

Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

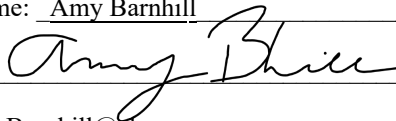
## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Amy Barnhill Title: Lead Environmental Specialist  
Signature:  Date: 12-13-22  
email: ABarnhill@chevron.com Telephone: 432-687-7108

### OCD Only

Received by: Jocelyn Harimon Date: 12/14/2022

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: Robert Hamlet Date: 3/17/2023  
Printed Name: Robert Hamlet Title: Environmental Specialist - Advanced



Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

## Site Assessment/Characterization

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

What is the shallowest depth to groundwater beneath the area affected by the release?	<u>&gt;350</u> (ft bgs)
Did this release impact groundwater or surface water?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a continuously flowing watercourse or any other significant watercourse?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 200 feet of any lakebed, sinkhole, or playa lake (measured from the ordinary high-water mark)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of an occupied permanent residence, school, hospital, institution, or church?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 500 horizontal feet of a spring or a private domestic fresh water well used by less than five households for domestic or stock watering purposes?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 1000 feet of any other fresh water well or spring?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within incorporated municipal boundaries or within a defined municipal fresh water well field?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within 300 feet of a wetland?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying a subsurface mine?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release overlying an unstable area such as karst geology?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are the lateral extents of the release within a 100-year floodplain?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Did the release impact areas <b>not</b> on an exploration, development, production, or storage site?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No

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

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

- ☒ Scaled site map showing impacted area, surface features, subsurface features, delineation points, and monitoring wells.
- ☒ Field data
- ☒ Data table of soil contaminant concentration data
- ☒ Depth to water determination
- ☒ Determination of water sources and significant watercourses within ½-mile of the lateral extents of the release
- ☒ Boring or excavation logs
- ☒ Photographs including date and GIS information
- ☒ Topographic/Aerial maps
- ☒ Laboratory data including chain of custody

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



## Oil Conservation Division

Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

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: Amy Barnhill Title: Lead Environmental Specialist

Signature:  Date: 12-13-22

email: ABarnhill@chevron.com

Telephone: 432-687-7108

**OCD Only**

Received by: Jocelyn Harimon Date: 12/14/2022



Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

## Remediation Plan

**Remediation Plan Checklist:** *Each of the following items must be included in the plan.*

- ☒ Detailed description of proposed remediation technique
- ☒ Scaled sitemap with GPS coordinates showing delineation points
- ☒ Estimated volume of material to be remediated
- ☒ Closure criteria is to Table 1 specifications subject to 19.15.29.12(C)(4) NMAC
- ☒ Proposed schedule for remediation (note if remediation plan timeline is more than 90 days OCD approval is required)

**Deferral Requests Only:** *Each of the following items must be confirmed as part of any request for deferral of remediation.*

- ☐ Contamination must be in areas immediately under or around production equipment where remediation could cause a major facility deconstruction.
- ☐ Extents of contamination must be fully delineated.
- ☐ Contamination does not cause an imminent risk to human health, the environment, or groundwater.

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

Printed Name: Amy Barnhill Title: Lead Environmental Specialist

Signature:  Date: 12-13-22

email: ABarnhill@chevron.com Telephone: 432-687-7108

**OCD Only**

Received by: Jocelyn Harimon Date: 12/14/2022

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

Signature: \_\_\_\_\_ Date: \_\_\_\_\_



Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

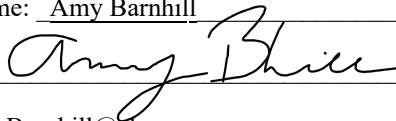
## Closure

The responsible party must attach information demonstrating they have complied with all applicable closure requirements and any conditions or directives of the OCD. This demonstration should be in the form of a comprehensive report (electronic submittals in .pdf format are preferred) including a scaled site map, sampling diagrams, relevant field notes, photographs of any excavation prior to backfilling, laboratory data including chain of custody documents of final sampling, and a narrative of the remedial activities. Refer to 19.15.29.12 NMAC.

**Closure Report Attachment Checklist:** *Each of the following items must be included in the closure report.*

- ☒ A scaled site and sampling diagram as described in 19.15.29.11 NMAC
- ☒ Photographs of the remediated site prior to backfill or photos of the liner integrity if applicable (Note: appropriate OCD District office must be notified 2 days prior to liner inspection)
- ☒ Laboratory analyses of final sampling (Note: appropriate ODC District office must be notified 2 days prior to final sampling)
- ☒ Description of remediation activities

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. The responsible party acknowledges they must substantially restore, reclaim, and re-vegetate the impacted surface area to the conditions that existed prior to the release or their final land use in accordance with 19.15.29.13 NMAC including notification to the OCD when reclamation and re-vegetation are complete.

Printed Name: Amy Barnhill Title: Lead Environmental Specialist  
Signature:  Date: 12-13-22  
email: ABarnhill@chevron.com Telephone: 432-687-7108

**OCD Only**

Received by: Jocelyn Harimon Date: 12/14/2022

Closure approval by the OCD does not relieve the responsible party of liability should their operations have failed to adequately investigate and remediate contamination that poses a threat to groundwater, surface water, human health, or the environment nor does not relieve the responsible party of compliance with any other federal, state, or local laws and/or regulations.

Closure Approved by: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_



**Tracking Number: nAPP2227365249**  
**Biocide Release Delineation and Closure Report**  
**Sand Dunes CTB 10**  
**Eddy County, New Mexico**

Latitude: N 32.234942°  
Longitude: W -103.768805°

LAI Project No. 22-0105-15

December 7, 2022

Prepared for:  
Chevron USA Inc.  
6301 Deauville Blvd.  
Midland, Texas 79706

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



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



Robert Nelson  
Sr. Geoscientist



**This Page Intentionally Left Blank**



Table of Contents

1.0 INTRODUCTION ..... 4

    1.1 Background ..... 4

    1.2 Physical Setting ..... 4

    1.3 Remediation Standards ..... 5

2.0 DELINEATION ..... 5

3.0 CLOSURE..... 5

Tables

Table 1	Delineation Soil Sample Analytical Data Summary
---------	---

Figures

Figure 1	Topographic Map
Figure 2	Aerial Map Showing Sample Locations

Appendices

Appendix A	Initial C-141’s and Chevron Spill Calculation
Appendix B	Karst Risk Potential
Appendix C	Biocide Safety Data Sheet
Appendix D	Laboratory Reports
Appendix E	Photographic Documentation



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022

## 1.0 INTRODUCTION

Larson & Associates, Inc. (LAI), has prepared this delineation and closure report on behalf of Chevron USA Inc. (Chevron) for submittal to the New Mexico Oil Conservation Division (NMOCD) District II for a biocide release at the Sand Dunes CTB 10 (Site) located in Unit F (SE/4, NW/4), Section 10, Township 24 South, Range 31 East in Eddy County, New Mexico. The geodetic position is North 32.234942° and West - 103.768805°. Figure 1 presents a topographic map. Figure 2 presents an aerial map.

### 1.1 Background

The release was discovered on September 15, 2022, due to an open frac tank containing fresh water and biocide. The spill occurred in an area where soil was excavated between about two (2) and six (6) feet bgs for burying flow lines. Chevron reported that approximately 155.961 barrels (bbls) of fresh water and 7 gallons of biocide were released. Approximately 130 bbls of fluids were recovered. The affected area measures approximately 1,354 square feet. The initial C-141 was submitted to NMOCD District II on September 30, 2022 and assigned incident number nAPP2227365249. Appendix A presents the initial Chevron spill calculation.

The biocide (Glutaraldehyde and Quaternary ammonium) is a chemical used in frac operations to inhibit bacterial growth within the formation. This chemical contains 10-20% Glutaraldehyde and 1-5% Quaternary ammonium compound and is mixed at a ratio of 5 gallons of biocide to 120 bbls of fresh water. EPA in 40 C.F.R. 261.24 and the New Mexico Environment Department Risk Assessment Guidance does not list a cleanup limit/standard for Glutaraldehyde. The National Institutes for Occupational Safety & Health (NIOSH) and Occupational Safety and Health Administration (OSHA) have defined permissible exposure limits (PEL) for Glutaraldehyde as 0.05 ppm and 0.2 ppm, respectively. Glutaraldehyde has a pH ranging from 3.1 to 4.5. Appendix B presents the NIOSH and OSHA information.

### 1.2 Physical Setting

The physical setting is as follows:

- The surface elevation is approximately 3,462 feet above mean sea level (msl).
- The surface elevation gradually decreases to the northwest.
- There are no surface water features within 1,000 feet of the Site.
- Karst data provided by the USGS describes the Site as “low risk” potential.
- The soils are designated as Berino complex, 0 to 3 percent slopes, consisting of 0 to 17 inches of fine sand, underlain by 17 to 58 inches of sandy clay loam and 58 to 60 inches of loamy sand.
- The geology is Quaternary age eolian sand, dunes, dune ridges, and sheets undivided.
- According to the New Mexico Office of the State Engineer (NMOSE) the nearest water well drilled in 1995 is located in approximately 0.34 miles southeast of the Site in Unit I (NE/4, SW/4) Section 10, Township 24 South, Range 31 East, with groundwater reported at depth greater than 350 feet below ground surface (bgs).

Appendix C presents USGS data depicting karst risk potential.



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022

### 1.3 Remediation Standards

The following remediation standards are based on NIOSH and OSHA permissible exposure limits:

- Glutaraldehyde 0.05 – 0.2 ppm
- pH 3.1 – 4.5

Further, 19.15.29.13 NMAC (Restoration, Reclamation and Re-Vegetation) requires the operator to restore the impacted surface area that existed prior to the release or their final land use.

## 2.0 DELINEATION

On September 30, 2022, LAI personnel used a stainless-steel hand auger to collect soil samples from seven (7) locations (S-1 through S-7) inside the spill area and four (4) locations (S-8 through S-11) outside the spill area in each cardinal direction (north, south, east, and west). The release pooled in an area where underground flowlines located adjacent to an above ground riser were being installed at depths ranging from approximately three (3) to six (6) feet bgs.

Soil samples were collected from ground surface to 0.5 feet bgs and from 0.5 to 1-foot bgs. The samples were delivered under chain of custody and preservation to Eurofins-Xenco Laboratories (Xenco) in Midland, Texas, which analyzed the samples for Glutaraldehyde by EPA Method SW-846 8315A and pH by EPA Method SW-846 9045D. Table 1 presents the analytical data summary. Figure 2 presents an aerial drawing showing the spill boundary and soil sample locations. Appendix D presents the laboratory report.

The laboratory reported Glutaraldehyde below the lowest available analytical method reporting limits. The pH values ranged from 7.3 standard units (s.u) to 8.1 s.u. Appendix E presents the photographic documentation.

## 3.0 CLOSURE

Chevron requests no further action for this release (nAPP2227365249), as laboratory results demonstrate concentrations are below the NIOSH and OSHA permissible exposure limits for Glutaraldehyde and pH.



## **Tables**



## Soil Sample Analytical Data Summary

Chevron - Sand Dunes CTB 10

Eddy County, New Mexico

32° 14' 05.79124" N, 103° 46' 07.69972" W

Page 1 of 1

Sample	Depth (Feet)	Collection Date	Status	Temp (C°)	pH (S.U.)	Glutaraldehyde (ug/Kg)
Delineation Limit:				--	3.1-4.5	0.2
S-1	4 - 4.5	9/30/2022	In-Situ	21.3	7.3	<498
	4.5 - 5	9/30/2022	In-Situ	21.4	7.8	<491
S-2	4 - 4.5	9/30/2022	In-Situ	21.3	7.7	<493
	4.5 - 5	9/30/2022	In-Situ	21.3	8.1	<481
S-3	6 - 6.5	9/30/2022	In-Situ	21.3	8.0	<492
	6.5 - 7	9/30/2022	In-Situ	21.3	8.0	<490
S-4	4 - 4.5	9/30/2022	In-Situ	21.2	7.9	<476
	4.5 - 5	9/30/2022	In-Situ	21.3	8.0	<485
S-5	4 - 4.5	9/30/2022	In-Situ	21.3	7.5	<481
	4.5 - 5	9/30/2022	In-Situ	21.3	7.5	<495
S-6	2 - 2.5	9/30/2022	In-Situ	21.2	7.8	<490
	2.5 - 3	9/30/2022	In-Situ	21.3	8.0	<481
S-7	2 - 2.5	9/30/2022	In-Situ	21.3	8.0	<500
	2.5 - 3	9/30/2022	In-Situ	21.2	7.9	<490
S-8	0 - 0.5	9/30/2022	In-Situ	21.2	8.0	<481
S-9	0 - 0.5	9/30/2022	In-Situ	21.2	8.0	<485
S-10	0 - 0.5	9/30/2022	In-Situ	21.2	8.0	<485
S-11	0 - 0.5	9/30/2022	In-Situ	21.3	7.7	<495

Notes: Analysis performed by and Eurofins-Xenco Laboratories in Lancaster, Pennsylvania by EPA SW-846 8315A-

Carbonyl Compounds by HPLC (Glutaraldehyde) and General Chemistry

Depth in feet below ground surface (bgs)

mg/Kg: milligrams per kilogram equivalent to parts per million (ppm)

