

Form C-141

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State of New Mexico  
Oil Conservation Division

Incident ID	NRM2002950544
District RP	TBD
Facility ID	
Application ID	

## 2019-12-11 Sand Dunes North Hydrotest Water Discharge 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?	21 (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 checked="" type="checkbox"/> Yes <input 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 - Not Applicable as no boring or excavation required
- ☐ Photographs including date and GIS information - Not Applicable as no backfill or liner required
- ☒ 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.

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State of New Mexico  
Oil Conservation Division

Incident ID	NRM2002950544
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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: Jon E. Fields Title: Director, Field EnvironmentalSignature:  Date: 3/3/2020email: jefields@eprod.com Telephone: 713-381-6684**OCD Only**Received by: Cristina Eads Date: 04/07/2020

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State of New Mexico  
Oil Conservation Division

Incident ID	NRM2002950544
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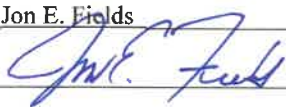
## 2019-12-11 Sand Dunes North Hydrotest Water Discharge Closure

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) - Not applicable as no excavation or backfill required
- ☒ 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: Jon E. Fields Title: Director, Field Environmental  
 Signature:  Date: 3/3/2020  
 email: jeffields@eprod.com Telephone: 713-381-6684

**OCD Only**

Received by: Cristina Eads Date: 04/07/2020

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: 04/07/2020  
 Printed Name: Cristina Eads Title: Environmental Specialist



Souder, Miller & Associates ♦ 201 S. Halagueno St. ♦ Carlsbad, NM 88220  
(575) 689-8801

January 15, 2020

#5E27957-BG25

NMOCD District 2  
811 S. First Street  
Artesia, New Mexico 88210

SUBJECT: Remediation Closure Report for the Sand Dunes North Compressor Station Release (2RP-TBD), Eddy County, New Mexico

To Whom it may concern:

On behalf of Enterprise Field Services, LLC (Enterprise) Souder, Miller & Associates (SMA) has prepared this Remediation Closure Report that describes the remediation of a release of liquids related to oil and gas production activities at the Sand Dunes Compressor Station site. The site is in Unit A, Section 32, Township 23S, Range 31E, Eddy County, New Mexico, on Federal land. Figure 1 illustrates the vicinity and site location on an USGS 7.5 minute quadrangle map. Based on the information presented herein, the site has met the closure standards of Table I of 19.15.29.12 NMAC; SMA recommends no further action. Table 1 summarizes release information and Closure Criteria.

Table 1: Release Information and Closure Criteria			
Name	Sand Dunes North Compressor Station	Company	Enterprise Field Services LLC
API Number	Not Applicable	Location	32.266456 -103.791462
Incident Number	TBD		
Estimated Date of Release	12/11/2019	Date Reported to NMOCD	12/12/2019
Land Owner	Federal Land	Reported To	NMOCD
Source of Release	Pipeline failed hydrotest		
Released Volume	10 bbls	Released Material	Municipal Water
Recovered Volume	0 bbls	Net Release	10 bbls
NMOCD Closure Criteria	>100 feet to groundwater		
SMA Response Dates	12/18/2020		

## **1.0 Background**

On December 11, 2019, a release was discovered at the Sand Dunes North Compressor Station site due to a pipeline failure during hydrotesting which released approximately 10 bbls of municipal water. Initial response activities were conducted by the contractor conducting the hydrotest, and included source elimination, site security, containment and site stabilization activities. Figure 1 illustrates the vicinity and site location, Figure 2 illustrates the release location. The C-141 form is included in Appendix A.

## **2.0 Site Information and Closure Criteria**

The Sand Dunes North Compressor Station is located approximately 16.6 miles northeast of Malaga, New Mexico on Federal (BLM) land at an elevation of approximately 3373 feet above mean sea level (amsl).

Based upon New Mexico Office of the State Engineer, United States Geological Survey and SMA's local groundwater knowledge, depth to groundwater in the area is estimated to be greater than 100 feet below grade surface (bgs). There are no known water sources within ½-mile of the location, according to the New Mexico Office of the State Engineer (NMOSE) online water well database ([https://gis.ose.state.nm.us/gisapps/ose\\_pod\\_locations/](https://gis.ose.state.nm.us/gisapps/ose_pod_locations/); accessed 1/8/2020). The nearest significant watercourse is an unnamed draw, located approximately 5,700 feet to the southwest. Figure 2 illustrates the site with 200 and 300-foot radii to indicate that it does not lie within a sensitive area as described in 19.15.29.12.C(4) NMAC.

Based on the information presented herein, the applicable NMOCD Closure Criteria for this site is for a groundwater depth of greater than 100 feet bgs. The site has met the standards of Table I of 19.15.29.12 NMAC.

Table 2 demonstrates the Closure Criteria applicable to this location. Pertinent well data is attached in Appendix B.

## **3.0 Release Characterization and Remediation Activities**

On December 18, 2019, SMA personnel arrived on site in response to the release associated with the Sand Dunes North Compressor Station. SMA performed site delineation activities by collecting soil samples around the release area. A total of four (4) samples (L1-L4) were collected at the surface of the pooling areas. Soil samples were analyzed for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene, and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel, and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D. Laboratory samples were collected in accordance with the sampling protocol included in Appendix C. Samples were placed into laboratory supplied glassware, labeled, and maintained on ice until delivery to Hall Environmental Analysis Laboratory in Albuquerque, New Mexico (Appendix D).

Figure 3 shows the extent of the release and sample locations. Laboratory results are summarized in Table 3. Laboratory reports are included in Appendix D.

Results show that no hydrocarbons or chlorides were present in the hydrotested water. All samples collected meet the Closure Criteria, as well as the Reclamation Requirements (19.15.29.1(D)(1)) for this site. Removal of impacted soils is not required because the closure criteria has been met. SMA recommends no further action.

Sand Dunes N Compressor Station Remediation Closure Report (2RP-TBD)  
January 15, 2020

Page 3 of 4

## **5.0 Scope and Limitations**

The scope of our services included: assessment sampling; verifying release stabilization; regulatory liaison; remediation; and preparing this closure report. All work has been performed in accordance with generally accepted professional environmental consulting practices for oil and gas releases in the Permian Basin in New Mexico.

If there are any questions regarding this report, please contact either Ashley Maxwell at 505-320-8975 or Shawna Chubbuck at 505-325-7535.

Submitted by:  
SOUDER, MILLER & ASSOCIATES

A handwritten signature in black ink, appearing to be 'AM' or similar initials, written in a cursive style.

Ashley Maxwell  
Project Scientist

Reviewed by:

A handwritten signature in blue ink, reading 'Shawna Chubbuck' in a cursive style.

Shawna Chubbuck  
Senior Scientist

Sand Dunes N Compressor Station Remediation Closure Report (2RP-TBD)  
January 15, 2020

