



Armando Martinez
Operations Lead, Portfolio Operations Central

May 20, 2021

New Mexico Oil Conservation Division – District I
1625 N. French Drive
Hobbs, New Mexico 88240

Re: 2021 Soil Assessment Report – LSAU Sat 4
Case No. 1RP-1891
Lea County, New Mexico

Dear Bradford Billings:

Chevron Environmental Management Company (CEMC) submits herein the *2021 Soil Assessment Report* for 1RP-1891, LSAU Sat 4. The Site is located approximately 5.60 miles southeast of Lovington, in Unit E, Section 1, Township 17 South, Range 36 East, Lea County, New Mexico. The Report was prepared by Arcadis U.S., Inc. (Arcadis), on behalf of CEMC. Based on the 2021 soil investigation data, additional assessment activities will be evaluated, and a proposed scope will be included in a Work Plan for review and approval to further delineate chloride impact in soil.

If you have any questions regarding this submittal, please contact Scott Foord of Arcadis at (713) 953-4853 or me at (505) 690 5408.

Respectfully,

A handwritten signature in blue ink, appearing to read "Armando Martinez".

Armando Martinez

Encl. 2021 Soil Assessment Report – LSAU Sat 4

Armando Martinez
Operations Lead Central
Portfolio Operations - Central
354 State Highway 38, Questa, NM 87556-0469
Tel 575 586 7639 Mobile 505 690 5408 Fax 575 586 0811
amarti@chevron.com



Chevron Environmental Management Company

2021 Soil Assessment Report

LSAU Sat 4

NMOCD Case No. 1RP-1891

May 2021

2021 Soil Assessment Report

2021 Soil Assessment Report

LSAU Sat 4

NMOCD Case No. 1RP-1891

May 2021

Prepared By:

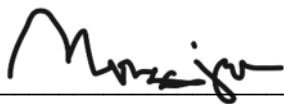
Arcadis U.S., Inc.
10205 Westheimer Road, Suite 800
Houston
Texas 77042
Phone: 713 953 4800
Fax: 713 977 4620

Prepared For:

Armando Martinez
Operations Lead Central
Chevron Environmental Management Company
P.O. Box 469
Questa, New Mexico 87556

Our Ref:

30064832



Morgan Jordan
Task Manager



Scott Foord, PG
Certified Project Manager

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

www.arcadis.com

LSAU Sat 4_Soil Assessment Report_SJ_mj_JN

2021 Soil Assessment Report

Contents

1	Introduction	1
2	Project Summary	1
3	2021 Soil Assessment	1
4	Soil Analytical Results	2
4.1	BTEX	2
4.2	TPH.....	2
4.3	Chloride	2
5	Conclusion	2

Tables

Table 1.	Summary of Soil Analytical Results
-----------------	---

Figures

Figure 1.	Site Map
Figure 2.	Soil Sample Locations Map
Figure 3.	Soil Analytical Results Map

Appendices

Appendix A.	Initial C-141 Form - 1RP-1891
Appendix B.	Photographic Log
Appendix C.	Laboratory Report
Appendix D.	Revised C-141 Form 1RP-1891

2021 Soil Assessment Report

1 Introduction

Arcadis U.S., Inc. (Arcadis) prepared this Site Assessment Report (Report), on behalf of Chevron Environmental Management Company (CEMC), summarizing the soil assessment activities conducted for the LSAU Sat 4 (Site).

2 Project Summary

The Site is located approximately 5.60 miles southeast of Lovington, in Unit E, Section 1, Township 17 South, Range 36 East, Lea County, New Mexico. A site location map is included as **Figure 1**.

On June 27, 2008, a control valve on a vessel malfunctioned causing the pressure relief valve to open, releasing 0.5 barrels (bbls) of oil and 19.5 bbls of produced water. The Initial C-141 Form states that the release covered an area approximately 30' in diameter on the northeast side of the satellite. Upon discovery, a vacuum truck recovered approximately 15 bbls of produced water. According to the New Mexico Office of the State Engineers (NMOSE) database, there is a water well approximately 0.07 miles east of the Site with a reported depth to groundwater of approximately 62 feet below ground surface (bgs). The Initial C-141 Form for this release was submitted to the New Mexico Oil Conservation Division (NMOCD) on July 2, 2008 and approved by NMOCD on July 7, 2008. The release was assigned remediation permit number 1RP-1891. The Initial C-141 Form for this release is included in **Appendix A**.

3 2021 Soil Assessment

On February 2 - 3, 2021, Arcadis personnel collected soil samples from ten locations (SB-1 through SB-10) within the release area. The sample locations were determined based on information obtained by Arcadis from the Initial C-141 Form and from Chevron personnel familiar with the release location associated with remediation permit number 1RP-1891. The soil samples were collected with a hand auger at depths ranging from the surface to approximately 1.25 feet bgs. Hand auger refusal was encountered in all boring locations. Boring logs were not generated due to the shallow depth of the borings. Each boring location was backfilled with the remaining soil after sample collection. Soil sample locations are presented on **Figure 2**. A photograph log is presented in **Appendix B**. Sample containers (4 oz. glass jars) were supplied by Eurofins Xenco Laboratories, and samples were collected and placed on ice for delivery to Eurofins Xenco Laboratories in Midland, Texas for analysis.

The soil samples were analyzed for:

- Benzene, toluene, ethylbenzene, and xylene (BTEX) by United States Environmental Protection Agency (USEPA) Method 8021B;
- Total Petroleum Hydrocarbons (TPH) as gasoline (TPH-GRO) by USEPA Method 8015;
- TPH as diesel (TPH-DRO) by USEPA Method 8015;
- TPH as oil (TPH-MRO) by USEPA Method 8015; and
- Chloride by USEPA Method 300.

2021 Soil Assessment Report

4 Soil Analytical Results

The soil analytical results were compared to the revised New Mexico Administration Code (NMAC) screening levels for BTEX, TPH, and chloride for depth to groundwater 51-100 feet bgs (revised Rule 19.15.29). A summary of the soil sample analytical results is presented in **Table 1**. Copies of the certified analytical reports and chain-of-custody documentation from Eurofins Xenco are presented in **Appendix C**. The soil analytical map is presented in **Figure 3**.

4.1 BTEX

- Benzene concentrations were reported below the NMAC standard of 10 milligrams per kilogram (mg/kg) at all sample locations.
- Total BTEX concentrations were reported below the NMAC standard of 50 mg/kg at all sample locations.

4.2 TPH

- TPH (GRO + DRO) concentrations were reported below the NMAC standard of 1,000 mg/kg at all sample locations.
- Total TPH (GRO + DRO + MRO) concentrations were reported below the NMAC standard of 2,500 mg/kg at all sample locations.

4.3 Chloride

- Chloride concentrations were reported below the revised Rule 19.15.29 screening limit of 10,000 mg/kg at all sample locations. However, concentrations did exceed the revised Rule (19.15.29.13) restoration screening criteria of 600 mg/kg at one sample location (SB-4).
 - SB-4
 - (0 – 0.5') at 1,230 mg/kg

5 Conclusion

Analytical results associated with the recent assessment activities indicate that concentrations of chloride above the restoration screening criteria of 600 mg/kg within the top 4 feet bgs of the soil column are present in surface and shallow soil in the vicinity of SB-4. Based upon the findings presented in this report, additional soil assessment activities are recommended to further delineate the chloride impact in soil at the Site. The revised C-141 Form is presented in **Appendix D**.

Tables

Table 1
2021 Soil Analytical Results
Chevron Environmental Management Company
LSAU Sat 4
Lea County, New Mexico



Sample I.D. No.	Sample Depth (feet bgs)	Date	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total BTEX	TPH-GRO	TPH-DRO	Total TPH GRO+DRO	TPH-MRO	Total TPH GRO+DRO+MRO	Chloride
			(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
			10	--	--	--	50	--	--	1,000	--	2,500	10,000
NMAC Standards													
Restoration Requirements													
SB-1	0-0.5'	02/02/21	<0.000389	0.00654	<0.000570	<0.000348	0.00654	--	142	142	74.7	217	145
DUP 1 (SB-1)	0-0.5'	02/02/21	<0.000386	0.00222	<0.000567	<0.000346	0.00222	--	157	157	76	233	137
	SB-2	0-0.5'	02/02/21	<0.000383	<0.000454	<0.000563	<0.000343	<0.000343	--	111	111	50.6	162
SB-3	0-5'	02/02/21	<0.000384	<0.000455	<0.000564	<0.000344	<0.000344	--	34.3 J	34.3 J	<15.0	34.3 J	12.4
	1'-1.25'	02/02/21	<0.000388	<0.000459	<0.000569	<0.000347	<0.000347	--	33.3 J	33.3 J	<14.9	33.3 J	9.51
SB-4	0-05'	02/02/21	<0.000383	<0.000453	<0.000561	<0.000342	<0.000342	--	15.9 J	15.9 J	<15.0	55.2	1,230
SB-5	0-05'	02/03/21	<0.000386	<0.000457	<0.000567	<0.000346	<0.000346	24.1 B J	24.6 J	48.7 B J	<15.0	48.7 J	122
	1'-1.25'	02/03/21	<0.000387	<0.000458	<0.000568	<0.000346	<0.000346	25.5 B J	18.3 J	43.8 B J	<15.0	43.8 J	239
SB-6	0-0.5'	02/03/21	<0.000384	0.00121 J	<0.000564	0.00114 J	0.00235	17.9 B J	621	638.9 B J	189	828	75.3
SB-7	0-0.5'	02/03/21	<0.000384	<0.000455	<0.000564	<0.000344	<0.000344	27.1 B J	17.9 J	45.0 B J	<15.0	45.0 J	73.3
SB-8	0-0.5'	02/03/21	<0.000386	<0.000457	<0.000566	<0.000345	<0.000345	23.9 B J	155	178.9 B J	48.6 J	228	103
SB-9	0-0.5'	02/03/21	<0.000386	<0.000457	<0.000567	<0.000346	<0.000346	22.8 B J	17.1 J	39.9 B J	<15.0	39.9 J	20.7
SB-10	0-0.5'	02/03/21	<0.000386	<0.000457	<0.000567	<0.000346	<0.000346	16.9 B J	768	784.9	256	1,040	8.69

Legend:

