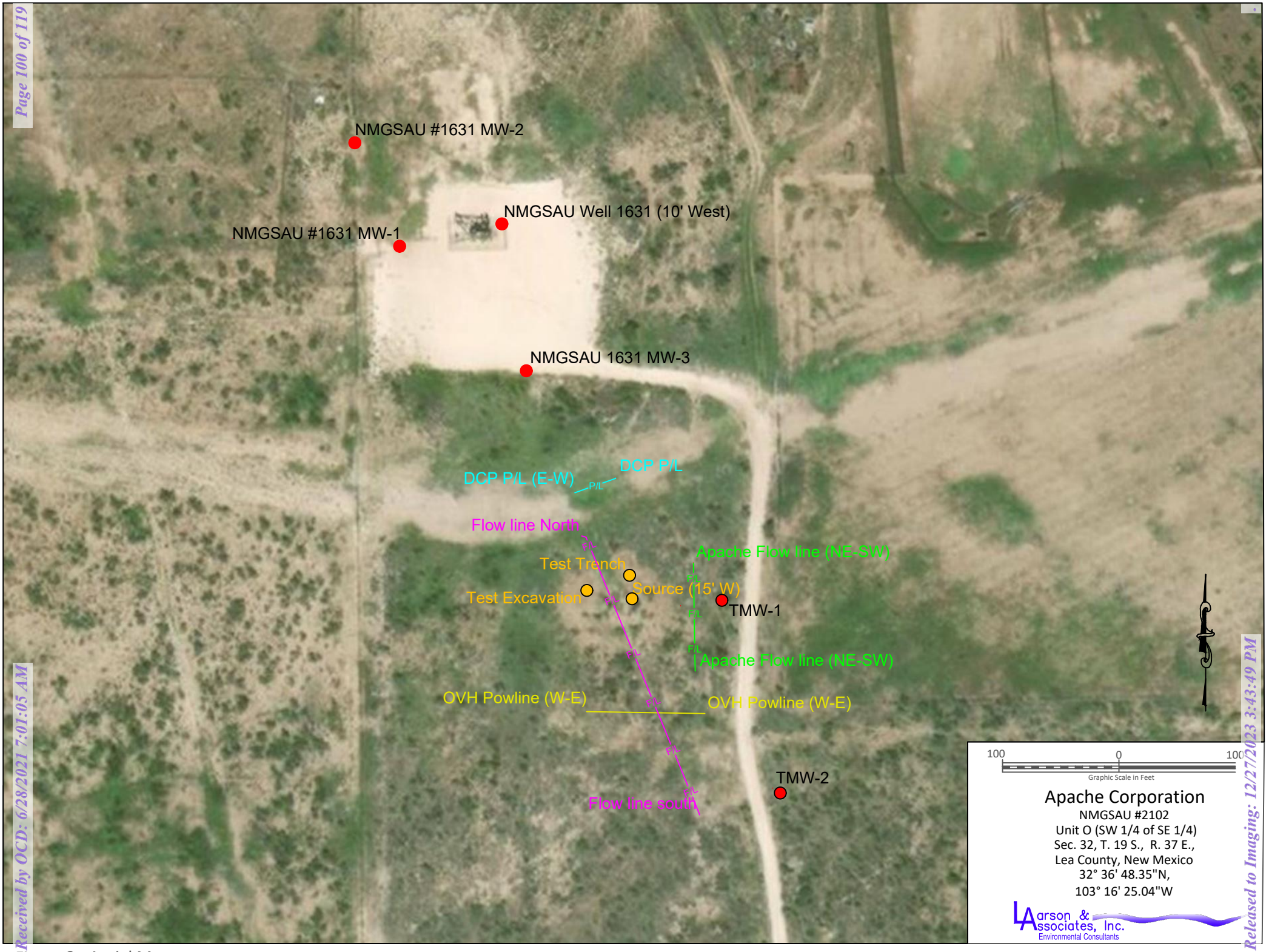