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**ATTACHMENTS:**

**Figures:**

Figure 1: Vicinity and Well Head Protection Map

Figure 2: Surface Water Radius Map

Figure 3: Site and Sample Location Map

**Tables:**

Table 2: NMOCD Closure Criteria Justification

Table 3: Summary of Sample Results

**Appendices:**

Appendix A: Form C141

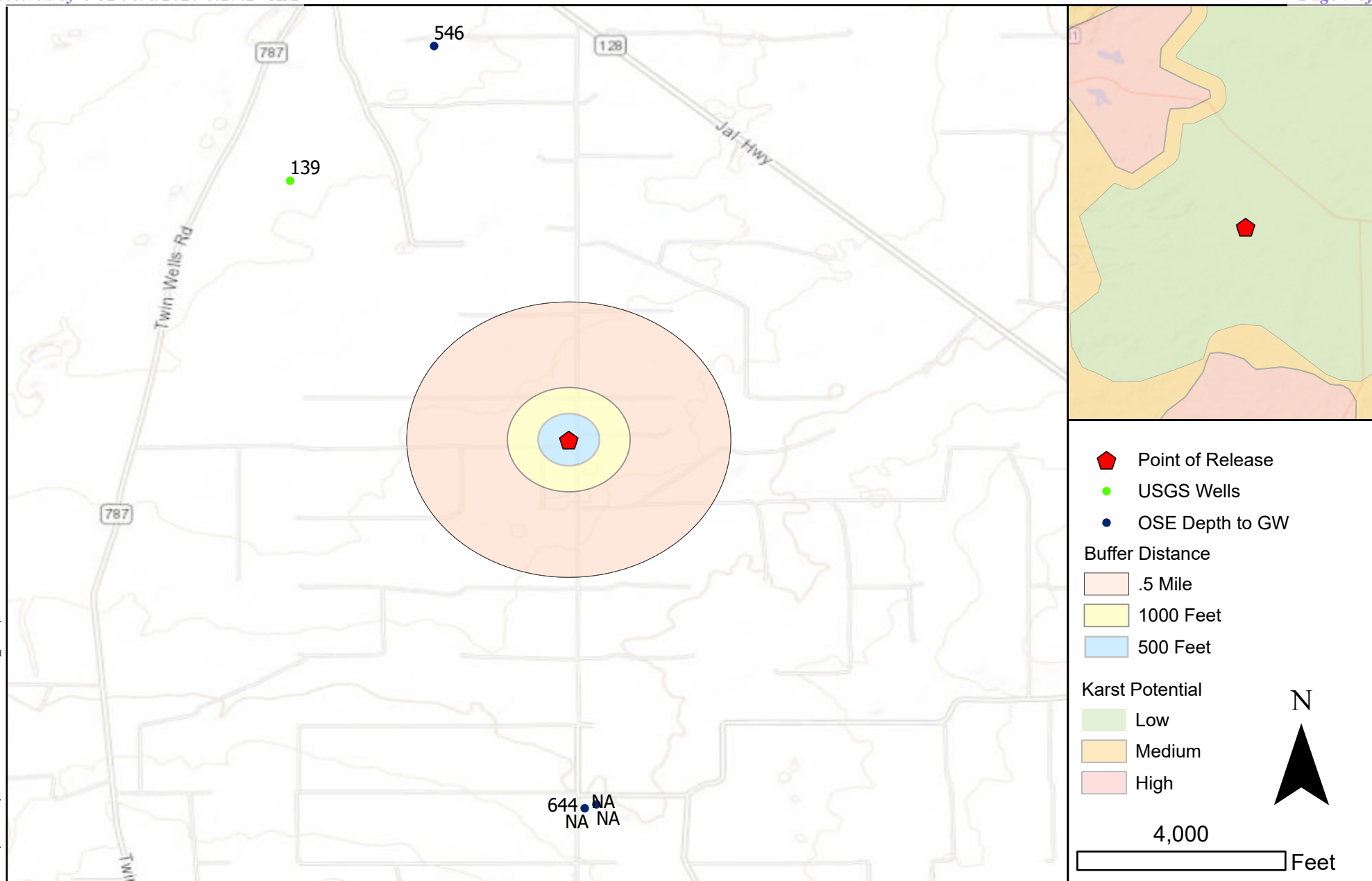
Appendix B: NMOSE, USGS Wells Report

Appendix C: Sampling Protocol and Field Notes

Appendix D: Laboratory Analytical Reports

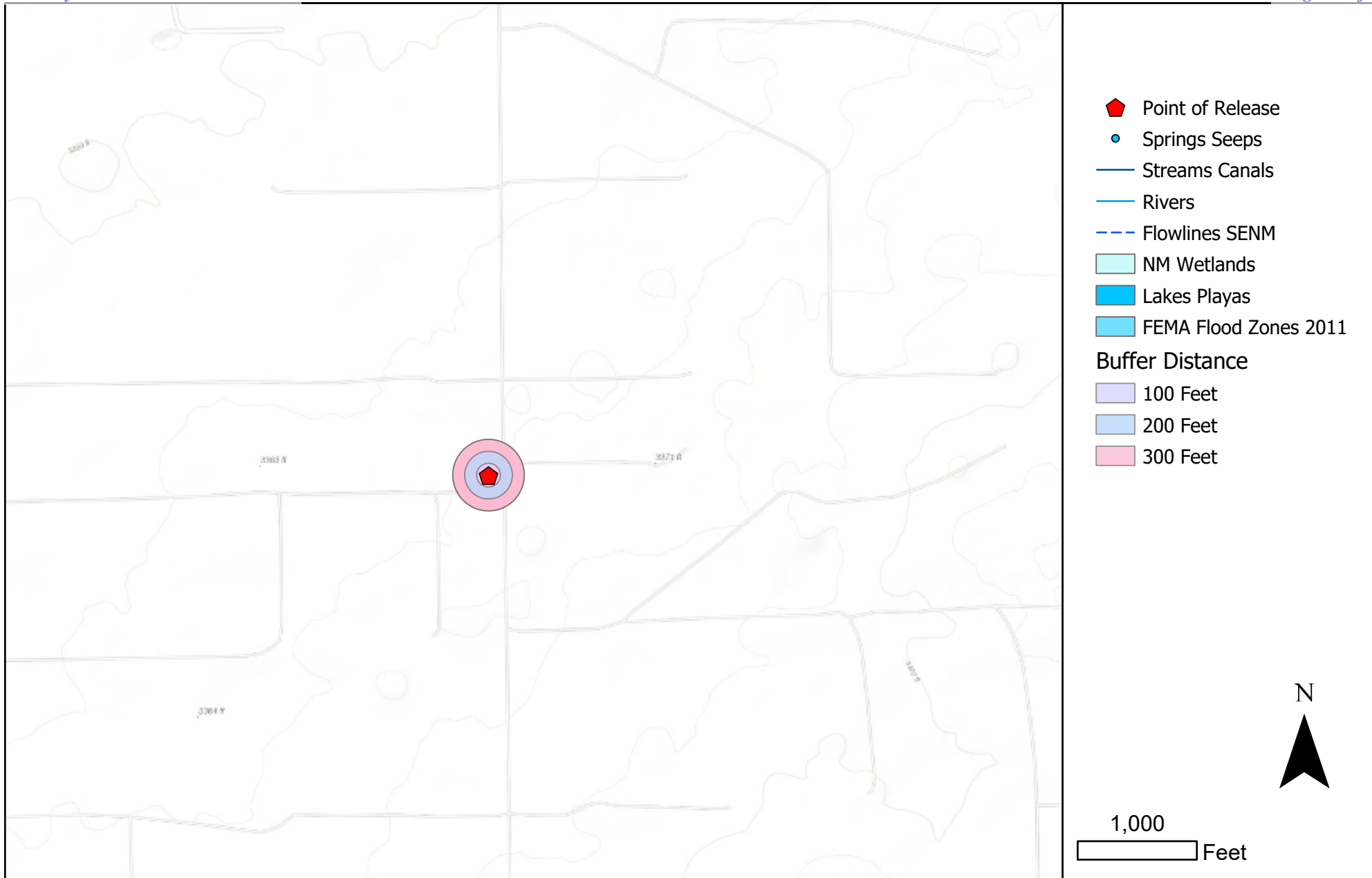
# FIGURES





*Regional Vicinity & Wellhead Protection Map*  
*Sand Dunes North-Enterprise Field Services LLC*  
*UL: A S: 32 T: 23S R: 31E Eddy County, New Mexico*

Figure 1



Surface Water Protection Map  
 Sand Dunes North- Enterprise Field Services LLC  
 UL: A S: 32 T: 23S R: 31E Eddy County, New Mexico

Figure 2

Revisions

By:	Date:	Descr:
By: _____	Date: _____	Descr: _____
By: _____	Date: _____	Descr: _____

Copyright 2018-19 Souder, Miller & Associates - All Rights Reserved

Drawn  
 Date  
 Checked  
 Approved

Lynn A. Acosta  
 1/8/2020  
 \_\_\_\_\_  
 \_\_\_\_\_



201 South Halagueno Street  
 Carlsbad, New Mexico 88220  
 (575) 689-7040  
 Serving the Southwest & Rocky Mountains



## Legend

- Point\_of\_Release
- Sample\_Locations
- Pipelines
- Release\_Area

N



0 33.75 67.5 135 Feet

Site and Sample Location Map  
 Sand Dunes N - Enterprise Field Services LLC  
 UL: A S: 32 T: 23S R: 31E Eddy County, New Mexico

