# NM1-62

# Vadose Zone Well Installation

June 2018

# Vadose Zone Monitoring Well Installation Report

# SUNDANCE WEST, INC., OILFIELD WASTE DISPOSAL SITE Lea County, New Mexico

Submitted To:

New Mexico Energy, Minerals, and Natural Resources Department Oil Conservation Division 1220 South St. Francis Drive Santa Fe, NM 87505 505.476.3440

**Prepared For:** 

Sundance West, Inc. 1001 6<sup>th</sup> Street Eunice, NM 88231

**Prepared By:** 

Gordon Environmental/PSC 333 Rio Rancho Blvd., Suite 400 Rio Rancho, NM 87124 505.867.6990

June 2018 Gordon/PSC Project #: 01011717



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- 3 SUNDANCE WEST GENERAL VADOSE ZONE WELL COMPLETION DETAILS

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1 LOCATIONS AND COMPLETION DETAILS OF VADOSE ZONE MONITORING WELLS

Title

# LIST OF ATTACHMENTS

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- A NMOSE PERMITS FOR VADOSE ZONE MONITORING WELLS
- B DOCUMENTATION OF NM 811 UNDERGROUND UTILITY CLEARANCE
- C LITHOLOGIC LOGS AND CONSTRUCTION DETAILS, VADOSE ZONE WELLS
- D PHOTO RECORDS OF DRILL CORES AND WELL CONSTRUCTION MATERIALS AND SURFACE COMPLETIONS
- E NMOSE WELL RECORDS FOR VADOSE ZONE WELLS

### 1.0 PROJECT SUMMARY

The Sundance West, Inc., Oilfield Waste Disposal Site (SWI) is an active Facility operating pursuant to its current Permit (NM1-62) tentatively issued by the New Mexico Energy, Minerals and Natural Resources Department, Oil Conservation Division (NMOCD) on 10/1/2017. A Vadose Zone Monitoring Plan (VZM Plan) for the facility was filed with NMOCD as part of the Application for Permit by SWI on 10/11/2016 and tentative agency approval, with Conditions, was granted in correspondence dated 1/10/2017.

The purpose of the VZM Plan is to comply with the requirements of 19.15.36.8.C(9) and 19.15.36.18 NMAC. The VZM Plan provides plans for the monitoring, recordkeeping, and reporting procedures for the site's vadose zone monitoring system.

Due to the absence of shallow protectable fresh groundwater resources at the facility, the VZM Plan included a request for exemption from groundwater monitoring requirements, and a proposal for Vadose Zone Monitoring of the interface of shallow unconsolidated sands and gravels of the Ogallala Formation and the underlying red beds of the Chinle Group. This submittal includes details of the VZM Plan, as well as documentation of installation of the Vadose Zone Monitoring Well network.

# 2.0 FACILITY DESCRIPTION

The SWI Facility is located directly west and contiguous with, Sundance Services Inc. (SSI), and approximately 1.5 miles east of the intersection of Wallach Ln. and NM highway 18 as shown on **Figure 1**. The SWI site is comprised of a 320-acre  $\pm$  tract of land located in the South  $\frac{1}{2}$  of Section 30, Township 21 South, Range 38 East, Lea County, New Mexico.

Located in the Process Area, 6 Evaporation Ponds have been constructed as the initial component of a new facility, and will eventually be complemented with process equipment, administrative offices, and a landfill. The total double lined project area is currently approximately 15 acres in size with each of the 6 ponds comprising approximately 1.75 acres each, with the remaining double lined acreage comprising the area between and around the ponds as shown on **Figure 2**.

The waste management facility is intended for the permanent disposal of exempt and nonexempt/non-hazardous oil field waste and will eventually include a processing area on 80 acres and a landfill on 180 acres. The landfill will have a waste capacity of approximately 17.4 million cubic yards. The remaining 60 acres of the facility incorporates associated infrastructure and buffer areas.

# 3.0 VADOSE ZONE MONITORING PLAN

Hydrogeologic conditions at the facility are characterized by an absence of shallow, protectable fresh groundwater beneath the site. Shallow stratigraphic units in the vicinity include veneers (50 feet or less in thickness) of lacustrine marl, shale and siltstone of the Cretaceous Fort Terrett Formation, caliche, sand, gravel, silt and clay of the Tertiary Ogallala Formation and Quaternary aeolian sand overlying vertically and laterally extensive Triassic Chinle Group bedrock units (redbeds) consisting predominantly of dense clayey shale with minor interbedded siltstones and sandstones (Barnes, 1976). Details of the VZM Plan are set forth in Volume II, Section 8, of the Application for Permit, (Gordon, 2016).

The intent of the VZM Plan is to provide for the earliest possible detection of potential fluid releases from the processing area or landfill. This would be accomplished by monitoring the zone immediately above the interface of relatively impermeable Chinle Group bedrock units below and conductive unconsolidated sandy-gravelly deposits of the Ogallala Formation above in downgradient locations adjacent to the SWI Oilfield Waste Disposal Site where seeping fluids would be expected to migrate laterally downslope on the upper redbed surface. The VZM Plan included a terrain map of the upper surface of the Chinle redbed/bedrock surface at the site which was prepared using redbed/bedrock top elevations obtained from nearby waste disposal facilities including the WCS Site, LCLF, and LES NEF, which are located immediately to the southeast of the SWI Site as shown on Figure II.8.3 of the VZM Plan. The Chinle terrain map was used to determine the most likely locations where fugitive fluids would be expected to migrate from the facility. Eight Vadose Zone Monitoring Wells (VZM Wells), as well as two existing VZM Wells were proposed as shown in Figure II.8.4 of the VZM Plan.

The NMOCD tentatively approved the Vadose Zone Monitoring Plan (VZM) Plan in correspondence dated 1/10/2017. The final approved locations of the 10 VZM Wells are shown in **Figure 2** of this submittal.

# 3.1 Vadose Zone Monitoring Well Design, Drilling and Completion

The VZM Plan included proposed drilling and installation methods, and design, for the VZM wells. The VZM Plan called for wells to be drilled using hollow-stem auger drilling methods to advance 8-inch diameter boreholes to fully penetrate the unconsolidated shallow sediments and the uppermost portion of the Chinle Group bedrock units below. The VZM Plan called for the wells to be completed with screened sections spanning the interval of the conductive units above the bedrock into the upper portions of the bedrock, with annular seals to prevent vertical flow of surface stormwater into the wells, or of vertical annular flow between penetrated zones. Generalized VZM well design set forth in the VZM Plan is illustrated in the well design diagram shown in **Figure 3**.

# 3.2 Vadose Zone Monitoring Plan Schedule and Methods

The VZM Plan (Gordon, 2016, Section 3) included provisions for monitoring schedule and methods, which included initial monitoring of the VZM wells for the presence of fluids, and less frequent inspections thereafter. The NMOCD 1/10/2017 Tentative Permit Approval, Condition 6 specified that VZM Well monitoring should be performed. The VZM wells will be monitored for the presence of free liquids on a monthly basis for a period of 12 months. If the monthly monitoring results continually indicate the absence of fluid, the subject wells will be transitioned to quarterly monitoring. If fluids adequate to allow well purging and sampling are observed, the well will be purged and sampled. Field purge parameters, including Depth to Fluid, Total Well Depth, Specific Conductance, pH and temperature will be noted. Collected fluid samples will be analyzed for Major Anions and Cations, RCRA Metals, Total Dissolved Solids, Total Petroleum Hydrocarbons in accordance with the VZM Plan (Gordon, 2016, Table II.8.2), and the full list of volatile organic compounds (EPA Method 8260) as specified in Condition 6 of the NMOCD 1/10/2017 Tentative Permit Approval.

# 4.0 VADOSE ZONE MONITORING WELL INSTALLATION

# 4.1 NMOSE Monitoring Well Permitting

Prior to installing the VZM wells, permits were obtained from the New Mexico Office of the State Engineer (NMOSE). Applications for VZM Well Nos. VZ-1 through VZ-10 were filed on NMOSE Form WR-07. Permits for the wells were issued on April 10, 2009 (VZ-1 and 4), and on October 18, 2017 (VZ 2,3, and 5-10). Copies of the permit documents are included in **Attachment A**.

# 4.2 Pre-Drilling Underground Utility Site Clearance

Prior to entering the site to install the VZM well network, the NM-811 Public Regulation Commission Pipeline Safety Bureau contractor was notified in accordance with New Mexico's Excavation Law Chapter 62, Article 14 NMSA 1978. Notice was made on 2/27/18 of the proposed drilling. Each of the proposed drilling locations was surveyed and staked, and all entities operating underground infrastructure were notified and informed of the proposed drilling locations. There were no conflicts with existing utilities. Documentation of NM-811 notification and clearance is included in **Attachment B**.

# 4.3 Borehole Advancement and Media Sampling

Existing Vadose Zone Monitoring Wells VZ-1 (formerly MP-2P) and VZ-4 (formerly MP-4P) were installed by Rodgers & Co., Albuquerque, NM on April 19, 2009 and April 5, 2009 respectively. VZM Wells 2,3, and 5-10 were installed pursuant to completion of the VZM Plan commitments. VZM Wells 2,3, and 5-10 were installed by Talon, LPE Drilling, Amarillo, Texas, between March 6, 2018 and April 17, 2017. Talon used a Central Mine Equipment (CME-75) rotary drilling rig to advance nominal 8-inch hollow-stem augers (HSA) to total depth to complete each boring. During drilling, a 3-inch x 5-foot split spoon core barrel was run inside the augers on steel rods and slightly ahead of the lead auger to collect depth-referenced samples of penetrated materials for lithologic descriptions and water-bearing potential. Other attributes of the penetrated materials are indicated on the VZM Well Logs, which are included in **Attachment C**. A photographic inventory of core samples recovered from the VZM well borings is included in **Attachment D** (photos 1-8).

# 4.4 Vadose Zone Monitoring Well Installation

Borings for the VZM wells were generally advanced through unconsolidated Tertiary and Quaternary sediments and a few feet into indurated shale or dense fine sandstone in the Chinle Group below. Upon reaching total depth in each boring, the core barrel and rods were withdrawn from the auger string and a string of 2-inch Schedule 40 PVC flush joint threaded monitoring well casing was inserted into the augers and advanced to the bottom of the drilled boring.

After verifying that the casing string was landed at the intended total depth of the boring, the auger string was lifted approximately 6 inches and 20/40 graded silica sand was poured into the space between the auger and the well casing until the lowermost 6 inches of the well annulus between

the drilled hole and the well casing was filled with the sand. During sand placement, a weighted fiberglass tape measure was inserted into the well between the augers and the well casing, lowered to the bottom of the well and used to sound the depth of the top of the sand to verify the filled depth of the annulus and to ensure that all of the sand was being placed properly and that no "bridging" of the sand had occurred. Care was taken to avoid having the sand fill above the bottom of the lead auger and flood the space between the auger and the well casing, which would result in a risk of having the well casing become "sand locked" inside the auger, prohibiting the auger string from being removed from the hole without pulling the casing string out of the hole as well.