&lt;: denotes concentration less than analytical method reporting limit



## **Figures**



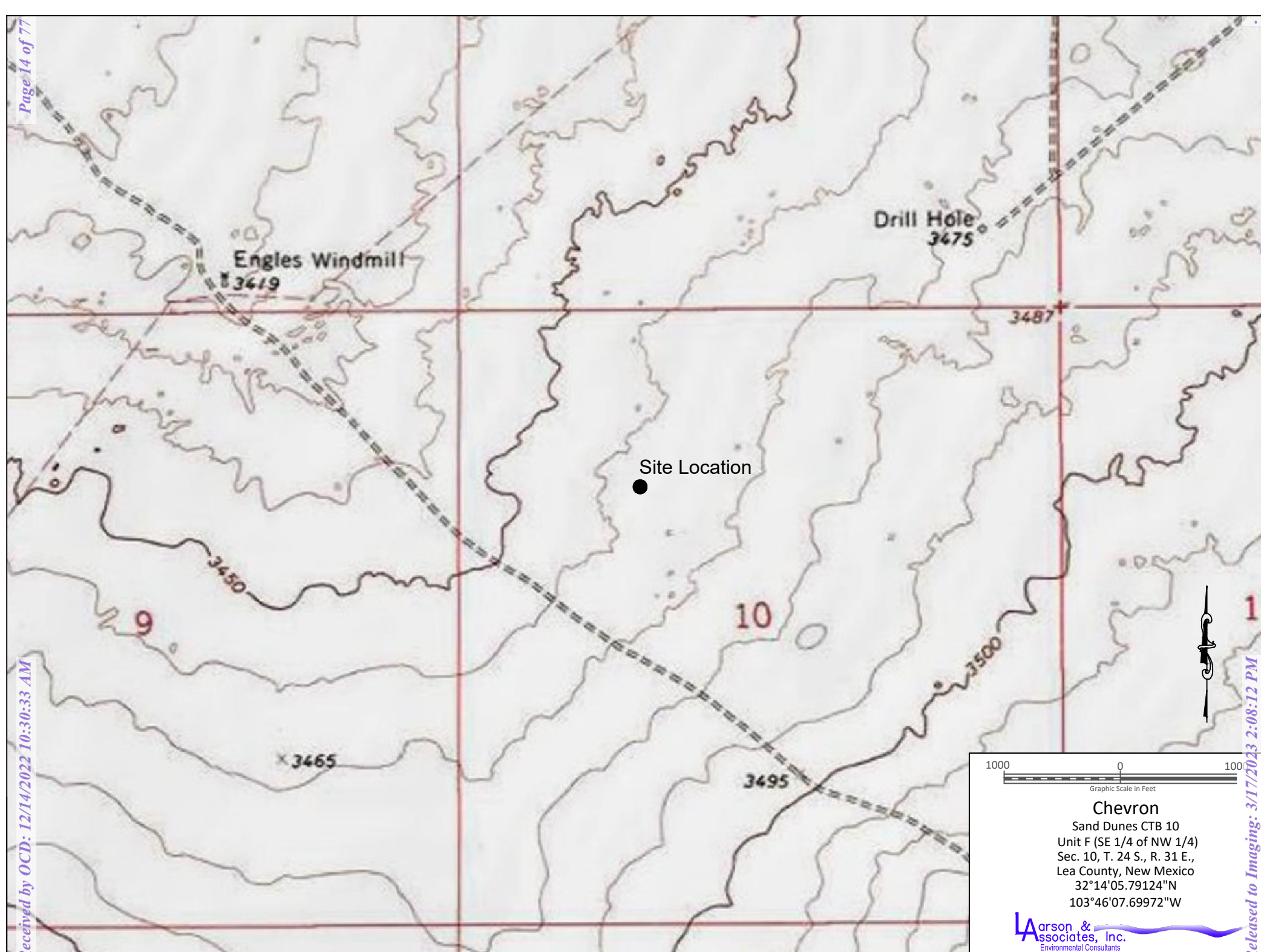
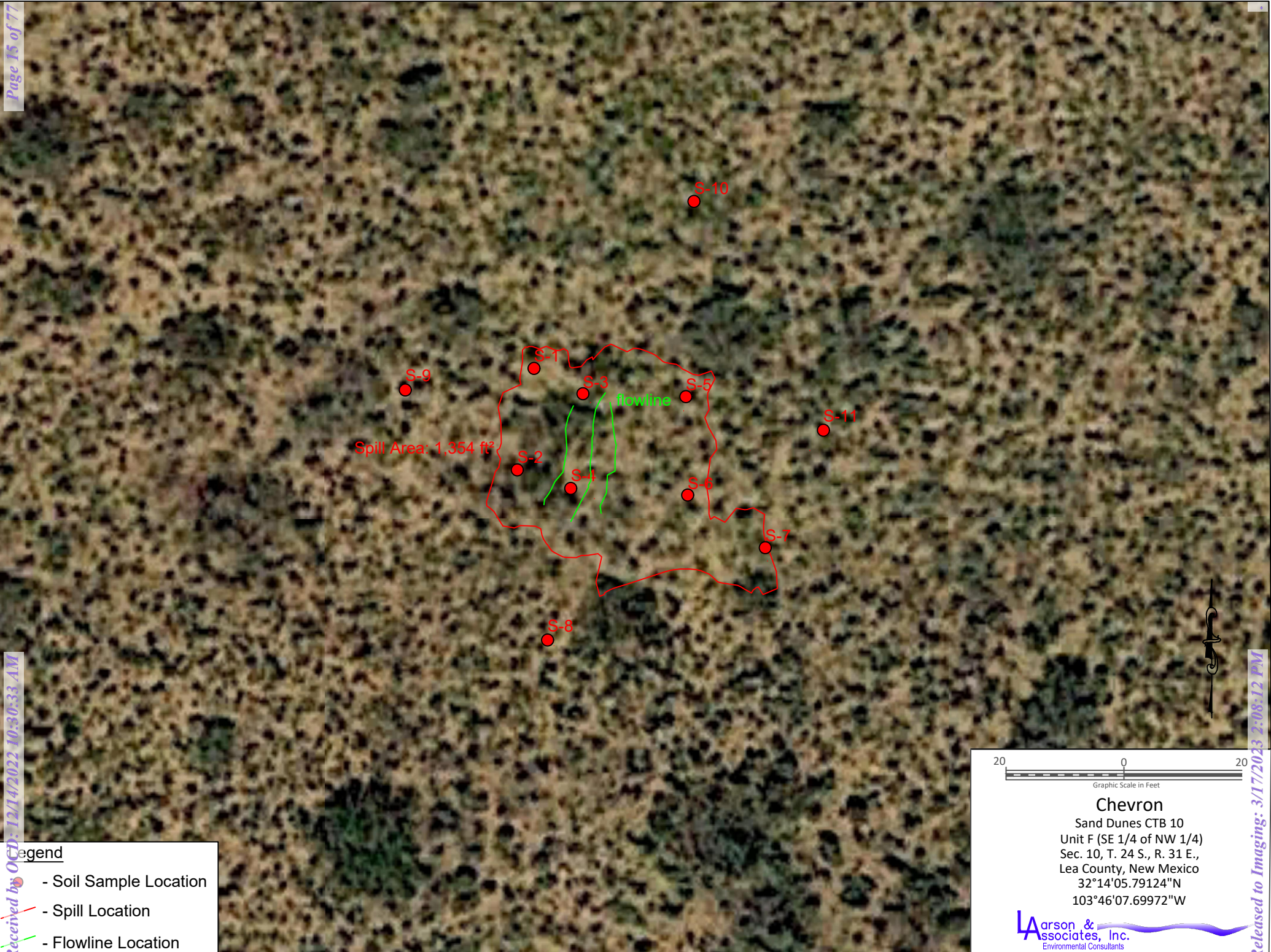


Figure 1 - Topographic Map





**Legend**

- Soil Sample Location
- Spill Location
- Flowline Location

20 0 20  
Graphic Scale in Feet

**Chevron**  
Sand Dunes CTB 10  
Unit F (SE 1/4 of NW 1/4)  
Sec. 10, T. 24 S., R. 31 E.,  
Lea County, New Mexico  
32°14'05.79124"N  
103°46'07.69972"W

**Larson & Associates, Inc.**  
Environmental Consultants

Figure 2 - Aerial Map



## **Appendix A**

### **Initial C-141 and Chevron Spill Calculation**



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	nAPP2227365249
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party: Chevron USA	OGRID: 4323
Contact Name: Amy Barnhill	Contact Telephone: 432-687-7108
Contact email: ABarnhill@chevron.com	Incident # (assigned by OCD)
Contact mailing address: 6301 Deauville Blvd Midland, Tx 79706	

### Location of Release Source

Latitude 32.37094 \_\_\_\_\_ Longitude -104.44891 \_\_\_\_\_  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name: Sand Dunes CTB 10	Site Type: Oil
Date Release Discovered: 9-15-22	API# (if applicable)

Unit Letter	Section	Township	Range	County
O	24	22S	24E	Eddy

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

### Nature and Volume of Release

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

<input type="checkbox"/> Crude Oil	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Produced Water	Volume Released (bbls)	Volume Recovered (bbls)
	Is the concentration of dissolved chloride in the produced water >10,000 mg/l?	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Condensate	Volume Released (bbls)	Volume Recovered (bbls)
<input type="checkbox"/> Natural Gas	Volume Released (Mcf)	Volume Recovered (Mcf)
<input checked="" type="checkbox"/> Other (describe)	Volume/Weight Released (provide units) 155.961 bbls fresh water with 7 gallons biocide	Volume/Weight Recovered (provide units) 130 bbls

Cause of Release: Frac tank opened inadvertently

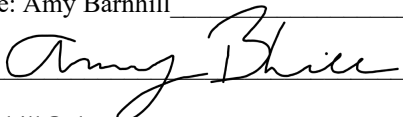


Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release? Over 25 bbls
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)? Amy Barnhill emailed Mike Bratcher on 9-16-22.	

### Initial Response

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

<input checked="" type="checkbox"/> The source of the release has been stopped. <input checked="" type="checkbox"/> The impacted area has been secured to protect human health and the environment. <input checked="" type="checkbox"/> Released materials have been contained via the use of berms or dikes, absorbent pads, or other containment devices. <input checked="" type="checkbox"/> All free liquids and recoverable materials have been removed and managed appropriately.	
If all the actions described above have <u>not</u> been undertaken, explain why:	
Per 19.15.29.8 B. (4) NMAC the responsible party may commence remediation immediately after discovery of a release. If remediation has begun, please attach a narrative of actions to date. If remedial efforts have been successfully completed or if the release occurred within a lined containment area (see 19.15.29.11(A)(5)(a) NMAC), please attach all information needed for closure evaluation.	
I hereby certify that the information given above is true and complete to the best of my knowledge and understand that pursuant to OCD rules and regulations all operators are required to report and/or file certain release notifications and perform corrective actions for releases which may endanger public health or the environment. The acceptance of a C-141 report by the OCD does not relieve the operator of liability should their operations have failed to adequately investigate and remediate contamination that pose a threat to groundwater, surface water, human health or the environment. In addition, OCD acceptance of a C-141 report does not relieve the operator of responsibility for compliance with any other federal, state, or local laws and/or regulations.	
Printed Name: Amy Barnhill	Title: Water Advisor
Signature: 	Date: 9-30-22
email: ABarnhill@chevron.com	Telephone: 432-687-7108
<b><u>OCD Only</u></b>	
Received by: Jocelyn Harimon	Date: 10/03/2022



Incident ID	nAPP2227365249
District RP	
Facility ID	
Application ID	

**Spill Calculations: known volume in frac tank**



**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 148029

CONDITIONS

Operator: CHEVRON U S A INC 6301 Deauville Blvd Midland, TX 79706	OGRID: 4323
	Action Number: 148029
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
jharimon	None	10/3/2022



**Appendix B**  
**Karst Risk Potential**







**Appendix C**  
**Biocide Safety Data Sheet**





# SAFETY DATA SHEET

## Section 1. Identification

**Product name** : X-CIDE™ 114 BIOCIDES  
™ a trademark of Baker Hughes Incorporated.

**Product code** : XC114

### Relevant identified uses of the substance or mixture and uses advised against

**Identified uses** : Biocide.

**Print date** : 3/16/2015.

**Validation date** : 3/16/2015.

**Version** : 1

**Supplier's details** : Baker Petrolite  
A Baker Hughes Company  
12645 W. Airport Blvd.  
Sugar Land, TX 77478  
For Product Information/SDSs Call: 800-231-3606  
(8:00 a.m. - 5:00 p.m. cst, Monday - Friday) 281-276-5400

**Emergency telephone number (with hours of operation)** : CHEMTREC: 800-424-9300 (U.S. 24 hour)  
Baker Petrolite: 800-231-3606  
(001)281-276-5400  
CANUTEC: 613-996-6666 (Canada 24 hours)  
CHEMTREC Int'l 01-703-527-3887 (International 24 hour)

## Section 2. Hazards identification

**OSHA/HCS status** : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

**Classification of the substance or mixture** : ACUTE TOXICITY: ORAL - Category 4  
SKIN CORROSION/IRRITATION - Category 1  
SERIOUS EYE DAMAGE/ EYE IRRITATION - Category 1  
RESPIRATORY SENSITIZATION - Category 1  
SKIN SENSITIZATION - Category 1  
AQUATIC HAZARD (ACUTE) - Category 2  
AQUATIC HAZARD (LONG-TERM) - Category 2

### GHS label elements

**Hazard pictograms** :



**Signal word** : Danger

**Hazard statements** : Harmful if swallowed.  
Causes severe skin burns and eye damage.  
May cause allergy or asthma symptoms or breathing difficulties if inhaled.  
May cause an allergic skin reaction.  
Toxic to aquatic life with long lasting effects.