Figure 3

Revisions  
 By: \_\_\_\_\_ Date: \_\_\_\_\_ Descr: \_\_\_\_\_  
 By: \_\_\_\_\_ Date: \_\_\_\_\_ Descr: \_\_\_\_\_  
 Copyright 2018-19 Souder, Miller & Associates - All Rights Reserved

Drawn Lynn A. Acosta  
 Date 1/8/2020  
 Checked \_\_\_\_\_  
 Approved \_\_\_\_\_



201 South Halagueno Street  
 Carlsbad, New Mexico 88220  
 (575) 689-7040  
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# TABLES

Site Information (19.15.29.11.A(2, 3, and 4) NMAC)		Source/Notes
Depth to Groundwater (feet bgs)	~597.5	New Mexico Office of the State Engineer
Hortizontal Distance From All Water Sources Within 1/2 Mile (ft)	NA	USGS Topographic Map
Hortizontal Distance to Nearest Significant Watercourse (ft)	5,700	Intermittent Stream to the Southwest

Closure Criteria (19.15.29.12.B(4) and Table 1 NMAC)						
Depth to Groundwater		Closure Criteria (units in mg/kg)				
		Chloride *numerical limit or background, whichever is greater	TPH	GRO + DRO	BTEX	Benzene
< 50' BGS		600	100		50	10
51' to 100'		10000	2500	1000	50	10
>100'	X	20000	2500	1000	50	10
Surface Water	yes or no	if yes, then				
<300' from continuously flowing watercourse or other significant watercourse?	No	600	100		50	10
<200' from lakebed, sinkhole or playa lake?	No					
Water Well or Water Source						
<500 feet from spring or a private, domestic fresh water well used by less than 5 households for domestic or stock watering purposes?	No					
<1000' from fresh water well or spring?	No					
Human and Other Areas						
<300' from an occupied permanent residence, school, hospital, institution or church?	No					
within incorporated municipal boundaries or within a defined municipal fresh water well field?	No					
<100' from wetland?	No					
within area overlying a subsurface mine	No					
within an unstable area?	No					
within a 100-year floodplain?	No					

Table 3:  
Summary of Sample Results

Sample ID	Sample Date	Depth (feet bgs)	Proposed Action/ Action Taken	BTEX mg/Kg	Benzene mg/Kg	GRO mg/Kg	DRO mg/Kg	MRO mg/Kg	Total TPH mg/Kg	Cl- mg/Kg
NMOCD Closure Criteria >100				50	10	1000			2500	2500
Initial Samples										
L1	12/18/2019	Surface	insitu	<0.217	<0.024	<4.8	<9.7	<49	<63.5	83
L2	12/18/2019	Surface	in-situ	<0.215	<0.024	<4.8	<9.5	<47	<61.3	180
L3	12/18/2019	Surface	in-situ	<0.215	<0.024	<4.8	<9.4	<47	<61.2	78
L4	12/18/2019	Surface	in-situ	<0.216	<0.024	<4.8	16	<46	16	66

"--" = Not Analyzed

# APPENDIX A FORM C141

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	
District RP	
Facility ID	
Application ID	

## Release Notification

### Responsible Party

Responsible Party	Enterprise Field Services LLC	OGRID	241602
Contact Name	Alena Miro	Contact Telephone	575-628-6802
Contact email	ammiro@eprod.com	Incident #	(assigned by OCD)
Contact mailing address	PO Box 4324, Houston, TX 77210		

### Location of Release Source

Latitude N32.266456 Longitude W -103.791462  
(NAD 83 in decimal degrees to 5 decimal places)

Site Name	Sand Dunes North	Site Type	Compressor Station Site
Date Release Discovered	12/11/2019	API# (if applicable)	N/A

Unit Letter	Section	Township	Range	County
A	32	23S	31E	Eddy

Surface Owner: ☐ State ☒ Federal ☐ Tribal ☐ Private : N/A

### 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) 10 bbls	Volume/Weight Recovered (provide units) 0 bbls

#### Cause of Release

Water from the hydrotest of a clean, new pipeline was released. The hydrotest water was originally obtained from a municipal source and was not in contact with any piping or equipment that has been in natural gas or condensate service. The hydrotest water was used to pressure test new, clean piping only. The hydrotest water was intended to be stored temporarily in frac tanks prior to shipment to a disposal well and was not intended to be discharged.



Incident ID	
District RP	
Facility ID	
Application ID	

Was this a major release as defined by 19.15.29.7(A) NMAC?  <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	If YES, for what reason(s) does the responsible party consider this a major release?
If YES, was immediate notice given to the OCD? By whom? To whom? When and by what means (phone, email, etc)?	

### 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:  N/A	
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: <u>Jon E. Fields</u>	Title: <u>Director, Field Environmental</u>
Signature: _____	Date: _____
email: <u>jefields@eprod.com</u>	Telephone: <u>713-381-6684</u>
<b><u>OCD Only</u></b>  Received by: _____ Date: _____	

# APPENDIX B

## NMOSE WELLS REPORT



## New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the POD suffix indicates the POD has been replaced & no longer serves a water right file.)

(R=POD has been replaced,  
O=orphaned,

C=the file is closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest)

(NAD83 UTM in meters)

(In feet)

POD Number	Code	POD Sub-basin	County	Q	Q	Q	Q	Sec	Tws	Rng	X	Y	Distance	Depth	Well	Depth	Water	Column
<a href="#">C 02661</a>		CUB	ED	3	3	1	04	24S	31E		613969	3568485*	▪	2131		708		
<a href="#">C 02785</a>		CUB	ED	3	3	1	04	24S	31E		613969	3568485*	▪	2131		692		
<a href="#">C 02783</a>		CUB	ED	3	3	1	04	24S	31E		613911	3568461	▪	2151		708		
<a href="#">C 02783 POD2</a>		CUB	ED	3	3	1	04	24S	31E		613911	3568461	▪	2151		672		
<a href="#">C 02784</a>		C	ED	4	2	4	04	24S	31E		613911	3568461	▪	2151		584		
<a href="#">C 02954 EXPL</a>		CUB	ED	3	1	4	20	23S	31E		613114	3572906*	▪	2401		905		