Upon verifying that the sand pack had been properly placed in the lowermost 6 inches of the well, the auger string was raised again and more sand was placed in the well. This process was repeated until the well annulus between the drilled hole and the casing had been fully flooded with sand in the interval opposite the well screen from the total depth of the boring to a point approximately 2 feet above the top of the well screen. After installing the annular sand pack, similar methods were employed to install ¼-inch bentonite pellets into the well annulus from the top of the sand pack to a point approximately 2 feet above the sand pack. The bentonite pellets were then hydrated with potable water and allowed to expand to affect a seal above the sand in the well annulus.

The remaining augers were withdrawn from the well and the well was left overnight to complete expansion of the bentonite seal. The remaining annulus of each well was then flooded with a mixture of neat Portland cement grout and a 5% admix of powdered bentonite from the pellet seal to a point approximately two feet below grade. The grout was installed from the bottom of the annular space using a hose and a grout pump. Photographic documentation of the well construction materials and methods is included in **Attachment D**, photos 9-20.

# 4.5 Surface Completions

Each of the VZM wells was completed with a 4-ft by 4-ft by 6-inch concrete pad surrounding the well casing, with a locking steel protecting casing set over the PVC casing and into the concrete pad. Four 3.5-inch by 4-ft steel concrete-filled bollard pipes were set in concrete next to the well pads and arrayed in the 4 principal directions around each well. Wells and surface completions were built in accordance with the designs and materials depicted in **Figure 3**. Photographs of the well surface completions are included in **Attachment D**, photos 21-28.

# 5.0 WELL COMPLETIONS, PENETRATED MATERIALS, SATURATED ZONES

The locations of the VZM wells, depths of screens and tops of penetrated zones, are summarized in **Table 1**. None of the wells penetrated saturated sediments above the Chinle Group bedrock. Depths of completed VZ wells 2,3, and 5-10 range from 35 feet to 65 feet. Details of penetrated sediments, saturated intervals and well completions are discussed below (**Attachment E**).

Well VZ-2 was installed on 3/7/2018. The well was drilled to a depth of 50 feet below land surface, penetrating 3 feet of dense red/green and clayey Chinle shale. The well was screened in the estimated interval 40 feet to 50 feet. No fluids were detected in well VZ-2 during drilling or in post completion inspections.

Well VZ-3 was installed on 3/6/2018. The well was drilled to a depth of 45 feet, penetrated 3 feet into sandy Chinle shale, and was screened in the interval 35 to 45 feet below land surface. No fluids were detected in well VZ-3 during drilling or in post completion inspections.

Well VZ-5 was installed on 3/7/2018. The well was drilled to a depth of 35 feet, penetrating 6 feet of red clayey Chinle shale. The well was screened in the interval 25-35 feet below land surface. No fluids were detected in well VZ-5 during drilling or in post completion inspections.

Well VZ-6 was installed on 4/5/2018. The well was advanced to a depth of 45 feet, penetrating 3 feet of dense, clayey Chinle shale. The well was screened in the interval 35-45 feet below land surface. No fluids were detected in well VZ-6 during drilling or in post completion inspections.

Well VZ-7 was installed on 4/4/2018. The well was advanced to a depth of 50 feet and penetrated 4 feet into sandy siltstone of the Chinle. The well was screened in the interval 40-50 feet below land surface. No fluids were detected in well VZ-7 during drilling or in post completion inspections.

Well VZ-8 was installed on 3/8/2018. The well was drilled to a depth of 60 feet and penetrated 4 feet of sandstone in the Chinle. The well was screened in the interval 50-60 feet below land surface. No fluids were detected in well VZ-8 during drilling or in post completion inspections.

Well VZ-9 was installed on 4/4/2018. The well was drilled to a depth of 65 feet and penetrated 3 feet of shale in the Chinle. The well was screened in the interval 55-65 feet below land surface. No fluids were detected in well VZ-9 during drilling or in post completion inspections.

Well VZ-10 was installed on 4/2/2018. The well was drilled to a depth of 60 feet and penetrated 4 feet of weathered sandstone in the Dockum (Chinle). The well was screened in the interval 50-60 feet below land surface. No fluids were detected in well VZ-10 during drilling or in post completion inspections.

# 6.0 CONCLUSIONS

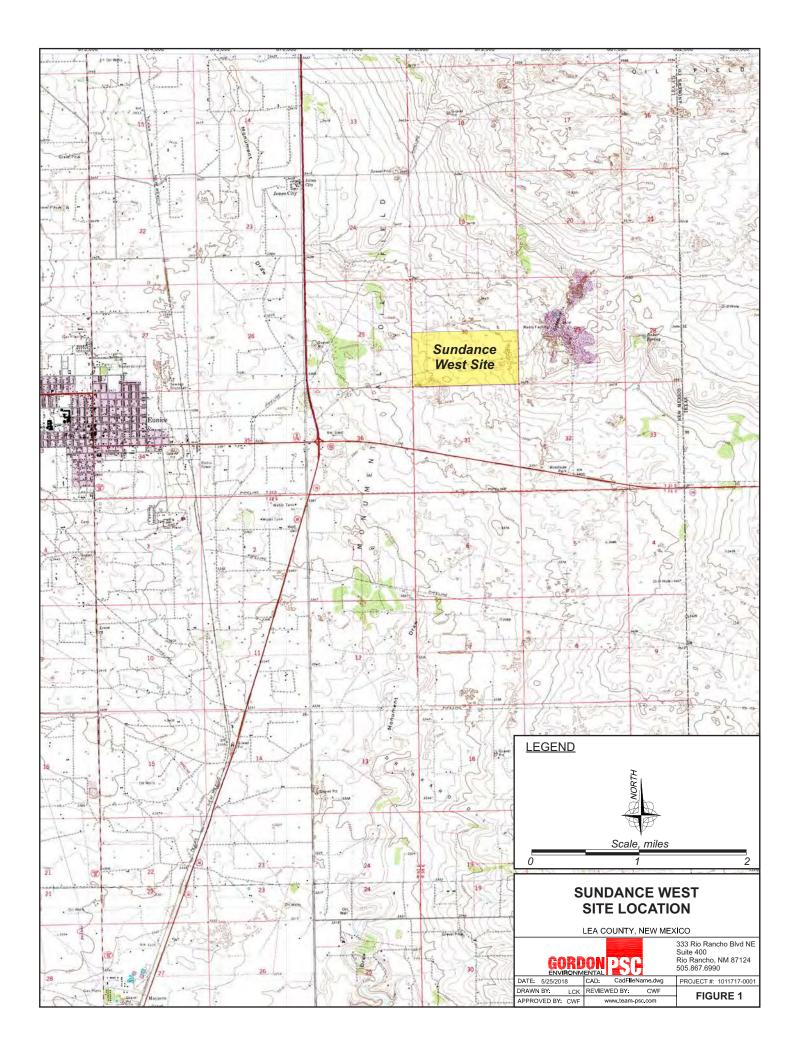
This submittal completes the VZM Plan commitments for VZM Well completion and initial monitoring. No subsurface fluid saturations were discovered in any of the newly drilled wells VZM Wells 2, 3, and 5-10.