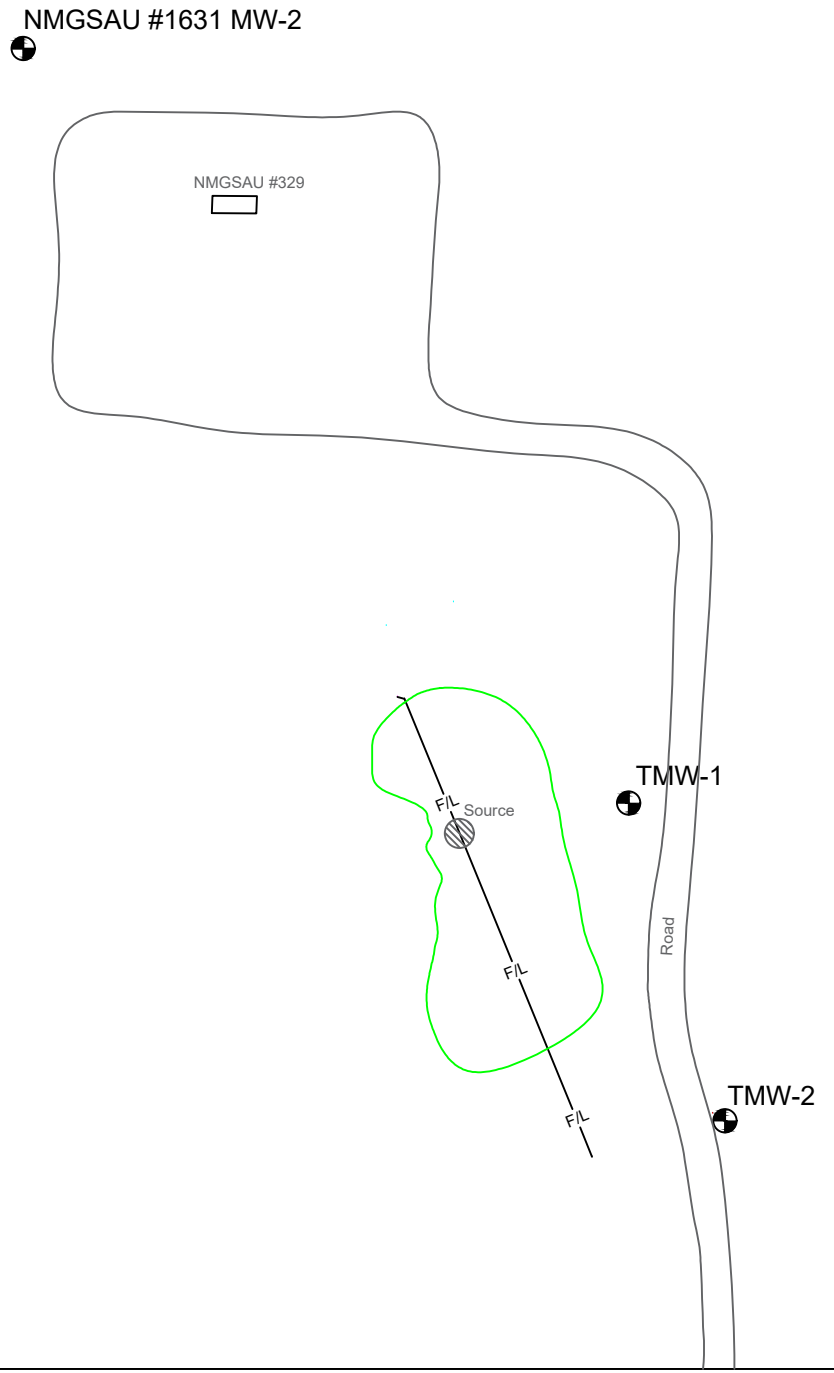