### Precautionary statements



**X-CIDE™ 114 BIOCIDES****Section 2. Hazards identification**

- Prevention** : Wear protective gloves: > 8 hours (breakthrough time): Rubber gloves. polyethylene (PE), Nitrile gloves. Butyl rubber gloves. . Wear eye or face protection. Wear protective clothing. In case of inadequate ventilation wear respiratory protection. Avoid release to the environment. Avoid breathing vapor. Do not eat, drink or smoke when using this product. Wash hands thoroughly after handling. Contaminated work clothing should not be allowed out of the workplace.
- Response** : Collect spillage. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or physician. If experiencing respiratory symptoms: Call a POISON CENTER or physician. IF SWALLOWED: Immediately call a POISON CENTER or physician. Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower. Wash contaminated clothing before reuse. Immediately call a POISON CENTER or physician. IF ON SKIN: Wash with plenty of soap and water. If skin irritation or rash occurs: Get medical attention. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
- Storage** : Store locked up.
- Disposal** : Dispose of contents and container in accordance with all local, regional, national and international regulations.
- Hazards not otherwise classified** : None known.

**Section 3. Composition/information on ingredients**

**Substance/mixture** : Mixture

Ingredient name	%	CAS number
Glutaraldehyde	10 - 20	111-30-8
Quaternary ammonium compound	1 - 5	68424-85-1

**Section 4. First aid measures****Description of necessary first aid measures**

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush the eye(s) continuously with lukewarm, gently flowing water for at least 20-60 minutes while holding the eyelid(s) open. Check for and remove any contact lenses. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours. In the event of any complaints or symptoms, avoid further exposure.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash affected area with soap and mild detergent for at least 20 - 60 minutes. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.



**X-CIDE™ 114 BIOCIDES****Section 4. First aid measures**

- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

**Most important symptoms/effects, acute and delayed****Potential acute health effects**

- Eye contact** : Causes serious eye damage.
- Inhalation** : May give off gas, vapor or dust that is very irritating or corrosive to the respiratory system. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Exposure to decomposition products may cause a health hazard. Serious effects may be delayed following exposure.
- Skin contact** : Causes severe burns. May cause an allergic skin reaction.
- Ingestion** : Harmful if swallowed. May cause burns to mouth, throat and stomach.

**Over-exposure signs/symptoms**

- Eye contact** : pain, watering, redness
- Inhalation** : wheezing and breathing difficulties, asthma
- Skin contact** : pain or irritation, redness, blistering may occur
- Ingestion** : stomach pains

**Indication of immediate medical attention and special treatment needed, if necessary**

- Notes to physician** : In case of inhalation of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

**Section 5. Fire-fighting measures****Extinguishing media**

- Suitable extinguishing media** : Use an extinguishing agent suitable for the surrounding fire.
- Unsuitable extinguishing media** : None known.

- Specific hazards arising from the chemical** : In a fire or if heated, a pressure increase will occur and the container may burst. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

- Hazardous thermal decomposition products** : carbon dioxide, carbon monoxide, nitrogen oxides, halogenated compounds



X-CIDE™ 114 BIOCIDES

## Section 5. Fire-fighting measures

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

### Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialised clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
- Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

### Methods and materials for containment and cleaning up

- Small spill** : Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
- Large spill** : Stop leak if without risk. Move containers from spill area. Approach release from upwind. Dike spill area and do not allow product to reach sewage system or surface or ground water. Notify any reportable spill to authorities. (See section 12 for environmental risks and 13 for disposal information.) Wash spillages into an effluent treatment plant or proceed as follows. Contain and collect spillage with non-combustible, absorbent material e.g. sand, earth, vermiculite or diatomaceous earth and place in container for disposal according to local regulations (see Section 13). Dispose of via a licensed waste disposal contractor. Contaminated absorbent material may pose the same hazard as the spilled product. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

If RQ (Reportable Quantity) is exceeded, report to National Spill Response Office at 1-800-424-8802.

## Section 7. Handling and storage

### Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. Avoid release to the environment. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.



**X-CIDE™ 114 BIOCIDES****Section 7. Handling and storage**

- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
- Conditions for safe storage, including any incompatibilities** : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination.

**Section 8. Exposure controls/personal protection****Control parameters**

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			
Ingredients:	List name	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	ppm	mg/m <sup>3</sup>	Other	Notations
Glutaraldehyde	US ACGIH	-	-	-	-	-	-	0.05	-	-	[3]
	OSHA PEL 1989	-	-	-	-	-	-	0.2	0.8	-	

[3]Skin sensitization

**Consult local authorities for acceptable exposure limits.**

**Only components of this product with established exposure limits appear in the box above.**

**If OSHA permissible exposure levels are shown above they are the OSHA 1989 levels or are from subsequent OSHA regulatory actions. Although the 1989 levels have been vacated the 11th Circuit Court of Appeals, Baker Hughes recommends that these lower exposure levels be observed as reasonable worker protection.**

- Appropriate engineering controls** : Use only with adequate ventilation. If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

**Individual protection measures**

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Wear chemical safety goggles. When transferring material wear face-shield in addition to chemical safety goggles. If inhalation hazards exist, a full-face respirator may be required instead.
- Hand protection** : Chemical-resistant gloves: Rubber gloves. polyethylene (PE), Nitrile gloves. Butyl rubber gloves.
- Skin protection** : Wear long sleeves and chemical resistant apron to prevent repeated or prolonged skin contact.
- Respiratory protection** : If a risk assessment indicates it is necessary, use a properly fitted, air purifying or supplied air respirator complying with an approved standard. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.



**X-CIDE™ 114 BIOCIDES****Section 9. Physical and chemical properties****Appearance**

<b>Physical state</b>	: Liquid.
<b>Color</b>	: Colorless to light yellow.
<b>Odor</b>	: Fruity.
<b>Odor threshold</b>	: 0.001 ppm
<b>pH</b>	: 3.1 to 4.5
<b>Melting/freezing point</b>	: -3°C (26.6°F)
<b>Boiling point</b>	: 100.7°C (213.3°F)
<b>Initial Boiling Point</b>	: Not available.
<b>Flash point</b>	: Closed cup: >93.4°C (>200.1°F)
<b>Burning time</b>	: Not applicable.
<b>Burning rate</b>	: Not applicable.
<b>Evaporation rate</b>	: Not available.
<b>Flammability (solid, gas)</b>	: Slightly flammable in the presence of the following materials or conditions: open flames, sparks and static discharge and heat.
<b>Lower and upper explosive (flammable) limits</b>	: Not available.
<b>Vapor pressure</b>	: 0.04 kPa (0.3 mm Hg) @ 20°C
<b>Vapor density</b>	: 0.7 [Air = 1]
<b>Relative density</b>	: 1.034
<b>Density</b>	: 8.61 (lbs/gal)
<b>Solubility in water</b>	: Soluble
<b>Partition coefficient: n-octanol/water</b>	: Not available.
<b>Auto-ignition temperature</b>	: Not available.
<b>Decomposition temperature</b>	: Not available.
<b>Viscosity</b>	: Dynamic (20°C): 3.2 cP Kinematic (20°C): 3.09 cSt
<b>VOC</b>	: Not available.
<b>Pour Point</b>	: Not available.

**Section 10. Stability and reactivity**

<b>Reactivity</b>	: No specific test data related to reactivity available for this product or its ingredients.
<b>Chemical stability</b>	: The product is stable.
<b>Possibility of hazardous reactions</b>	: Under normal conditions of storage and use, hazardous reactions will not occur.
<b>Conditions to avoid</b>	: No specific data.
<b>Incompatible materials</b>	: Reactive or incompatible with the following materials: oxidizing materials, metals, acids and alkalis. Amines , Ammonia.
<b>Hazardous decomposition products</b>	: Under normal conditions of storage and use, hazardous decomposition products should not be produced.



X-CIDE™ 114 BIOCIDES

## Section 11. Toxicological information

### Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Quaternary ammonium compound	LD50 Oral	Rat	426 mg/kg	-
X-CIDE™ 114 BIOCIDES	LD50 Dermal	Rabbit	>16000 mg/kg	-
	LD50 Oral	Rat	>900 mg/kg	-

#### Irritation/Corrosion

No applicable toxicity data

#### Sensitization

No applicable toxicity data

#### Conclusion/Summary

##### Skin

: Skin contact may caused an allergic reaction in a small proportion of individuals. Based on information for product component(s): has caused allergic skin reactions when tested in guinea pigs; has demonstrated the potential for contact allergy in mice.

#### Mutagenicity

No applicable toxicity data

#### Carcinogenicity

No applicable toxicity data

#### Reproductive toxicity

No applicable toxicity data

#### Teratogenicity

No applicable toxicity data

#### Specific target organ toxicity (single exposure)

Not applicable.

#### Specific target organ toxicity (repeated exposure)

Not applicable.

#### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : Routes of entry anticipated: Dermal, Inhalation.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

**Potential immediate effects** : Not available.

**Potential delayed effects** : Not available.

#### Potential chronic health effects

**Conclusion/Summary** : Repeated skin contact may result in absorption of amounts which could cause death. May caused nausea and vomiting.

**General** : Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

**Carcinogenicity** : No known significant effects or critical hazards.



**X-CIDE™ 114 BIOCIDES****Section 11. Toxicological information**

<b>Mutagenicity</b>	: No known significant effects or critical hazards.
<b>Teratogenicity</b>	: No known significant effects or critical hazards.
<b>Developmental effects</b>	: No known significant effects or critical hazards.
<b>Fertility effects</b>	: No known significant effects or critical hazards.

**Numerical measures of toxicity****Acute toxicity estimates**

<b>Route</b>	<b>ATE value</b>
Inhalation (vapors)	21.43 mg/l

**Section 12. Ecological information****Toxicity**

<b>Product/ingredient name</b>	<b>Result</b>	<b>Species</b>	<b>Exposure</b>
Glutaraldehyde	Acute EC50 0.31 ppm Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
Quaternary ammonium compound	Acute EC50 0.75 ppm Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 5.4 ppm Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 3.41 ppm	Fish - Oncorhynchus mykiss	97 days
	Acute EC50 37 ppb Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 64 ppb Fresh water	Fish - Oncorhynchus mykiss	96 hours
X-CIDE™ 114 BIOCIDES	Chronic NOEC 4.15 ppb Marine water	Daphnia - Daphnia magna	21 days
	Chronic NOEC 32.2 ppb	Fish - Pimephales promelas	34 days
	Acute LC50 3.5 mg/l	Daphnia - Daphnia magna	48 hours
	Acute LC50 13 mg/l	Fish - Lepomis macrochirus	96 hours
	Acute LC50 25 mg/l	Fish - Oncorhynchus mykiss	96 hours

<b>Conclusion/Summary</b>	: Product is moderately toxic to aquatic organisms on an acute basis (LC50/EC50 between 1 and 10 mg/L in the most sensitive species tested). Product is practically non-toxic to birds on an acute basis (LD50>2000 mg/kg). Product is practically non-toxic to birds on a dietary basis (LC50>5000 ppm).
---------------------------	---

**Persistence and degradability**

<b>Product/ingredient name</b>	<b>Test</b>	<b>Result</b>	<b>Dose</b>	<b>Inoculum</b>
Glutaraldehyde	OECD 301A	83 % - Readily - 28 days	-	Aqueous
Quaternary ammonium compound	OECD 306	73 % - 28 days	-	Seawater
	OECD 301D	97 % - 10 days	-	Aqueous

<b>Conclusion/Summary</b>	: The product is expected to be readily biodegradable.
---------------------------	--

<b>Product/ingredient name</b>	<b>Aquatic half-life</b>	<b>Photolysis</b>	<b>Biodegradability</b>
Glutaraldehyde	-	-	Readily
Quaternary ammonium compound	-	-	Readily

<b>Other adverse effects</b>	: No known significant effects or critical hazards.
------------------------------	---

**Additional information**



X-CIDE™ 114 BIOCIDES

## Section 12. Ecological information





Based upon the partition coefficients (octanol/water) of the components, the potential for bioaccumulation of this product is low.

Glutaraldehyde is expected to be highly mobile in soil.

## Section 13. Disposal considerations

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

## Section 14. Transport information

	DOT Classification	TDG Classification	IMDG	IATA
UN number	UN3265	UN3265	UN3265	UN3265
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Glutaraldehyde)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Glutaraldehyde)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Glutaraldehyde)	CORROSIVE LIQUID, ACIDIC, ORGANIC, N. O.S. (Contains: Glutaraldehyde)
Transport hazard class(es)	8 	8 	8 	8 
Packing group	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	No.
Additional information	-	-	-	-

**Special precautions for user** : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code** : Not available.

**DOT Reportable Quantity** : Not applicable.

**Marine pollutant** : Glutaraldehyde  
Quaternary ammonium compound

**North-America NAERG** : 153



X-CIDE™ 114 BIOCIDES

## Section 15. Regulatory information

**U.S. Federal regulations** : TSCA 12(b) one-time export: No products were found.  
 TSCA 12(b) annual export notification: No products were found.  
 United States inventory (TSCA 8b): All components are listed or exempted.  
 Clean Water Act (CWA) 307: No products were found.  
 Clean Water Act (CWA) 311: No products were found.