Average Depth to Water: -

Minimum Depth: -

Maximum Depth: -

**Record Count:**6

**UTM NAD83 Radius Search (in meters):**

**Easting (X):** 613825.17

**Northing (Y):** 3570611.88

**Radius:** 3000

\*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

1/7/20 8:32 PM

WATER COLUMN/ AVERAGE DEPTH TO  
WATER



## WELL RECORD & LOG

**OFFICE OF THE STATE ENGINEER**

**www.ose.state.nm.us**

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICO

2010 OCT 18 AM 10:58

H9BR

1. GENERAL AND WELL LOCATION	POD NUMBER (WELL NUMBER) <b>C-02783-POD2</b>				OSE FILE NUMBER(S) <b>C-2783</b>					
	WELL OWNER NAME(S) <b>U.S. Dept of ENERGY</b>				PHONE (OPTIONAL) <b>575-234-8218</b>					
	WELL OWNER MAILING ADDRESS <b>PO BOX 3090</b>				CITY <b>CARLSBAD</b>		STATE ZIP <b>NM 88221</b>			
	WELL LOCATION (FROM GPS)	DEGREES LATITUDE <b>32</b>	MINUTES <b>14</b>	SECONDS <b>49.4 N</b>	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84					
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS <b>mile mkr 14 HWY 128 SOUTH 2.9 miles</b>										
2. OPTIONAL	(2.5 ACRE) <b>SW 1/4</b>		(10 ACRE) <b>SW 1/4</b>		(40 ACRE) <b>SW 1/4</b>		(160 ACRE) <b>NW 1/4</b>			
	SUBDIVISION NAME				SECTION <b>4</b>		TOWNSHIP <b>24</b>			
	HYDROGRAPHIC SURVEY				LOT NUMBER		BLOCK NUMBER			
					MAP NUMBER		TRACT NUMBER			
3. DRILLING INFORMATION	LICENSE NUMBER <b>314331</b>		NAME OF LICENSED DRILLER <b>W. BRUNSON STEWART BROS DRILL CO</b>				NAME OF WELL DRILLING COMPANY <b>STEWART BROS DRILL CO</b>			
	DRILLING STARTED <b>9-9-10</b>		DRILLING ENDED <b>9-29-10</b>		DEPTH OF COMPLETED WELL (FT) <b>672</b>		BORE HOLE DEPTH (FT) <b>686</b>			
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)						DEPTH WATER FIRST ENCOUNTERED (FT)			
	DRILLING FLUID: <input checked="" type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY:						STATIC WATER LEVEL IN COMPLETED WELL (FT)			
	DRILLING METHOD: <input checked="" type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input type="checkbox"/> OTHER - SPECIFY:									
	DEPTH (FT)		BORE HOLE DIA. (IN)		CASING MATERIAL		CONNECTION TYPE (CASING)			
	FROM	TO								
	<b>672</b>	<b>662</b>	<b>11 5/8</b>		<b>FIBER GLASS</b>		<b>THREADED</b>			
	<b>662</b>	<b>686</b>	<b>11 5/8</b>		<b>FIBER GLASS</b>		<b>THREADED</b>			
4. WATER BEARING STRATA	DEPTH (FT)		THICKNESS (FT)		FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)				YIELD (GPM)	
	FROM	TO								
	<b>644</b>	<b>672</b>	<b>28</b>		<b>Calcifer</b>				<b>UNK</b>	
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA								TOTAL ESTIMATED WELL YIELD (GPM)		

FOR OSE INTERNAL USE

WELL RECORD &amp; LOG (Version 6/9/08)

FOR USE INTERNAL USE		WILL RECORD & LOG (VERSION 07/2003)	
FILE NUMBER	C-2783-	POD NUMBER	POD2
LOCATION		TRN NUMBER	PAGE 1 OF 2
74314.1333124			

## Locator Tool Report

### General Information:

Application ID:29                      Date: 01-27-2011                      Time: 15:42:19

WR File Number: C-02783-POD2                      *H-9BR*  
Purpose: POINT OF DIVERSION

Applicant First Name: DOE WIPP  
Applicant Last Name: REPLACEMENT MONITOR WELL C-2783-POD2

GW Basin: CARLSBAD  
County: EDDY

Critical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT

### PLSS Description (New Mexico Principal Meridian):

SW 1/4 of SW 1/4 of SW 1/4 of NW 1/4 of Section 04, Township 24S, Range 31E.

### Coordinate System Details:

#### Geographic Coordinates:

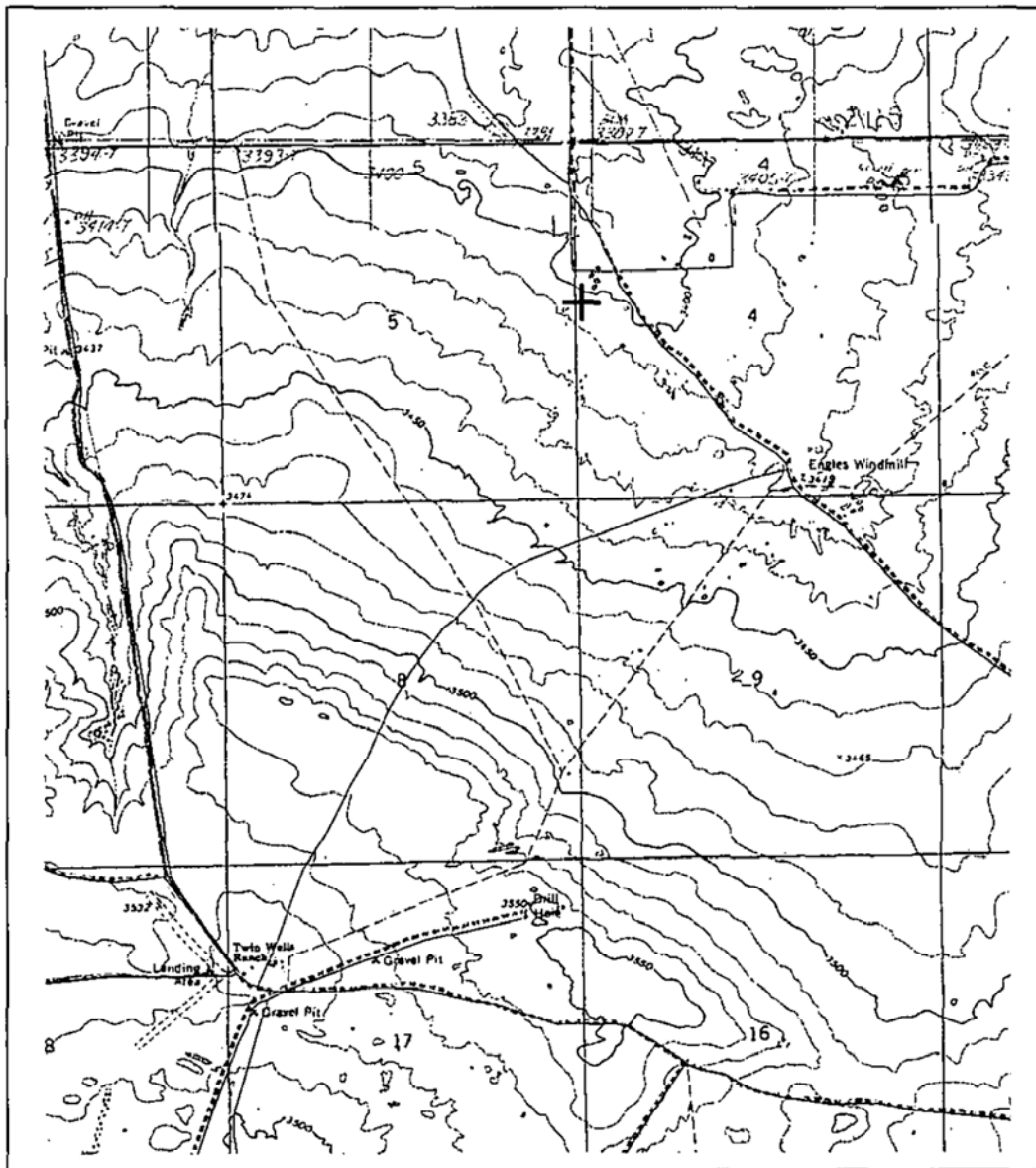
Latitude:            32 Degrees   14 Minutes   49.4 Seconds   N  
Longitude:           103 Degrees   47 Minutes   26.9 Seconds   W

#### Universal Transverse Mercator Zone: 13N

NAD 1983(92) (Meters)	N: 3,568,462	E: 613,911
NAD 1983(92) (Survey Feet)	N: 11,707,529	E: 2,014,140
NAD 1927 (Meters)	N: 3,568,260	E: 613,960
NAD 1927 (Survey Feet)	N: 11,706,867	E: 2,014,299

#### State Plane Coordinate System Zone: New Mexico East

NAD 1983(92) (Meters)	N: 138,390	E: 216,123
NAD 1983(92) (Survey Feet)	N: 454,036	E: 709,063
NAD 1927 (Meters)	N: 138,372	E: 203,570
NAD 1927 (Survey Feet)	N: 453,977	E: 667,879