Figure 2 - Aerial Map



100 0 100
Graphic Scale in Feet

Apache Corporation
NMGSAU #2102
Unit O (SW 1/4 of SE 1/4)
Sec. 32, T. 19 S., R. 37 E.,
Lea County, New Mexico
32° 36' 48.35"N,
103° 16' 25.04"W

Larson & Associates, Inc.
Environmental Consultants

Figure 3 - Base Map

Appendix A

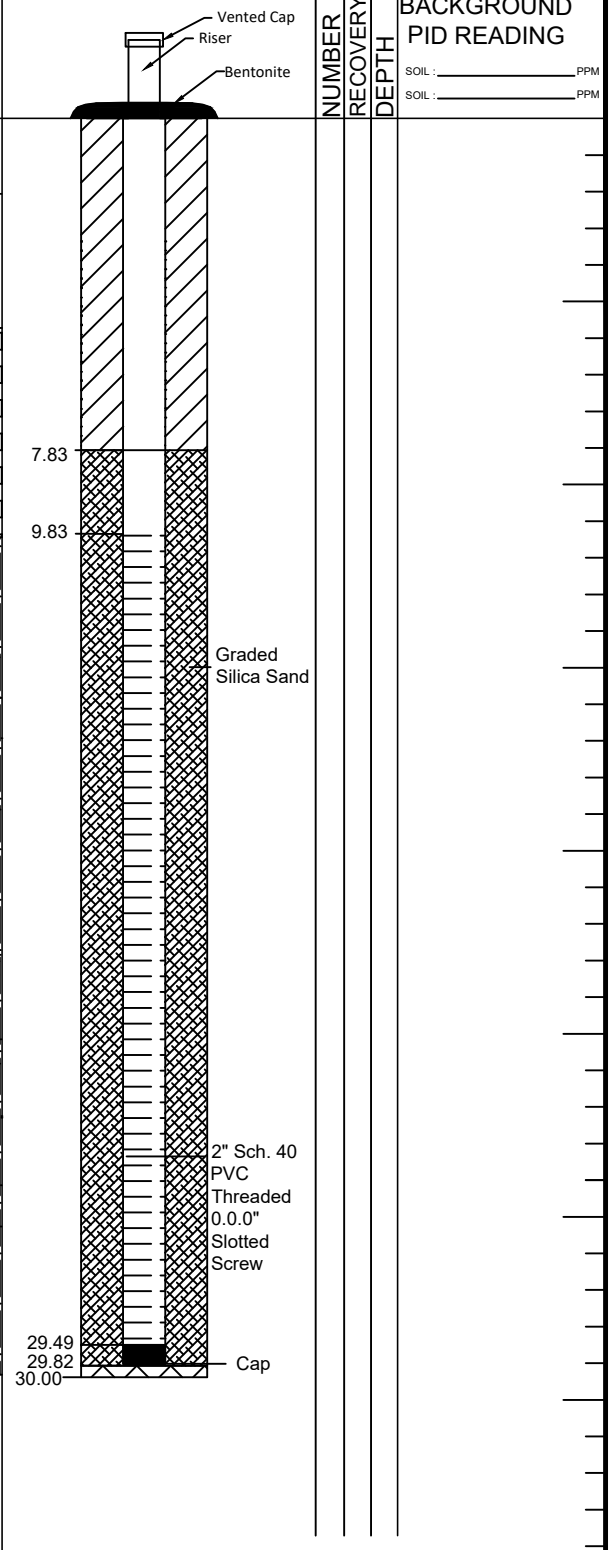
Boring Logs

BORING RECORD

Start: 10:29
Finish: 11:45

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Grained Quartz Sand, Light Brown	ML	
	5	Caliche, 7.5YR, 8/3, Pink, 2-10mm Subangular Clast Inclusions, Fine Grained	Caliche	
	10	Silty Sand, 7.5YR, 8/4, Pink, Moderately Sorted with Subangular 1-6mm Clast Inclusions		
	15	7.5YR, 8/6, Reddish Yellow, Moderately Sorted with Subangular 2-6mm Clast Inclusions	ML	
	20			
	25			
	30	TD: 30'		

Surface Elevation:
TOC Elecation:



NUMBER | RECOVERY | DEPTH

REMARKS
BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 19-0112-51 / Apache Corp.
HOLE DIAMETER : 2"
LOCATION : NMGSAU 2102
LAI GEOLOGIST : R. Nelson
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 03-11-2020