Clean Air Act Section 112 : Not listed  
 (b) Hazardous Air  
 Pollutants (HAPs)

SARA 302/304 : No products were found.

SARA 311/312

Classification : Immediate (acute) health hazard

SARA 313

Supplier notification : No products were found.

### Canada

Canada (CEPA DSL): : All components are listed or exempted.

### Additional information

This product is subject to regulation under the US Federal Insecticide, Fungicide and Rodenticide ACT (FIFRA) and is therefore exempt from US Toxic Substance Control Act (TSCA) Inventory listing requirements.

This chemical is a pesticide product registered by the Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets, and for workplace labels of non-pesticide chemicals.

Following is the hazard information as required on the pesticide label:

DANGER

Corrosive. Causes irreversible eye damage. Causes skin irritation. Harmful if inhaled. Harmful if swallowed. Harmful if absorbed through skin. Prolong or frequently repeated skin contact may cause allergic reactions in some individuals. Causes asthmatic signs and symptoms in hyper-reactive individuals. Do not get into eyes, on skin or on clothing. Avoid breathing vapor. Do not swallow. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash before reuse.

This pesticide is toxic to fish, aquatic invertebrates, oysters and shrimp.

## Section 16. Other information

### National Fire Protection Association (U.S.A.)



### History

Date of printing : 3/16/2015.

Indicates information that has changed from previously issued version.

### Notice to reader



X-CIDE™ 114 BIOCID

## Section 16. Other information

**NOTE:** The information on this SDS is based on data which is considered to be accurate. Baker Hughes, however, makes no guarantees or warranty, either expressed or implied of the accuracy or completeness of this information.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

This SDS was prepared and is to be used for this product. If the product is used as a component in another product, this SDS information may not be applicable.



**Appendix D**  
**Laboratory Reports**





Environment Testing

1

2

3

4

5

6

7

8

9

10

11

12

13

14

# ANALYTICAL REPORT

## PREPARED FOR

Attn: Mr. Mark J Larson  
Larson & Associates, Inc.  
507 N Marienfeld  
Suite 202  
Midland, Texas 79701

Generated 12/2/2022 10:33:29 AM Revision 1

## JOB DESCRIPTION

Sand Dunes CTB 10  
SDG NUMBER 22-0105-15

## JOB NUMBER

880-19872-1

Eurofins Midland  
1211 W. Florida Ave  
Midland TX 79701

See page two for job notes and contact information.





# Eurofins Midland

## Job Notes

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

## Authorization



Authorized for release by  
Jessica Kramer, Project Manager  
[Jessica.Kramer@et.eurofinsus.com](mailto:Jessica.Kramer@et.eurofinsus.com)  
Designee for  
Holly Taylor, Project Manager  
[Holly.Taylor@et.eurofinsus.com](mailto:Holly.Taylor@et.eurofinsus.com)  
(806)794-1296

Generated  
12/2/2022 10:33:29 AM  
Revision 1



Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Laboratory Job ID: 880-19872-1  
SDG: 22-0105-15

# Table of Contents

Cover Page . . . . .	1
Table of Contents . . . . .	3
Definitions/Glossary . . . . .	4
Case Narrative . . . . .	5
Client Sample Results . . . . .	6
Surrogate Summary . . . . .	12
QC Sample Results . . . . .	13
QC Association Summary . . . . .	16
Lab Chronicle . . . . .	19
Certification Summary . . . . .	24
Method Summary . . . . .	26
Sample Summary . . . . .	27
Chain of Custody . . . . .	28
Receipt Checklists . . . . .	32

1

2

3

4

5

6

7

8

9

10

11

12

13

14



## Definitions/Glossary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## Qualifiers

## HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count



## Case Narrative

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

### Job ID: 880-19872-1

### Laboratory: Eurofins Midland

#### Narrative

#### Job Narrative 880-19872-1

#### Receipt

The samples were received on 9/30/2022 4:00 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.1°C

#### Receipt Exceptions

The following samples analyzed for method 8315A were received and analyzed from an unpreserved bulk soil jar: S-1 4-4.5' (880-19872-1), S-1 4.5-5' (880-19872-2), S-2 4-4.5' (880-19872-3), S-2 4.5-5' (880-19872-4), S-3 6-6.5' (880-19872-5), S-3 6.5-7' (880-19872-6), S-4 4-4.5' (880-19872-7), S-4 4.5-5' (880-19872-8), S-5 4-4.5' (880-19872-9), S-5 4.5-5' (880-19872-10), S-6 2-2.5' (880-19872-11), S-6 2.5-3' (880-19872-12), S-7 2-2.5' (880-19872-13), S-7 2.5-3' (880-19872-14), S-8 0-0.5' (880-19872-15), S-9 0-0.5' (880-19872-16), S-10 0-0.5' (880-19872-17) and S-11 0-0.5' (880-19872-18).

#### HPLC/IC

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

#### General Chemistry

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.



## Client Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-1 4-4.5'

Date Collected: 09/30/22 11:30

Date Received: 09/30/22 16:00

Lab Sample ID: 880-19872-1

Matrix: Solid

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<498	U	996	498 ug/Kg		10/08/22 11:47	10/08/22 16:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	109		77 - 133	10/08/22 11:47	10/08/22 16:45	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.3		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-1 4.5-5'

Date Collected: 09/30/22 11:31

Date Received: 09/30/22 16:00

Lab Sample ID: 880-19872-2

Matrix: Solid

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<491	U	982	491 ug/Kg		10/08/22 11:47	10/08/22 16:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	101		77 - 133	10/08/22 11:47	10/08/22 16:55	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.8		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.4		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-2 4-4.5'

Date Collected: 09/30/22 11:32

Date Received: 09/30/22 16:00

Lab Sample ID: 880-19872-3

Matrix: Solid

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<493	U	986	493 ug/Kg		10/08/22 11:47	10/08/22 17:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	107		77 - 133	10/08/22 11:47	10/08/22 17:06	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.7		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-2 4.5-5'

Date Collected: 09/30/22 11:33

Date Received: 09/30/22 16:00

Lab Sample ID: 880-19872-4

Matrix: Solid

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<481	U	962	481 ug/Kg		10/08/22 11:47	10/08/22 17:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	102		77 - 133	10/08/22 11:47	10/08/22 17:17	1

Eurofins Midland

12/2/2022 (Rev. 1)



## Client Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-2 4.5-5'

Lab Sample ID: 880-19872-4

Date Collected: 09/30/22 11:33

Matrix: Solid

Date Received: 09/30/22 16:00

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.1		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-3 6-6.5'

Lab Sample ID: 880-19872-5

Date Collected: 09/30/22 11:34

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<492	U	983	492 ug/Kg		10/08/22 11:47	10/08/22 17:28	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	108		77 - 133			10/08/22 11:47	10/08/22 17:28	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-3 6.5-7'

Lab Sample ID: 880-19872-6

Date Collected: 09/30/22 11:35

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<490	U	980	490 ug/Kg		10/09/22 08:15	10/10/22 10:57	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	97		77 - 133			10/09/22 08:15	10/10/22 10:57	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-4 4-4.5'

Lab Sample ID: 880-19872-7

Date Collected: 09/30/22 11:36

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<476	U	952	476 ug/Kg		10/09/22 08:15	10/10/22 11:08	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	110		77 - 133			10/09/22 08:15	10/10/22 11:08	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.9		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.2		0.01	Degrees C			10/04/22 16:38	1

Eurofins Midland

12/2/2022 (Rev. 1)



## Client Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-4 4.5-5'

Lab Sample ID: 880-19872-8

Date Collected: 09/30/22 11:37

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<485	U	971	485 ug/Kg		10/09/22 08:15	10/10/22 11:19	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	105		77 - 133	10/09/22 08:15	10/10/22 11:19	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-5 4-4.5'

Lab Sample ID: 880-19872-9

Date Collected: 09/30/22 11:38

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<481	U	962	481 ug/Kg		10/09/22 08:15	10/10/22 11:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	96		77 - 133	10/09/22 08:15	10/10/22 11:30	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.5		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-5 4.5-5'

Lab Sample ID: 880-19872-10

Date Collected: 09/30/22 11:39

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<495	U	990	495 ug/Kg		10/09/22 08:15	10/10/22 11:40	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	110		77 - 133	10/09/22 08:15	10/10/22 11:40	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.5		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-6 2-2.5'

Lab Sample ID: 880-19872-11

Date Collected: 09/30/22 11:40

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<490	U	980	490 ug/Kg		10/09/22 08:15	10/10/22 11:51	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	110		77 - 133	10/09/22 08:15	10/10/22 11:51	1

Eurofins Midland

12/2/2022 (Rev. 1)



## Client Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-6 2-2.5'

Lab Sample ID: 880-19872-11

Date Collected: 09/30/22 11:40

Matrix: Solid

Date Received: 09/30/22 16:00

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.8		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.2		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-6 2.5-3'

Lab Sample ID: 880-19872-12

Date Collected: 09/30/22 11:41

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<481	U	962	481 ug/Kg		10/09/22 08:15	10/10/22 12:12	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	108		77 - 133			10/09/22 08:15	10/10/22 12:12	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-7 2-2.5'

Lab Sample ID: 880-19872-13

Date Collected: 09/30/22 11:42

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<500	U	1000	500 ug/Kg		10/09/22 08:15	10/10/22 12:23	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	111		77 - 133			10/09/22 08:15	10/10/22 12:23	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-7 2.5-3'

Lab Sample ID: 880-19872-14

Date Collected: 09/30/22 11:43

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<490	U	980	490 ug/Kg		10/09/22 08:15	10/10/22 12:34	1
Surrogate	%Recovery	Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	109		77 - 133			10/09/22 08:15	10/10/22 12:34	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	7.9		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.2		0.01	Degrees C			10/04/22 16:38	1

Eurofins Midland

12/2/2022 (Rev. 1)



## Client Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-8 0-0.5'

Lab Sample ID: 880-19872-15

Date Collected: 09/30/22 11:44

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<481	U	962	481 ug/Kg		10/09/22 08:15	10/10/22 12:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	113		77 - 133	10/09/22 08:15	10/10/22 12:45	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.2		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-9 0-0.5'

Lab Sample ID: 880-19872-16

Date Collected: 09/30/22 11:45

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<485	U	971	485 ug/Kg		10/09/22 08:15	10/10/22 12:56	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	103		77 - 133	10/09/22 08:15	10/10/22 12:56	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.2		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-10 0-0.5'

Lab Sample ID: 880-19872-17

Date Collected: 09/30/22 11:46

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<485	U	971	485 ug/Kg		10/09/22 08:15	10/10/22 13:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	107		77 - 133	10/09/22 08:15	10/10/22 13:06	1

## General Chemistry - Soluble

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
pH (SW846 9045D)	8.0		0.01	S.U.			10/04/22 16:38	1
Temperature (SW846 9045D)	21.2		0.01	Degrees C			10/04/22 16:38	1

Client Sample ID: S-11 0-0.5'

Lab Sample ID: 880-19872-18

Date Collected: 09/30/22 11:47

Matrix: Solid

Date Received: 09/30/22 16:00

## Method: SW846 8315A - Carbonyl Compounds by HPLC

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<495	U	990	495 ug/Kg		10/09/22 08:15	10/10/22 13:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Butyraldehyde	109		77 - 133	10/09/22 08:15	10/10/22 13:17	1

Eurofins Midland

12/2/2022 (Rev. 1)



Client Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-11 0-0.5'  
Date Collected: 09/30/22 11:47  
Date Received: 09/30/22 16:00

Lab Sample ID: 880-19872-18  
Matrix: Solid

General Chemistry - Soluble									
Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac	
pH (SW846 9045D)	7.7		0.01	S.U.			10/04/22 16:38	1	
Temperature (SW846 9045D)	21.3		0.01	Degrees C			10/04/22 16:38	1	



## Surrogate Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

**Method: 8315A - Carbonyl Compounds by HPLC**

**Matrix: Solid**

**Prep Type: Total/NA**

Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	BTRA (77-133)
880-19872-1	S-1 4-4.5'	109
880-19872-1 MS	S-1 4-4.5'	105
880-19872-1 MSD	S-1 4-4.5'	106
880-19872-2	S-1 4.5-5'	101
880-19872-3	S-2 4-4.5'	107
880-19872-4	S-2 4.5-5'	102
880-19872-5	S-3 6-6.5'	108
880-19872-6	S-3 6.5-7'	97
880-19872-6 MS	S-3 6.5-7'	110
880-19872-6 MSD	S-3 6.5-7'	111
880-19872-7	S-4 4-4.5'	110
880-19872-8	S-4 4.5-5'	105
880-19872-9	S-5 4-4.5'	96
880-19872-10	S-5 4.5-5'	110
880-19872-11	S-6 2-2.5'	110
880-19872-12	S-6 2.5-3'	108
880-19872-13	S-7 2-2.5'	111
880-19872-14	S-7 2.5-3'	109
880-19872-15	S-8 0-0.5'	113
880-19872-16	S-9 0-0.5'	103
880-19872-17	S-10 0-0.5'	107
880-19872-18	S-11 0-0.5'	109
LCS 410-304146/2-B	Lab Control Sample	111
LCS 410-304470/2-B	Lab Control Sample	108
MB 410-304146/1-B	Method Blank	100
MB 410-304470/1-B	Method Blank	99