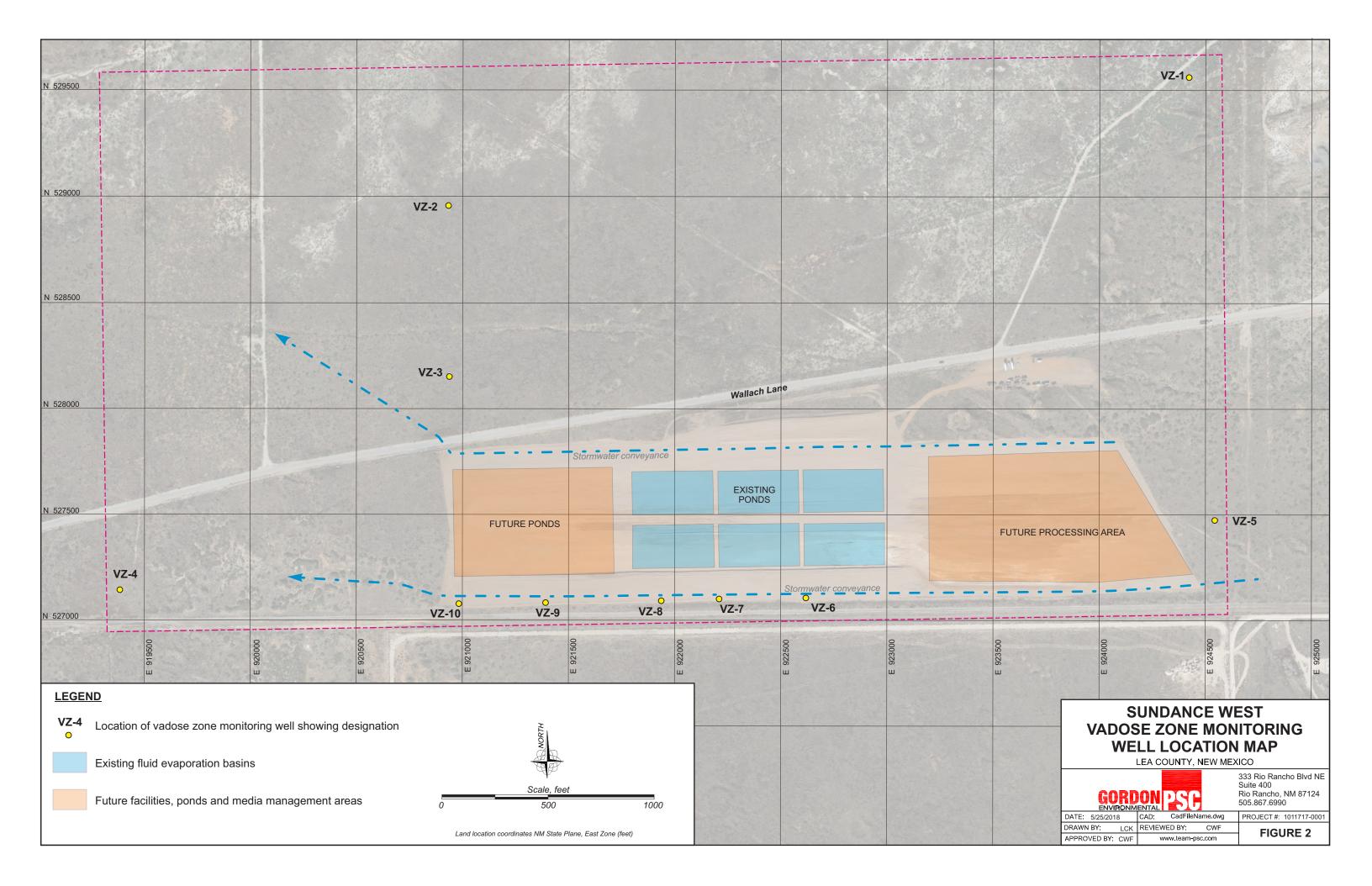
# 7.0 REFERENCES

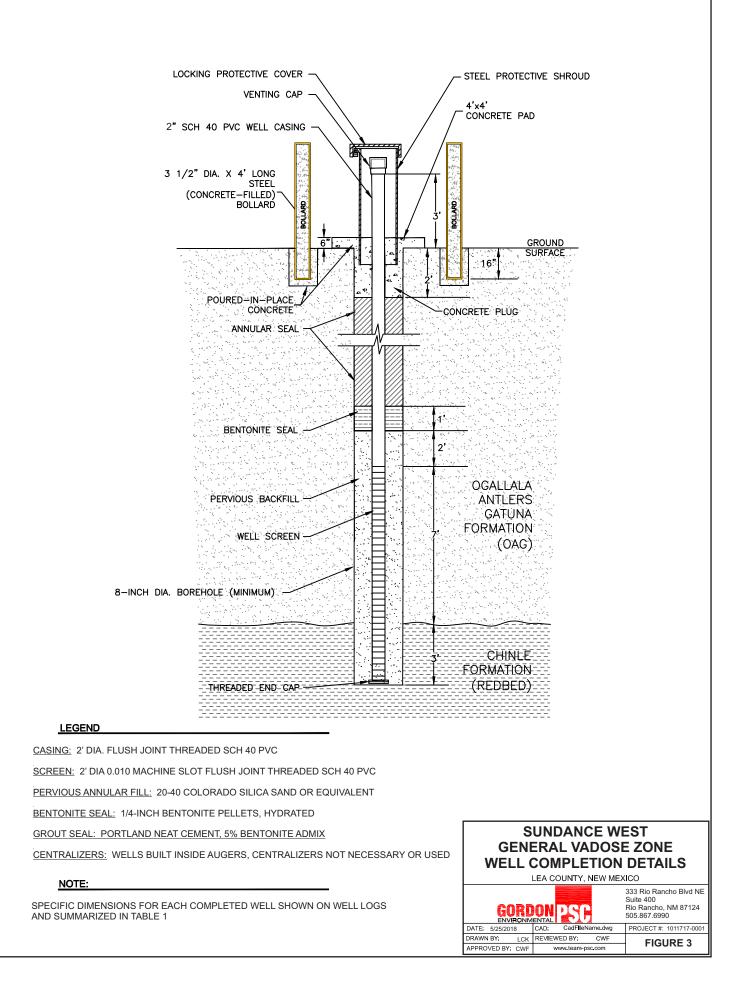
- 1. Gordon Environmental/PSC, October 2016, Vadose Zone Monitoring Plan, Sundance West, Inc. Consultant report prepared for Sundance West, Inc.
- 2. Barnes, V., 1976, Geologic Atlas of Texas, Hobbs Sheet, Texas Bureau of Economic Geology

# FIGURES

- 1 SUNDANCE WEST SITE LOCATION
- 2 SUNDANCE WEST VADOSE ZONE MONITORING WELL LOCATION MAP
- 3 SUNDANCE WEST GENERAL VADOSE ZONE WELL COMPLETION DETAILS







# TABLE 1

# LOCATIONS AND COMPLETION DETAILS OF VADOSE ZONE MONITORING WELLS

			Latitude	)	L	.ongitud	е		Depth	Depth to	Depth to		Saturation	Comments
Site Vadoze Zone Well No.	NMOSE Well Permit No	Deg	Min	Sec	Deg	Min	Sec	Depth (ft)	to Top Chinle (ft)	Top of	Bottom of Screen (ft)	Depth to Water (ft)	Above Chinle (ft)	
VZ-1	CP-1016	32	26	59.5	103	05	28.6	28	27	23	28	dry	0	Drilled 4/19/09
VZ-2	CP-1694-POD 1	32	26	53.3	103	06	10.1	50	47	40	50	dry	0	
VZ-3	CP-1694-POD 2	32	26	45.4	103	06	10.2	45	42	35	45	dry	0	
VZ-4	CP-1018	32	26	37.4	103	06	26.2	60	45	50	60	dry	0	Drilled 4/24/09
VZ-5	CP-1694-POD 3	32	26	38.3	103	05	28.2	35	29	25	35	dry	0	
VZ-6	CP-1694-POD 4	32	26	34.7	103	05	50.8	45	42	35	45	dry	0	
VZ-7	CP-1692-POD 5	32	26	34.7	103	05	55.6	50	46	40	50	dry	0	
VZ-8	CP-1692-POD 6	32	26	35.0	103	05	58.8	60	56	50	60	dry	0	
VZ-9	CP-1692-POD 7	32	26	35.2	103	06	3.86	65	62	55	65	dry	0	
VZ-10	CP-1692-POD 8	32	26	34.8	103	06	10.0	60	56	50	60	dry	0	

#### Table 1.--Locations and Completion Details of Vadose Zone Monitoring Wells Sundance West, Inc., Oilfield Waste Disposal Site

Notes:

All depths, feet below land surface

# ATTACHMENT A

NMOSE PERMITS FOR VADOSE ZONE MONITORING WELLS

Tom Blaine, P.E. State Engineer



Roswell Office 1900 WEST SECOND STREET ROSWELL, NM 88201

#### STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER

Trn Nbr: 615134 File Nbr: CP 01694 POD1-8

Oct. 18, 2017

CHARLES FIELDER, PE GORDAN ENVIRONMENTAL PSC 213 S CAMINO DEL PUEBLO BERNALILLO, NM 87004

Greetings:

Enclosed is your copy of the above numbered permit that has been approved subject to the conditions set forth on the approval page. In accordance with the conditions of approval, the well can only be tested for 10 cumulative days, and the well is to be plugged on or before 10/31/2018, unless a permit to use the water is acquired from this office.

A Well Record & Log (OSE Form wr-20) shall be filed in this office within twenty (20) days after completion of drilling, but no later than 10/31/2018.

Appropriate forms can be downloaded from the OSE website www.ose.state.nm.us or will be mailed upon request.

Sincerely,

Juan Hernandez (575)622-6521

Enclosure

explore

File No.	CP-	. 1694
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NEW	ME	STHE STATE				
		WR-07 APPLICATION FO				
(11) Interstate Stream Commission		A WELL WITH NO	WATER RIGHT			
		(check applic	able box):			
	Fo	r fees, see State Engineer webs	ite: http://www.ose.state.nm.us/			
Purpose:		Pollution Control And/Or Recovery	Ground Source Heat Pu	mp		
Exploratory Well (Pump test)		Construction Site/Public Works Dewatering	Other(Describe):	`		
Monitoring Well		Mine Dewatering				
A separate permit will be required to apply water to beneficial use regardless if use is consumptive or nonconsumptive.						
Temporary Request - Requested Start Date: Requested End Date:						
Plugging Plan of Operations Submitted?  Yes No						

# 1. APPLICANT(S)

Name: Sundance West, Inc.		Name: Charles Fiedler, P.E., Gordon Environmental/PSC			
Contact or Agent:	check here if Agent	Contact or Agent:	check here if Agent		
Mailing Address: PO Box 1737		Mailing Address: 213 S. Camino del Pueblo			
City: Eunice		City: Bernalillo			
State: New Mexico	Zip Code: 88231	State: New Mexico	Zip Code: 87004		
Phone: Phone (Work):	Home Cell	Phone: 505-750-3164 Phone (Work):			
E-mail (optional):		E-mail (optional):			
		· · ·			
			9: 56		

FOR OSE INTERNAL USE	Application for Permit, Form WR-	07, Rev 11/17/16
File No.: CP-1694	Trn. No.: (15/34	Receipt No.:
Trans Description (optional):	OD 1-8	
Sub-Basin:	PCW/LOG Due	
L		Page 1 of 3

2. WELL(S) Describe the well(s) applicable to this application.

Location Required: Coordin	ate location must be	a reported in NM	State Blane (NAD 82) LITM (NAD 82) or Latitu	de/l ongitude			
Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), <u>or</u> Latitude/Longitude (Lat/Long - WGS84).							
District II (Roswell) and Dist	trict VII (Cimarron) c	ustomers, provid	e a PLSS location in addition to above.				
NM State Plane (NAD83) NM West Zone NM East Zone NM Central Zone	□ NM East Zone □Zone 13N 1/10 <sup>st</sup> of second)						
Well Number (if known):       X or Easting or Longitude:       Y or Northing or Latitude:       Provide if known:       -Public Land Survey System (PLSS)         Well Number (if known):       X or Easting or Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       X or Easting or Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       X or Easting or Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:         Vell Number (if known):       Longitude:       Y or Northing or Latitude:       Provide if known:							
(P1694 POD   VZ-2	103D 06M 10.1S	32D 26M 53.3S	T21S R38E S30.3233				
VZ-3	103D 06M 10.1S	32D 26M 45.3S	T21S R38E S30.3413				
POD 3 VZ-5	103D 05M 28.2S	32D 26M 38.295	5 T21S R38E S30.4442				
VZ-6 VZ-6	103D 05M 47.8S	32D 26M 35.34s	5 T21S R38E S30.4344				
V/ POD5	103D 05M 33.13S	32D 26M 35.3S		2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
NOTE: If more well location Additional well descriptions	s need to be describ are attached:	ed, complete for Yes □ No	m WR-08 (Attachment 1 – POD Descriptions) If yes, how many 2				
Other description relating well to common landmarks, streets, or other:							
Well is on land owned by: Wallach Ranch, LLC, leased to Sundance Services, Inc. (owner of wells and 30-year site closure plan)							
Well Information: NOTE: If more than one (1) well needs to be described, provide attachment. Attached?  Yes No If yes, how many							
Approximate depth of well (feet): 45 Outside diameter of well casing (inches): 2							
Driller Name: Talon Drilling Driller License Number: 1575							

#### 3. ADDITIONAL STATEMENTS OR EXPLANATIONS

These monitoring wells are requested pursuant to closure and post-closure monitoring of an oilfield wast disposal facility, Closure and Post-Closure monitoring is to be conducted in accordance with a Closure/Post Closure Plan for Sundance Services, Inc., filed September, 2016, with the NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT, OIL CONSERVATION DIVISION. Printed portions of the Closure Plan associated with groundwater and vadozse zone monitoring commitments are attached to this APPLICATION. Additionally, a digital disk copy of the complete Closure Plan is transmitted herewith. A copy of proposed well completion is attached.