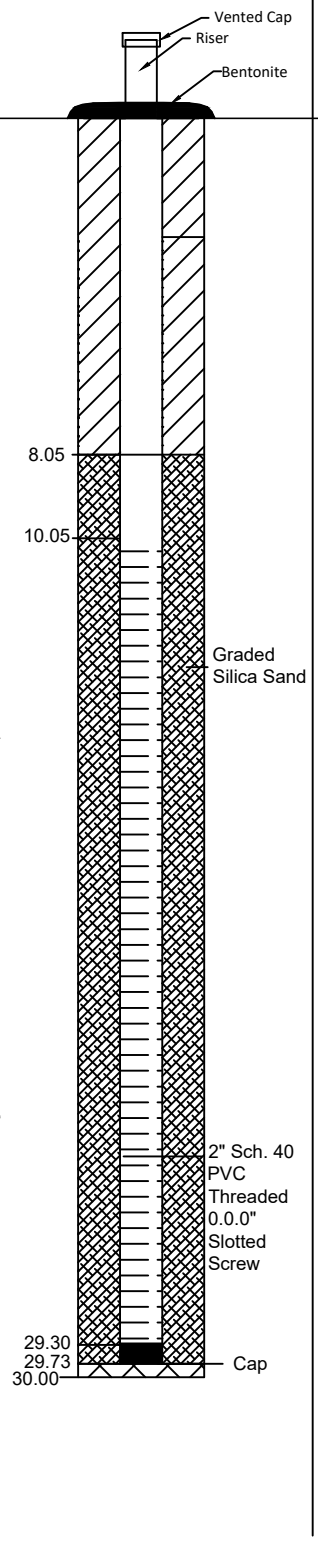
BORING NUMBER : TMW-1

BORING RECORD

Start: 12:36
Finish: 1:09

GEOLOGIC UNIT	DEPTH	DESCRIPTION LITHOLOGIC	DESCRIPTION USCS	GRAPHIC LOG
	0	Sand, 7.5YR, 6/5 to 6/4, Well Sorted, Very Fine Quartz Grained Sand, Light Brown	ML	
	5	Caliche, 7.5YR, 8/3, Pink, 2-10mm Subangular Clast Inclusions, Fine Grained	Caliche	
	10	Silty Sand, 7.5YR, 8/4, Pink, Moderately Sorted with Subangular 1-6mm Clast Inclusions		
	15	7.5YR, 8/6, Reddish Yellow, Moderately Sorted with Subangular 2-6mm Clast Inclusions	ML	
	20			
	25			
	30	TD: 30'		

Surface Elevation:
TOC Elecation:



NUMBER	RECOVERY	DEPTH

REMARKS

BACKGROUND PID READING
SOIL : _____ PPM
SOIL : _____ PPM

ONE CONTINUOUS AUGER SAMPLER
STANDARD PENETRATION TEST
UNDISTURBED SAMPLE
WATER TABLE (24 HRS)
WATER TABLE (TIME OF BORING)
LABORATORY TEST LOCATION
PENETROMETER (TONS/ SQ. FT)
NR NO RECOVERY

JOB NUMBER : 19-0112-51 / Apache Corp.
HOLE DIAMETER : 2"
LOCATION : NMGSAU 2102
LAI GEOLOGIST : R. Nelson
DRILLING CONTRACTOR : SDI
DRILLING METHOD : Air Rotary

Larson & Associates, Inc. Environmental Consultants

DRILL DATE : 03-11-2020

BORING NUMBER : TMW-2

Appendix B

Laboratory Reports

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Certificate of Analysis Summary 691511

Larson and Associates, Inc., Midland, TX

Project Name: NMGSAU 2102

Project Id: 19-0112-51
Contact: Mark Larson
Project Location:

Date Received in Lab: Thu 03.11.2021 15:46
Report Date: 03.19.2021 17:08
Project Manager: Holly Taylor