**NEW MEXICO OFFICE OF STATE ENGINEER****Locator Tool Report**

WR File Number: C-02783-POD2 Scale: 1:33,191

Northing/Easting: UTM83(92) (Meter): N: 3,568,462 E: 613,911

Northing/Easting: SPCS83(92) (Feet): N: 454,036 E: 709,063

GW Basin: Carlsbad



H-9-C



## WELL RECORD &amp; LOG

OFFICE OF THE STATE ENGINEER

www.ose.state.nm.us

STATE ENGINEER OFFICE  
ROSWELL, NEW MEXICOWell Casing  
Reconfiguration

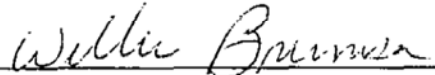
2010 OCT 18 AM 10 59

1. GENERAL AND WELL LOCATION	POD NUMBER (WELL NUMBER) <b>C-2784-POD1</b>				OSE FILE NUMBER(S) <b>C-2784</b>				
	WELL OWNER NAME(S) <b>U.S. DEPT OF ENERGY</b>				PHONE (OPTIONAL) <b>575-234-8218</b>				
	WELL OWNER MAILING ADDRESS <b>PO Box 3090</b>				CITY <b>CHARLSBAD</b>		STATE <b>NM</b>		
					ZIP <b>88221</b>				
	WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	* ACCURACY REQUIRED: ONE TENTH OF A SECOND * DATUM REQUIRED: WGS 84				
		LATITUDE	<b>32</b>	<b>14</b>					<b>49.4 N</b>
		LONGITUDE	<b>103</b>	<b>47</b>					<b>26.9 W</b>
DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS <b>mile marker 14 Highway 128 SOUTH 2.4 miles</b>									
2. OPTIONAL	(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE		
	<b>SW 1/4</b>	<b>SW 1/4</b>	<b>SW 1/4</b>	<b>NW 1/4</b>	<b>4</b>	<b>24</b>	<input type="checkbox"/> NORTH <input checked="" type="checkbox"/> SOUTH	<b>31</b> <input checked="" type="checkbox"/> EAST <input type="checkbox"/> WEST	
	SUBDIVISION NAME				LOT NUMBER	BLOCK NUMBER	UNIT/TRACT		
	HYDROGRAPHIC SURVEY				MAP NUMBER		TRACT NUMBER		
3. DRILLING INFORMATION	LICENSE NUMBER <b>244331</b>		NAME OF LICENSED DRILLER <b>WILLIAM BRUNSON</b>			NAME OF WELL DRILLING COMPANY <b>STEWART BROS DRILL CO</b>			
	DRILLING STARTED <b>10-6-10</b>		DRILLING ENDED <b>10-8-10</b>		DEPTH OF COMPLETED WELL (FT) <b>584</b>	BORE HOLE DEPTH (FT) <b>782</b>	DEPTH WATER FIRST ENCOUNTERED (FT) <b>UNK</b>		
	COMPLETED WELL IS: <input type="checkbox"/> ARTESIAN <input type="checkbox"/> DRY HOLE <input checked="" type="checkbox"/> SHALLOW (UNCONFINED)						STATIC WATER LEVEL IN COMPLETED WELL (FT) <b>UNK</b>		
	DRILLING FLUID: <input type="checkbox"/> AIR <input type="checkbox"/> MUD <input type="checkbox"/> ADDITIVES - SPECIFY: <b>U/A</b>								
	DRILLING METHOD: <input type="checkbox"/> ROTARY <input type="checkbox"/> HAMMER <input type="checkbox"/> CABLE TOOL <input checked="" type="checkbox"/> OTHER - SPECIFY: <b>RE CONFIGURATION</b>								
	DEPTH (FT)		BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)	
	FROM	TO							
4. WATER BEARING STRATA	DEPTH (FT)		THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)				YIELD (GPM)	
	FROM	TO							
METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA						TOTAL ESTIMATED WELL YIELD (GPM)			

FOR OSE INTERNAL USE

WELL RECORD &amp; LOG (Version 6/9/08)

FILE NUMBER <b>C-2784</b>	POD NUMBER <b>POD 1</b>	TRN NUMBER
LOCATION <b>24-31.4-1333124</b>		PAGE 1 OF 2

<b>5. SEAL AND PUMP</b>	TYPE OF PUMP: <input type="checkbox"/> SUBMERSIBLE <input type="checkbox"/> JET <input type="checkbox"/> NO PUMP - WELL NOT EQUIPPED						
	<input type="checkbox"/> TURBINE <input type="checkbox"/> CYLINDER <input type="checkbox"/> OTHER - SPECIFY:						
	ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT)		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
		FROM	TO				
<b>6. GEOLOGIC LOG OF WELL</b>	DEPTH (FT)		THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?		
	FROM	TO			<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
					<input type="checkbox"/> YES <input type="checkbox"/> NO	<input type="checkbox"/> YES <input type="checkbox"/> NO	
	ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL						
<b>7. TEST &amp; ADDITIONAL INFO</b>	WELL TEST		METHOD: <input type="checkbox"/> BAILER <input type="checkbox"/> PUMP <input type="checkbox"/> AIR LIFT <input type="checkbox"/> OTHER - SPECIFY:				
			TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.				
	ADDITIONAL STATEMENTS OR EXPLANATIONS:						
<b>8. SIGNATURE</b>	THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:						
	 SIGNATURE OF DRILLER			10-10-10 DATE			

 STATE ENGINEER OFFICE  
 ROSWELL, NEW MEXICO  
 2018 OCT 18 AM 10:58

FOR USE INTERNAL USE

WELL RECORD &amp; LOG (Version 6/9/08)

FILE NUMBER <b>C-2784</b>	POD NUMBER <b>Pod 1</b>	TRN NUMBER
LOCATION <b>24.31.4.1333124</b>	PAGE 2 OF 2	



**Locator Tool Report****General Information:**

Application ID:29                      Date: 01-27-2011                      Time: 15:42:19

WR File Number: C-02784-POD1  
Purpose: POINT OF DIVERSION

H-9-C

Applicant First Name: DOE WIPP  
Applicant Last Name: RECONFIGURED MONITOR WELL C-2784-POD1GW Basin: CARLSBAD  
County: EDDYCritical Management Area Name(s): NONE  
Special Condition Area Name(s): NONE  
Land Grant Name: NON GRANT**PLSS Description (New Mexico Principal Meridian):**

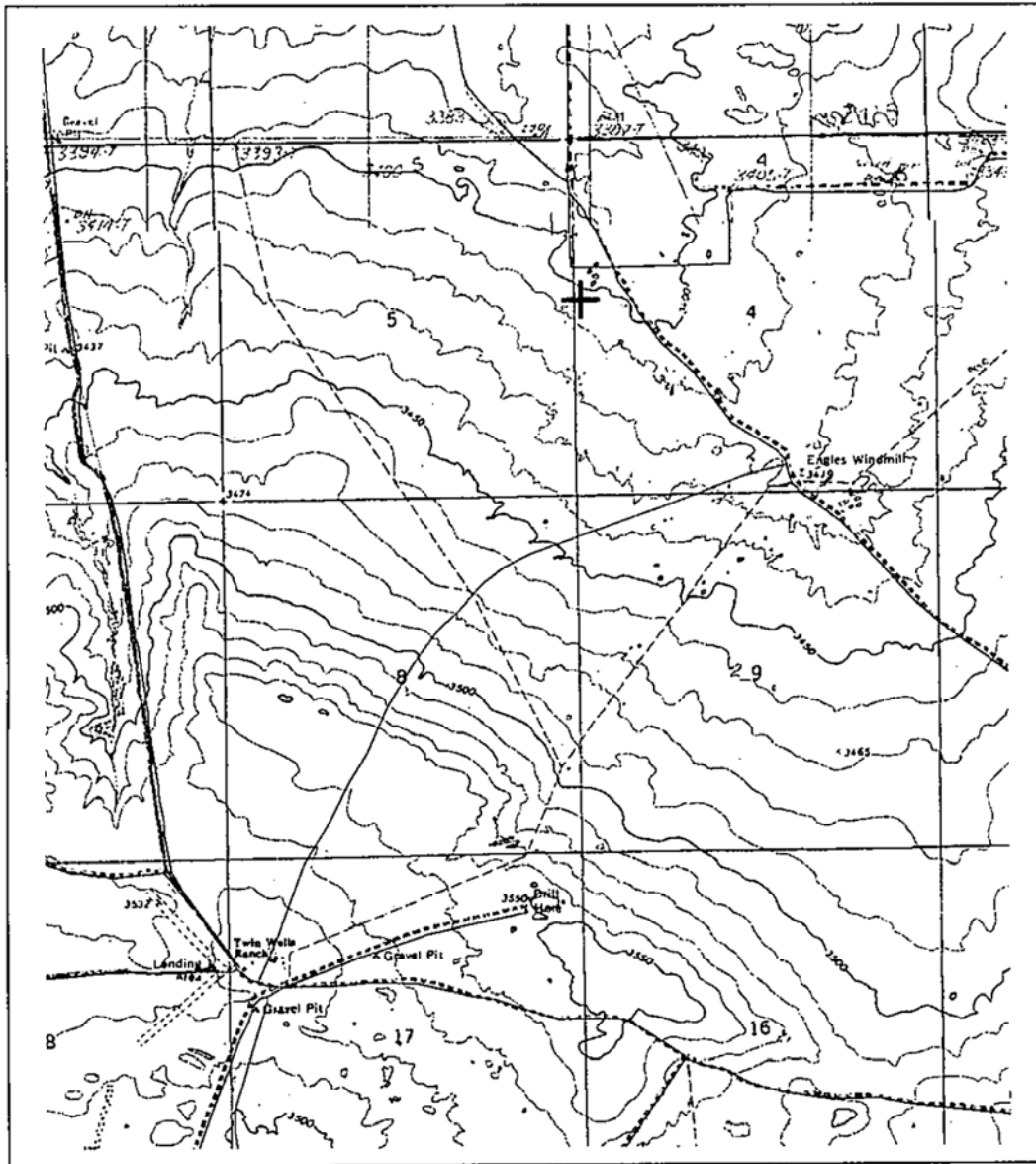
SW 1/4 of SW 1/4 of SW 1/4 of NW 1/4 of Section 04, Township 24S, Range 31E.