BOLD = Analytes exceeding NMAC standards

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

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

< indicates the analyte was not detected at or above the Method Detection Limit (MDL)

mg/kg: Milligram per Kilogram

BTEX : Benzene, Toluene, Ethylbenzene, and Total Xylenes

NMAC : New Mexico Administration Code

TPH GRO: Total Petroleum Hydrocarbons Gasoline Range Organics

TPH DRO: Total Petroleum Hydrocarbon Diesel Range Organics

TPH MRO: Total Petroleum Hydrocarbons Motor Oil Range Organics

" " " : Indicates feet

*Revised screening limit and restoration criteria within the first 4 feet below ground surface per Rule 19.15.29 effective August 14, 2018

DUP : Duplicate sample

Notes:

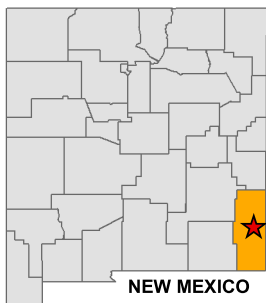
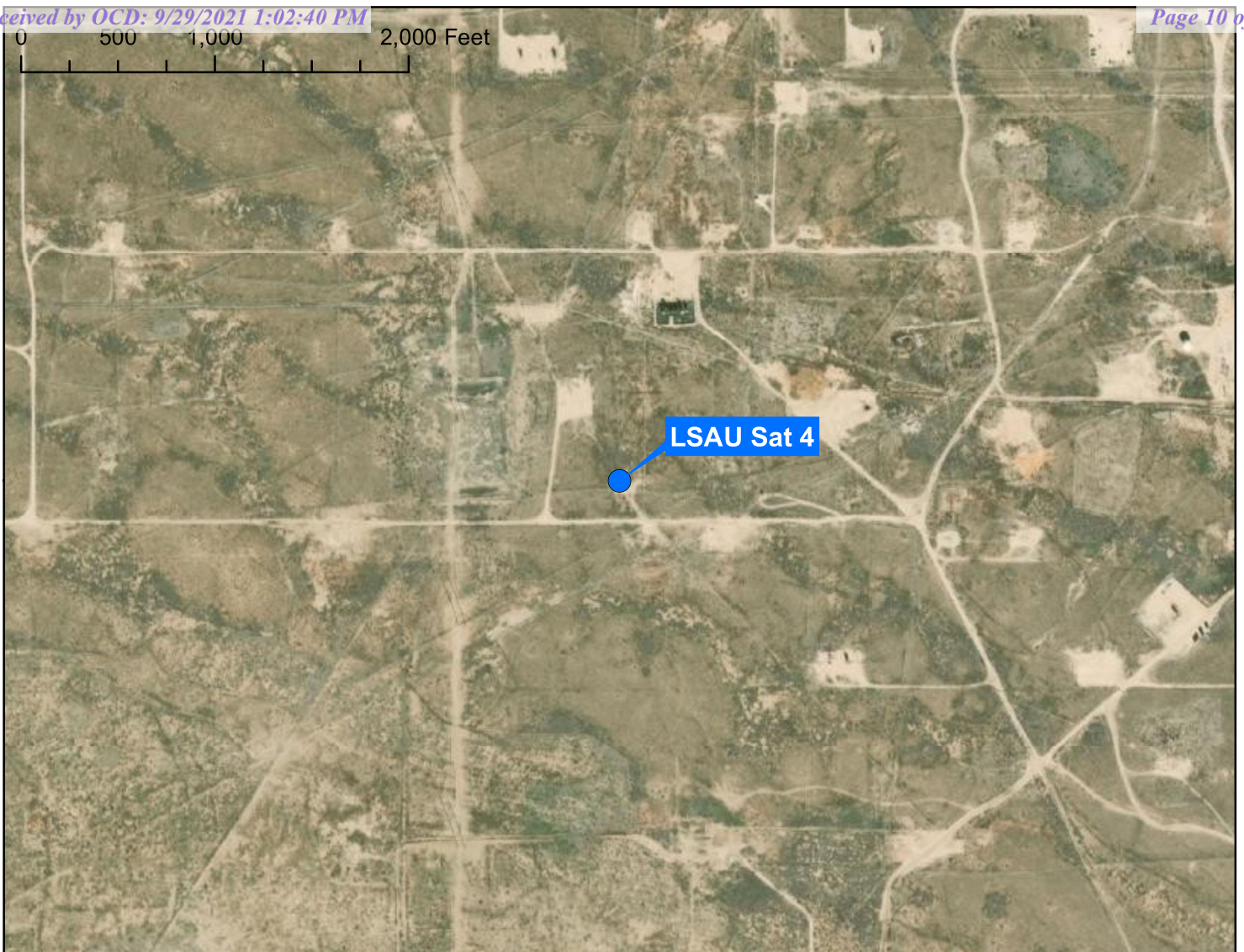
1. Chloride analyzed by United States Environmental Protection Agency Method 300

2. TPH analyzed by TPH by SW8015 Mod DRO/ ORO Method

3. BTEX analyzed by USEPA Method 8021B

4. Closure Criteria New Mexico Administrative Code 19.15.29.12.E(2)

Figures



NOTES:
1. Datum: D_WGS_1984
2. Site Location: 32.866608, -103.314695

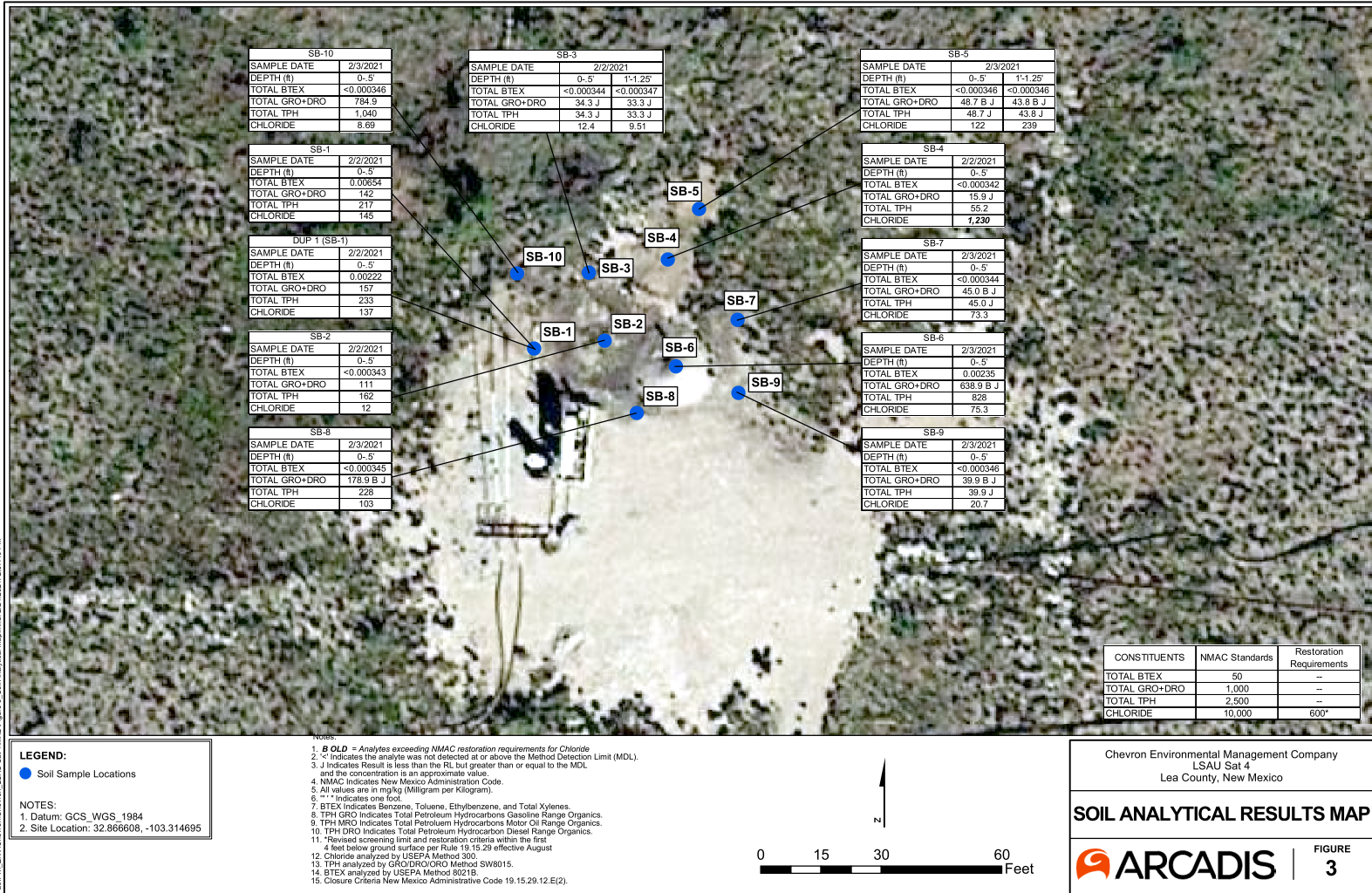
Chevron Environmental Management Company
LSAU Sat 4
Lea County, New Mexico

SITE LOCATION MAP



FIGURE
1





Appendix A

Initial C-141 Forms - 1RP-1891

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

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

RECEIVED

Form C-141

Revised October 10, 2003

III 07 2008
Submit 2 Copies to appropriate District Office in accordance with Rule 1.06 on back side of form

HOBBS OCD

Release Notification and Corrective Action

OPERATOR

X Initial Report

Final Report

Name of Company Chevron Midcontinent LP	Contact Larry Ridenour
Address HCR 60 Box 423 Lovington, N.M. 88260	Telephone No. 505-396-4414 X 102
Facility Name Lovington San Andres Unit Sat #4 <i>Well 73</i>	Facility Type producing well test facility
Surface Owner City of Lovington	Mineral Owner State of NM
Lease No. B-1505	

LOCATION OF RELEASE

API 30 025 31367

Unit Letter E	Section 1	Township 17S	Range 36E	Feet from the 1726	North line	Feet from the 554	West line	County Lea
---------------	-----------	--------------	-----------	--------------------	------------	-------------------	-----------	------------

Latitude N 32 deg 51 min 59.83 sec Longitude W 103 deg 18 min 52.87 sec

NATURE OF RELEASE

Type of Release Produced oil and water	Volume of Release 20 bbls Total fluid (.5 bo, 19.5 bw)	Volume Recovered 15 bbls fluids. (0 bo, 15 bw)
Source of Release pressure relief valve on test vessel	Date and Hour of Occurrence 06/27/08 8:30 AM	Date and Hour of Discovery 06/27/08 10:30 AM
Was Immediate Notice Given? ☒ Yes ☐ No ☐ Not Required	If YES, To Whom? Sylvia Dickey	
By Whom? Larry Ridenour	Date and Hour 6/27/2008 3:20 PM	
Was a Watercourse Reached? ☐ Yes ☒ No	If YES, Volume Impacted	

If a Watercourse was Impacted, Describe Fully.*

Describe Cause of Problem and Remedial Action Taken.*

Control valve on vessel malfunctioned causing vessel to pressure up and the pressure relief valve opening up. Upon discovery well was switched out of test. Vacuum truck was called in to pick up fluids. Area was flagged off and RWI notified to make one call for clean up of obviously contaminated soil. Chlorides 35,300

Describe Area Affected and Cleanup Action Taken.*

Approximately 30' diameter area on NE side of satellite. Bulk of spill stayed on location. Samples will then be taken after initial clean up for delineation, evaluation, and formulation of remediation plan to be submitted to NMOCD.