FOR OSE INTERNAL USE	Application for Permit, Form WR-07
File No.: CP-1694	Trn No.: 415134

Page 2 of 3

2. WELL(S) Describe the well(s) applicable to this application.

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Location Required: Coordinate location must be reported in NM State Plane (NAD 83), UTM (NAD 83), <u>or</u> Latitude/Longitude (Lat/Long - WGS84).						
District II (Roswell) and Dis	District II (Roswell) and District VII (Cimarron) customers, provide a PLSS location in addition to above.					
<ul> <li>NM State Plane (NAD83)</li> <li>NM West Zone</li> <li>NM East Zone</li> <li>NM Central Zone</li> </ul>		JTM (NAD83) (Mete ]Zone 12N ]Zone 13N	rs)			
Well Number (if known):	X or Easting or Longitude:	Y or Northing or Latitude:	Provide if known: -Public Land Survey System (PLSS) ( <i>Quarters or Halves , Section, Township, Range</i> ) OR - Hydrographic Survey Map & Tract; OR - Lot, Block & Subdivision; OR - Land Grant Name			
CP/694 POD6	103D 05M 58.7S	32D 26M 35.21S	T21S R38E S30.3444			
VZ-9 POD 7	103D 06M 3.9S	32D 26M 35.2S	T21S R38E S30.3443			
VZ-10	103D 06M 9.8S	32D 26M 35.3S	T21S R38E S30.3343			
Additional well description	s are attached: 🔳	Yes 🗌 No	WR-08 (Attachment 1 – POD Descriptions) If yes, how many3			
Other description relating we	ll to common landmarl	ks, streets, or other:				
Well is on land owned by: Wa	llach Ranch, LLC, lea	sed to Sundance Se	rvices, Inc. (owner of wells and 30-year site closure plan)			
			cribed, provide attachment. Attached?  Yes  No			
Approximate depth of well (fe	et): 45	0	utside diameter of well casing (inches): 2			
Driller Name: Talon Drilling		D	riller License Number: 1575			
3. ADDITIONAL STATEMENTS OR EXPLANATIONS						
These monitoring wells are requested pursuant to closure and post-closure monitoring of an oilfield wast disposal facility, Closure and Post-Closure monitoring is to be conducted in accordance with a Closure/Post Closure Plan for Sundance Services, Inc., filed September, 2016, with the NEW MEXICO ENERGY, MINERALS, AND NATURAL RESOURCES DEPARTMENT, OIL CONSERVATION DIVISION. Printed portions of the Closure Plan associated with groundwater and vadozse zone monitoring commitments are attached to this APPLICATION. Additionally, a digital disk copy of the complete Closure Plan is transmitted herewith. A copy of proposed well completion is attached.						

FOR OSE INTERNAL USE	Application for Permit, Form WR-07
File No.: 0 P-1694	Trn No.: 615134
	Page 2 of 3

4. SPECIFIC REQUIREMENTS: The applicant must include the following, as applicable to each well type. Please check the appropriate boxes, to indicate the information has been included and/or attached to this application:

<ul> <li>Include a description of any proposed pump test, if applicable.</li> <li>Monitoring:         <ul> <li>Include the reason for the monitoring well, and,</li> <li>The duration of the planned monitoring.</li> </ul> </li> </ul>	<ul> <li>Include a plan for pollution control/recovery, that includes the following:</li> <li>A description of the need for the pollution control or recovery operation.</li> <li>The estimated maximum period of time for completion of the operation.</li> <li>The annual diversion amount.</li> <li>The annual consumptive use amount.</li> <li>The maximum amount of water to be diverted and injected for the duration of the operation.</li> <li>The method and place of discharge.</li> <li>The method of measurement of water produced and discharged.</li> <li>The method of measurement of water injected.</li> <li>The method of determining the resulting annual consumptive use of water and depletion from any related stream system.</li> <li>Proof of any permit required from the New Mexico Environment Department.</li> </ul>	De-Watering:  Include a description of the proposed dewatering operation, The estimated duration of the operation, The maximum amount of water to be diverted, A description of the need for the dewatering operation, and, A description of how the diverted water will be disposed of. Ground Source Heat Pump: Include a description of the geothermal heat exchange project, The number of boreholes for the completed project and required depths. The time frame for constructing the geothermal heat exchange project, and, The duration of the project. Preliminary surveys, design	<ul> <li>Include a plan for pollution</li> <li>control/recovery, that includes the following:</li> <li>A description of the need for mine</li> <li>dewatering.</li> <li>The estimated maximum period of time</li> <li>for completion of the operation.</li> <li>The source(s) of the water to be diverted.</li> <li>The geohydrologic characteristics of the</li> <li>aquifer(s).</li> <li>The maximum amount of water to be</li> <li>diverted per annum.</li> <li>The maximum amount of water to be</li> <li>diverted per annum.</li> <li>The maximum amount of water to be</li> <li>diverted for the duration of the operation.</li> <li>The quality of the water.</li> <li>The method of measurement of water</li> <li>diverted.</li> <li>The recharge of water to the aquifer.</li> <li>Description of the estimated area of</li> <li>hydrologic effect of the project.</li> <li>An estimation of the effects on surface</li> <li>water rights and underground water rights</li> <li>from the mine dewatering project.</li> <li>A description of the methods employed to</li> <li>estimate effects on surface water rights and</li> <li>underground water rights.</li> </ul>				
	An access agreement if the applicant is not the owner of the land on which the pollution plume control or recovery well is to be located.	data, and additional information shall be included to provide all essential facts relating to the request.	Information on existing wells, rivers, springs, and wetlands within the area of hydrologic effect.				
	AC	KNOWLEDGEMENT					
I, We (name of a	applicant(s)), Charles Fiedler, P.E., Gordon	Environmental/PSC					
•	Print Name(s)						
affirm that the fo	affirm that the foregoing statements are true to the best of (my, our) knowledge and belief.						
ht	m						

17 Applicant Signature

Applicant Signature

#### ACTION OF THE STATE ENGINEER

This application is:

partially approved 🛛 🗌 denied

provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare and further subject to the <u>attached</u> conditions of approval.

approved

Witness my hand and seal this 18th da	y of <u>October</u> 20 <u>17</u>	, for the State Engineer,
Tom Blaine, P.E.	, State Engineer	
By:		
Signature	Print	
	r Resources Manager 1	
Print		
	FOR OSE INTERNAL USE	Application for Permit, Form WR-07
	File No.: CP-1694	Trn No.: (015134

Page 3 of 3

#### SPECIFIC CONDITIONS OF APPROVAL

- 17-1A Depth of the well shall not exceed the thickness of the valley fill.
- 17-4 No water shall be appropriated and beneficially used under this permit.
- 17-6 The well authorized by this permit shall be plugged completely using the following method per Rules and Regulations Governing Well Driller Licensing, Construction, Repair and Plugging of Wells; Subsection C of 19.27.4.30 NMAC unless an alternative plugging method is proposed by the well owner and approved by the State Engineer upon completion of the permitted use. All pumping appurtenance shall be removed from the well prior to plugging. To plug a well, the entire well shall be filled from the bottom upwards to ground surface using a tremie pipe. The bottom of the tremie shall remain submerged in the sealant throughout the entire sealing process; other placement methods may be acceptable and approved by the state engineer. The well shall be plugged with an office of the state engineer approved sealant for use in the plugging of non-artesian wells. The well driller shall cut the casing off at least four (4) feet below ground surface and fill the open hole with at least two vertical feet of approved sealant. The driller must fill or cover any open annulus with sealant. Once the sealant has cured, the well driller or well owner may cover the seal with soil. A Plugging Report for said well shall be filed with the Office of the State Engineer in a District Office within 30 days of completion of the plugging, but no later than 10/31/2018.

Trn Desc: CP 01694 POD1-8

File Number: <u>CP 01694</u> Trn Number: 615134

#### SPECIFIC CONDITIONS OF APPROVAL (Continued)

- 17-7 The Permittee shall utilize the highest and best technology available to ensure conservation of water to the maximum extent practical.
- 17-B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with 72-12-12 NMSA 1978. A licensed driller shall not be required for the construction of a well driven without the use of a drill rig, provided that the casing shall not exceed two and three-eighths (2 3/8) inches outside diameter.
- 17-C The well driller must file the well record with the State Engineer and the applicant within 30 days after the well is drilled or driven. It is the well owner's responsibility to ensure that the well driller files the well record. The well driller may obtain the well record form from any District Office or the Office of the State Engineer website.
- 17-P The well shall be constructed, maintained, and operated to prevent inter-aquifer exchange of water and to prevent loss of hydraulic head between hydrogeologic zones.
- 17-Q The State Engineer retains jurisdiction over this permit.
- 17-R Pursuant to section 72-8-1 NMSA 1978, the permittee shall allow the State Engineer and OSE representatives entry upon private property for the performance of their respective duties, including access to the ditch or acequia to measure flow and also to the well for meter reading and water level measurement.

Trn Desc: CP 01694 POD1-8

File Number: <u>CP 01694</u> Trn Number: <u>615134</u>

#### SPECIFIC CONDITIONS OF APPROVAL (Continued)

- LOG The Point of Diversion CP 01694 POD1 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD2 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD3 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD4 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD5 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD6 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD7 must be completed and the Well Log filed on or before 10/31/2018.
- LOG The Point of Diversion CP 01694 POD8 must be completed and the Well Log filed on or before 10/31/2018.

IT IS THE PERMITTEES RESPONSIBILITY TO OBTAIN ALL AUTHORIZATIONS AND PERMISSIONS TO DRILL ON PROPERTY OF OTHER OWNERSHIP BEFORE COMMENCING ACTIVITIES UNDER THIS PERMIT.

SHOULD THE PERMITTEE CHANGE THE PURPOSE OF USE TO OTHER THAN MONITORING PURPOSES, AN APPLICATION SHALL BE ACQUIRED FROM THE OFFICE OF THE STATE ENGINEER.