**Surrogate Legend**

BTRA = Butyraldehyde



## QC Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## Method: 8315A - Carbonyl Compounds by HPLC

Lab Sample ID: MB 410-304146/1-B

Matrix: Solid

Analysis Batch: 304539

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 304522

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<500	U	1000	500 ug/Kg		10/08/22 11:47	10/08/22 15:51	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	100		77 - 133			10/08/22 11:47	10/08/22 15:51	1

Lab Sample ID: LCS 410-304146/2-B

Matrix: Solid

Analysis Batch: 304539

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 304522

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Glutaraldehyde	10000	11740		ug/Kg		117	84 - 123
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
Butyraldehyde	111		77 - 133				

Lab Sample ID: 880-19872-1 MS

Matrix: Solid

Analysis Batch: 304539

Client Sample ID: S-1 4-4.5'

Prep Type: Total/NA

Prep Batch: 304522

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
Glutaraldehyde	<498	U	9850	10720		ug/Kg		109	84 - 123
Surrogate	MS %Recovery	MS Qualifier	Limits						
Butyraldehyde	105		77 - 133						

Lab Sample ID: 880-19872-1 MSD

Matrix: Solid

Analysis Batch: 304539

Client Sample ID: S-1 4-4.5'

Prep Type: Total/NA

Prep Batch: 304522

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Glutaraldehyde	<498	U	9670	10810		ug/Kg		112	84 - 123	1	50
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
Butyraldehyde	106		77 - 133								

Lab Sample ID: MB 410-304470/1-B

Matrix: Solid

Analysis Batch: 304752

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 304560

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Glutaraldehyde	<500	U	1000	500 ug/Kg		10/09/22 08:15	10/10/22 10:14	1
Surrogate	MB %Recovery	MB Qualifier	Limits			Prepared	Analyzed	Dil Fac
Butyraldehyde	99		77 - 133			10/09/22 08:15	10/10/22 10:14	1

Eurofins Midland

12/2/2022 (Rev. 1)



## QC Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## Method: 8315A - Carbonyl Compounds by HPLC (Continued)

Lab Sample ID: LCS 410-304470/2-B

Matrix: Solid

Analysis Batch: 304752

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 304560

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Glutaraldehyde			10000	11320		ug/Kg		113	84 - 123		
	LCS %Recovery	LCS Qualifier	Limits								
Surrogate											
Butyraldehyde	108		77 - 133								

Lab Sample ID: 880-19872-6 MS

Matrix: Solid

Analysis Batch: 304752

Client Sample ID: S-3 6.5-7'

Prep Type: Total/NA

Prep Batch: 304560

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Glutaraldehyde	<490	U	9710	10880		ug/Kg		112	84 - 123		
	MS %Recovery	MS Qualifier	Limits								
Surrogate											
Butyraldehyde	110		77 - 133								

Lab Sample ID: 880-19872-6 MSD

Matrix: Solid

Analysis Batch: 304752

Client Sample ID: S-3 6.5-7'

Prep Type: Total/NA

Prep Batch: 304560

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Glutaraldehyde	<490	U	9800	10990		ug/Kg		112	84 - 123	1	50
	MSD %Recovery	MSD Qualifier	Limits								
Surrogate											
Butyraldehyde	111		77 - 133								

## Method: 9045D - pH

Lab Sample ID: LCS 410-302982/1-A

Matrix: Solid

Analysis Batch: 302999

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
pH			7.00	7.1		S.U.		101	95 - 105		

Lab Sample ID: 880-19872-18 DU

Matrix: Solid

Analysis Batch: 302999

Client Sample ID: S-11 0-0.5'

Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
pH	7.7			7.9		S.U.				2	3
Temperature	21.3			21.2		Degrees C				0.5	3

Lab Sample ID: LCS 410-302981/1-A

Matrix: Solid

Analysis Batch: 303003

Client Sample ID: Lab Control Sample

Prep Type: Soluble

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
pH			7.00	6.9		S.U.		99	95 - 105		

Eurofins Midland

12/2/2022 (Rev. 1)



## QC Sample Results

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## Method: 9045D - pH (Continued)

Lab Sample ID: 880-19872-1 DU  
Matrix: Solid  
Analysis Batch: 303003

Client Sample ID: S-1 4-4.5'  
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.3		7.6		S.U.		3	3
Temperature	21.3		21.3		Degrees C		0	3

Lab Sample ID: 880-19872-2 DU  
Matrix: Solid  
Analysis Batch: 303003

Client Sample ID: S-1 4.5-5'  
Prep Type: Soluble

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
pH	7.8		7.9		S.U.		1	3
Temperature	21.4		21.4		Degrees C		0	3



## QC Association Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## HPLC/IC

## Leach Batch: 304146

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-1	S-1 4-4.5'	Total/NA	Solid	8315A	
880-19872-2	S-1 4.5-5'	Total/NA	Solid	8315A	
880-19872-3	S-2 4-4.5'	Total/NA	Solid	8315A	
880-19872-4	S-2 4.5-5'	Total/NA	Solid	8315A	
880-19872-5	S-3 6-6.5'	Total/NA	Solid	8315A	
MB 410-304146/1-B	Method Blank	Total/NA	Solid	8315A	
LCS 410-304146/2-B	Lab Control Sample	Total/NA	Solid	8315A	
880-19872-1 MS	S-1 4-4.5'	Total/NA	Solid	8315A	
880-19872-1 MSD	S-1 4-4.5'	Total/NA	Solid	8315A	

## Leach Batch: 304470

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-6	S-3 6.5-7'	Total/NA	Solid	8315A	
880-19872-7	S-4 4-4.5'	Total/NA	Solid	8315A	
880-19872-8	S-4 4.5-5'	Total/NA	Solid	8315A	
880-19872-9	S-5 4-4.5'	Total/NA	Solid	8315A	
880-19872-10	S-5 4.5-5'	Total/NA	Solid	8315A	
880-19872-11	S-6 2-2.5'	Total/NA	Solid	8315A	
880-19872-12	S-6 2.5-3'	Total/NA	Solid	8315A	
880-19872-13	S-7 2-2.5'	Total/NA	Solid	8315A	
880-19872-14	S-7 2.5-3'	Total/NA	Solid	8315A	
880-19872-15	S-8 0-0.5'	Total/NA	Solid	8315A	
880-19872-16	S-9 0-0.5'	Total/NA	Solid	8315A	
880-19872-17	S-10 0-0.5'	Total/NA	Solid	8315A	
880-19872-18	S-11 0-0.5'	Total/NA	Solid	8315A	
MB 410-304470/1-B	Method Blank	Total/NA	Solid	8315A	
LCS 410-304470/2-B	Lab Control Sample	Total/NA	Solid	8315A	
880-19872-6 MS	S-3 6.5-7'	Total/NA	Solid	8315A	
880-19872-6 MSD	S-3 6.5-7'	Total/NA	Solid	8315A	

## Prep Batch: 304522

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-1	S-1 4-4.5'	Total/NA	Solid	8315A Prep	304146
880-19872-2	S-1 4.5-5'	Total/NA	Solid	8315A Prep	304146
880-19872-3	S-2 4-4.5'	Total/NA	Solid	8315A Prep	304146
880-19872-4	S-2 4.5-5'	Total/NA	Solid	8315A Prep	304146
880-19872-5	S-3 6-6.5'	Total/NA	Solid	8315A Prep	304146
MB 410-304146/1-B	Method Blank	Total/NA	Solid	8315A Prep	304146
LCS 410-304146/2-B	Lab Control Sample	Total/NA	Solid	8315A Prep	304146
880-19872-1 MS	S-1 4-4.5'	Total/NA	Solid	8315A Prep	304146
880-19872-1 MSD	S-1 4-4.5'	Total/NA	Solid	8315A Prep	304146

## Analysis Batch: 304539

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-1	S-1 4-4.5'	Total/NA	Solid	8315A	304522
880-19872-2	S-1 4.5-5'	Total/NA	Solid	8315A	304522
880-19872-3	S-2 4-4.5'	Total/NA	Solid	8315A	304522
880-19872-4	S-2 4.5-5'	Total/NA	Solid	8315A	304522
880-19872-5	S-3 6-6.5'	Total/NA	Solid	8315A	304522
MB 410-304146/1-B	Method Blank	Total/NA	Solid	8315A	304522
LCS 410-304146/2-B	Lab Control Sample	Total/NA	Solid	8315A	304522

Eurofins Midland



## QC Association Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## HPLC/IC (Continued)

## Analysis Batch: 304539 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-1 MS	S-1 4-4.5'	Total/NA	Solid	8315A	304522
880-19872-1 MSD	S-1 4-4.5'	Total/NA	Solid	8315A	304522

## Prep Batch: 304560

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-6	S-3 6.5-7'	Total/NA	Solid	8315A Prep	304470
880-19872-7	S-4 4-4.5'	Total/NA	Solid	8315A Prep	304470
880-19872-8	S-4 4.5-5'	Total/NA	Solid	8315A Prep	304470
880-19872-9	S-5 4-4.5'	Total/NA	Solid	8315A Prep	304470
880-19872-10	S-5 4.5-5'	Total/NA	Solid	8315A Prep	304470
880-19872-11	S-6 2-2.5'	Total/NA	Solid	8315A Prep	304470
880-19872-12	S-6 2.5-3'	Total/NA	Solid	8315A Prep	304470
880-19872-13	S-7 2-2.5'	Total/NA	Solid	8315A Prep	304470
880-19872-14	S-7 2.5-3'	Total/NA	Solid	8315A Prep	304470
880-19872-15	S-8 0-0.5'	Total/NA	Solid	8315A Prep	304470
880-19872-16	S-9 0-0.5'	Total/NA	Solid	8315A Prep	304470
880-19872-17	S-10 0-0.5'	Total/NA	Solid	8315A Prep	304470
880-19872-18	S-11 0-0.5'	Total/NA	Solid	8315A Prep	304470
MB 410-304470/1-B	Method Blank	Total/NA	Solid	8315A Prep	304470
LCS 410-304470/2-B	Lab Control Sample	Total/NA	Solid	8315A Prep	304470
880-19872-6 MS	S-3 6.5-7'	Total/NA	Solid	8315A Prep	304470
880-19872-6 MSD	S-3 6.5-7'	Total/NA	Solid	8315A Prep	304470

## Analysis Batch: 304752

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-6	S-3 6.5-7'	Total/NA	Solid	8315A	304560
880-19872-7	S-4 4-4.5'	Total/NA	Solid	8315A	304560
880-19872-8	S-4 4.5-5'	Total/NA	Solid	8315A	304560
880-19872-9	S-5 4-4.5'	Total/NA	Solid	8315A	304560
880-19872-10	S-5 4.5-5'	Total/NA	Solid	8315A	304560
880-19872-11	S-6 2-2.5'	Total/NA	Solid	8315A	304560
880-19872-12	S-6 2.5-3'	Total/NA	Solid	8315A	304560
880-19872-13	S-7 2-2.5'	Total/NA	Solid	8315A	304560
880-19872-14	S-7 2.5-3'	Total/NA	Solid	8315A	304560
880-19872-15	S-8 0-0.5'	Total/NA	Solid	8315A	304560
880-19872-16	S-9 0-0.5'	Total/NA	Solid	8315A	304560
880-19872-17	S-10 0-0.5'	Total/NA	Solid	8315A	304560
880-19872-18	S-11 0-0.5'	Total/NA	Solid	8315A	304560
MB 410-304470/1-B	Method Blank	Total/NA	Solid	8315A	304560
LCS 410-304470/2-B	Lab Control Sample	Total/NA	Solid	8315A	304560
880-19872-6 MS	S-3 6.5-7'	Total/NA	Solid	8315A	304560
880-19872-6 MSD	S-3 6.5-7'	Total/NA	Solid	8315A	304560

## General Chemistry

## Leach Batch: 302981

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-1	S-1 4-4.5'	Soluble	Solid	DI Leach	
880-19872-2	S-1 4.5-5'	Soluble	Solid	DI Leach	
880-19872-3	S-2 4-4.5'	Soluble	Solid	DI Leach	
880-19872-4	S-2 4.5-5'	Soluble	Solid	DI Leach	

Eurofins Midland

12/2/2022 (Rev. 1)



## QC Association Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## General Chemistry (Continued)

## Leach Batch: 302981 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-5	S-3 6-6.5'	Soluble	Solid	DI Leach	
880-19872-6	S-3 6.5-7'	Soluble	Solid	DI Leach	
880-19872-7	S-4 4-4.5'	Soluble	Solid	DI Leach	
880-19872-8	S-4 4.5-5'	Soluble	Solid	DI Leach	
880-19872-9	S-5 4-4.5'	Soluble	Solid	DI Leach	
880-19872-10	S-5 4.5-5'	Soluble	Solid	DI Leach	
880-19872-11	S-6 2-2.5'	Soluble	Solid	DI Leach	
880-19872-12	S-6 2.5-3'	Soluble	Solid	DI Leach	
880-19872-13	S-7 2-2.5'	Soluble	Solid	DI Leach	
880-19872-14	S-7 2.5-3'	Soluble	Solid	DI Leach	
880-19872-15	S-8 0-0.5'	Soluble	Solid	DI Leach	
880-19872-16	S-9 0-0.5'	Soluble	Solid	DI Leach	
880-19872-17	S-10 0-0.5'	Soluble	Solid	DI Leach	
LCS 410-302981/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
880-19872-1 DU	S-1 4-4.5'	Soluble	Solid	DI Leach	
880-19872-2 DU	S-1 4.5-5'	Soluble	Solid	DI Leach	