**Coordinate System Details:****Geographic Coordinates:**Latitude: 32 Degrees 14 Minutes 49.4 Seconds N  
Longitude: 103 Degrees 47 Minutes 26.9 Seconds W**Universal Transverse Mercator Zone: 13N**

NAD 1983(92) (Meters)	N: 3,568,462	E: 613,911
NAD 1983(92) (Survey Feet)	N: 11,707,529	E: 2,014,140
NAD 1927 (Meters)	N: 3,568,260	E: 613,960
NAD 1927 (Survey Feet)	N: 11,706,867	E: 2,014,299

**State Plane Coordinate System Zone: New Mexico East**

NAD 1983(92) (Meters)	N: 138,390	E: 216,123
NAD 1983(92) (Survey Feet)	N: 454,036	E: 709,063
NAD 1927 (Meters)	N: 138,372	E: 203,570
NAD 1927 (Survey Feet)	N: 453,977	E: 667,879

**NEW MEXICO OFFICE OF STATE ENGINEER****Locator Tool Report**

WR File Number: C-02784-POD1 Scale: 1:33,191

Northing/Easting: UTM83(92) (Meter): N: 3,568,462 E: 613,911

Northing/Easting: SPCS83(92) (Feet): N: 454,036 E: 709,063

GW Basin: Carlsbad

# New Mexico Office of the State Engineer

## Point of Diversion Summary

(quarters are 1=NW 2=NE 3=SW 4=SE)  
(quarters are smallest to largest)  
(NAD83 UTM in meters)

Well Tag	POD Number	Q6	Q1	Q4	Se	Tws	Rng	X	Y
C	02954 EXPL	4	6	c					
		3	1	4	20	23S	31E	613114	3572906*

**Driller License:** 1184 **Driller Company:** WEST TEXAS WATER WELL SERVICE

**Driller Name:** BROCKMAN, BERNARD J.

**Drill Start Date:** 06/25/2003 **Drill Finish Date:** 07/29/2003

**Plug Date:**

**Log File Date:** 08/07/2003

**PCW Rcv Date:**

**Source:** Shallow

**Pump Type:** SUBMER

**Pipe Discharge Size:** 1.25

**Estimated Yield:** 23 GPM

**Casing Size:** 13.38

**Depth Well:** 905 feet

**Depth Water:**

Water Bearing Stratifications:	Top	Bottom	Description
	0	10	Other/Unknown
	10	18	Other/Unknown
	18	44	Sandstone/Gravel/Conglomerate
	44	180	Other/Unknown
	180	372	Other/Unknown
	372	432	Other/Unknown
	432	460	Other/Unknown
	460	548	Other/Unknown
	548	589	Other/Unknown
	589	601	Other/Unknown
	601	610	Other/Unknown
	610	692	Other/Unknown
	692	822	Other/Unknown
	822	825	Other/Unknown
	825	863	Other/Unknown
	863	865	Other/Unknown
	865	879	Other/Unknown
	879	894	Other/Unknown
	894	905	Other/Unknown

SUBJECT DTGWL Determination PROJECT Sand dunes PAGE 2/1  
 CLIENT Enterprise DATE 1/8/20 BY Acosta L.

CHECKED

BY

Location Elevation: 3373

	Pod #	Elev	DTGW	Gw Elev	Approx Gw Elev	DTGW Based on Point
same location	C 02661	3405	NA	NA		
	C 02785	3405	NA	NA		
	C 02783	3406	NA	NA		
same location	C 02783 Pod 2	3406	644	2762		611
	C 027834	3406	NA	NA		
	C 02954 Expl	3335	~546	2789		~584

$$611 + 584 = 1195 / 2 = 597.5 \text{ Ft avg DTGW}$$

# APPENDIX C

## SAMPLING PROTOCOL & FIELD NOTES



## Sampling Protocol

The soil samples were collected in laboratory supplied containers in accordance with this sampling protocol, immediately placed on ice and sent under standard chain-of-custody protocols to Hall Environmental Analysis Laboratory (HEAL) in Albuquerque, New Mexico for analysis. A total of nine (9) samples were collected for laboratory analysis for total chloride using EPA Method 300.0; benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8021B; and motor, diesel and gasoline range organics (MRO, DRO, and GRO) by EPA Method 8015D.

## Sampling Analysis Field Quality Assurance Procedures

A unique sample numbering was used to identify each sample collected and designated for on-site and off-site laboratory analysis. The purpose of this numbering scheme was to provide a tracking system for the retrieval of analytical and field data on each sample. Sample identification numbers were recorded on sample labels or tags, field notes, chain-of-custody records (COC) and all other applicable documentation used during the project. Sample labels were affixed to all sample containers during sampling activities. Information was recorded on each sample container label at the time of sample collection. The information recorded on the labels were as follows: sample identification number; sample type (discrete or composite); site name and area/location number; analysis to be performed; type of chemical preservative present in container; date and time of sample collection; and sample collector's name and initials. All samples were packed in ice in an approved rigid body container, custody sealed signed and shipped to the appropriate laboratory via insured carrier service.

COC procedures implemented for the project provided documentation of the handling of each sample from the time of collection until completion of laboratory analysis. A COC form serves as a legal record of possession of the sample. A sample is considered to be under custody if one or more of the following criteria are met: the sample is in the sampler's possession; the sample is in the sampler's view after being in possession; the sample was in the sampler's possession and then was placed into a locked area to prevent tampering; and/or the sample is in a designated secure area. Custody was documented throughout the project field sampling activities by a chain-of custody form initiated each day during which samples are collected. Container custody seals placed on either individual samples or on the rigid body container were used to ensure that no sample tampering occurs between the time the samples are placed into the containers and the time the containers are opened for analysis at the laboratory. Container custody seals were signed and dated by the individual responsible for completing the COC form contained within the container.



## Field Screening

Location Name:

Sand dunes N

Date:

12/18/19

Sample Name:

Soil Type:

Depth  
(BGS)Collection  
Time:

EC (ppm)

Temp (°C)

PID Reading

PF

L1

Sand

Surf

1135

0.15

7.6

0.3

—

L2

" " " "

1142

0.31

7.7

0.1

—

L3

" " " "

1145

0.28

7.8

0.0

—

L4

" " " "

1204

0.13

9.9

0.0

—

# APPENDIX D

## LABORATORY ANALYTICAL REPORTS





Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: [www.hallenvironmental.com](http://www.hallenvironmental.com)

December 27, 2019

Ashley Maxwell  
Souder, Miller & Associates  
201 S Halagueno  
Carlsbad, NM 88221  
TEL:  
FAX:

RE: Sand Dunes N

OrderNo.: 1912995

Dear Ashley Maxwell:

Hall Environmental Analysis Laboratory received 4 sample(s) on 12/19/2019 for the analyses presented in the following report.