Trn Desc: CP 01694 POD1-8

File Number: <u>CP 01694</u> Trn Number: 615134

#### ACTION OF STATE ENGINEER

Notice of Intention Rcvd:Date Rcvd. Corrected:Formal Application Rcvd: 10/05/2017Pub. of Notice Ordered:Date Returned - Correction:Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 18th day of Oct A.D., 2017 Tom Blaine, P.E. , State Engineer By: Juan Hernandez

Trn Desc: CP 01694 POD1-8

File Number: CP 01694 Trn Number: 615134

F.T.	le Numwer: (For OSE Use Onl)
NEW MEXICO OFFICE OF THE STATE APPLICATION FOR PERMIT TO DRILL AN EXPLORATORY WE	2-200
1. APPLICANT:	
Name: Sundance Services, Inc.	Work Phone: <u>575-394-2511</u> Home Phone:
Contact: Mr. Joe Carrillo, Plant Manager Address: 1001 6th Street	
City: Eunice	
2. LOCATION OF WELL (A, B, C, or D required, E or F if known): MP-	2
A. <u>NE 1/4 <i>NE</i> 1/4 <i>SE</i> 1/4 Section: <u>30</u> Townshi in <u>Lea County</u></u>	p: <u>21S</u> Range: <u>38E</u> N.M.P.I Count
B. X = feet, Y = f Zone in the f U.S.G.S. Quad Map	eet, N.M. Coordinate Syst Gran
C. Latitude: <u>32</u> d <u>26</u> m <u>59,5</u> s Longitude	: <u>103 d 5 m 28.6</u>
D. East <u>479418</u> (m), North <u>3591905</u> (m), UTM	Zone 13, NAD (27 or 8
E. Tract No, Map No of the	Hydrographic Surv
F. Lot No, Block No of Unit/Tract Subdivision recorded in	of t Count
G. Other:	
H. Give State Engineer File Number of existing we	11:
I. On land owned by (required): <u>Sundance Services, Inc. (th</u>	rough lease authorization)
3. WELL INFORMATION:	
Approximate depth <u>125</u> feet; Outside diameter of Name of well driller and driller license number <u>F</u>	casing 2inches.
To evaluate subsurface groundwater.	
TO evaluate subsurface groundwater.	ار با
	>
Renumbered	<u> </u>
$OP_{10} _{\ell}$	
n: <u>CP-1014</u>	
2P-10/10 Pod 1	

		Do Not	Write	Below	This	Line	1002337
File Number: Form:	CP-1016 wr-07		pa	age 1 d		Trn Number:	428017

#### NEW MEXICO OFFICE OF THE STATE ENGINEER APPLICATION FOR PERMIT TO DRILL AN EXPLORATORY WELL

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#### ACKNOWLEDGEMENT

(I, We) Joe Carrillo for Sundance Services, Inc.	affirm that	the
(Please Print)		
foregoing statements are true to the best of my knowledge and	$\bigcirc$	•
Applicant Signature Applicant Signatur	re	

#### ACTION OF STATE ENGINEER

see att	see attached conditions of approval			
Witness my hand and sea	1 this <b>7</b>	day of	April	, 20 <u>09</u>
John R. D'Antonio, Jr., By: And Maly	<b>p.E</b> , State Eng	ineer		
Kenneth M. Fresquez, Dis	strict II Manage	er		STATE ENGINEER OFFICE Rodwoll, N. C. A. H. 32 2001 APR - / A. H. 32
	Do Not Write B	elow This I	Line	1002337
le Number: <u>CP-/C/6</u> Form: wr-07			Irn Number:	428017

#### NEW MEXICO STATE ENGINEER PERMIT TO MONITOR

#### SPECIFIC CONDITIONS OF APPROVAL

- 4 No water shall be appropriated and beneficially used under this permit.
- B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
- C Driller's well record must be filed with the State Engineer within 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1016 must be completed and the Well Log filed on or before 04/30/2010.

#### ACTION OF STATE ENGINEER

Notice of Intention Rcvd:	
Formal Application Rcvd:	04/01/2009
Date Returned – Correction:	

Date Rcvd. Corrected: Pub. Of Notice Ordered: Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this 2 day of April A.D., 2009.

John R. D'Antonie, Jr., P.E., State Engineer

By: \_\_\_\_\_\_\_\_ Kenneth M. Fresquez, District II Manager



#### STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER ROSWELL

John R. D'Antonio, Jr., P.E. State Engineer 1900 West Second Street Roswell, NM 88201 Phone: (575) 622-6521 Fax: (575) 623-8559

April 10, 2009

2-1016

Sundance Services, Inc. % Larry M. Coons, P.E. Gordon Environmental, Inc. 213 S. Camino del Pueblo Bernalillo, NM 87004

RE: Monitoring Wells - CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

Tepor Andy Morley, Staff Manager (575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

# MP-2

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# Locator Tool Report

#### **General Information:**

Application ID: 28	Date: 04-02-2009	Time:	10:42:31
WR File Number: Purpose:	CP POINT OF DIVERSION		
Applicant First Name: Applicant Last Name:			
GW Basin: County:			
Critical Management Area Name(s): Special Condition Area Name(s): Land Grant Name:	NONE NONE NON GRANT		

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

NE 1/4 of NE 1/4 of NE 1/4 of SE 1/4 of Section 30, Township 21S, Range 38E.

#### **Coordinate System Details:**

#### **Geographic Coordinates:**

Latitude:	32 Degrees	26 Minutes	59.5 Seconds	Ν
Longitude:	103 Degrees	5 Minutes	28.6 Seconds	W

#### **Universal Transverse Mercator Zone: 13N**

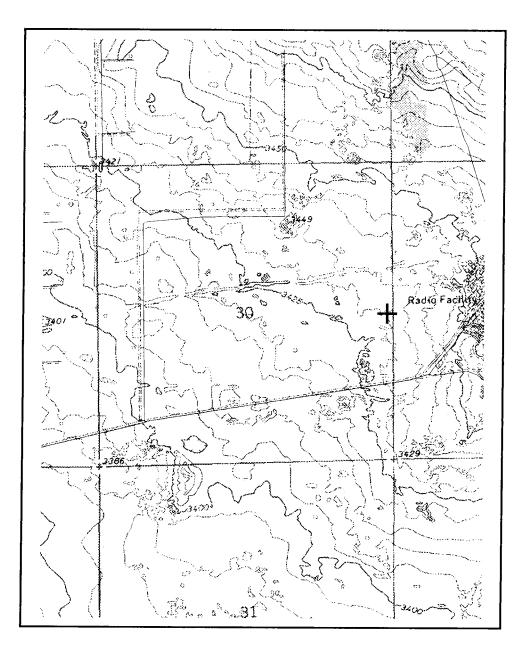
NAD 1983(92) (Meters)	N: 3,591,905	E: 679,418
NAD 1983(92) (Survey Feet)	N: 11,784,441	E: 2,229,057
NAD 1927 (Meters)	N: 3,591,729	E: 679,378
NAD 1927 (Survey Feet)	N: 11,783,865	E: 2,228,925

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

NAD 1983(92) (Meters)	N: 161,428	E: 281,783
NAD 1983(92) (Survey Feet)	N: 529,618	E: 924,483
NAD 1927 (Meters)	N: 161,436	E: 269,142
NAD 1927 (Survey Feet)	N: 529,646	E: 883,009

# NEW MEXICO OFFICE OF STATE ENGINEER

# Locator Tool Report





File wunder:	ar OCE Has Oplar)
( E	'or OSE Use Only)
NEW MEXICO OFFICE OF THE STATE ENGINEER	2-26830
APPLICATION FOR PERMIT TO DRILL AN EXPLORATORY WELL	105-
TO DRILL AN EXPLORATORY WELL	U,
1. APPLICANT:	
	one: <u>575-394-2511</u>
Address: 1001 6th Street	
City: Eunice State: NM	7 in. 00221
2. LOCATION OF WELL (A, B, C, or D required, E or F if known): MP-4	
A. <u>SW</u> 1/4 <u>SW</u> 1/4 <u>SW</u> 1/4 Section: <u>30</u> Township: <u>21S</u> Ran in <u>Lea County</u>	ge: <u>38E</u> N.M.P.M. County.
B. X = feet, Y = feet, N.M. C	coordinate System
Zone in the	Grant.
U.S.G.S. Quad Map	
C. Latitude: <u>32</u> d <u>26</u> m <u>37.4</u> s Longitude: <u>103</u> d	6 m 26.2 s
D. East <u>677925</u> (m), North <u>359/197</u> (m), UTM Zone 13, N	AD _ (27 or 83)
E. Tract No, Map No of the Hyd	rographic Survey
F. Lot No, Block No of Unit/Tract Subdivision recorded in	of the County.
G. Other:	
H. Give State Engineer File Number of existing well:	
I. On land owned by (required): Sundance Services, Inc. (through lease autho	rization)
3. WELL INFORMATION:	
Approximate depth <u>125</u> feet; Outside diameter of casing <u>2</u>	inches. 🚉 🖓
Name of well driller and driller license number Rodgers-NMWD 2	<u>≥25 53 552</u>
4. ADDITIONAL STATEMENT OR EXPLANATIONS:	
	L . @
To evaluate subsurface groundwater.	
POD Renumbered	
From: LOLY	
To: 1018 POOL	
Do Not Write Below This Line	1002200
AP IDIA	elorano
File Number: <u>CP-/C/8</u> Trn Number: Form: wr-07 page 1 of 2	Faraz
Form: wr-07 page 1 of 2	

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#### NEW MEXICO OFFICE OF THE STATE ENGINEER APPLICATION FOR PERMIT TO DRILL AN EXPLORATORY WELL

#### ACKNOWLEDGEMENT

(I, We) Joe Carrillo for Sundance Services, Inc.	affirm that the
(Please Print)	
foregoing statements are true to the best of my knowledge	u.
Applicant Signature	ture

#### ACTION OF STATE ENGINEER

see at	ttached conditi	ons of approv	val	
Witness my hand and sea	al this	day of	April	, 20 <u>09</u>
John R. D'Antonio, Jr., By:	. P.E. State En	gineer		
Kenneth M. Frésquez, Di		5		2001 APR -1 A II. 32
	Do Not Write	Below This L	ine	40234
Le Number: CP-1018		Т	rn Number:	428022
Form: wr-07	pa	ige 2 of 2		

#### NEW MEXICO STATE ENGINEER PERMIT TO MONITOR

#### SPECIFIC CONDITIONS OF APPROVAL

- 4 No water shall be appropriated and beneficially used under this permit.
- B The well shall be drilled by a driller licensed in the State of New Mexico in accordance with Section 72-12-12 New Mexico Statutes Annotated.
- C Driller's well record must be filed with the State Engineer within 20 days after the well is drilled or driven. Well record forms will be provided by the State Engineer upon request.

No water shall be diverted from this well except for testing purposes which shall not exceed ten (10) cumulative days unless a permit to use water from this well is acquired from the Office of the State Engineer.

Should the permittee change the purpose of use to other than monitoring purposes, an application shall be acquired from the Office of the State Engineer.

The proposed well shall be drilled at least 660 feet from all wells of other ownership.

The well shall be constructed, maintained, and operated that each water shall be confined to the aquifer in which it is encountered.

LOG The Point of Diversion CP-1018 must be completed and the Well Log filed on or before 04/30/2010.