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

Signature: <i>Larry D Ridenour</i>	OIL CONSERVATION DIVISION	
Printed Name: Larry Ridenour	Approved by District Supervisor: <i>Johnson</i>	
Title: Operations Representative	ENVIRONMENTAL ENGINEER	
E-mail Address LRidenour@chevron.com	Approval Date: 7.7.08	Expiration Date: 9.8.08
Date: 7/2/2008 Phone: 396-4414 X 102	Conditions of Approval: SUBMIT FINAL C-141 w/ DOCUMENT	Attached ☐ IRP# 1891

* Attach Additional Sheets If Necessary

By 9.8.08

FGR 0821727930

Appendix B

Photographic Log



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 1	Date: 02/02/2021	 A wide-angle photograph of an industrial site. In the foreground, there is a large, flat, gravelly area. In the middle ground, there are several large, cylindrical storage tanks and various pipes and structures. In the background, there are more industrial buildings and a line of power lines under a blue sky with some clouds.	
Direction Photo Taken: North			
Description: South of Pad near entrance			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 2	Date: 02/02/2021	 A photograph of an industrial site, similar to the one above. It shows a gravelly foreground, industrial tanks and pipes in the middle ground, and power lines in the background under a blue sky.	
Direction Photo Taken: Northeast			
Description: East of center of pad			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 3	Date: 02/02/2021		
Direction Photo Taken: East			
Description: West of Pad			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 4	Date: 02/02/2021		
Direction Photo Taken: South			
Description: North of pad			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 5	Date: 02/02/2021		
Direction Photo Taken: South			
Description: Center of pad north of separator			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 6	Date: 02/02/2021		
Direction Photo Taken: West			
Description: Northeast corner of pad			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 7	Date: 02/02/2021		
Direction Photo Taken: South			
Description: North of separator			



PHOTOGRAPHIC LOG

Property Name: LSAU Sat 4		Location: Lea County, NM	Case No. 1RP-1891
Photo No. 8	Date: 02/02/2021		
Direction Photo Taken: East			
Description: Northwest of separator			

Appendix C

Laboratory Report

Analytical Report 687046

for

Arcadis U.S., Inc

Project Manager: Morgan Jordan

LSAU Sat 4

30064632-0002B

02.09.2021

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)



02.09.2021

Project Manager: **Morgan Jordan**

Arcadis U.S., Inc

1717 W 6th Street, Suite 210

Austin, TX 78703

Reference: Eurofins Xenco, LLC Report No(s): **687046**

LSAU Sat 4

Project Address:

Morgan Jordan:

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) 687046. 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. 687046 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,

A handwritten signature in black ink, appearing to read "Sachin Kudchadkar", written over a horizontal line.

Sachin Kudchadkar

Project Manager

A Small Business and Minority Company

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

**Sample Cross Reference 687046****Arcadis U.S., Inc, Austin, TX**

LSAU Sat 4

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB-1-S-0-.5-210202	S	02.02.2021 11:30		687046-001
SB-1-SD-0-.5-210202	S	02.02.2021 00:00		687046-002
SB-2-S-0-.5-210202	S	02.02.2021 11:47		687046-003
SB-3-S-0-.5-210202	S	02.02.2021 12:27		687046-004
SB-3-S-1-1.25-210202	S	02.02.2021 12:41		687046-005
SB-4-S-0-.5-210202	S	02.02.2021 12:49		687046-006

**CASE NARRATIVE****Client Name: Arcadis U.S., Inc****Project Name: LSAU Sat 4**

Project ID: 30064632-0002B
Work Order Number(s): 687046

Report Date: 02.09.2021
Date Received: 02.02.2021

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:

Sample receipt non conformances and comments per sample:

None



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-1-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-001

Date Collected: 02.02.2021 11:30

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

% Moisture:

Seq Number: 3149952

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	145	4.98	0.855	mg/kg	02.03.2021 19:46		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.05.2021 12:00

% Moisture:

Seq Number: 3150316

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	02.05.2021 19:00	U	1
Diesel Range Organics (DRO)	C10C28DRO	142	49.9	15.0	mg/kg	02.05.2021 19:00		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	74.7	49.9	15.0	mg/kg	02.05.2021 19:00		1
Total TPH	PHC635	217	49.9	15.0	mg/kg	02.05.2021 19:00		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	94	%	70-130	02.05.2021 19:00	
o-Terphenyl	84-15-1	93	%	70-130	02.05.2021 19:00	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-1-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-001

Date Collected: 02.02.2021 11:30

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

% Moisture:
Basis: Wet Weight

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000389	0.00202	0.000389	mg/kg	02.03.2021 15:02	U	1
Toluene	108-88-3	0.00654	0.00202	0.000460	mg/kg	02.03.2021 15:02		1
Ethylbenzene	100-41-4	<0.000570	0.00202	0.000570	mg/kg	02.03.2021 15:02	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00404	0.00102	mg/kg	02.03.2021 15:02	U	1
o-Xylene	95-47-6	<0.000348	0.00202	0.000348	mg/kg	02.03.2021 15:02	U	1
Total Xylenes	1330-20-7	<0.000348	0.00202	0.000348	mg/kg	02.03.2021 15:02	U	1
Total BTEX		0.00654	0.00202	0.000348	mg/kg	02.03.2021 15:02		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
1,4-Difluorobenzene	540-36-3	98	%	70-130	02.03.2021 15:02			
4-Bromofluorobenzene	460-00-4	98	%	70-130	02.03.2021 15:02			



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-1-SD-0-5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-002

Date Collected: 02.02.2021 00:00

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

% Moisture:

Seq Number: 3149952

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	137	4.97	0.853	mg/kg	02.03.2021 20:02		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.05.2021 12:00

% Moisture:

Seq Number: 3150316

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	02.05.2021 19:22	U	1
Diesel Range Organics (DRO)	C10C28DRO	157	50.0	15.0	mg/kg	02.05.2021 19:22		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	76.0	50.0	15.0	mg/kg	02.05.2021 19:22		1
Total TPH	PHC635	233	50.0	15.0	mg/kg	02.05.2021 19:22		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	106	%	70-130	02.05.2021 19:22	
o-Terphenyl	84-15-1	107	%	70-130	02.05.2021 19:22	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-1-SD-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-002

Date Collected: 02.02.2021 00:00

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

% Moisture:
Basis: Wet Weight

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	02.03.2021 15:22	U	1
Toluene	108-88-3	0.00222	0.00201	0.000457	mg/kg	02.03.2021 15:22		1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	02.03.2021 15:22	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.03.2021 15:22	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.03.2021 15:22	U	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	02.03.2021 15:22	U	1
Total BTEX		0.00222	0.00201	0.000346	mg/kg	02.03.2021 15:22		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	102	%	70-130	02.03.2021 15:22			
1,4-Difluorobenzene	540-36-3	101	%	70-130	02.03.2021 15:22			



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-2-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-003

Date Collected: 02.02.2021 11:47

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

% Moisture:

Seq Number: 3149952

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12.0	5.04	0.865	mg/kg	02.03.2021 20:07		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.05.2021 12:00

% Moisture:

Seq Number: 3150316

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	02.05.2021 19:43	U	1
Diesel Range Organics (DRO)	C10C28DRO	111	50.0	15.0	mg/kg	02.05.2021 19:43		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	50.6	50.0	15.0	mg/kg	02.05.2021 19:43		1
Total TPH	PHC635	162	50.0	15.0	mg/kg	02.05.2021 19:43		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-130	02.05.2021 19:43	
o-Terphenyl	84-15-1	114	%	70-130	02.05.2021 19:43	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-2-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-003

Date Collected: 02.02.2021 11:47

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

% Moisture:
Basis: Wet Weight

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	02.03.2021 15:43	U	1
Toluene	108-88-3	<0.000454	0.00199	0.000454	mg/kg	02.03.2021 15:43	U	1
Ethylbenzene	100-41-4	<0.000563	0.00199	0.000563	mg/kg	02.03.2021 15:43	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	02.03.2021 15:43	U	1
o-Xylene	95-47-6	<0.000343	0.00199	0.000343	mg/kg	02.03.2021 15:43	U	1
Total Xylenes	1330-20-7	<0.000343	0.00199	0.000343	mg/kg	02.03.2021 15:43	U	1
Total BTEX		<0.000343	0.00199	0.000343	mg/kg	02.03.2021 15:43	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	101	%	70-130	02.03.2021 15:43			
1,4-Difluorobenzene	540-36-3	100	%	70-130	02.03.2021 15:43			



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-3-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-004

Date Collected: 02.02.2021 12:27

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

% Moisture:

Basis: Wet Weight

Seq Number: 3149952

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	12.4	4.99	0.857	mg/kg	02.03.2021 20:13		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.05.2021 12:00

% Moisture:

Basis: Wet Weight

Seq Number: 3150316

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	49.9	15.0	mg/kg	02.05.2021 20:04	U	1
Diesel Range Organics (DRO)	C10C28DRO	34.3	49.9	15.0	mg/kg	02.05.2021 20:04	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	02.05.2021 20:04	U	1
Total TPH	PHC635	34.3	49.9	15.0	mg/kg	02.05.2021 20:04	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	102	%	70-130	02.05.2021 20:04	
o-Terphenyl	84-15-1	113	%	70-130	02.05.2021 20:04	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-3-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-004

Date Collected: 02.02.2021 12:27

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

% Moisture:
Basis: Wet Weight

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	02.03.2021 16:03	U	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	02.03.2021 16:03	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	02.03.2021 16:03	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	02.03.2021 16:03	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.03.2021 16:03	U	1
Total Xylenes	1330-20-7	<0.000344	0.00200	0.000344	mg/kg	02.03.2021 16:03	U	1
Total BTEX		<0.000344	0.00200	0.000344	mg/kg	02.03.2021 16:03	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	99	%	70-130	02.03.2021 16:03			
1,4-Difluorobenzene	540-36-3	98	%	70-130	02.03.2021 16:03			



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-3-S-1-1.25-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-005

Date Collected: 02.02.2021 12:41

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

% Moisture:

Seq Number: 3149952

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	9.51	4.98	0.855	mg/kg	02.03.2021 20:18		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.05.2021 12:00

% Moisture:

Seq Number: 3150316

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<14.9	49.8	14.9	mg/kg	02.05.2021 20:25	U	1
Diesel Range Organics (DRO)	C10C28DRO	33.3	49.8	14.9	mg/kg	02.05.2021 20:25	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<14.9	49.8	14.9	mg/kg	02.05.2021 20:25	U	1
Total TPH	PHC635	33.3	49.8	14.9	mg/kg	02.05.2021 20:25	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	104	%	70-130	02.05.2021 20:25	
o-Terphenyl	84-15-1	118	%	70-130	02.05.2021 20:25	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-3-S-1-1.25-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-005

Date Collected: 02.02.2021 12:41

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

% Moisture:
Basis: Wet Weight

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000388	0.00202	0.000388	mg/kg	02.03.2021 16:23	U	1
Toluene	108-88-3	<0.000459	0.00202	0.000459	mg/kg	02.03.2021 16:23	U	1
Ethylbenzene	100-41-4	<0.000569	0.00202	0.000569	mg/kg	02.03.2021 16:23	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00403	0.00102	mg/kg	02.03.2021 16:23	U	1
o-Xylene	95-47-6	<0.000347	0.00202	0.000347	mg/kg	02.03.2021 16:23	U	1
Total Xylenes	1330-20-7	<0.000347	0.00202	0.000347	mg/kg	02.03.2021 16:23	U	1
Total BTEX		<0.000347	0.00202	0.000347	mg/kg	02.03.2021 16:23	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
4-Bromofluorobenzene	460-00-4	102	%	70-130	02.03.2021 16:23	
1,4-Difluorobenzene	540-36-3	99	%	70-130	02.03.2021 16:23	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-4-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-006

Date Collected: 02.02.2021 12:49

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

% Moisture:

Seq Number: 3149952

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	1230	24.8	4.25	mg/kg	02.03.2021 20:23		5

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 09:00

% Moisture:

Seq Number: 3150326

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	39.3	50.0	15.0	mg/kg	02.06.2021 18:47	J	1
Diesel Range Organics (DRO)	C10C28DRO	15.9	50.0	15.0	mg/kg	02.06.2021 18:47	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	02.06.2021 18:47	U	1
Total TPH	PHC635	55.2	50.0	15.0	mg/kg	02.06.2021 18:47		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	91	%	70-130	02.06.2021 18:47	
o-Terphenyl	84-15-1	105	%	70-130	02.06.2021 18:47	



Certificate of Analytical Results 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-4-S-0-.5-210202**

Matrix: Soil

Date Received: 02.02.2021 17:00

Lab Sample Id: 687046-006

Date Collected: 02.02.2021 12:49

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

% Moisture:
Basis: Wet Weight

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000383	0.00199	0.000383	mg/kg	02.03.2021 19:08	U	1
Toluene	108-88-3	<0.000453	0.00199	0.000453	mg/kg	02.03.2021 19:08	U	1
Ethylbenzene	100-41-4	<0.000561	0.00199	0.000561	mg/kg	02.03.2021 19:08	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00398	0.00101	mg/kg	02.03.2021 19:08	U	1
o-Xylene	95-47-6	<0.000342	0.00199	0.000342	mg/kg	02.03.2021 19:08	U	1
Total Xylenes	1330-20-7	<0.000342	0.00199	0.000342	mg/kg	02.03.2021 19:08	U	1
Total BTEX		<0.000342	0.00199	0.000342	mg/kg	02.03.2021 19:08	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	106	%	70-130	02.03.2021 19:08			
1,4-Difluorobenzene	540-36-3	98	%	70-130	02.03.2021 19:08			

**Blank Summary 687046****Arcadis U.S., Inc, Austin, TX**

LSAU Sat 4

Sample Id: 7720700-1-BLK

Matrix: SOLID

Lab Sample Id: 7720700-1-BLK

Analytical Method: **Chloride by EPA 300**

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.03.2021 13:30

Seq Number: 3149952

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	02.03.2021 17:55	U	1



Blank Summary 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: 7720752-1-BLK

Matrix: SOLID

Lab Sample Id: 7720752-1-BLK

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: KTL

Analyst: KTL

Date Prep: 02.03.2021 10:00

Seq Number: 3149948

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	02.03.2021 12:37	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	02.03.2021 12:37	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	02.03.2021 12:37	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	02.03.2021 12:37	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.03.2021 12:37	U	1



Blank Summary 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: 7721003-1-BLK

Matrix: SOLID

Lab Sample Id: 7721003-1-BLK

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.05.2021 12:00

Seq Number: 3150316

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	02.05.2021 11:26	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	02.05.2021 11:26	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	02.05.2021 11:26	U	1



Blank Summary 687046

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: 7721014-1-BLK

Matrix: SOLID

Lab Sample Id: 7721014-1-BLK

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 09:00

Seq Number: 3150326

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	<15.0	50.0	15.0	mg/kg	02.06.2021 12:07	U	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	02.06.2021 12:07	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	02.06.2021 12:07	U	1



Form 2 - Surrogate Recoveries

Project Name: LSAU Sat 4

Report Date: 02092021

Work Orders : 687046

Project ID: 30064632-0002B

Lab Batch #: 3149948

Sample: 7720752-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.03.2021 10:38

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0303	0.0300	101	70-130	
4-Bromofluorobenzene	0.0289	0.0300	96	70-130	

Lab Batch #: 3149948

Sample: 7720752-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.03.2021 10:58

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0306	0.0300	102	70-130	
4-Bromofluorobenzene	0.0289	0.0300	96	70-130	

Lab Batch #: 3149948

Sample: 687045-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.03.2021 11:19

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0306	0.0300	102	70-130	
4-Bromofluorobenzene	0.0265	0.0300	88	70-130	

Lab Batch #: 3149948

Sample: 687045-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.03.2021 11:39

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0305	0.0300	102	70-130	
4-Bromofluorobenzene	0.0286	0.0300	95	70-130	

Lab Batch #: 3149948

Sample: 7720752-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.03.2021 12:37

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0270	0.0300	90	70-130	
4-Bromofluorobenzene	0.0306	0.0300	102	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: LSAU Sat 4

Report Date: 02092021

Work Orders : 687046

Project ID: 30064632-0002B

Lab Batch #: 3150316

Sample: 7721003-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.05.2021 11:26

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	87.0	100	87	70-130	
o-Terphenyl	46.6	50.0	93	70-130	

Lab Batch #: 3150316

Sample: 7721003-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.05.2021 11:47

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	83.5	100	84	70-130	
o-Terphenyl	42.4	50.0	85	70-130	

Lab Batch #: 3150316

Sample: 7721003-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.05.2021 12:08

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	106	100	106	70-130	
o-Terphenyl	46.9	50.0	94	70-130	

Lab Batch #: 3150316

Sample: 686905-021 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.05.2021 12:51

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	95.3	99.7	96	70-130	
o-Terphenyl	46.9	49.9	94	70-130	

Lab Batch #: 3150316

Sample: 686905-021 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.05.2021 13:12

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	94.5	99.6	95	70-130	
o-Terphenyl	48.2	49.8	97	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: LSAU Sat 4

Report Date: 02092021

Work Orders : 687046

Project ID: 30064632-0002B

Lab Batch #: 3150326

Sample: 7721014-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 12:07

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.5	100	91	70-130	
o-Terphenyl	53.1	50.0	106	70-130	

Lab Batch #: 3150326

Sample: 7721014-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 12:28

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.0	100	98	70-130	
o-Terphenyl	50.2	50.0	100	70-130	

Lab Batch #: 3150326

Sample: 7721014-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 12:49

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	91.7	100	92	70-130	
o-Terphenyl	46.0	50.0	92	70-130	

Lab Batch #: 3150326

Sample: 687058-041 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.06.2021 13:31

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	82.6	99.7	83	70-130	
o-Terphenyl	42.1	49.9	84	70-130	

Lab Batch #: 3150326

Sample: 687058-041 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.06.2021 13:52

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	83.2	99.6	84	70-130	
o-Terphenyl	42.1	49.8	85	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

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



Arcadis U.S., Inc

LSAU Sat 4

Analytical Method: Chloride by EPA 300

Seq Number: 3149952

MB Sample Id: 7720700-1-BLK

Matrix: Solid

LCS Sample Id: 7720700-1-BKS

Prep Method: E300P

Date Prep: 02.03.2021

LCSD Sample Id: 7720700-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	242	97	249	100	90-110	3	20	mg/kg	02.03.2021 18:00	

Analytical Method: Chloride by EPA 300

Seq Number: 3149952

Parent Sample Id: 687003-037

Matrix: Soil

MS Sample Id: 687003-037 S

Prep Method: E300P

Date Prep: 02.03.2021

MSD Sample Id: 687003-037 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	15.1	252	294	111	278	104	90-110	6	20	mg/kg	02.03.2021 18:16	X