Analysis Requested													
	Lab Id:	691511-001		691511-002		691511-003		691511-004					
	Field Id:	MW-2		TMW-1		TMW-2		DUP-1					
	Depth:												
	Matrix:	WATER		WATER		WATER		WATER					
	Sampled:	03.10.2021 10:17		03.10.2021 10:40		03.10.2021 11:45		03.10.2021 00:00					
BTEX by EPA 8021B	***Extracted:***	03.16.2021 12:00		03.16.2021 12:00		03.16.2021 12:00		03.16.2021 12:00					
	Analyzed:	03.19.2021 01:00		03.19.2021 01:52		03.19.2021 02:18		03.19.2021 02:44					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Benzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Toluene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Ethylbenzene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
m,p-Xylenes		<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400	<0.00400	0.00400				
o-Xylene		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total Xylenes		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Total BTEX		<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200	<0.00200	0.00200				
Chloride by EPA 300	***Extracted:***	03.11.2021 17:45		03.11.2021 17:45		03.11.2021 17:45		03.11.2021 17:45					
	Analyzed:	03.11.2021 18:27		03.11.2021 18:36		03.11.2021 19:01		03.11.2021 19:10					
	Units/RL:	mg/L	RL	mg/L	RL	mg/L	RL	mg/L	RL				
Chloride		235	2.50	418	5.00	428	5.00	237	5.00				

BRL - Below Reporting Limit

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Analytical Report 691511

for

Larson and Associates, Inc.

Project Manager: Mark Larson

NMGSAU 2102

19-0112-51

03.19.2021

Collected By: Client

1211 W. Florida Ave
Midland TX 79701

Xenco-Houston (EPA Lab Code: TX00122):
Texas (T104704215-20-38), Arizona (AZ0765), Florida (E871002-33), Louisiana (03054)
Oklahoma (2020-014), North Carolina (681), Arkansas (20-035-0)

Xenco-Dallas (EPA Lab Code: TX01468):
Texas (T104704295-20-26), Arizona (AZ0809)

Xenco-El Paso (EPA Lab Code: TX00127): Texas (T104704221-20-18)
Xenco-Lubbock (EPA Lab Code: TX00139): Texas (T104704219-20-24)
Xenco-Midland (EPA Lab Code: TX00158): Texas (T104704400-20-21)
Xenco-Carlsbad (LELAP): Louisiana (05092)
Xenco-San Antonio (EPA Lab Code: TNI02385): Texas (T104704534-20-8)
Xenco-Tampa: Florida (E87429), North Carolina (483)

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03.19.2021

Project Manager: **Mark Larson**
Larson and Associates, Inc.
P. O. Box 50685
Midland, TX 79710

Reference: Eurofins Xenco, LLC Report No(s): **691511**
NMGSAU 2102
Project Address:

Mark Larson:

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 Eurofins Xenco, LLC Report Number(s) 691511. 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 Eurofins Xenco, LLC. 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. 691511 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 Eurofins Xenco, LLC to serve your analytical needs. If you have any questions concerning this report, please feel free to contact us at any time.

Respectfully,

Holly Taylor

Holly Taylor
Project Manager

A Small Business and Minority Company

Houston - Dallas - Midland - Tampa - Phoenix - Lubbock - San Antonio - El Paso - Atlanta - New Mexico

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Sample Cross Reference 691511

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
MW-2	W	03.10.2021 10:17		691511-001
TMW-1	W	03.10.2021 10:40		691511-002
TMW-2	W	03.10.2021 11:45		691511-003
DUP-1	W	03.10.2021 00:00		691511-004

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CASE NARRATIVE

Client Name: Larson and Associates, Inc.