#### **ACTION OF STATE ENGINEER**

Notice of Intention Rcvd:		Date Rcvd. Corrected:
Formal Application Rcvd:	04/01/2009	Pub. Of Notice Ordered:
Date Returned – Correction:		Affidavit of Pub. Filed:

This application is approved provided it is not exercised to the detriment of any others having existing rights, and is not contrary to the conservation of water in New Mexico nor detrimental to the public welfare of the state; and further subject to the specific conditions listed previously.

Witness my hand and seal this \_\_\_\_\_ day of April A.D., 2009.

John R. D'Antonio, Jr., P.E., State Engineer

By: \_\_\_\_\_\_Kenneth M. Fresquez, District II Manager



July 2, 2009

Office of the State Engineer 1900 West Second Street Roswell, NM 88201

Re: File numbers CP 1016 and CP1018

To Whom It May Concern:

Please find enclosed, in triplicate, amended Well Records for the above-mentioned file numbers. Both bore hole depths were incorrectly marked and are corrected herein. Additionally, the geologic logs in Section 6 have been amended to reflect the deeper bore hole depths. All other information remains the same.

Sincerely, Rodgers & Co., Inc.

Becty Habald

Becky Gabaldon

Enclosures

1019 ENGINEER OFFIC



#### STATE OF NEW MEXICO OFFICE OF THE STATE ENGINEER ROSWELL

John R. D'Antonio, Jr., P.E. State Engineer 1900 West Second Street Roswell, NM 88201 Phone: (575) 622-6521 Fax: (575) 623-8559

April 10, 2009

CP-1018

Sundance Services, Inc. % Larry M. Coons, P.E. Gordon Environmental, Inc. 213 S. Camino del Pueblo Bernalillo, NM 87004

RE: Monitoring Wells - CP-1014; CP-1015; CP-1016; CP-1017; CP-1018; CP-1019

Greetings:

Enclosed is your copy of the Monitoring Well permits, which have been approved subject to the conditions set forth on the approval page thereof.

In accordance with Condition C, a well record shall be filed in this office twenty days after completion of drilling. The well record is proof of completion of well. IT IS YOUR RESPONSIBILITY TO ASSURE THAT THE WELL LOG IS FILED WITHIN 20 DAYS OF DRILLING OF THE WELL.

These permits will expire on or before 04/30/2010, unless the wells have been drilled and the well logs filed in this office.

Sincerely,

EMO Andy Morley, Staff Manager (575) 622-6521, ext 113

Enclosure

cc: Santa Fe Office

MP-4

### Locator Tool Report

#### **General Information:**

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Application ID: 28	Date: 04-02-2009	Time: 10:47:21
WR File Number: Purpose:	CP POINT OF DIVERSION	
Applicant First Name:	SUNDANCE	

Applicant Last Name: SERVICES GW Basin: CAPITAN

County: LEA

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

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

NW 1/4 of SW 1/4 of SW 1/4 of SW 1/4 of Section 30, Township 21S, Range 38E.

#### **Coordinate System Details:**

#### **Geographic Coordinates:**

Latitude:	32 Degrees	26 Minutes	37.4 Seconds	Ν
Longitude:	103 Degrees	6 Minutes	26.2 Seconds	W

#### **Universal Transverse Mercator Zone: 13N**

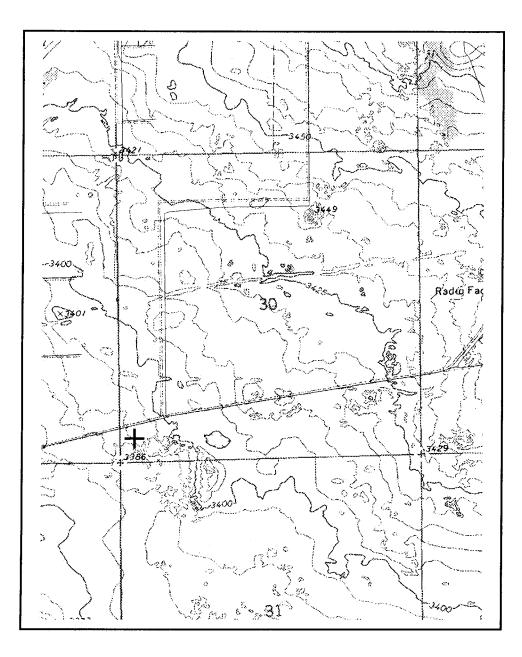
NAD 1983(92) (Meters)	N: 3,591,197	E: 677,925
NAD 1983(92) (Survey Feet)	N: 11,782,118	E: 2,224,160
NAD 1927 (Meters)	N: 3,591,021	E: 677,885
NAD 1927 (Survey Feet)	N: 11,781,542	E: 2,224,027

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

NAD 1983(92) (Meters)	N: 160,729	E: 280,286
NAD 1983(92) (Survey Feet)	N: 527,326	E: 919,571
NAD 1927 (Meters)	N: 160,738	E: 267,644
NAD 1927 (Survey Feet)	N: 527,354	E: 878,097

### NEW MEXICO OFFICE OF STATE ENGINEER

## Locator Tool Report





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WR File Number: CPScale: 1:20,224Northing/Easting: UTM83(92) (Meter):N: 3,591,197E: 677,925Northing/Easting: SPCS83(92) (Feet):N: 527,326E: 919,571GW Basin: CapitanSecond Second S

Page 2 of 2

Print Date: 04/02/2009

## ATTACHMENT B

## DOCUMENTATION OF NM811 UNDERGROUND UTILITY CLEARANCE

### NM811 LOCATE REQUEST

TICKET NUMBER:	18FE270504	Update of:
Ticket Type:	Standard Locate	
Creation Date:	02/27/18 AT 12:24	
		Excavator Information

	Excavator information			
Company:	Gordon-PSC	Main Contact Phone:	(505) 235-4482	
Address:	213 S Camino del Pueblo	Secondary Phone:	5058676990	
City, St, Zip:	Bernalillo, NM 87004	Main Contact Email:	claykilmer@gmail.com	
Company Phone:	5058676990	Alternate Contact:	Don Gray	
Company Fax:		Alternate Contact Phone:	505-401-8628	
Main Contact:	Clav Kilmer	Alternate Contact Email:	dgrav@team-psc.com	

Work Information				
State:	NM	Work To Begin:	03/01/18 AT 12:15	
County:	LEA	Expire Date	03/15/18 AT 12:15	
Place:	RURAL LEA			
Address:	S Wallach LN			
Intersection:	NM-18			
Latitude:	32.442063	Longitude:	-103.105377	
Secondary Lat:	32.449028	Secondary Long:	-103.090572	
Work Type:	Bore–Auger – Water Well	Working For:	Sundance West	
Pre-marked:	YES	Mechanical Boring:	NO	
Contact Prior to Locating	g: NO	Contact After Locating:	YES	

#### Location Information (Driving Directions)

From the inter of NM-18 & Wallach Ln, drive east on Wallach Lane 2.1 miles.

#### Location Information (Spotting Instructions)

Exact locations where wells are to be drilled are marked with stakes and white flagging. Please spot any UG utilities within 10 feet of well locations

#### Location Information (Remarks)

8 monitoring well locations are staked with white flagging at the following coordinates: 103D 06M 10.1S; 32D 26M 53.3S 103D 06M 10.1S; 32D 26M 45.3S 103D 05M 28.2S; 32D 26M 38.29S 103D 05M 47.8S; 32D 26M 35.34S 103D 05M 33.13S; 32D 26M35.3S 103D 05M 58.7S; 32D 26M 35.21S 103D 06M 3.9S; 32D 26M 35.2S 103D 06M 9.8S; 32D 26M 35.3S No Hazards – Open Access

## TRSQ: [W8T21SR38ES30SE][W8T21SR38ES30SW][W8T21SR38ES31NE][W8T21SR38ES31NW]

#### **Utilities Notified:**

Code	Name	Added Manually?
COEUN	CITY OF EUNICE	False
TCO2	TRINITY PIPELINE GP LLC	False
WNDSTRM	WINDSTREAM COMMUNICATIONS	False
XCEH	XCEL- HOBBS SERVICE CENTER	False

#### Response Status As Of Wednesday, May 16, 2018 1:15 PM

	Response	status no or meanesaay	
<u>Status</u>	<u>Code</u>	<u>Name</u>	<u>Facilities</u>
Closed	COEUN	CITY OF EUNICE	Water, Waste Water – Sewer
		<ul> <li>March 01, 2018 12:2</li> </ul>	
		PM by AutoClose: No	
		Response Provided	
		Closed by the system	
		process for excessive	
		age.	
Closed	TCO2	TRINITY PIPELINE GP LLC	Pipeline
		<ul> <li>February 27, 2018 1:</li> </ul>	42
		PM by	
		onecall@trinityco2.co	om:
		UFO Cleared	
		Trinity CO2 is approx.	
		150' due east of	
		easternmost GPS.	
Closed	WNDSTRM	WINDSTREAM	Phone
		COMMUNICATIONS	
		<ul> <li>February 27, 2018 4:</li> </ul>	
		PM by NMKORTERRA:	
		UFO Cleared	
Closed	XCEH	XCEL- HOBBS SERVICE	Electric
		CENTER	

• February 27, 2018 3:40 PM by USICLLC: UFO Cleared

## ATTACHMENT C

LITHOLOGIC LOGS AND CONSTRUCTION DETAILS, VADOSE ZONE WELLS

e Name: ell Location S. Elevation ill Date gged By: illing Meth le Diamete oject Numl	n (feet): lod: er:	Sundance West Servi 34 (32°, 26', 53.3" N, 103° 3/7/18 Clay Kilmer Hollow-Stem Auger (H 7 7/8-inch Gordon PSC Project N	06', 10.1" W Drilled Depth: Cased Depth: Drilling Contra OSE POD NO. A)	50 ft 50 ft	ion core barrel
epth (ft) Below Land Surface	WELL	Completion Details		ic Descriptions ent, water-bearing properties, etc.	Unified Soil Classification Svetem Symbol
0	Casing	Annular Fill Concrete 2 ft - 0 ft	Soil, sandy loam, 95% sand, 5% fines, orange, 5YR 5/	/6, fine grained, friable, non-plastic, dry	sw
5	/C Sch 40 FJ 3 ft above grade	Annular grout seal – Portland	Sand, fine to medium, 75% sand, 25% fines, silty, 2.5	YR 4/8, firm, low plasticity, slightly moist	SM
5	Blank well casing -2" PVC Sch 40 FJ 40.0 ft below land surface to 3 ft above grade	Type I-II 5% bentonite 37.0 ft - 2.0 ft	Caliche, silty, pink-white, 85% sand, 15% fines, 2.5YR	8/2, hard, non-plastic, dry	SM
5		_	Sand, Silty, fine to medium, 75% sand, 25% fines, yell gravel, up to 1/3 inch, quartzite (MARL?), hard, non-pl		SM
0		-	Sand, AA. Gravel up to 1 inch, 75% sand, 25% fines,	pink-white 5YR 8/2, hard, non-plastic, dry	SM
5		1/4-in bentonite pellet - hydrated 38.0 ft - 37.0 ft	Sand, fine toned, silty, pink, 75% sand, 25% fines, 5YI soft, non-plastic, dry	R 8/3, minor gravel 1/8" sub-rounded, quartzite,	SM
D	screen - 40.0 ft		Gravel, fine to 1/2", sandy, silty, pink-yellow, 7.5YR 7/4	4, 60% gravel, 30% sand, 10% fines, firm, non-plastic, dry	GM
5	Sch 40 PVC scree slot 50.0 ft - 40.0	20/40 Colorado Silica Sand 50.0 ft - 38.0 ft	Sand, fine to medium, silty, orange, 2.5YR 5/8, 80% s	and, 20% fines, firm, low-plasticity, slight moisture	SM
0	2-inch S 0.010 sl		Shale, clayey, variegated red/green, 2.5YR 3/6 to 10Y <u>7.5R 4/1 to</u> 10GY 8/1 Total Depth Drilled: 50 ft Well dry at total depth	R 5/2, hard, high plasticity, dry, 2.5 YR 4/1 to 10 YR 8/1	