## Leach Batch: 302982

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-18	S-11 0-0.5'	Soluble	Solid	DI Leach	
LCS 410-302982/1-A	Lab Control Sample	Soluble	Solid	DI Leach	
880-19872-18 DU	S-11 0-0.5'	Soluble	Solid	DI Leach	

## Analysis Batch: 302999

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-18	S-11 0-0.5'	Soluble	Solid	9045D	302982
LCS 410-302982/1-A	Lab Control Sample	Soluble	Solid	9045D	302982
880-19872-18 DU	S-11 0-0.5'	Soluble	Solid	9045D	302982

## Analysis Batch: 303003

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
880-19872-1	S-1 4-4.5'	Soluble	Solid	9045D	302981
880-19872-2	S-1 4.5-5'	Soluble	Solid	9045D	302981
880-19872-3	S-2 4-4.5'	Soluble	Solid	9045D	302981
880-19872-4	S-2 4.5-5'	Soluble	Solid	9045D	302981
880-19872-5	S-3 6-6.5'	Soluble	Solid	9045D	302981
880-19872-6	S-3 6.5-7'	Soluble	Solid	9045D	302981
880-19872-7	S-4 4-4.5'	Soluble	Solid	9045D	302981
880-19872-8	S-4 4.5-5'	Soluble	Solid	9045D	302981
880-19872-9	S-5 4-4.5'	Soluble	Solid	9045D	302981
880-19872-10	S-5 4.5-5'	Soluble	Solid	9045D	302981
880-19872-11	S-6 2-2.5'	Soluble	Solid	9045D	302981
880-19872-12	S-6 2.5-3'	Soluble	Solid	9045D	302981
880-19872-13	S-7 2-2.5'	Soluble	Solid	9045D	302981
880-19872-14	S-7 2.5-3'	Soluble	Solid	9045D	302981
880-19872-15	S-8 0-0.5'	Soluble	Solid	9045D	302981
880-19872-16	S-9 0-0.5'	Soluble	Solid	9045D	302981
880-19872-17	S-10 0-0.5'	Soluble	Solid	9045D	302981
LCS 410-302981/1-A	Lab Control Sample	Soluble	Solid	9045D	302981
880-19872-1 DU	S-1 4-4.5'	Soluble	Solid	9045D	302981
880-19872-2 DU	S-1 4.5-5'	Soluble	Solid	9045D	302981

Eurofins Midland



## Lab Chronicle

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-1 4-4.5'

Lab Sample ID: 880-19872-1

Date Collected: 09/30/22 11:30

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.04 g	200 mL	304146	10/07/22 14:16	U9KU	ELLE
							Completed:	10/08/22 10:28		
Total/NA	Prep	8315A Prep			100 g	10 mL	304522	10/08/22 11:47	A2VL	ELLE
							Completed:	10/08/22 13:58		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304539	10/08/22 16:45	GM5C	ELLE
Soluble	Leach	DI Leach			24.59 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-1 4.5-5'

Lab Sample ID: 880-19872-2

Date Collected: 09/30/22 11:31

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.18 g	200 mL	304146	10/07/22 14:16	U9KU	ELLE
							Completed:	10/08/22 10:28		
Total/NA	Prep	8315A Prep			100 g	10 mL	304522	10/08/22 11:47	A2VL	ELLE
							Completed:	10/08/22 13:58		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304539	10/08/22 16:55	GM5C	ELLE
Soluble	Leach	DI Leach			24.93 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-2 4-4.5'

Lab Sample ID: 880-19872-3

Date Collected: 09/30/22 11:32

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.14 g	200 mL	304146	10/07/22 14:16	U9KU	ELLE
							Completed:	10/08/22 10:28		
Total/NA	Prep	8315A Prep			100 g	10 mL	304522	10/08/22 11:47	A2VL	ELLE
							Completed:	10/08/22 13:58		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304539	10/08/22 17:06	GM5C	ELLE
Soluble	Leach	DI Leach			25.55 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-2 4.5-5'

Lab Sample ID: 880-19872-4

Date Collected: 09/30/22 11:33

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.39 g	200 mL	304146	10/07/22 14:16	U9KU	ELLE
							Completed:	10/08/22 10:28		
Total/NA	Prep	8315A Prep			100 g	10 mL	304522	10/08/22 11:47	A2VL	ELLE
							Completed:	10/08/22 13:58		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304539	10/08/22 17:17	GM5C	ELLE
Soluble	Leach	DI Leach			24.69 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Eurofins Midland



## Lab Chronicle

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-3 6-6.5'

Lab Sample ID: 880-19872-5

Date Collected: 09/30/22 11:34

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.17 g	200 mL	304146	10/07/22 14:16	U9KU	ELLE
							Completed:	10/08/22 10:28		
Total/NA	Prep	8315A Prep			100 g	10 mL	304522	10/08/22 11:47	A2VL	ELLE
							Completed:	10/08/22 13:58		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304539	10/08/22 17:28	GM5C	ELLE
Soluble	Leach	DI Leach			24.61 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-3 6.5-7'

Lab Sample ID: 880-19872-6

Date Collected: 09/30/22 11:35

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.2 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 10:57	GM5C	ELLE
Soluble	Leach	DI Leach			25.01 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-4 4-4.5'

Lab Sample ID: 880-19872-7

Date Collected: 09/30/22 11:36

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.5 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 11:08	GM5C	ELLE
Soluble	Leach	DI Leach			24.97 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-4 4.5-5'

Lab Sample ID: 880-19872-8

Date Collected: 09/30/22 11:37

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.3 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 11:19	GM5C	ELLE
Soluble	Leach	DI Leach			25.20 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Eurofins Midland

12/2/2022 (Rev. 1)



## Lab Chronicle

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-5 4-4.5'

Lab Sample ID: 880-19872-9

Date Collected: 09/30/22 11:38

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.4 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41	1	
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15	1	
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 11:30	GM5C	ELLE
Soluble	Leach	DI Leach			24.97 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-5 4.5-5'

Lab Sample ID: 880-19872-10

Date Collected: 09/30/22 11:39

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.1 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41	1	
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15	1	
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 11:40	GM5C	ELLE
Soluble	Leach	DI Leach			24.66 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-6 2-2.5'

Lab Sample ID: 880-19872-11

Date Collected: 09/30/22 11:40

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.2 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41	1	
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15	1	
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 11:51	GM5C	ELLE
Soluble	Leach	DI Leach			25.29 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-6 2.5-3'

Lab Sample ID: 880-19872-12

Date Collected: 09/30/22 11:41

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.4 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41	1	
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15	1	
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 12:12	GM5C	ELLE
Soluble	Leach	DI Leach			25.68 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Eurofins Midland



## Lab Chronicle

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-7 2-2.5'

Lab Sample ID: 880-19872-13

Date Collected: 09/30/22 11:42

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.0 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 12:23	GM5C	ELLE
Soluble	Leach	DI Leach			24.71 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-7 2.5-3'

Lab Sample ID: 880-19872-14

Date Collected: 09/30/22 11:43

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.2 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 12:34	GM5C	ELLE
Soluble	Leach	DI Leach			25.24 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-8 0-0.5'

Lab Sample ID: 880-19872-15

Date Collected: 09/30/22 11:44

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.4 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 12:45	GM5C	ELLE
Soluble	Leach	DI Leach			24.88 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-9 0-0.5'

Lab Sample ID: 880-19872-16

Date Collected: 09/30/22 11:45

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.3 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 12:56	GM5C	ELLE
Soluble	Leach	DI Leach			25.09 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Eurofins Midland

12/2/2022 (Rev. 1)



## Lab Chronicle

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Client Sample ID: S-10 0-0.5'

Lab Sample ID: 880-19872-17

Date Collected: 09/30/22 11:46

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.3 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41 <sup>1</sup>		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15 <sup>1</sup>		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 13:06	GM5C	ELLE
Soluble	Leach	DI Leach			24.89 g	25 mL	302981	10/04/22 14:29	DI9Q	ELLE
Soluble	Analysis	9045D		1			303003	10/04/22 16:38	F8TI	ELLE

Client Sample ID: S-11 0-0.5'

Lab Sample ID: 880-19872-18

Date Collected: 09/30/22 11:47

Matrix: Solid

Date Received: 09/30/22 16:00

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Leach	8315A			10.1 g	200 mL	304470	10/08/22 12:45	A2VL	ELLE
							Completed:	10/09/22 07:41 <sup>1</sup>		
Total/NA	Prep	8315A Prep			100 g	10 mL	304560	10/09/22 08:15	DFX4	ELLE
							Completed:	10/09/22 11:15 <sup>1</sup>		
Total/NA	Analysis	8315A		1	1 mL	1 mL	304752	10/10/22 13:17	GM5C	ELLE
Soluble	Leach	DI Leach			24.58 g	25 mL	302982	10/04/22 14:32	DI9Q	ELLE
Soluble	Analysis	9045D		1			302999	10/04/22 16:38	F8TI	ELLE

<sup>1</sup> Completion dates and times are reported or not reported per method requirements or individual lab discretion.

## Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



# Accreditation/Certification Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

## Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	0001.01	11-20-22
A2LA	ISO/IEC 17025	0001.01	11-30-22
Alaska	State	PA00009	07-01-23
Alaska (UST)	State	17-027	02-28-23
Arizona	State	AZ0780	03-12-23
Arkansas DEQ	State	88-00660	11-09-22
California	State	2792	11-09-22
Colorado	State	PA00009	11-09-22
Connecticut	State	PH-0746	11-09-22
DE Haz. Subst. Cleanup Act (HSCA)	State	019-006 (PA cert)	01-31-23
Delaware (DW)	State	N/A	01-31-23
Florida	NELAP	E87997	11-09-22
Georgia (DW)	State	C048	01-31-23
Hawaii	State	N/A	11-27-22
Illinois	NELAP	200027	11-09-22
Iowa	State	361	11-09-22
Kansas	NELAP	E-10151	10-31-22
Kentucky (DW)	State	KY90088	12-31-22
Kentucky (UST)	State	0001.01	11-20-22
Kentucky (WW)	State	KY90088	11-09-22
Louisiana (All)	NELAP	02055	11-09-22
Maine	State	2019012	03-12-23
Maryland	State	100	06-30-23
Massachusetts	State	M-PA009	11-10-22
Michigan	State	9930	01-31-23
Minnesota	NELAP	042-999-487	12-31-22
Mississippi	State	022	01-31-23
Missouri	State	450	01-31-25
Montana (DW)	State	0098	01-01-23
Montana (UST)	State	<cert No.>	02-01-23
Nebraska	State	NE-OS-32-17	11-09-22
New Hampshire	NELAP	2730	11-09-22
New Jersey	NELAP	PA011	11-14-22
New York	NELAP	10670	11-09-22
North Carolina (DW)	State	42705	07-31-23
North Carolina (WW/SW)	State	521	10-31-22
North Dakota	State	R-205	01-31-23
Oklahoma	NELAP	R-205	11-09-22
Oregon	NELAP	PA200001	11-09-22
PALA	Canada	1978	09-16-24
Pennsylvania	NELAP	36-00037	11-09-22
Rhode Island	State	LAO00338	11-09-22
South Carolina	State	89002	01-31-23
Tennessee	State	02838	01-31-23
Texas	NELAP	T104704194-22-43	11-09-22
USDA	US Federal Programs	P330-19-00197	08-09-23
Vermont	State	VT - 36037	10-27-22
Virginia	NELAP	460182	10-31-22
Washington	State	C457	11-09-22
West Virginia (DW)	State	9906 C	12-31-22

Eurofins Midland



**Accreditation/Certification Summary**

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

**Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC (Continued)**

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
West Virginia DEP	State	055	10-19-22
Wyoming	State	8TMS-L	01-31-23
Wyoming (UST)	A2LA	0001.01	11-20-22

Eurofins Midland



## Method Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Method	Method Description	Protocol	Laboratory
8315A	Carbonyl Compounds by HPLC	SW846	ELLE
9045D	pH	SW846	ELLE
8315A	Solid Leach (Carbonyl Compounds)	SW846	ELLE
8315A Prep	Extraction (Carbonyl Compounds)	SW846	ELLE
DI Leach	Deionized Water Leaching Procedure	ASTM	ELLE

**Protocol References:**

ASTM = ASTM International

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Eurofins Midland



## Sample Summary

Client: Larson & Associates, Inc.  
Project/Site: Sand Dunes CTB 10

Job ID: 880-19872-1  
SDG: 22-0105-15

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
880-19872-1	S-1 4-4.5'	Solid	09/30/22 11:30	09/30/22 16:00
880-19872-2	S-1 4.5-5'	Solid	09/30/22 11:31	09/30/22 16:00
880-19872-3	S-2 4-4.5'	Solid	09/30/22 11:32	09/30/22 16:00
880-19872-4	S-2 4.5-5'	Solid	09/30/22 11:33	09/30/22 16:00
880-19872-5	S-3 6-6.5'	Solid	09/30/22 11:34	09/30/22 16:00
880-19872-6	S-3 6.5-7'	Solid	09/30/22 11:35	09/30/22 16:00
880-19872-7	S-4 4-4.5'	Solid	09/30/22 11:36	09/30/22 16:00
880-19872-8	S-4 4.5-5'	Solid	09/30/22 11:37	09/30/22 16:00
880-19872-9	S-5 4-4.5'	Solid	09/30/22 11:38	09/30/22 16:00
880-19872-10	S-5 4.5-5'	Solid	09/30/22 11:39	09/30/22 16:00
880-19872-11	S-6 2-2.5'	Solid	09/30/22 11:40	09/30/22 16:00
880-19872-12	S-6 2.5-3'	Solid	09/30/22 11:41	09/30/22 16:00
880-19872-13	S-7 2-2.5'	Solid	09/30/22 11:42	09/30/22 16:00
880-19872-14	S-7 2.5-3'	Solid	09/30/22 11:43	09/30/22 16:00
880-19872-15	S-8 0-0.5'	Solid	09/30/22 11:44	09/30/22 16:00
880-19872-16	S-9 0-0.5'	Solid	09/30/22 11:45	09/30/22 16:00
880-19872-17	S-10 0-0.5'	Solid	09/30/22 11:46	09/30/22 16:00
880-19872-18	S-11 0-0.5'	Solid	09/30/22 11:47	09/30/22 16:00