Project Name: NMGSAU 2102

Project ID: *19-0112-51*
Work Order Number(s): *691511*

Report Date: *03.19.2021*
Date Received: *03.11.2021*

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None

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Certificate of Analytical Results 691511

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **MW-2** Matrix: Water Date Received:03.11.2021 15:46

Lab Sample Id: 691511-001 Date Collected: 03.10.2021 10:17

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.11.2021 17:45 % Moisture:

Seq Number: 3153434

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**235**	2.50	mg/L	03.11.2021 18:27		5

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 03.16.2021 12:00 % Moisture:

Seq Number: 3154191

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.19.2021 01:00	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.19.2021 01:00	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.19.2021 01:00	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	03.19.2021 01:00	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.19.2021 01:00	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.19.2021 01:00	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.19.2021 01:00	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	100	%	70-130	03.19.2021 01:00	
4-Bromofluorobenzene	460-00-4	98	%	70-130	03.19.2021 01:00	

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Certificate of Analytical Results 691511

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **TMW-1** Matrix: Water Date Received:03.11.2021 15:46

Lab Sample Id: 691511-002 Date Collected: 03.10.2021 10:40

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.11.2021 17:45 % Moisture:

Seq Number: 3153434

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**418**	5.00	mg/L	03.11.2021 18:36		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 03.16.2021 12:00 % Moisture:

Seq Number: 3154191

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.19.2021 01:52	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.19.2021 01:52	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.19.2021 01:52	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	03.19.2021 01:52	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.19.2021 01:52	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.19.2021 01:52	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.19.2021 01:52	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	117	%	70-130	03.19.2021 01:52	
4-Bromofluorobenzene	460-00-4	103	%	70-130	03.19.2021 01:52	

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Certificate of Analytical Results 691511

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **TMW-2** Matrix: Water Date Received:03.11.2021 15:46

Lab Sample Id: 691511-003 Date Collected: 03.10.2021 11:45

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.11.2021 17:45 % Moisture:

Seq Number: 3153434

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**428**	5.00	mg/L	03.11.2021 19:01		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 03.16.2021 12:00 % Moisture:

Seq Number: 3154191

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.19.2021 02:18	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.19.2021 02:18	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.19.2021 02:18	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	03.19.2021 02:18	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.19.2021 02:18	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.19.2021 02:18	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.19.2021 02:18	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	113	%	70-130	03.19.2021 02:18	
4-Bromofluorobenzene	460-00-4	78	%	70-130	03.19.2021 02:18	

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Certificate of Analytical Results 691511

Larson and Associates, Inc., Midland, TX

NMGSAU 2102

Sample Id: **DUP-1** Matrix: Water Date Received:03.11.2021 15:46

Lab Sample Id: 691511-004 Date Collected: 03.10.2021 00:00

Analytical Method: Chloride by EPA 300 Prep Method: E300P

Tech: CHE

Analyst: CHE Date Prep: 03.11.2021 17:45 % Moisture:

Seq Number: 3153434

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	**237**	5.00	mg/L	03.11.2021 19:10		10

Analytical Method: BTEX by EPA 8021B Prep Method: SW5030B

Tech: KTL

Analyst: KTL Date Prep: 03.16.2021 12:00 % Moisture:

Seq Number: 3154191

Parameter	Cas Number	Result	RL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.00200	0.00200	mg/L	03.19.2021 02:44	U	1
Toluene	108-88-3	<0.00200	0.00200	mg/L	03.19.2021 02:44	U	1
Ethylbenzene	100-41-4	<0.00200	0.00200	mg/L	03.19.2021 02:44	U	1
m,p-Xylenes	179601-23-1	<0.00400	0.00400	mg/L	03.19.2021 02:44	U	1
o-Xylene	95-47-6	<0.00200	0.00200	mg/L	03.19.2021 02:44	U	1
Total Xylenes	1330-20-7	<0.00200	0.00200	mg/L	03.19.2021 02:44	U	1
Total BTEX		<0.00200	0.00200	mg/L	03.19.2021 02:44	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	117	%	70-130	03.19.2021 02:44	
4-Bromofluorobenzene	460-00-4	105	%	70-130	03.19.2021 02:44	

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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. **ND** Not Detected.

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

SMP Client Sample **BLK** Method Blank

BKS/LCS Blank Spike/Laboratory Control Sample **BKSD/LCSD** Blank Spike Duplicate/Laboratory Control Sample Duplicate

MD/SD Method Duplicate/Sample Duplicate **MS** Matrix Spike **MSD:** Matrix Spike Duplicate

+ NELAC certification not offered for this compound.