GORI ENVIRONI Well		P: 505	MONITORING WELL LOG .867.6990 .867.6991	
Site Name: Vell Locatio S. Elevatio Drill Date .ogged By: Drilling Meth Hole Diamet Project Num	n (feet): nod: er:	Sundance West Se 44 32°, 26', 45.35" N, 7 3/6/18 Clay Kilmer Hollow-Stem Auger 7 7/8-inch Gordon PSC Projec	103°, 06', 10.15" W Drilled Depth: 45 ft Cased Depth: 45 ft Drilling Contractor: Talon LPE, Amarillo Texas OSE POD NO. (Well No.): (VZ-3) CP-1694 POD 2	oon core barrel
Depth (ft) Below Land Surface	WELL C	completion Details	Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.	Unified Soil Classification System Symbol
_0 - - - 5	Casing	Annular Fill Concrete 2 ft - 0 ft	Soil, sandy, well sorted, 95% sand, 5% fines, orange, 5YR 6/6, fine grained, friable, non-plastic, dry	SW
 10 	Blank well casing -2" PVC Sch 40 FJ 35.0 ft below land surface to 3 ft above grade	Annular grout seal Portland Type I-II 5% bentonite 32.0 ft - 0.0 ft	Sand, fine to medium, 70% sand, 30% fines, silty, 5YR 6/6, firm, medium plasticity, moist Sand, with caliche, 75% sand, 25% fines, hard, buff to white, 2.5YR 8/2, firm, low placticity, moist Sand, silty, red, 5YR 5/6, 75% sand, 25% fines, firm, low plasticity, moist	SC SM SM
20	Blank well o 35.0 ft below lan		Caliche, sand, fine to medium grained, buff-pink, 5YR 8/3, 80% sand, 20% fines, firm, non-plactic, dry	SM
25			Caliche as above, fine to medium gravel, mixed igneous, 80% sand, 20% fines, hard, non-plastic, dry	SM
35	2	1/4-in bentonite pellet - hydrated 33.0 ft - 32.0 ft	Sand, fine, caliche cement, pink-buff, 5YR 8/3, 75% sand, 25% fines, friable non-plastic, dry	SM
40	Sch 40 PVC screen slot 46.0 ft - 36.0 ft	20/40 Colorado Silica Sand 45.0 ft - 33.0 ft	Sand, fine, silty, orange, 5 YR 7/8, 80% sand, 20% fines, friable non-plastic, dry Drilling hard, redbed clasts	SM
45	2-inch 5 0.010 s		Shale, sandy, maroon, 2.5YR 3/6, hard, 25% sand, 75% fines, NP, dry	
50			Total Depth Drilled: 45 ft Well dry at total depth	
55				
- -				

<b>GOR</b> ENVIRONI Well		PSC Suite 4 Rio Ra P: 505.	ncho, NM 87124 MONITORING WELL LOG 867.6990 867.6991	
Site Name: Well Locatic L.S. Elevatic Drill Date Logged By: Drilling Meth Hole Diamet Project Num	hod:	Sundance West Ser 84 (32°, 26', 38.29" N, 1 3/7/18 Clay Kilmer Hollow-Stem Auger 7 7/8-inch Gordon (PSC Projec	03°, 05', 28.2" W Drilled Depth: 35 ft Cased Depth: 35 ft Drilling Contractor: Talon LPE, Amarillo Texas OSE POD NO. (Well No.): (VZ-5) CP-1694 POD 3	oon core barrel
Depth (ft) Below Land Surface	WELL	Completion Details	Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.	Unified Soil Classification System Symbol
0	Casing	Annular Fill Concrete 2 ft - 0 ft	Soil, sandy loam, brown, 5YR 7/4, 95% sand, 5% fines, friable, non-plastic, dry	sw
5 	40 FJ ove grade		Sand, fine, silty, orange, 5YR 7/4, 95% sand, 5% fines, friable, non-plastic	SW
10 	Blank well casing -2" PVC Sch 40 FJ ft below land surface to 3 ft above grade	Annular grout seal Portland Type I-II 5% bentonite 22.0 ft - 0.0 ft	Caliche, bound sand, orange as above, 80% sand, 20% fines, firm, non-plastic, dry	SM
_15 - -	Blank well ca 25.0 ft below land	-	Sand, fine to medium grained, silty, pink, 5YR 8/4, less caliche cement 85% sand, 15% fines, firm, non-plastic, dry	SM
20 	25	1/4-in bentonite pellet - hydrated 23.0 ff - 22.0 ft	Sand, fine, silty, light pink, minor gravel to pebbles, 5YR 8/2, 85% sand, 15% fines, firm, non-plastic	SM
_25	een 0 ft		Sand, A.A., darker pink, 2.5 YR 7/6, 85% sand, 15% fines, friable, non-plastic, dry	SM
- - - 30 - -	2-inch Sch 40 PVC screen 0.010 slot 35.0 ft - 25.0 ft	35.0 ft - 23.0 ft	Sand, silty, pebbly, mottled green to orange caliche in vertical fractures, 85% sand, 15% fines firm, low plasticity, slightly moist Shale, fractured, weathered, red to green Shale, red, clayey, sandy, 7.5 YR 4/4	SM
_ 35   			Fotal Depth Drilled: 35 ft Well dry at total depth	
40 - - - 45				
- - - 50				
- - - _55				

Elevation Date ged By: ling Meth Diamete	Location (WGS-84, 32°, 26', 34.7" N, 1 Elevation (feet): Date 4/5/18 ged By: Clay Kilmer ng Method: Hollow-Stem Auge Diameter: 7 7/8-inch		Cased Depth:45 ftDrilling Contractor:Talon LPE, Amarillo TexasOSE POD NO. (Well No.):(VZ-6) CP-1694 POD 4					
epth (ft) Below Land urface	WELL C	Completion Details	Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.	Unified Soil Classification Svetem Svmhol				
	Casing	Annular Fill Concrete 2 ft - 0 ft	Soil, sandy loam, orange brown, 5YR 6/4, 85% sand, 15% fines, friable, non-plastic, dry	SM				
5	Blank well casing -2" PVC Sch 40 FJ 35.0 ft below land surface to 3 ft above grade	Annular grout seal Portland Type I-II 5% bentonite 32.0 ft - 0.0 ft	Sand, silty, minor gravel, mottled orange to grey, 5YR 6/6 to 5YR 7/1, chaliche in vertical joints and laminae 80% sand, 20% fines, firm, low plasticity, slightly moist	SM				
,	Blank well 35.0 ft below la		Sand, fine, orange, 7.5YR 6/6, with caliche laminae, 90% sand, 10% fines, friable, non-plastic, dry	SP-SM				
;			Caliche, sand, fine, silty, pink-white, 5YR 8/1, 80% sand, 20% fines, friable, non-plastic, dry	SM				
,		1/4-in bentonite pellet - hydrated	Sand, fine, silty, mottled orange to green, 7.5YR 7/4 to 2.5 GY 8/0, 80% sand, 20% fines, non-plastic, dry	SM				
5	screen 35.0 ft	33.0 ft - 32.0 ft	Sand, fine, silty, orange-brown, 7.5 YR 7/4, gravel up to 1/6-in, subrounded igneous mixed (quartzite) 15% gravel, 80% sand, 5% fines, hard, non-plastic, dry	SM				
)	h Sch 40 PVC screen ) slot 45.0 ft - 35.0 ft	20/40 Colorado Silica Sand 45.0 ft - 33.0 ft	Gravel, sandy, (gravel up to 1.25 in, well rounded, quartzite, red, 7.5 YR 4/1 50% gravel, 35% sand, 15% fines, non-plastic, dry	GP				
5	2-inch S 0.010 s		Red bed, maroon shale, clayey with green laminae and spherical inclusions 5% sand, 95% fines, hard, high plasticity, slightly moist					
5			Fotal Depth Drilled: 45 ft Well dry at total depth					

<b>GORI</b> ENVIRONN Well		DSC Suite Rio R P: 505	mcho, NM 87124 MONITORING WELL LOG .867.6990 .867.6991					
Well Location (WGS-84 32°, 26', 34.7" N, 1         L.S. Elevation (feet):         Drill Date       4/4/18         Logged By:       Clay Kilmer         Drilling Method:       Holow-Stem Auge         Hole Diameter:       7 7/8-inch			ervices Site Closure Sampling Method: Auger Cuttings - 3-inch x 5 ft lead auger split spoon core barrel 03°, 05', 55.6" W Drilled Depth: 50 ft Drilling Contractor: Talon LPE, Amarillo Texas OSE POD NO. (Well No.): (VZ-7) CP-1694 POD 5					
Depth (ft) Below Land Surface	WELL C	Completion Details	Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.					
0   5	Casing	Annular Fill Concrete 2 ft - 0 ft	Soil, sandy loam, brown, 5YR 5/1, 95% sand, 5% fines, friable, non-plastic, dry	AS Classification System Symbol				
10   15 	Blank well casing -2" PVC Sch 40 FJ 40.0 ft below land surface to 3 ft above grade	Annular grout seal Portland Type I-II 5% bentonite 37.0 ft - 0.0 ft	Sand, silty, orange, 5YR 5/6, 85% sand, 15% fines, firm, low plasticity, slightly moist Gravelly from 13' to 15', (up to 1/4 in diameter, subrounded, mixed igneous)	SM				
20 	40.0		Sand, as above, white caliche in vertical joints, orange to greyish white, 5YR 7/6 to 10YR 8/1	SP-SM				
_25   _30			Caliche, sandy, grayish white, 10YR 8/1, 90% sand, 10% fines, firm, non-plastic, dry	SP-SM				
_ _ _ _ 35 _			Caliche, sand, laminated, pink, 5YR 8/2, 85% sand, 15% fines, firm, non-plastic, dry	SM				
40 	40 PVC screen 50.0 ft - 40.0 ft	1/4/in bentonite petet - mydrated 38.0 ft - 37.0 ft 20/40 Colorado Silica Sand 50.0 ft - 38.0 ft	Gravel, fine to medium, up to 1/2 in, subrounded, mixed igneous lithology, red, 10R 5/6 50% gravel, 30% sand, 20% fines, hard, non-plastic, dry	GM				
50	2-inch Sch 0.010 slot		Chinle siltstone, sandy, micaceous, variegated maroon to green, 10R 4/3 to 5G 7/1					
        			Well dry at total depth					