Analytical Method: Chloride by EPA 300

Seq Number: 3149952

Parent Sample Id: 687003-047

Matrix: Soil

MS Sample Id: 687003-047 S

Prep Method: E300P

Date Prep: 02.03.2021

MSD Sample Id: 687003-047 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	323	250	572	100	564	96	90-110	1	20	mg/kg	02.03.2021 19:30	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150316

MB Sample Id: 7721003-1-BLK

Matrix: Solid

LCS Sample Id: 7721003-1-BKS

Prep Method: SW8015P

Date Prep: 02.05.2021

LCSD Sample Id: 7721003-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	836	84	854	85	70-130	2	20	mg/kg	02.05.2021 11:47	
Diesel Range Organics (DRO)	<15.0	1000	864	86	876	88	70-130	1	20	mg/kg	02.05.2021 11:47	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	87		84		106		70-130	%	02.05.2021 11:47
o-Terphenyl	93		85		94		70-130	%	02.05.2021 11:47

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150326

MB Sample Id: 7721014-1-BLK

Matrix: Solid

LCS Sample Id: 7721014-1-BKS

Prep Method: SW8015P

Date Prep: 02.06.2021

LCSD Sample Id: 7721014-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1090	109	1020	102	70-130	7	20	mg/kg	02.06.2021 12:28	
Diesel Range Organics (DRO)	<15.0	1000	1020	102	950	95	70-130	7	20	mg/kg	02.06.2021 12:28	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		98		92		70-130	%	02.06.2021 12:28
o-Terphenyl	106		100		92		70-130	%	02.06.2021 12:28

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C-A) / B$
 $RPD = 200 * |(C-E) / (C+E)|$
 $[D] = 100 * (C) / [B]$
 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



Arcadis U.S., Inc

LSAU Sat 4

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150316

Matrix: Solid

Prep Method: SW8015P

Date Prep: 02.05.2021

MB Sample Id: 7721003-1-BLK

Parameter

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	02.05.2021 11:26	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150326

Matrix: Solid

Prep Method: SW8015P

Date Prep: 02.06.2021

MB Sample Id: 7721014-1-BLK

Parameter

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	02.06.2021 12:07	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150316

Matrix: Soil

Prep Method: SW8015P

Date Prep: 02.05.2021

Parent Sample Id: 686905-021

MS Sample Id: 686905-021 S

MSD Sample Id: 686905-021 SD

Parameter

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	896	90	1030	103	70-130	14	20	mg/kg	02.05.2021 12:51	
Diesel Range Organics (DRO)	<15.0	997	921	92	948	95	70-130	3	20	mg/kg	02.05.2021 12:51	

Surrogate

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	96		95		70-130	%	02.05.2021 12:51
o-Terphenyl	94		97		70-130	%	02.05.2021 12:51

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150326

Matrix: Soil

Prep Method: SW8015P

Date Prep: 02.06.2021

Parent Sample Id: 687058-041

MS Sample Id: 687058-041 S

MSD Sample Id: 687058-041 SD

Parameter

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	973	98	980	98	70-130	1	20	mg/kg	02.06.2021 13:31	
Diesel Range Organics (DRO)	<15.0	997	921	92	922	93	70-130	0	20	mg/kg	02.06.2021 13:31	

Surrogate

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	83		84		70-130	%	02.06.2021 13:31
o-Terphenyl	84		85		70-130	%	02.06.2021 13:31

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 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



Arcadis U.S., Inc
LSAU Sat 4

Analytical Method: BTEX by EPA 8021B

Seq Number: 3149948

Matrix: Solid

Prep Method: SW5035A

Date Prep: 02.03.2021

MB Sample Id: 7720752-1-BLK

LCS Sample Id: 7720752-1-BKS

LCSD Sample Id: 7720752-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000385	0.100	0.0935	94	0.0949	95	70-130	1	35	mg/kg	02.03.2021 10:38	
Toluene	<0.000456	0.100	0.0878	88	0.0892	89	70-130	2	35	mg/kg	02.03.2021 10:38	
Ethylbenzene	<0.000565	0.100	0.0937	94	0.0941	94	70-130	0	35	mg/kg	02.03.2021 10:38	
m,p-Xylenes	<0.00101	0.200	0.185	93	0.185	93	70-130	0	35	mg/kg	02.03.2021 10:38	
o-Xylene	<0.000344	0.100	0.0899	90	0.0911	91	70-130	1	35	mg/kg	02.03.2021 10:38	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	90		101		102		70-130	%	02.03.2021 10:38
4-Bromofluorobenzene	102		96		96		70-130	%	02.03.2021 10:38

Analytical Method: BTEX by EPA 8021B

Seq Number: 3149948

Matrix: Soil

Prep Method: SW5035A

Date Prep: 02.03.2021

Parent Sample Id: 687045-001

MS Sample Id: 687045-001 S

MSD Sample Id: 687045-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000383	0.0994	0.0765	77	0.0731	73	70-130	5	35	mg/kg	02.03.2021 11:19	
Toluene	2.72	0.0994	1.95	0	1.95	0	70-130	0	35	mg/kg	02.03.2021 11:19	X
Ethylbenzene	<0.000561	0.0994	0.0553	56	0.0498	50	70-130	10	35	mg/kg	02.03.2021 11:19	X
m,p-Xylenes	<0.00101	0.199	0.104	52	0.0929	46	70-130	11	35	mg/kg	02.03.2021 11:19	X
o-Xylene	<0.000342	0.0994	0.0509	51	0.0496	50	70-130	3	35	mg/kg	02.03.2021 11:19	X

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	102		102		70-130	%	02.03.2021 11:19
4-Bromofluorobenzene	88		95		70-130	%	02.03.2021 11:19

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 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

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

1211 W Florida Ave
Midland TX 79701
Phone 432-704-5440

687046

Final 1,000

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis U.S., Inc

Date/ Time Received: 02.02.2021 05.00.00 PM

Work Order #: 687046

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)?	2.6
#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?	N/A

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

Analyst:

PH Device/Lot#:

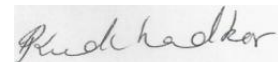
Checklist completed by:



Brianna Teel

Date: 02.03.2021

Checklist reviewed by:



Sachin Kudchadkar

Date: 02.03.2021

Analytical Report 687238

for

Arcadis U.S., Inc

Project Manager: Morgan Jordan

LSAU Sat 4

30064832-0002B

02.09.2021

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)



02.09.2021

Project Manager: **Morgan Jordan**

Arcadis U.S., Inc

1717 W 6th Street, Suite 210

Austin, TX 78703

Reference: Eurofins Xenco, LLC Report No(s): **687238**

LSAU Sat 4

Project Address:

Morgan Jordan:

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) 687238. 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. 687238 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,

A handwritten signature in black ink, appearing to read "Sachin Kudchadkar", written over a horizontal line.

Sachin Kudchadkar

Project Manager

A Small Business and Minority Company

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

**Sample Cross Reference 687238****Arcadis U.S., Inc, Austin, TX**

LSAU Sat 4

Sample Id	Matrix	Date Collected	Sample Depth	Lab Sample Id
SB-5-S-0-.5-210203	S	02.03.2021 10:35		687238-001
SB-5-S-1-1.25-210203	S	02.03.2021 10:39		687238-002
SB-6-S-0-.5-210203	S	02.03.2021 10:56		687238-003
SB-7-S-0-.5-210203	S	02.03.2021 11:08		687238-004
SB-8-S-0-.5-210203	S	02.03.2021 12:15		687238-005
SB-9-S-0-.5-210203	S	02.03.2021 12:26		687238-006
SB-10-S-0-.5-210203	S	02.03.2021 12:47		687238-007

**CASE NARRATIVE****Client Name: Arcadis U.S., Inc****Project Name: LSAU Sat 4**Project ID: 30064832-0002B
Work Order Number(s): 687238Report Date: 02.09.2021
Date Received: 02.03.2021

This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory.

Sample receipt non conformances and comments:**Sample receipt non conformances and comments per sample:**

None



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-5-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-001

Date Collected: 02.03.2021 10:35

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Seq Number: 3150091

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	122	4.99	0.857	mg/kg	02.04.2021 19:43		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Seq Number: 3150327

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	24.1	49.9	15.0	mg/kg	02.07.2021 04:20	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	24.6	49.9	15.0	mg/kg	02.07.2021 04:20	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	02.07.2021 04:20	U	1
Total TPH	PHC635	48.7	49.9	15.0	mg/kg	02.07.2021 04:20	J	1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	82		%	70-130	02.07.2021 04:20		
o-Terphenyl	84-15-1	94		%	70-130	02.07.2021 04:20		



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-5-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-001

Date Collected: 02.03.2021 10:35

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	02.06.2021 06:57	U	1
Toluene	108-88-3	<0.000457	0.00201	0.000457	mg/kg	02.06.2021 06:57	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	02.06.2021 06:57	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.06.2021 06:57	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 06:57	U	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 06:57	U	1
Total BTEX		<0.000346	0.00201	0.000346	mg/kg	02.06.2021 06:57	U	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1,4-Difluorobenzene	540-36-3	95	%	70-130	02.06.2021 06:57	
4-Bromofluorobenzene	460-00-4	107	%	70-130	02.06.2021 06:57	



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-5-S-1-1.25-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-002

Date Collected: 02.03.2021 10:39

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Basis: Wet Weight

Seq Number: 3150091

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	239	4.96	0.852	mg/kg	02.04.2021 19:59		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Basis: Wet Weight

Seq Number: 3150327

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	25.5	50.0	15.0	mg/kg	02.07.2021 04:41	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	18.3	50.0	15.0	mg/kg	02.07.2021 04:41	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	02.07.2021 04:41	U	1
Total TPH	PHC635	43.8	50.0	15.0	mg/kg	02.07.2021 04:41	J	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
1-Chlorooctane	111-85-3	83	%	70-130	02.07.2021 04:41			
o-Terphenyl	84-15-1	97	%	70-130	02.07.2021 04:41			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-5-S-1-1.25-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-002

Date Collected: 02.03.2021 10:39

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000387	0.00201	0.000387	mg/kg	02.06.2021 07:18	U	1
Toluene	108-88-3	<0.000458	0.00201	0.000458	mg/kg	02.06.2021 07:18	U	1
Ethylbenzene	100-41-4	<0.000568	0.00201	0.000568	mg/kg	02.06.2021 07:18	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.06.2021 07:18	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 07:18	U	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 07:18	U	1
Total BTEX		<0.000346	0.00201	0.000346	mg/kg	02.06.2021 07:18	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	103	%	70-130	02.06.2021 07:18			
1,4-Difluorobenzene	540-36-3	96	%	70-130	02.06.2021 07:18			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-6-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-003