1987 No. 2739

## CHAIN-OF-CUSTODY

<b>Arson &amp; Associates, Inc.</b> Environmental Consultants 507 N. Marienfeld, Ste 202 Midland, TX 79701 432-687-0901				DATE: 9/30/2022 PAGE 1 OF 2 PO# LAB WORK ORDER# PROJECT LOCATION OR NAME Sand Dunes CIB 10 LAI PROJECT # 22-0105-15 COLLECTOR: BW + DSG									
Data Reported to TRRP report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No TIME ZONE Time zone/State MST/NA		S=SOIL W=WATER A=AIR P=PAINT SL=SLUDGE OT=OTHER		PRESERVATION HCl <input type="checkbox"/> H <sub>2</sub> SO <sub>4</sub> <input type="checkbox"/> NaOH <input type="checkbox"/> ICE <input type="checkbox"/> UNPRESERVED		# of Containers Matrix		ANALYSES TRPH 418 <input type="checkbox"/> TRPH 1005 <input type="checkbox"/> TRPH 1006 <input type="checkbox"/> GASOLINE MOD 8015 <input type="checkbox"/> DIESEL - MOD 8015 <input type="checkbox"/> OIL - MOD 8015 <input type="checkbox"/> SVOC 8270 <input type="checkbox"/> SVOC 8280 <input type="checkbox"/> 8081 PESTICIDES <input type="checkbox"/> PAH 8270 <input type="checkbox"/> PAH 8270 <input type="checkbox"/> TOLP - METALS (RCRA) <input type="checkbox"/> 8151 HERBICIDES <input type="checkbox"/> TOLP - PEST <input type="checkbox"/> HERB <input type="checkbox"/> TOLP-VOC <input type="checkbox"/> LEAD - TOTAL <input type="checkbox"/> TDS <input type="checkbox"/> TOX <input type="checkbox"/> D W 200 <input type="checkbox"/> TOLP <input type="checkbox"/> PH 44 <input type="checkbox"/> HEXAVALENT CHROMIUM <input type="checkbox"/> CYANIDE <input type="checkbox"/> EXPLOSIVES <input type="checkbox"/> PENTACHLORATE <input type="checkbox"/> ALKALINITY <input type="checkbox"/>		FIELD NOTES Chloride <input type="checkbox"/> ANIONS <input type="checkbox"/> ALKALINITY <input type="checkbox"/>			
Field Sample ID	Lab #	Date	Time	Matrix	# of Containers	HCl	H <sub>2</sub> SO <sub>4</sub>	NaOH	ICE	UNPRESERVED	ANALYSES	FIELD NOTES	
S-1, 4-4.5'		9/30/22	1130	S	1								
S-1, 4.5-5'			1131										
S-2, 4-4.5'			1132										
S-2, 4.5-5'			1133										
S-3, 6-6.5'			1134										
S-3, 6.5-7'			1135										
S-4, 4-4.5'			1136										
S-4, 4.5-5'			1137										
S-5, 4-4.5'			1138										
S-5, 4.5-5'			1139										
S-6, 2-2.5'			1140										
S-6, 2.5-3'			1141										
S-7, 2-2.5'			1142										
S-7, 2.5-3'			1143										
S-8, 0-0.5'			1144										
TOTAL													
RELINQUISHED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)	
		9/30/22 1600											
RELINQUISHED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)	
RELINQUISHED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)		DATE/TIME		RECEIVED BY (Signature)	
LABORATORY Xeno													

## LABORATORY USE ONLY:

 RECEIVING TEMP 49.5 THERM# IP8.20  
 CUSTODY SEALS - ☐ BROKEN ☐ CONTACT ☐ NOT USED  
☐ CARRIER BILL #  
☒ HAND DELIVERED



19872  
No. 2740

No. 2740

# CHAIN-OF-CUSTODY

[illegible]



## Eurofins Midland

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

## Chain of Custody Record



**Environment Testing  
America**

<b>Client Information (Sub Contract Lab)</b>				Sampler Taylor, Holly		Carrier Tracking No(s):		COC No: 880-5374-1															
Client Contact: Shipping/Receiving				Phone		E-Mail: Holly.Taylor@et.eurofins.com		State of Origin: New Mexico															
Company: Eurofins Lancaster Laboratories Environm				Accreditations Required (See note) NELAP - Texas		Job # 880-19872-1		Page: Page 1 of 2															
Address: 2425 New Holland Pike.				Due Date Requested: 10/6/2022		<b>Analysis Requested</b>																	
City: Lancaster				TAT Requested (days):																			
State, Zip: PA, 17601				PO #																			
Phone: 717-656-2300(Tel)				WO #																			
Email:				Project #: 88000254																			
Project Name: Sand Dunes CTB 10				SSOW#:		<b>Preservation Codes:</b> A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Y - Trizma Z - other (specify)  Other:																	
Site:				SSOW#:																			
<b>Sample Identification - Client ID (Lab ID)</b>				<b>Sample Date</b>		<b>Sample Time</b>		<b>Sample Type (C=Comp, G=grab)</b>		<b>Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)</b>		<b>Field Filtered Sample (Yes or No)</b>		<b>Perform MS/MSD (Yes or No)</b>		<b>8315A/8315A_S_Leach (MOD) Custom Analyte List</b>		<b>9045D/DI_Leach_NP pH and Temperature</b>		<b>Total Number of containers</b>		<b>Special Instructions/Note:</b>	
<b>Preservation Code:</b>																							
S-1 4-4 5' (880-19872-1)				9/30/22		11:30 Mountain		Solid		Solid				X		X						1	
S-1 4-5-5' (880-19872-2)				9/30/22		11:31 Mountain		Solid		Solid				X		X						1	
S-2 4-4 5' (880-19872-3)				9/30/22		11:32 Mountain		Solid		Solid				X		X						1	
S-2 4-5-5' (880-19872-4)				9/30/22		11:33 Mountain		Solid		Solid				X		X						1	
S-3 6-6-5' (880-19872-5)				9/30/22		11:34 Mountain		Solid		Solid				X		X						1	
S-3 6-5-7' (880-19872-6)				9/30/22		11:35 Mountain		Solid		Solid				X		X						1	
S-4 4-4 5' (880-19872-7)				9/30/22		11:36 Mountain		Solid		Solid				X		X						1	
S-4 4-5-5' (880-19872-8)				9/30/22		11:37 Mountain		Solid		Solid				X		X						1	
S-5 4-4 5' (880-19872-9)				9/30/22		11:38 Mountain		Solid		Solid				X		X						1	
<b>Note:</b> Since laboratory accreditations are subject to change, Eurofins Environment Testing South Central, LLC places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing South Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing South Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing South Central, LLC.																							
<b>Possible Hazard Identification</b>												<b>Sample Disposal ( A fee may be assessed if samples are retained longer than 1 month)</b>											
Unconfirmed												<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months											
Deliverable Requested: I, II, III, IV, Other (specify)												Primary Deliverable Rank: 2											
Empty Kit Relinquished by:												Special Instructions/QC Requirements:											
Relinquished by: <i>[Signature]</i>												Date: 10/13/22											
Relinquished by:												Date/Time:											
Relinquished by:												Date/Time:											
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No												Custody Seal No.:											
Cooler Temperature(s) °C and Other Remarks: 3.1												10/4/22 1031 <i>[Signature]</i>											

Ver: 06/08/2021

12/2/2022 (Rev. 1)



## Eurofins Midland

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

## Chain of Custody Record



<b>Client Information (Sub Contract Lab)</b>		Sampler:		Lab PM Taylor, Holly		Carrier Tracking No(s)		COC No 880-5374 2			
Client Contact:		Phone		E-Mail: Holly Taylor@et.eurofinsus.com		State of Origin New Mexico		Page Page 2 of 2			
Shipping/Receiving											
Company Eurofins Lancaster Laboratories Environm		Accreditations Required (See note) NELAP - Texas						Job # 880-19872-1			
Address: 2425 New Holland Pike,		Due Date Requested: 10/6/2022		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 Y - Trizma Z - other (specify)		Other:			
City: Lancaster		TAT Requested (days):									
State, Zip PA, 17601		PO #									
Phone 717-656-2300(Tel)		WO #									
Email:		Project #: 88000254									
Project Name: Sand Dunes CTB 10		SSOW#									
Site:											
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/soil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8315A/B315A, S_Leach (MOD) Custom Analyte List	9045DDI_LEACH_NP pH and Temperature	Total Number of containers	Special Instructions/Note:
				Preservation Code:							
S-5 4.5-5' (880-19872-10)	9/30/22	11:39 Mountain		Solid			X	X		1	
S-6 2-2.5' (880-19872-11)	9/30/22	11:40 Mountain		Solid			X	X		1	
S-6 2.5-3' (880-19872-12)	9/30/22	11:41 Mountain		Solid			X	X		1	
S-7 2-2.5' (880-19872-13)	9/30/22	11:42 Mountain		Solid			X	X		1	
S-7 2.5-3' (880-19872-14)	9/30/22	11:43 Mountain		Solid			X	X		1	
S-8 0-0.5' (880-19872-15)	9/30/22	11:44 Mountain		Solid			X	X		1	
S-9 0-0.5' (880-19872-16)	9/30/22	11:45 Mountain		Solid			X	X		1	
S-10 0-0.5' (880-19872-17)	9/30/22	11:46 Mountain		Solid			X	X		1	
S-11 0-0.5' (880-19872-18)	9/30/22	11:47 Mountain		Solid			X	X		1	
<p>Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing South Central, LLC places the ownership of method, analyte &amp; accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing South Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing South Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing South Central, LLC</p>											
<b>Possible Hazard Identification</b>						<b>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</b>					
Unconfirmed						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months					
Deliverable Requested: I, II, III, IV, Other (specify)						Primary Deliverable Rank: 2					
Special Instructions/QC Requirements:											
Empty Kit Relinquished by:			Date:		Time:		Method of Shipment:				
Relinquished by:			Date/Time:		Company:		Received by:		Date/Time:		Company:
Relinquished by:			Date/Time:		Company:		Received by:		Date/Time:		Company:
Relinquished by:			Date/Time:		Company:		Received by:		Date/Time: 10/1/22 1031		Company:
Custody Seals Intact Δ Yes Δ No		Custody Seal No.				Cooler Temperature(s) °C and Other Remarks:					

Ver: 06/08/2021

12/2/2022 (Rev. 1)



## Login Sample Receipt Checklist

Client: Larson &amp; Associates, Inc.

Job Number: 880-19872-1

SDG Number: 22-0105-15

**Login Number: 19872****List Number: 1****Creator: Rodriguez, Leticia****List Source: Eurofins Midland**

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	



## Login Sample Receipt Checklist

Client: Larson &amp; Associates, Inc.