These were analyzed according to EPA procedures or equivalent. To access our accredited tests please go to [www.hallenvironmental.com](http://www.hallenvironmental.com) or the state specific web sites. In order to properly interpret your results, it is imperative that you review this report in its entirety. See the sample checklist and/or the Chain of Custody for information regarding the sample receipt temperature and preservation. Data qualifiers or a narrative will be provided if the sample analysis or analytical quality control parameters require a flag. When necessary, data qualifiers are provided on both the sample analysis report and the QC summary report, both sections should be reviewed. All samples are reported, as received, unless otherwise indicated. Lab measurement of analytes considered field parameters that require analysis within 15 minutes of sampling such as pH and residual chlorine are qualified as being analyzed outside of the recommended holding time.

Please don't hesitate to contact HEAL for any additional information or clarifications.

ADHS Cert #AZ0682 -- NMED-DWB Cert #NM9425 -- NMED-Micro Cert #NM0901

Sincerely,

A handwritten signature in black ink, appearing to read "Andy Freeman", is written over a light blue horizontal line.

Andy Freeman  
Laboratory Manager  
4901 Hawkins NE  
Albuquerque, NM 87109

## Analytical Report

Lab Order 1912995

Date Reported: 12/27/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: L1- Surface

Project: Sand Dunes N

Collection Date: 12/18/2019 11:35:00 AM

Lab ID: 1912995-001

Matrix: SOIL

Received Date: 12/19/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	83	60		mg/Kg	20	12/22/2019 9:49:20 PM	49470
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.7		mg/Kg	1	12/23/2019 9:17:04 PM	49458
Motor Oil Range Organics (MRO)	ND	49		mg/Kg	1	12/23/2019 9:17:04 PM	49458
Surr: DNOP	90.9	70-130		%Rec	1	12/23/2019 9:17:04 PM	49458
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/20/2019 7:20:06 PM	49445
Surr: BFB	76.3	66.6-105		%Rec	1	12/20/2019 7:20:06 PM	49445
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/20/2019 7:20:06 PM	49445
Toluene	ND	0.048		mg/Kg	1	12/20/2019 7:20:06 PM	49445
Ethylbenzene	ND	0.048		mg/Kg	1	12/20/2019 7:20:06 PM	49445
Xylenes, Total	ND	0.097		mg/Kg	1	12/20/2019 7:20:06 PM	49445
Surr: 4-Bromofluorobenzene	95.5	80-120		%Rec	1	12/20/2019 7:20:06 PM	49445

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1912995

Date Reported: 12/27/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: L2- Surface

Project: Sand Dunes N

Collection Date: 12/18/2019 11:42:00 AM

Lab ID: 1912995-002

Matrix: SOIL

Received Date: 12/19/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	180	60		mg/Kg	20	12/22/2019 10:01:44 PM	49470
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.5		mg/Kg	1	12/23/2019 9:41:03 PM	49458
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/23/2019 9:41:03 PM	49458
Surr: DNOP	87.6	70-130		%Rec	1	12/23/2019 9:41:03 PM	49458
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/20/2019 7:43:34 PM	49445
Surr: BFB	81.1	66.6-105		%Rec	1	12/20/2019 7:43:34 PM	49445
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/20/2019 7:43:34 PM	49445
Toluene	ND	0.048		mg/Kg	1	12/20/2019 7:43:34 PM	49445
Ethylbenzene	ND	0.048		mg/Kg	1	12/20/2019 7:43:34 PM	49445
Xylenes, Total	ND	0.095		mg/Kg	1	12/20/2019 7:43:34 PM	49445
Surr: 4-Bromofluorobenzene	103	80-120		%Rec	1	12/20/2019 7:43:34 PM	49445

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1912995

Date Reported: 12/27/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: L3- Surface

Project: Sand Dunes N

Collection Date: 12/18/2019 11:45:00 AM

Lab ID: 1912995-003

Matrix: SOIL

Received Date: 12/19/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	78	60		mg/Kg	20	12/23/2019 8:07:11 PM	49494
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	ND	9.4		mg/Kg	1	12/23/2019 10:04:53 PM	49458
Motor Oil Range Organics (MRO)	ND	47		mg/Kg	1	12/23/2019 10:04:53 PM	49458
Surr: DNOP	91.5	70-130		%Rec	1	12/23/2019 10:04:53 PM	49458
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/20/2019 9:17:01 PM	49445
Surr: BFB	77.0	66.6-105		%Rec	1	12/20/2019 9:17:01 PM	49445
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/20/2019 9:17:01 PM	49445
Toluene	ND	0.048		mg/Kg	1	12/20/2019 9:17:01 PM	49445
Ethylbenzene	ND	0.048		mg/Kg	1	12/20/2019 9:17:01 PM	49445
Xylenes, Total	ND	0.095		mg/Kg	1	12/20/2019 9:17:01 PM	49445
Surr: 4-Bromofluorobenzene	98.2	80-120		%Rec	1	12/20/2019 9:17:01 PM	49445

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

## Analytical Report

Lab Order 1912995

Date Reported: 12/27/2019

## Hall Environmental Analysis Laboratory, Inc.

CLIENT: Souder, Miller &amp; Associates

Client Sample ID: L4- Surface

Project: Sand Dunes N

Collection Date: 12/18/2019 12:04:00 PM

Lab ID: 1912995-004

Matrix: SOIL

Received Date: 12/19/2019 9:00:00 AM

Analyses	Result	RL	Qual	Units	DF	Date Analyzed	Batch
<b>EPA METHOD 300.0: ANIONS</b>							Analyst: <b>MRA</b>
Chloride	66	60		mg/Kg	20	12/23/2019 8:44:13 PM	49494
<b>EPA METHOD 8015M/D: DIESEL RANGE ORGANICS</b>							Analyst: <b>BRM</b>
Diesel Range Organics (DRO)	16	9.2		mg/Kg	1	12/23/2019 10:28:53 PM	49458
Motor Oil Range Organics (MRO)	ND	46		mg/Kg	1	12/23/2019 10:28:53 PM	49458
Surr: DNOP	94.1	70-130		%Rec	1	12/23/2019 10:28:53 PM	49458
<b>EPA METHOD 8015D: GASOLINE RANGE</b>							Analyst: <b>NSB</b>
Gasoline Range Organics (GRO)	ND	4.8		mg/Kg	1	12/20/2019 9:40:20 PM	49445
Surr: BFB	77.4	66.6-105		%Rec	1	12/20/2019 9:40:20 PM	49445
<b>EPA METHOD 8021B: VOLATILES</b>							Analyst: <b>NSB</b>
Benzene	ND	0.024		mg/Kg	1	12/20/2019 9:40:20 PM	49445
Toluene	ND	0.048		mg/Kg	1	12/20/2019 9:40:20 PM	49445
Ethylbenzene	ND	0.048		mg/Kg	1	12/20/2019 9:40:20 PM	49445
Xylenes, Total	ND	0.096		mg/Kg	1	12/20/2019 9:40:20 PM	49445
Surr: 4-Bromofluorobenzene	98.0	80-120		%Rec	1	12/20/2019 9:40:20 PM	49445

Refer to the QC Summary report and sample login checklist for flagged QC data and preservation information.