Date Collected: 02.03.2021 10:56

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Basis: Wet Weight

Seq Number: 3150091

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	75.3	5.00	0.858	mg/kg	02.04.2021 20:05		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Basis: Wet Weight

Seq Number: 3150327

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	17.9	49.9	15.0	mg/kg	02.07.2021 08:16	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	621	49.9	15.0	mg/kg	02.07.2021 08:16		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	189	49.9	15.0	mg/kg	02.07.2021 08:16		1
Total TPH	PHC635	828	49.9	15.0	mg/kg	02.07.2021 08:16		1
Surrogate	Cas Number	% Recovery		Units	Limits	Analysis Date	Flag	
1-Chlorooctane	111-85-3	84		%	70-130	02.07.2021 08:16		
o-Terphenyl	84-15-1	93		%	70-130	02.07.2021 08:16		



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-6-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-003

Date Collected: 02.03.2021 10:56

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	02.06.2021 07:38	U	1
Toluene	108-88-3	0.00121	0.00200	0.000455	mg/kg	02.06.2021 07:38	J	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	02.06.2021 07:38	U	1
m,p-Xylenes	179601-23-1	0.00114	0.00399	0.00101	mg/kg	02.06.2021 07:38	J	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.06.2021 07:38	U	1
Total Xylenes	1330-20-7	0.00114	0.00200	0.000344	mg/kg	02.06.2021 07:38	J	1
Total BTEX		0.00235	0.00200	0.000344	mg/kg	02.06.2021 07:38		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
1,4-Difluorobenzene	540-36-3	88	%	70-130	02.06.2021 07:38			
4-Bromofluorobenzene	460-00-4	101	%	70-130	02.06.2021 07:38			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-7-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-004

Date Collected: 02.03.2021 11:08

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Seq Number: 3150091

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	73.3	5.00	0.858	mg/kg	02.04.2021 20:10		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Seq Number: 3150327

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	27.1	50.0	15.0	mg/kg	02.07.2021 05:24	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	17.9	50.0	15.0	mg/kg	02.07.2021 05:24	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	02.07.2021 05:24	U	1
Total TPH	PHC635	45.0	50.0	15.0	mg/kg	02.07.2021 05:24	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	77	%	70-130	02.07.2021 05:24	
o-Terphenyl	84-15-1	90	%	70-130	02.07.2021 05:24	



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-7-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-004

Date Collected: 02.03.2021 11:08

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000384	0.00200	0.000384	mg/kg	02.06.2021 07:58	U	1
Toluene	108-88-3	<0.000455	0.00200	0.000455	mg/kg	02.06.2021 07:58	U	1
Ethylbenzene	100-41-4	<0.000564	0.00200	0.000564	mg/kg	02.06.2021 07:58	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00399	0.00101	mg/kg	02.06.2021 07:58	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.06.2021 07:58	U	1
Total Xylenes	1330-20-7	<0.000344	0.00200	0.000344	mg/kg	02.06.2021 07:58	U	1
Total BTEX		<0.000344	0.00200	0.000344	mg/kg	02.06.2021 07:58	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	103	%	70-130	02.06.2021 07:58			
1,4-Difluorobenzene	540-36-3	95	%	70-130	02.06.2021 07:58			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-8-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-005

Date Collected: 02.03.2021 12:15

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Seq Number: 3150091

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	103	5.00	0.858	mg/kg	02.04.2021 20:15		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Seq Number: 3150327

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	23.9	50.0	15.0	mg/kg	02.07.2021 08:38	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	155	50.0	15.0	mg/kg	02.07.2021 08:38		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	48.6	50.0	15.0	mg/kg	02.07.2021 08:38	J	1
Total TPH	PHC635	228	50.0	15.0	mg/kg	02.07.2021 08:38		1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
1-Chlorooctane	111-85-3	77	%	70-130	02.07.2021 08:38			
o-Terphenyl	84-15-1	86	%	70-130	02.07.2021 08:38			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-8-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-005

Date Collected: 02.03.2021 12:15

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00200	0.000386	mg/kg	02.06.2021 08:19	U	1
Toluene	108-88-3	<0.000457	0.00200	0.000457	mg/kg	02.06.2021 08:19	U	1
Ethylbenzene	100-41-4	<0.000566	0.00200	0.000566	mg/kg	02.06.2021 08:19	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00401	0.00102	mg/kg	02.06.2021 08:19	U	1
o-Xylene	95-47-6	<0.000345	0.00200	0.000345	mg/kg	02.06.2021 08:19	U	1
Total Xylenes	1330-20-7	<0.000345	0.00200	0.000345	mg/kg	02.06.2021 08:19	U	1
Total BTEX		<0.000345	0.00200	0.000345	mg/kg	02.06.2021 08:19	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	106	%	70-130	02.06.2021 08:19			
1,4-Difluorobenzene	540-36-3	92	%	70-130	02.06.2021 08:19			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-9-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-006

Date Collected: 02.03.2021 12:26

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Seq Number: 3150091

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	20.7	5.04	0.865	mg/kg	02.04.2021 20:21		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Seq Number: 3150327

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	22.8	49.9	15.0	mg/kg	02.07.2021 06:07	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	17.1	49.9	15.0	mg/kg	02.07.2021 06:07	J	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	49.9	15.0	mg/kg	02.07.2021 06:07	U	1
Total TPH	PHC635	39.9	49.9	15.0	mg/kg	02.07.2021 06:07	J	1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	73	%	70-130	02.07.2021 06:07	
o-Terphenyl	84-15-1	85	%	70-130	02.07.2021 06:07	



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-9-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-006

Date Collected: 02.03.2021 12:26

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	02.06.2021 08:39	U	1
Toluene	108-88-3	<0.000457	0.00201	0.000457	mg/kg	02.06.2021 08:39	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	02.06.2021 08:39	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.06.2021 08:39	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 08:39	U	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 08:39	U	1
Total BTEX		<0.000346	0.00201	0.000346	mg/kg	02.06.2021 08:39	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	104	%	70-130	02.06.2021 08:39			
1,4-Difluorobenzene	540-36-3	89	%	70-130	02.06.2021 08:39			



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-10-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-007

Date Collected: 02.03.2021 12:47

Analytical Method: Chloride by EPA 300

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

% Moisture:

Seq Number: 3150091

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	8.69	4.95	0.850	mg/kg	02.04.2021 20:26		1

Analytical Method: TPH By SW8015 Mod

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

% Moisture:

Seq Number: 3150327

Basis: Wet Weight

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	16.9	50.0	15.0	mg/kg	02.07.2021 08:59	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	768	50.0	15.0	mg/kg	02.07.2021 08:59		1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	256	50.0	15.0	mg/kg	02.07.2021 08:59		1
Total TPH	PHC635	1040	50.0	15.0	mg/kg	02.07.2021 08:59		1

Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag
1-Chlorooctane	111-85-3	82	%	70-130	02.07.2021 08:59	
o-Terphenyl	84-15-1	89	%	70-130	02.07.2021 08:59	



Certificate of Analytical Results 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: **SB-10-S-0-.5-210203**

Matrix: Soil

Date Received: 02.03.2021 16:30

Lab Sample Id: 687238-007

Date Collected: 02.03.2021 12:47

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 17:00

% Moisture:
Basis: Wet Weight

Seq Number: 3150285

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000386	0.00201	0.000386	mg/kg	02.06.2021 14:46	U	1
Toluene	108-88-3	<0.000457	0.00201	0.000457	mg/kg	02.06.2021 14:46	U	1
Ethylbenzene	100-41-4	<0.000567	0.00201	0.000567	mg/kg	02.06.2021 14:46	U	1
m,p-Xylenes	179601-23-1	<0.00102	0.00402	0.00102	mg/kg	02.06.2021 14:46	U	1
o-Xylene	95-47-6	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 14:46	U	1
Total Xylenes	1330-20-7	<0.000346	0.00201	0.000346	mg/kg	02.06.2021 14:46	U	1
Total BTEX		<0.000346	0.00201	0.000346	mg/kg	02.06.2021 14:46	U	1
Surrogate	Cas Number	% Recovery	Units	Limits	Analysis Date	Flag		
4-Bromofluorobenzene	460-00-4	114	%	70-130	02.06.2021 14:46			
1,4-Difluorobenzene	540-36-3	89	%	70-130	02.06.2021 14:46			

**Blank Summary 687238****Arcadis U.S., Inc, Austin, TX**

LSAU Sat 4

Sample Id: 7720812-1-BLK

Matrix: SOLID

Lab Sample Id: 7720812-1-BLK

Analytical Method: **Chloride by EPA 300**

Prep Method: E300P

Tech: CHE

Analyst: CHE

Date Prep: 02.04.2021 15:00

Seq Number: 3150091

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Chloride	16887-00-6	<0.858	5.00	0.858	mg/kg	02.04.2021 17:52	U	1



Blank Summary 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: 7720951-1-BLK

Matrix: SOLID

Lab Sample Id: 7720951-1-BLK

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 16:00

Seq Number: 3150275

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	02.06.2021 00:46	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	02.06.2021 00:46	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	02.06.2021 00:46	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	02.06.2021 00:46	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.06.2021 00:46	U	1



Blank Summary 687238

Arcadis U.S., Inc, Austin, TX

LSAU Sat 4

Sample Id: 7720952-1-BLK

Matrix: SOLID

Lab Sample Id: 7720952-1-BLK

Analytical Method: BTEX by EPA 8021B

Prep Method: SW5035A

Tech: MNR

Analyst: MNR

Date Prep: 02.05.2021 17:00

Seq Number: 3150285

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Benzene	71-43-2	<0.000385	0.00200	0.000385	mg/kg	02.06.2021 11:41	U	1
Toluene	108-88-3	<0.000456	0.00200	0.000456	mg/kg	02.06.2021 11:41	U	1
Ethylbenzene	100-41-4	<0.000565	0.00200	0.000565	mg/kg	02.06.2021 11:41	U	1
m,p-Xylenes	179601-23-1	<0.00101	0.00400	0.00101	mg/kg	02.06.2021 11:41	U	1
o-Xylene	95-47-6	<0.000344	0.00200	0.000344	mg/kg	02.06.2021 11:41	U	1