Job Number: 880-19872-1

SDG Number: 22-0105-15

Login Number: 19872

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

List Number: 2

List Creation: 10/04/22 11:21 AM

Creator: McBeth, Jessica

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable ( $\leq 6^{\circ}\text{C}$ , not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temperature is acceptable ( $\leq 6^{\circ}\text{C}$ , not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace $> 6\text{mm}$ in diameter (none, if from WV)?	N/A	



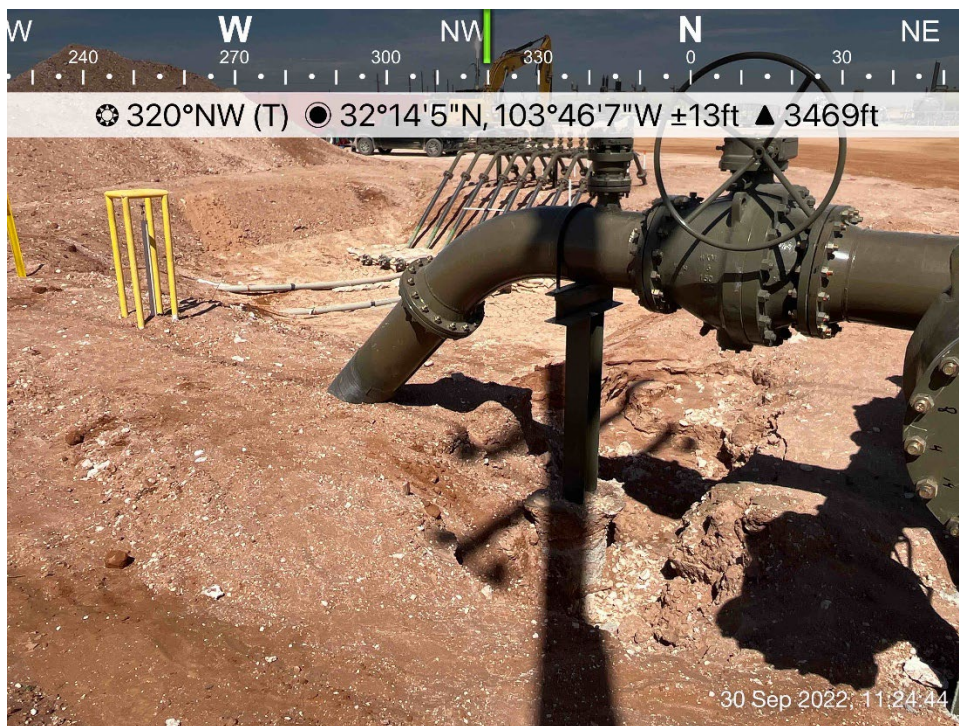
**Appendix E**  
**Photographic Documentation**



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



Impacted area viewing southeast, September 20, 2022



Impacted area viewing northwest, September 20, 2022



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



Impacted area viewing east, September 20, 2022



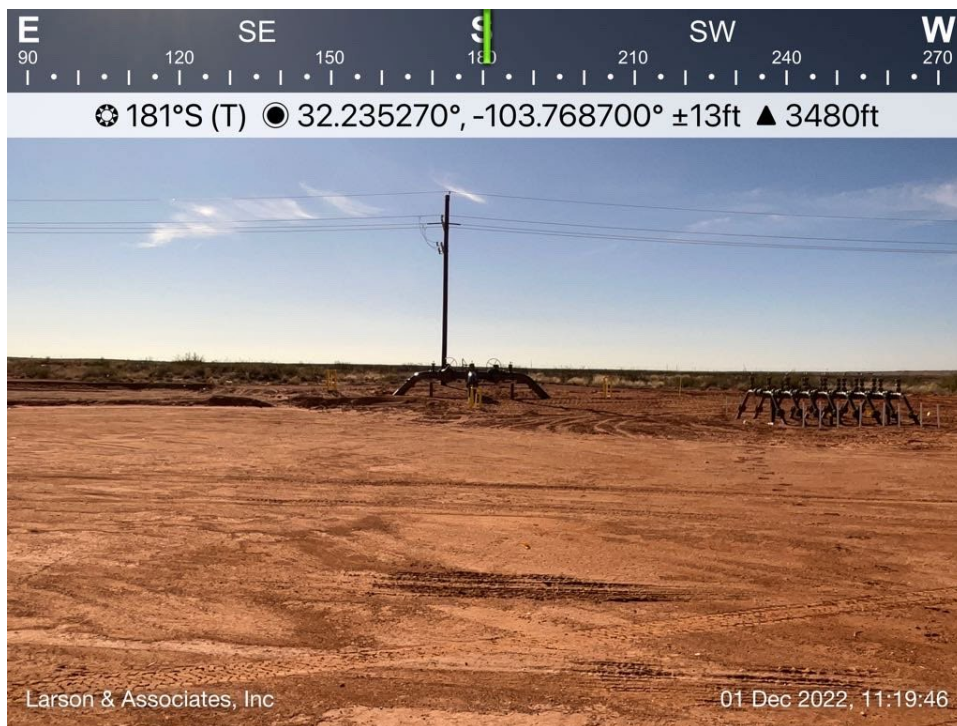
Impacted area viewing southwest, September 20, 2022



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



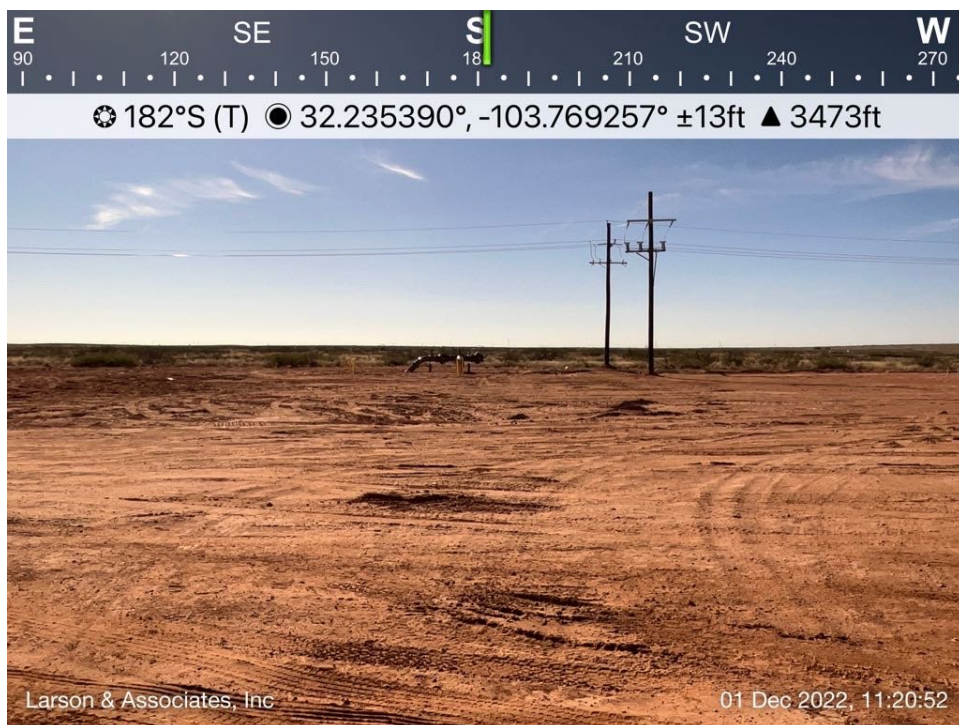
Impacted area viewing west, September 20, 2022



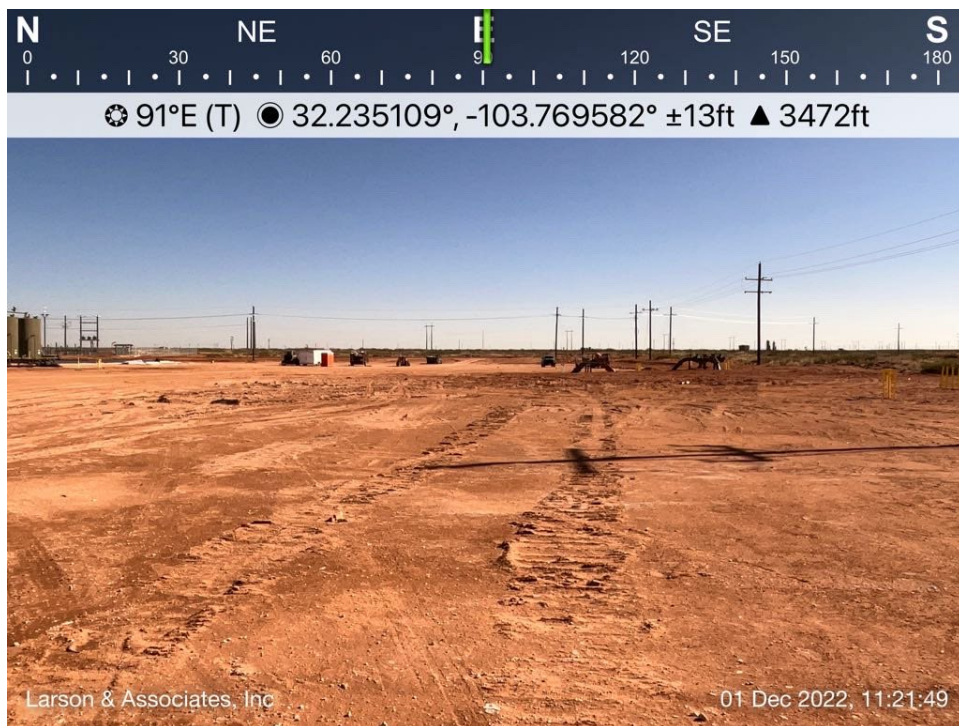
Backfilled area viewing south, December 1, 2022



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



Backfilled area viewing south, December 1, 2022



Backfilled area viewing east, December 1, 2022



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



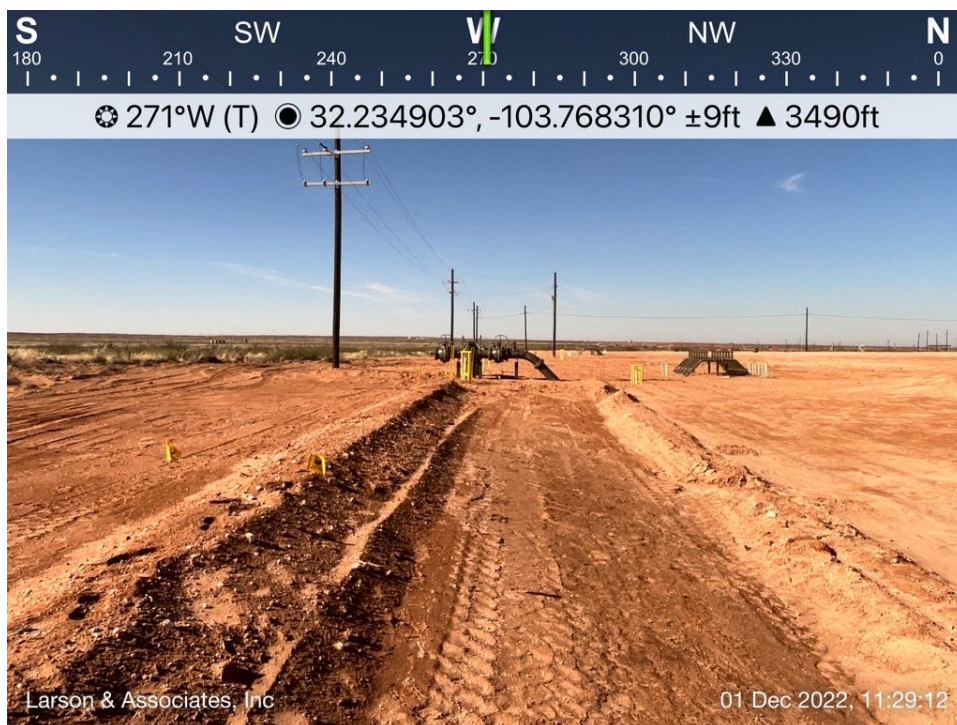
Backfilled area viewing east, December 1, 2022



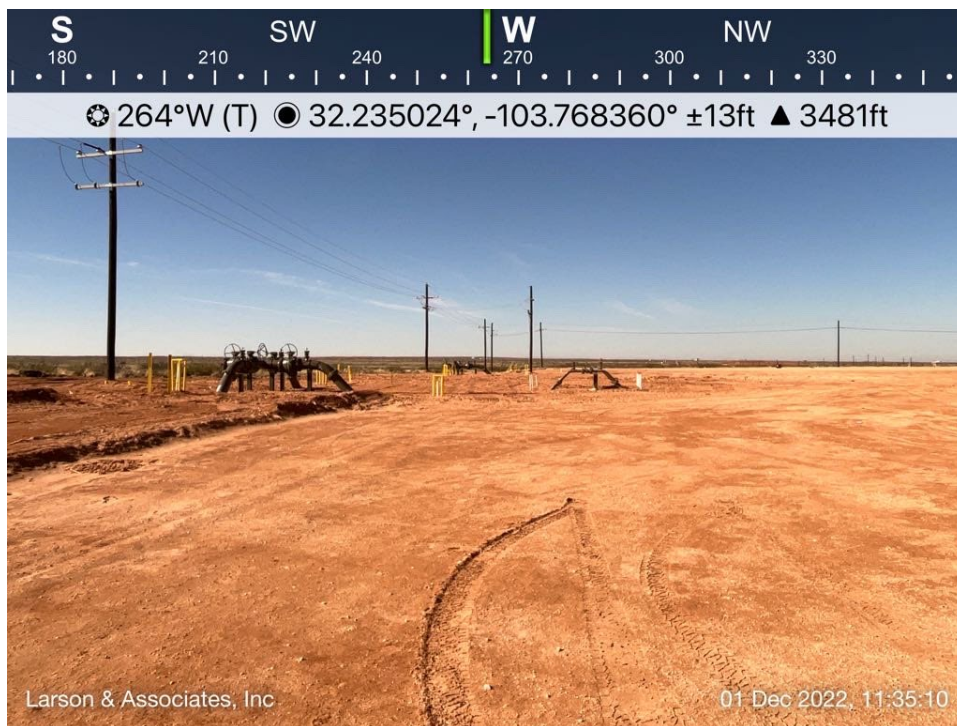
Backfilled area viewing west, December 1, 2022



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



Backfilled area viewing west, December 1, 2022



Backfilled area viewing west, December 1, 2022



Tracking Number: nAPP2227365249  
Biocide Release Delineation and Closure Report  
Chevron USA, Inc., Sand Dunes CTB 10  
December 7, 2022



Backfilled area viewing southwest, December 1, 2022



**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 166846

CONDITIONS

Operator: CHEVRON U S A INC 6301 Deauville Blvd Midland, TX 79706	OGRID: 4323
	Action Number: 166846
	Action Type: [C-141] Release Corrective Action (C-141)

CONDITIONS

Created By	Condition	Condition Date
rhamlet	We have received your closure report and final C-141 for Incident #NAPP2227365249 SAND DUNES CTB 10, thank you. This closure is approved.	3/17/2023