<b>Qualifiers:</b>	*	Value exceeds Maximum Contaminant Level.	B	Analyte detected in the associated Method Blank
	D	Sample Diluted Due to Matrix	E	Value above quantitation range
	H	Holding times for preparation or analysis exceeded	J	Analyte detected below quantitation limits
	ND	Not Detected at the Reporting Limit	P	Sample pH Not In Range
	PQL	Practical Quantitative Limit	RL	Reporting Limit
	S	% Recovery outside of range due to dilution or matrix		

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1912995

27-Dec-19

**Client:** Souder, Miller & Associates**Project:** Sand Dunes N

Sample ID: <b>MB-49470</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49470</b>	RunNo: <b>65348</b>								
Prep Date: <b>12/22/2019</b>	Analysis Date: <b>12/22/2019</b>	SeqNo: <b>2244792</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-49470</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49470</b>	RunNo: <b>65348</b>								
Prep Date: <b>12/22/2019</b>	Analysis Date: <b>12/22/2019</b>	SeqNo: <b>2244793</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	94.1	90	110			

Sample ID: <b>MB-49494</b>	SampType: <b>mblk</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49494</b>	RunNo: <b>65358</b>								
Prep Date: <b>12/23/2019</b>	Analysis Date: <b>12/23/2019</b>	SeqNo: <b>2246271</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	ND	1.5								

Sample ID: <b>LCS-49494</b>	SampType: <b>lcs</b>	TestCode: <b>EPA Method 300.0: Anions</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49494</b>	RunNo: <b>65358</b>								
Prep Date: <b>12/23/2019</b>	Analysis Date: <b>12/23/2019</b>	SeqNo: <b>2246272</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Chloride	14	1.5	15.00	0	93.4	90	110			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1912995

27-Dec-19

**Client:** Souder, Miller & Associates**Project:** Sand Dunes N

Sample ID: <b>LCS-49458</b>	SampType: <b>LCS</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>LCSS</b>	Batch ID: <b>49458</b>		RunNo: <b>65352</b>							
Prep Date: <b>12/20/2019</b>	Analysis Date: <b>12/23/2019</b>		SeqNo: <b>2245266</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	51	10	50.00	0	102	63.9	124			
Surr: DNOP	4.4		5.000		87.1	70	130			

Sample ID: <b>MB-49458</b>	SampType: <b>MBLK</b>		TestCode: <b>EPA Method 8015M/D: Diesel Range Organics</b>							
Client ID: <b>PBS</b>	Batch ID: <b>49458</b>		RunNo: <b>65352</b>							
Prep Date: <b>12/20/2019</b>	Analysis Date: <b>12/23/2019</b>		SeqNo: <b>2245267</b>		Units: <b>mg/Kg</b>					
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Diesel Range Organics (DRO)	ND	10								
Motor Oil Range Organics (MRO)	ND	50								
Surr: DNOP	9.5		10.00		95.2	70	130			

**Qualifiers:**

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D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit

**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1912995

27-Dec-19

**Client:** Souder, Miller & Associates**Project:** Sand Dunes N

Sample ID: <b>mb-49445</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49445</b>	RunNo: <b>65335</b>								
Prep Date: <b>12/19/2019</b>	Analysis Date: <b>12/20/2019</b>	SeqNo: <b>2244437</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	ND	5.0								
Surr: BFB	850		1000		84.9	66.6	105			

Sample ID: <b>lcs-49445</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8015D: Gasoline Range</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49445</b>	RunNo: <b>65335</b>								
Prep Date: <b>12/19/2019</b>	Analysis Date: <b>12/20/2019</b>	SeqNo: <b>2244438</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Gasoline Range Organics (GRO)	22	5.0	25.00	0	89.7	80	120			
Surr: BFB	920		1000		91.5	66.6	105			

**Qualifiers:**

\* Value exceeds Maximum Contaminant Level.  
D Sample Diluted Due to Matrix  
H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
PQL Practical Quantitative Limit  
S % Recovery outside of range due to dilution or matrix

B Analyte detected in the associated Method Blank  
E Value above quantitation range  
J Analyte detected below quantitation limits  
P Sample pH Not In Range  
RL Reporting Limit



**QC SUMMARY REPORT****Hall Environmental Analysis Laboratory, Inc.**

WO#: 1912995

27-Dec-19

**Client:** Souder, Miller & Associates**Project:** Sand Dunes N

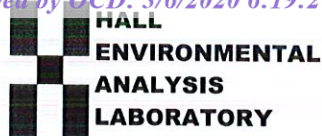
Sample ID: <b>mb-49445</b>	SampType: <b>MBLK</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>PBS</b>	Batch ID: <b>49445</b>	RunNo: <b>65335</b>								
Prep Date: <b>12/19/2019</b>	Analysis Date: <b>12/20/2019</b>	SeqNo: <b>2244465</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	ND	0.025								
Toluene	ND	0.050								
Ethylbenzene	ND	0.050								
Xylenes, Total	ND	0.10								
Surr: 4-Bromofluorobenzene	1.1		1.000		106	80	120			

Sample ID: <b>LCS-49445</b>	SampType: <b>LCS</b>	TestCode: <b>EPA Method 8021B: Volatiles</b>								
Client ID: <b>LCSS</b>	Batch ID: <b>49445</b>	RunNo: <b>65335</b>								
Prep Date: <b>12/19/2019</b>	Analysis Date: <b>12/20/2019</b>	SeqNo: <b>2244466</b>	Units: <b>mg/Kg</b>							
Analyte	Result	PQL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	%RPD	RPDLimit	Qual
Benzene	0.90	0.025	1.000	0	89.9	80	120			
Toluene	0.94	0.050	1.000	0	93.7	80	120			
Ethylbenzene	0.93	0.050	1.000	0	92.8	80	120			
Xylenes, Total	2.8	0.10	3.000	0	94.6	80	120			
Surr: 4-Bromofluorobenzene	1.0		1.000		104	80	120			

**Qualifiers:**

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H Holding times for preparation or analysis exceeded  
ND Not Detected at the Reporting Limit  
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P Sample pH Not In Range  
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Hall Environmental Analysis Laboratory  
4901 Hawkins NE  
Albuquerque, NM 87109  
TEL: 505-345-3975 FAX: 505-345-4107  
Website: www.hallenvironmental.com

## Sample Log-In Check List

Client Name: **SMA-CARLSBAD**Work Order Number: **1912995**

RcptNo: 1

Received By: **Yazmine Garduno** 12/19/2019 9:00:00 AM*Yazmine Garduno*Completed By: **Yazmine Garduno** 12/19/2019 11:06:44 AM*Yazmine Garduno*

Reviewed By:

*Y6 12/19/19*

### Chain of Custody

1. Is Chain of Custody sufficiently complete? Yes ☒ No ☐ Not Present ☐
2. How was the sample delivered? Courier

### Log In

3. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
4. Were all samples received at a temperature of  $>0^{\circ}\text{C}$  to  $6.0^{\circ}\text{C}$ ? Yes ☒ No ☐ NA ☐
5. Sample(s) in proper container(s)? Yes ☒ No ☐
6. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
7. Are samples (except VOA and ONG) properly preserved? Yes ☒ No ☐
8. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
9. Received at least 1 vial with headspace  $<1/4"$  for AQ VOA? Yes ☐ No ☐ NA ☒
10. Were any sample containers received broken? Yes ☐ No ☒
11. Does paperwork match bottle labels?  
(Note discrepancies on chain of custody) Yes ☒ No ☐
12. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
13. Is it clear what analyses were requested? Yes ☒ No ☐
14. Were all holding times able to be met?  
(If no, notify customer for authorization.) Yes ☒ No ☐

# of preserved  
bottles checked  
for pH:

( $<2$  or  $>12$  unless noted)

Adjusted? \_\_\_\_\_

Checked by: *ENV 12/19/19*

### Special Handling (if applicable)

15. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: \_\_\_\_\_

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

By Whom: \_\_\_\_\_

Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person

Regarding: \_\_\_\_\_

Client Instructions: \_\_\_\_\_

16. Additional remarks:

### 17. Cooler Information

Cooler No	Temp $^{\circ}\text{C}$	Condition	Seal Intact	Seal No	Seal Date	Signed By
1	4.1	Good				



Tel. 505-345-3975 Fax 505-345-4107

## Enterprise

1

If necessary, samples submitted to Hall Environmental may be subcontracted to other accredited laboratories. Any sub-contracted data will be clearly notated on the analytical report. This serves as notice of this possibility. Any sub-contracted data will be clearly notated on the analytical report.