**Blank Summary 687238****Arcadis U.S., Inc, Austin, TX**

LSAU Sat 4

Sample Id: 7721016-1-BLK

Matrix: SOLID

Lab Sample Id: 7721016-1-BLK

Analytical Method: **TPH By SW8015 Mod**

Prep Method: SW8015P

Tech: DVM

Analyst: ARM

Date Prep: 02.06.2021 10:00

Seq Number: 3150327

Parameter	Cas Number	Result	RL	MDL	Units	Analysis Date	Flag	Dil
Gasoline Range Hydrocarbons (GRO)	PHC610	34.4	50.0	15.0	mg/kg	02.06.2021 21:39	BJ	1
Diesel Range Organics (DRO)	C10C28DRO	<15.0	50.0	15.0	mg/kg	02.06.2021 21:39	U	1
Motor Oil Range Hydrocarbons (MRO)	PHCG2835	<15.0	50.0	15.0	mg/kg	02.06.2021 21:39	U	1



Form 2 - Surrogate Recoveries

Project Name: LSAU Sat 4

Report Date: 02092021

Work Orders : 687238

Project ID: 30064832-0002B

Lab Batch #: 3150275

Sample: 7720951-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.05.2021 22:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0310	0.0300	103	70-130	
4-Bromofluorobenzene	0.0289	0.0300	96	70-130	

Lab Batch #: 3150275

Sample: 7720951-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.05.2021 23:07

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0305	0.0300	102	70-130	
4-Bromofluorobenzene	0.0288	0.0300	96	70-130	

Lab Batch #: 3150275

Sample: 687058-038 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.05.2021 23:27

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0298	0.0300	99	70-130	
4-Bromofluorobenzene	0.0299	0.0300	100	70-130	

Lab Batch #: 3150275

Sample: 687058-038 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.05.2021 23:47

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0277	0.0300	92	70-130	
4-Bromofluorobenzene	0.0345	0.0300	115	70-130	

Lab Batch #: 3150275

Sample: 7720951-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 00:46

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
Analytes					
1,4-Difluorobenzene	0.0275	0.0300	92	70-130	
4-Bromofluorobenzene	0.0300	0.0300	100	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = 100 * A / B

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



Form 2 - Surrogate Recoveries

Project Name: LSAU Sat 4

Report Date: 02092021

Work Orders : 687238

Project ID: 30064832-0002B

Lab Batch #: 3150285

Sample: 7720952-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 09:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	70-130	
4-Bromofluorobenzene	0.0293	0.0300	98	70-130	

Lab Batch #: 3150285

Sample: 7720952-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 10:02

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	70-130	
4-Bromofluorobenzene	0.0293	0.0300	98	70-130	

Lab Batch #: 3150285

Sample: 687223-001 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.06.2021 10:22

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0297	0.0300	99	70-130	
4-Bromofluorobenzene	0.0300	0.0300	100	70-130	

Lab Batch #: 3150285

Sample: 687223-001 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.06.2021 10:43

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0302	0.0300	101	70-130	
4-Bromofluorobenzene	0.0294	0.0300	98	70-130	

Lab Batch #: 3150285

Sample: 7720952-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 11:41

SURROGATE RECOVERY STUDY

BTEX by EPA 8021B Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1,4-Difluorobenzene	0.0265	0.0300	88	70-130	
4-Bromofluorobenzene	0.0302	0.0300	101	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

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



Form 2 - Surrogate Recoveries

Project Name: LSAU Sat 4

Report Date: 02092021

Work Orders : 687238

Project ID: 30064832-0002B

Lab Batch #: 3150327

Sample: 7721016-1-BLK / BLK

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 21:39

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	90.9	100	91	70-130	
o-Terphenyl	52.9	50.0	106	70-130	

Lab Batch #: 3150327

Sample: 7721016-1-BKS / BKS

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 22:01

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	92.9	100	93	70-130	
o-Terphenyl	47.1	50.0	94	70-130	

Lab Batch #: 3150327

Sample: 7721016-1-BSD / BSD

Batch: 1 Matrix: Solid

Units: mg/kg

Date Analyzed: 02.06.2021 22:22

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	98.6	100	99	70-130	
o-Terphenyl	50.5	50.0	101	70-130	

Lab Batch #: 3150327

Sample: 687301-002 S / MS

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.06.2021 23:06

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	84.2	99.7	84	70-130	
o-Terphenyl	43.9	49.9	88	70-130	

Lab Batch #: 3150327

Sample: 687301-002 SD / MSD

Batch: 1 Matrix: Soil

Units: mg/kg

Date Analyzed: 02.06.2021 23:27

SURROGATE RECOVERY STUDY

TPH By SW8015 Mod Analytes	Amount Found [A]	True Amount [B]	Recovery %R [D]	Control Limits %R	Flags
1-Chlorooctane	84.7	99.9	85	70-130	
o-Terphenyl	43.5	50.0	87	70-130	

* Surrogate outside of Laboratory QC limits

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

*** Poor recoveries due to dilution

Surrogate Recovery [D] = $100 * A / B$

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



Arcadis U.S., Inc

LSAU Sat 4

Analytical Method: Chloride by EPA 300

Seq Number: 3150091

MB Sample Id: 7720812-1-BLK

Matrix: Solid

LCS Sample Id: 7720812-1-BKS

Prep Method: E300P

Date Prep: 02.04.2021

LCSD Sample Id: 7720812-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	<0.858	250	255	102	258	103	90-110	1	20	mg/kg	02.04.2021 17:57	

Analytical Method: Chloride by EPA 300

Seq Number: 3150091

Parent Sample Id: 687202-003

Matrix: Soil

MS Sample Id: 687202-003 S

Prep Method: E300P

Date Prep: 02.04.2021

MSD Sample Id: 687202-003 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	3860	2530	6450	102	7140	130	90-110	10	20	mg/kg	02.04.2021 19:27	X

Analytical Method: Chloride by EPA 300

Seq Number: 3150091

Parent Sample Id: 687293-005

Matrix: Soil

MS Sample Id: 687293-005 S

Prep Method: E300P

Date Prep: 02.04.2021

MSD Sample Id: 687293-005 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Chloride	32.2	248	285	102	286	102	90-110	0	20	mg/kg	02.04.2021 18:13	

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150327

MB Sample Id: 7721016-1-BLK

Matrix: Solid

LCS Sample Id: 7721016-1-BKS

Prep Method: SW8015P

Date Prep: 02.06.2021

LCSD Sample Id: 7721016-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	1000	1040	104	1110	111	70-130	7	20	mg/kg	02.06.2021 22:01	
Diesel Range Organics (DRO)	<15.0	1000	959	96	1030	103	70-130	7	20	mg/kg	02.06.2021 22:01	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	91		93		99		70-130	%	02.06.2021 22:01
o-Terphenyl	106		94		101		70-130	%	02.06.2021 22:01

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150327

Matrix: Solid

MB Sample Id: 7721016-1-BLK

Prep Method: SW8015P

Date Prep: 02.06.2021

Parameter	MB Result	Units	Analysis Date	Flag
Motor Oil Range Hydrocarbons (MRO)	<15.0	mg/kg	02.06.2021 21:39	

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 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



Arcadis U.S., Inc

LSAU Sat 4

Analytical Method: TPH By SW8015 Mod

Seq Number: 3150327

Parent Sample Id: 687301-002

Matrix: Soil

MS Sample Id: 687301-002 S

Prep Method: SW8015P

Date Prep: 02.06.2021

MSD Sample Id: 687301-002 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Gasoline Range Hydrocarbons (GRO)	<15.0	997	994	100	1010	101	70-130	2	20	mg/kg	02.06.2021 23:06	
Diesel Range Organics (DRO)	<15.0	997	904	91	905	91	70-130	0	20	mg/kg	02.06.2021 23:06	

Surrogate	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1-Chlorooctane	84		85		70-130	%	02.06.2021 23:06
o-Terphenyl	88		87		70-130	%	02.06.2021 23:06

Analytical Method: BTEX by EPA 8021B

Seq Number: 3150275

MB Sample Id: 7720951-1-BLK

Matrix: Solid

LCS Sample Id: 7720951-1-BKS

Prep Method: SW5035A

Date Prep: 02.05.2021

LCSD Sample Id: 7720951-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000385	0.100	0.112	112	0.104	104	70-130	7	35	mg/kg	02.05.2021 22:46	
Toluene	<0.000456	0.100	0.103	103	0.0962	96	70-130	7	35	mg/kg	02.05.2021 22:46	
Ethylbenzene	<0.000565	0.100	0.106	106	0.0972	97	70-130	9	35	mg/kg	02.05.2021 22:46	
m,p-Xylenes	<0.00101	0.200	0.205	103	0.190	95	70-130	8	35	mg/kg	02.05.2021 22:46	
o-Xylene	<0.000344	0.100	0.103	103	0.0912	91	70-130	12	35	mg/kg	02.05.2021 22:46	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	92		103		102		70-130	%	02.05.2021 22:46
4-Bromofluorobenzene	100		96		96		70-130	%	02.05.2021 22:46

Analytical Method: BTEX by EPA 8021B

Seq Number: 3150285

MB Sample Id: 7720952-1-BLK

Matrix: Solid

LCS Sample Id: 7720952-1-BKS

Prep Method: SW5035A

Date Prep: 02.05.2021

LCSD Sample Id: 7720952-1-BSD

Parameter	MB Result	Spike Amount	LCS Result	LCS %Rec	LCSD Result	LCSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000385	0.100	0.101	101	0.101	101	70-130	0	35	mg/kg	02.06.2021 09:41	
Toluene	<0.000456	0.100	0.0947	95	0.0946	95	70-130	0	35	mg/kg	02.06.2021 09:41	
Ethylbenzene	<0.000565	0.100	0.0972	97	0.0964	96	70-130	1	35	mg/kg	02.06.2021 09:41	
m,p-Xylenes	<0.00101	0.200	0.192	96	0.191	96	70-130	1	35	mg/kg	02.06.2021 09:41	
o-Xylene	<0.000344	0.100	0.0954	95	0.0947	95	70-130	1	35	mg/kg	02.06.2021 09:41	