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

eurofins | Environment Testing Xenco

QC Summary 691511

Larson and Associates, Inc.

NMGSAU 2102

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3153434 — Matrix: Water — Date Prep: 03.11.2021
MB Sample Id: 7723127-1-BLK — LCS Sample Id: 7723127-1-BKS — LCSD Sample Id: 7723127-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.500	25.0	24.4	98	24.4	98	90-110	0	20	mg/L	03.11.2021 17:27	

Analytical Method: Chloride by EPA 300 — Prep Method: E300P
Seq Number: 3153434 — Matrix: Drinking Water — Date Prep: 03.11.2021
Parent Sample Id: 691256-001 — MS Sample Id: 691256-001 S — MSD Sample Id: 691256-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	22.8	25.0	47.2	98	47.1	97	90-110	0	20	mg/L	03.11.2021 17:53	

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3154191 — Matrix: Water — Date Prep: 03.16.2021
MB Sample Id: 7723688-1-BLK — LCS Sample Id: 7723688-1-BKS — LCSD Sample Id: 7723688-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.108	108	0.102	102	70-130	6	25	mg/L	03.18.2021 23:17	
Toluene	<0.00200	0.100	0.103	103	0.0981	98	70-130	5	25	mg/L	03.18.2021 23:17	
Ethylbenzene	<0.00200	0.100	0.103	103	0.0993	99	70-130	4	25	mg/L	03.18.2021 23:17	
m,p-Xylenes	<0.00400	0.200	0.213	107	0.203	102	70-130	5	25	mg/L	03.18.2021 23:17	
o-Xylene	<0.00200	0.100	0.103	103	0.101	101	70-130	2	25	mg/L	03.18.2021 23:17	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		115		117		70-130	%	03.18.2021 23:17
4-Bromofluorobenzene	75		88		95		70-130	%	03.18.2021 23:17

Analytical Method: BTEX by EPA 8021B — Prep Method: SW5030B
Seq Number: 3154191 — Matrix: Water — Date Prep: 03.16.2021
Parent Sample Id: 691511-001 — MS Sample Id: 691511-001 S — MSD Sample Id: 691511-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.00200	0.100	0.0781	78	0.0865	87	70-130	10	25	mg/L	03.19.2021 07:41	
Toluene	<0.00200	0.100	0.0828	83	0.0871	87	70-130	5	25	mg/L	03.19.2021 07:41	
Ethylbenzene	<0.00200	0.100	0.0863	86	0.0903	90	70-130	5	25	mg/L	03.19.2021 07:41	
m,p-Xylenes	<0.00400	0.200	0.174	87	0.185	93	70-130	6	25	mg/L	03.19.2021 07:41	
o-Xylene	<0.00200	0.100	0.0874	87	0.0935	94	70-130	7	25	mg/L	03.19.2021 07:41	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		116		70-130	%	03.19.2021 07:41
4-Bromofluorobenzene	113		94		70-130	%	03.19.2021 07:41

MS/MSD Percent Recovery — [D] = 100*(C-A) / B — LCS = Laboratory Control Sample — MS = Matrix Spike
Relative Percent Difference — RPD = 200* | (C-E) / (C+E) | — A = Parent Result — B = Spike Added
LCS/LCSD Recovery — [D] = 100 * (C) / [B] — C = MS/LCS Result — D = MSD/LCSD % Rec
Log Difference — Log Diff. = Log(Sample Duplicate) - Log(Original Sample) — E = MSD/LCSD Result

№ 1537

CHAIN-OF-CUSTODY

Larson & Associates, Inc.
Environmental Consultants
507 N. Marienfeld, Ste. 200
Midland, TX 79701
432-687-0901

Data Reported to:

DATE: 3/10/21 PAGE 1 OF 1

PO#:

LAB WORK ORDER#: ~~69151~~ 69151

PROJECT LOCATION OR NAME: NMGSAU 2102 3.11.21 AJ

LAI PROJECT #: 19-0112-51 COLLECTOR: IJ + MB

TRRP report? ☐ Yes ☒ No

TIME ZONE: Time zone/State: MST

S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER

PRESERVATION: 3 VOA | HCl | HNO_3 | H_2SO_4 ☐ NaOH ☐ | 1 poly | ICE | UNPRESERVED

ANALYSES: BTEX ☒ MTBE ☐ | TRPH 418.1 ☐ | TPH 1005 ☐ TPH 1006 ☐ | GASOLINE MOD 8015 ☐ | DIESEL - MOD 8015 ☐ | OIL - MOD 8015 ☐ | VOC 8260 ☐ | SVOC 8270 ☐ PAH 8270 ☐ HOLDPAH ☐ | 8081 PESTICIDES ☐ 8151 HERBICIDES ☐ | 8082 PCBS ☐ | TBLP - METALS (RCRA) ☐ TCLP VOC ☐ | TCLP - PEST ☐ HERB ☐ Semi-VOC ☐ | TOTAL METALS (RCRA) ☐ OTHER LIST ☐ | LEAD - TOTAL ☐ D.W. 200.8 ☐ TCLP ☐ | RCI ☐ TOX ☐ FLASHPOINT ☐ | TDS ☐ TSS ☐ % MOISTURE ☐ | pH ☐ HEXAVALENT CHROMIUM ☐ CYANIDE ☐ | EXPLOSIVES ☐ PECHLORATE ☐ | CHLORIDE ☒ ANIONS ☐ ALKALINITY ☐

Field Sample I.D.	Lab #	Date	Time	Matrix	# of Containers	HCl	HNO_3	H_2SO_4 NaOH	ICE	UNPRESERVED	BTEX	FIELD NOTES
MW-2		3/10/21	1017	W	4	X			X		X	
TMW-1		"	1040	"	4	X			X		X	Bill to Apache
TMW-2		"	1145	"	4	X			X		X	
DUP-1		"		"	4	X			X		X	

TOTAL 4

RELINQUISHED BY:(Signature) Grant Om DATE/TIME 3/11/21 1546 RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) DATE/TIME RECEIVED BY: (Signature)

RELINQUISHED BY:(Signature) Lindall DATE/TIME 03-11-21 1546 RECEIVED BY: (Signature)

LABORATORY: Xenco

TURN AROUND TIME
NORMAL ☒
1 DAY ☐
2 DAY ☐
OTHER ☐

LABORATORY USE ONLY:
RECEIVING TEMP: 6.0 THERM#: IR-8
CUSTODY SEALS - ☐ BROKEN ☒ INTACT ☐ NOT USED
☐ CARRIER BILL #
☒ HAND DELIVERED

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Larson and Associates, Inc.

Date/ Time Received: 03.11.2021 03.46.00 PM

Work Order #: 691511

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

Temperature Measuring device used : IR8

Sample Receipt Checklist	Comments
#1 *Temperature of cooler(s)?	6
#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)?	**N/A**
#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#: 10BDH1991

Checklist completed by: Brianna Teel Date: 03.11.2021

Brianna Teel

Checklist reviewed by: Holly Taylor Date: 03.15.2021

Holly Taylor

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1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
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District III
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Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

State of New Mexico
Energy, Minerals and Natural Resources
Oil Conservation Division
1220 S. St Francis Dr.
Santa Fe, NM 87505

CONDITIONS

Action 33959

CONDITIONS

Operator: APACHE CORPORATION 303 Veterans Airpark Ln Midland, TX 79705	OGRID: 873
	Action Number: 33959
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
michael.buchanan	Review of the 1Q 2021 Groundwater Monitoring Report for N. Monument G/SA Unit #2102: Content Satisfactory 1. Continue to conduct groundwater monitoring on a quarterly basis as prescribed by OCD. 2. Continue to submit reports on an annual basis to NMOCD with recommendations and conclusions based on analytical results. 3. Submit Annual Reports no later than April 1 of each year. 4. Groundwater Reports and documents only related to groundwater impacts may be submitted under "GWA" and not as a C-141 for future submissions.	12/27/2023