Surrogate	MB %Rec	MB Flag	LCS %Rec	LCS Flag	LCSD %Rec	LCSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	88		101		101		70-130	%	02.06.2021 09:41
4-Bromofluorobenzene	101		98		98		70-130	%	02.06.2021 09:41

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 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



Arcadis U.S., Inc
LSAU Sat 4

Analytical Method: BTEX by EPA 8021B

Seq Number: 3150275

Matrix: Soil

Prep Method: SW5035A

Date Prep: 02.05.2021

Parent Sample Id: 687058-038

MS Sample Id: 687058-038 S

MSD Sample Id: 687058-038 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000384	0.0998	0.0263	26	0.0239	24	70-130	10	35	mg/kg	02.05.2021 23:27	X
Toluene	<0.000455	0.0998	0.0236	24	0.0258	26	70-130	9	35	mg/kg	02.05.2021 23:27	X
Ethylbenzene	<0.000564	0.0998	0.0247	25	0.0253	25	70-130	2	35	mg/kg	02.05.2021 23:27	X
m,p-Xylenes	<0.00101	0.200	0.0474	24	0.0495	25	70-130	4	35	mg/kg	02.05.2021 23:27	X
o-Xylene	<0.000344	0.0998	0.0254	25	0.0269	27	70-130	6	35	mg/kg	02.05.2021 23:27	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		92		70-130	%	02.05.2021 23:27
4-Bromofluorobenzene	100		115		70-130	%	02.05.2021 23:27

Analytical Method: BTEX by EPA 8021B

Seq Number: 3150285

Matrix: Soil

Prep Method: SW5035A

Date Prep: 02.05.2021

Parent Sample Id: 687223-001

MS Sample Id: 687223-001 S

MSD Sample Id: 687223-001 SD

Parameter	Parent Result	Spike Amount	MS Result	MS %Rec	MSD Result	MSD %Rec	Limits	%RPD	RPD Limit	Units	Analysis Date	Flag
Benzene	<0.000383	0.0996	0.0713	72	0.0782	78	70-130	9	35	mg/kg	02.06.2021 10:22	
Toluene	<0.000454	0.0996	0.0665	67	0.0724	73	70-130	8	35	mg/kg	02.06.2021 10:22	X
Ethylbenzene	<0.000563	0.0996	0.0702	70	0.0761	76	70-130	8	35	mg/kg	02.06.2021 10:22	
m,p-Xylenes	<0.00101	0.199	0.103	52	0.0985	49	70-130	4	35	mg/kg	02.06.2021 10:22	X
o-Xylene	<0.000343	0.0996	0.0687	69	0.0751	75	70-130	9	35	mg/kg	02.06.2021 10:22	X

Surrogate

	MS %Rec	MS Flag	MSD %Rec	MSD Flag	Limits	Units	Analysis Date
1,4-Difluorobenzene	99		101		70-130	%	02.06.2021 10:22
4-Bromofluorobenzene	100		98		70-130	%	02.06.2021 10:22

MS/MSD Percent Recovery
Relative Percent Difference
LCS/LCSD Recovery
Log Difference

$[D] = 100 * (C - A) / B$
 $RPD = 200 * |(C - E) / (C + E)|$
 $[D] = 100 * (C) / [B]$
 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

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

1211 W Florida Ave
Midland TX 79701
Phone 432-704-5440

Client Information Client Contact: Motgan Jordan Company: ARCADIS U.S., Inc. Address: 1717 W 6th Street, Suite 210 City: Austin State, Zip: TX, 78703 Phone: 281 644 9437 Email: douglas.jordan@arcadis.com Project Name: 30064832-0002B Site: LSAU Sat 4		Sampler: J. Steinmann Phone: 619 851 8792		Lab PM: Kudchadkar, Sachin G E-Mail: sachin.kudchadkar@testamericainc.com		Carrier Tracking No(s): COC No: 600-23559-8666.1	
		Job #: 1087238		Page: 1 of 1			
Analysis Requested				Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - ph 4-5 L - EDA Z - other (specify) Other:			
Due Date Requested:		TAT Requested (days): Std		PO #:		WO #:	
Project #: 30064832-0002B		SSOV#:		Field Filtered Sample (Yes or No)		Total Number of Containers	
Sample Identification		Sample Date		Sample Time		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	
Preservation Code:		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Special Instructions/Note:	
SB-5-S-0-.5-210203		2/03/21		1035		Solid	
SB-5-S-1-1.25-210203		1039		Solid		Solid	
SB-6-S-0-.5-210203		1056		Solid		Solid	
SB-7-S-0-.5-210203		1108		Solid		Solid	
SB-8-S-0-.5-210203		1215		Solid		Solid	
SB-9-S-0-.5-210203		1226		Solid		Solid	
SB-10-S-0-.5-210203		1247		Solid		Solid	
g/s 2/03/21		2/03/21		1500		Solid	
Possible Hazard Identification ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months			
Deliverable Requested: I, II, III, IV, Other (specify)				Special Instructions/QC Requirements:			
Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks:			

Eurofins Xenco, LLC

Prelogin/Nonconformance Report- Sample Log-In

Client: Arcadis U.S., Inc

Date/ Time Received: 02.03.2021 04.30.00 PM

Work Order #: 687238

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)?	4.3
#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:

PH Device/Lot#:

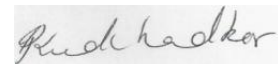
Checklist completed by:



Brianna Teel

Date: 02.03.2021

Checklist reviewed by:



Sachin Kudchadkar

Date: 02.03.2021

Appendix D

Revised C-141 Form 1RP-1891

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

State of New Mexico
Energy Minerals and Natural
Resources Department

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

Form C-141
Revised August 24, 2018
Submit to appropriate OCD District office

Incident ID	NGRL0821729742
District RP	1RP-1891
Facility ID	fGRL0821727930
Application ID	NA

Release Notification

Responsible Party

Responsible Party: Chevron Midcontinent, L.P.	OGRID: 241333
Contact Name: Armando Martinez	Contact Telephone: 505-690-5408
Contact email: amarti@chevron.com	Incident # (assigned by OCD) NGRL0821729742
Contact mailing address:	

Location of Release Source

Latitude 32.866608 _____ Longitude -103.314695 _____
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Lovington San Andres Unit Sat #4	Site Type: Producing well test facility
Date Release Discovered: 06/27/2008	API# (if applicable): 30-025-31367

Unit Letter	Section	Township	Range	County
E	1	17S	36E	Lea

Surface Owner: ☐ State ☐ Federal ☐ Tribal ☒ Private

Nature and Volume of Release

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

☒ Crude Oil	Volume Released (bbls): .5	Volume Recovered (bbls): 0
☒ Produced Water	Volume Released (bbls): 19.5	Volume Recovered (bbls): 15
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	☒ Yes ☐ No
☐ Condensate	Volume Released (bbls)	Volume Recovered (bbls)
☐ Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
☐ Other (describe)	Volume/Weight Released (provide units)	Volume/Weight Recovered (provide units)

Cause of Release: Control valve on vessel malfunctioned pressure relief valve to open.

State of New Mexico
Oil Conservation Division

Page 2

Incident ID	NGRL0821729742
District RP	1RP-1891
Facility ID	fGRL0821727930
Application ID	NA

Was this a major release as defined by 19.15.29.7(A) NMAC? ☐ Yes ☒ No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

Incident ID	NGRL0821729742
District RP	1RP-1891
Facility ID	fGRL0821727930
Application ID	NA

Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>62</u> (ft bgs)
Did this release impact groundwater or surface water?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	☐ Yes ☒ No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	☐ Yes ☒ No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	☐ Yes ☒ No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	☐ Yes ☒ No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	☐ Yes ☒ No
Are the lateral extents of the release within 300 feet of a wetland?	☐ Yes ☒ No
Are the lateral extents of the release overlying a subsurface mine?	☐ Yes ☒ No
Are the lateral extents of the release overlying an unstable area such as karst geology?	☐ Yes ☒ No
Are the lateral extents of the release within a 100-year floodplain?	☐ Yes ☒ No
Did the release impact areas not on an exploration, development, production, or storage site?	☐ Yes ☒ No

Attach a comprehensive report (electronic submittals in .pdf format are preferred) demonstrating the lateral and vertical extents of soil contamination associated with the release have been determined. Refer to 19.15.29.11 NMAC for specifics.

Characterization Report Checklist: Each of the following items must be included in the report.

Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells. **Attached.**
Field data: **Attached.**
Data table of soil contaminant concentration data: **Attached.**
Depth to water determination: **51-100 feet bgs**
Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release: **None identified.**
Boring or excavation logs: **Shallow refusal was encountered.**
Photographs including date and GIS information: **Photographic log attached.**
Topographic/Aerial maps; **Topographic map attached.**
Laboratory data including chain of custody: **Attached.**

If the site characterization report does not include completed efforts at remediation of the release, the report must include a proposed remediation plan. That plan must include the estimated volume of material to be remediated, the proposed remediation technique, proposed sampling plan and methods, anticipated timelines for beginning and completing the remediation. The closure criteria for a release are contained in Table 1 of 19.15.29.12 NMAC, however, use of the table is modified by site- and release-specific parameters.

State of New Mexico
Oil Conservation Division

Incident ID	NGRL0821729742
District RP	1RP-1891
Facility ID	fGRL0821727930
Application ID	NA

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

Printed Name: Armando Martinez Title: Environmental Project Manager

Signature:  Date: 05/20/2021

email: amarti@chevron.com Telephone: 505-690-

5408

OCD Only

Received by: Jennifer Nobui Date: 04/18/2022

Arcadis U.S., Inc.
10205 Westheimer Road, Suite 800
Houston
Texas 77042
Phone: 713 953 4800
Fax: 713 977 4620
www.arcadis.com

District I

1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720

District II

811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720

District III

1000 Rio Brazos Rd., Aztec, NM 87410
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 52931

CONDITIONS

Operator: CHEVRON U S A INC 6301 Deauville Blvd Midland, TX 79706	OGRID: 4323
	Action Number: 52931
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jnobui	Site Assessment Report Accepted. Proceed with proposed additional assessment. Please make sure you are delineated to 600 mg/kg for chlorides and 100 mg/kg for TPH within the top 4 feet.	4/18/2022