GORD ENVIRONMEN Well Na		DSC Suite 4 Rio Ra P: 505	mcho, NM 87124 MONITORING WELL LOG .867.6990 .867.6991				
Veil Location (WGS-84 32°, 26', 34.95" N.        S. Elevation (feet):         prill Date       3/8/18         .ogged By:       Clay Kilmer         rilling Method:       Hollow-Stem Augr         hole Diameter:       7 7/8-inch		3/8/18 Clay Kilmer Hollow-Stem Auger 7 7/8-inch	103°, 05', 58.8" W Drilled Depth: 60 ft Cased Depth: 60 ft Drilling Contractor: Talon LPE, Amarillo Texas OSE POD NO. (Well No.): (VZ-8) CP-1694 POD 6				
Depth (ft) Below Land Surface	WELL Completion Details		Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.				
_0 _(  5	Casing	Annular Fill Concrete 2 ft - 0 ft	Sand, silty, fine to medium, brown, 7.5 YR 8/6, 90% sand, 10% fines, friable, non-plastic, dry	Unified Soil Unified Soil Classification System Symbol			
  10	PVC Sch 40 FJ to 3 ft above grade	Annular grout seal Portland	Sand, fine, silty, orange, 10R 5/8, 85% sand, 15% fines, firm, low plasticity, slightly moist	SM			
15	Blank well casing -2" 50.0 ft below land surface	Type I-II 5% bentonite 47.0 ft - 0.0 ft	Gravel, sandy, up to 3/8 in, rounded, pink, 2.5 YR 7/4, 45% gravel, 40% sand, 15% fines, hard, NP, dry	GM			
20	Blank 50.0 ft belov		Caliche, sandy, fine to medium, white, 5YR 8/2, 85% sand, 15% fines, friable, non-plastic, dry	SM			
- - - 25			Sand, fine, silty, buff, 5YR 7/6, 85% sand, 15% fines, friable, non-plastic, dry	SM			
-		-	Caliche, fine silty sand, white, 7.5 YR 8/2, 80% sand, 20% fines, friable, non-plastic, dry	SM			
_30 - - - - 35			Caliche, fine, sand, silty, reddish pink, 2.5 YR 7/6, 80% sand, 20% fines, firm, non-plastic, dry	SM			
  40 			Gravel, coarse, up to 2 in, well rounded, sandy, silty, red-brown, 2.5 YR 6/6 65% gravel, 20% sand, 15% fines, hard, non-plastic, dry	GM			
_45		1/4-in bentonite pellet - hydrated	Sand, caliche, clasts of light green limestone, enmarl, fine grained maroon sandstone 25% gravel, 60% sand, 15% fines, hard, non-plastic, dry	SM			
50	h 40 PVC screen t 60.0 ft - 50.0 ft	48.0 ft-47.0 ft 20/40 Colorado Silica Sand 60.0 ft - 48.0 ft	Sand, fine, silty, red, 5YR 5/6 Sand, gravelly, caliche, green limestone clasts, 10% gravel, 75% sand, 15% fines, hard, non-plastic, dry	SM			
_	2-inch Scl 0.010 slot		Sandstone, fine, silty, clayey, maroon, 2.5 YR 2.5/4, micaceous 70% sand, 30% fines, hard, non-plastic, dry				

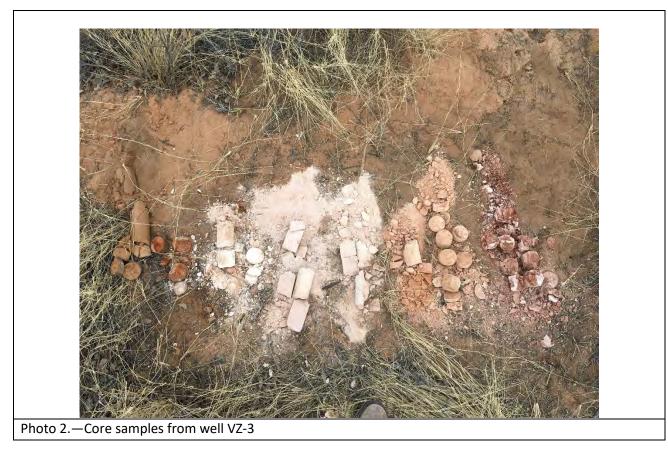
GOR ENVIRONI Well		DSC Suite 4 Rio Ra P: 505	ancho, NM 87124 MONITORING WELL LOG .867.6990 .867.6991	
ite Name:	on (WGS-8 on (feet): hod: ter:	Sundance West Se 84 32°, 26', 35.2" N, 1 4/3/18 to 4/4/18 Clay Kilmer Hollow-Stem Auge 7 7/8-inch	ervices Site Closure Sampling Method: Auger Cuttings - 3-inch x 5 ft lead auger split spo 03°, 06', 3.86" W Drilled Depth: 65 ft Cased Depth: 65 ft Drilling Contractor: Talon LPE, Amarillo Texas OSE POD NO. (Well No.): (VZ-9) CP-1694 POD 7	on core barrel
Depth (ft) Below Land Surface	WELL C	Completion Details	Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.	Unified Soil Classification Svstem Symbol
0	Casing	Annular Fill Concrete 2 ft - 0 ft	Soil, sandy, loam, brown, 5YR 5/2, 95% sand, 5% fines, friable, non-plastic, dry	SP
- - 5 - - - - 10 -	PVC Sch 40 FJ to 3 ft above grade	Annular grout seal Portland	Sand, fine to medium grained, orange, 7.5 YR 7/8, 95% sand, 5% fines, friable, non-plastic, dry	SP
- - - 15 -	Blank well casing -2" PVC Sch 40 FJ ft below land surface to 3 ft above grade	Type I-II 5% bentonite 52.0 ft - 0.0 ft	Sand, fine, light orange, 5YR 7/6, 95% sand, 5% fine, friable, low plasticity, slightly moisty	SP
	25.0		Sand, silty, fine, mottled orange to green-white, caliche cement 90% sand, 10% fines, firm, non-plastic, dry	SP-SN
			Caliche, bound sand, silty, 85% sand, 15% fines, hard, non-plastic, dry	SM
_30 - - - - _ 35 -			Sand, fine, silty, very light pink, 10YR 8/2, carbonate cement 80% sand, 20% fines, firm, non-plastic, dry	SM
40			Sand, fine, silty, mottled red-white (caliche), 2.5 in green quartzite cobble at 45' 80% sand, 20% fines, firm, low plasticity, dry	SM
50			Gravel, sandy, up to 1 in, mixed igneous, 45% gravel, 35% sand, 20% fines, hard, non-plastic, dry	GM
55	VC screen 0 ft - 55.0 ft	1/4-in bentonite pellet - hydrated 53.0 ft - 52.0 ft 20/40 Colorado Silica Sand	Sand, fine to medium, silty, red 10R 5/4, with gravelly zones, 85% sand, 15% fines, hard, non-plastic, dry	SM
_60	ich Sch 40 PVC 10 slot 65.0 ft -	65.0 ft - 53.0 ft	Transitioning to 20% sand, 80% fines, hard, low plasticity, dry	
_65	2-in 0.01		Shale, silty, clayey (Chinle), variegated red-green, Variegated red-green, 2.5 YR 5/4 to 5G 7/1, micaceous	
			Total Depth Drilled 65 ft Well dry at total depth	

PSC Suite Rio R P: 505	ancho, NM 87124 MONITORING WELL LOG .867.6990 .867.6991			
4/2/18 Clay Kilmer Hollow-Stem Auger 7 7/8-inch	Cased Depth:60 ftDrilling Contractor:Talon LPE, Amarillo TexasOSE POD NO. (Well No.):(VZ-10) CP-1694 POD 8	on core barrel		
mpletion Details	Lithologic Descriptions Drill notes, moisture content, water-bearing properties, etc.			
Annular Fill Concrete 2 ft - 0 ft	Soil, sandy loam, brown, 7.5 YR 6/3, 95% sand, 5% fines, friable, non-plastic, dry	Unified Soil G Classification System Symbol		
Annular grout seal Portland Type I-II	Sand, well sorted, orange, 7.5YR 7/8, 95% sand, 5% fines, friable, non-plastic, dry	sw		
5% bentonite 47.0 ft - 0.0 ft	Sand, silty, yellow orange, 10YR 6/6, caliche in vertical joints, 14'-20' 85% sand, 15% fines, firm, low plasticity, slightly moist	SM		
	Sand, fine, silty, yellow-orange, 10YR 7/6, caliche in horizontial laminae 85% sand, 15% fines, firm, non-plastic, dry	SM		
	Caliche, sand, fine, white-pink, 10YR 8/8, 80% sand, 20% fines, firm, non-plastic, dry	SM		
	Caliche as above, harder, well cemented, 80% sand, 20% fines, hard, non-plastic, dry	SM		
	Caliche, sandy, gravelly (subrounded, up to 1/2 in, quartz), pale orange, 5YR 8/3 25% gravel, 55% sand, 20% fines, hard, non-plastic, dry	SM		
	Gravel, coarse (up to 1.5 in, mixed igneous), 75% gravel, 15% sand, 10% fines, hard, non-plastic, dry <u>Clavey s</u> hale inclusions in lower (red) pink, 2.5 YR 7/4 Gravel, coarse, sandy, (up to 1/2 in, rounded), maroon, 7.5R 4/1	GP-GM GP-GM		
1/4-in bentonite pellet - hydrated 48.0 ft - 47.0 ft	Gravel, coarse, sandy, (up to 1/2 in, rounded), maroon, 7.5R 4/1 75% gravel, 15% sand, 10% fines, hard, non-plastic, dry  Sand, medium to fine, red, 10R 4/4, 85% sand, 15% fines, hard, non-plastic, slightly moist	GP-GM SM		
20/40 Colorado Silica Sand 60.0 ft - 48.0 ft	Sand, as above, with minor gravel (up to 1/2 in, well rounded) 10% sand, 80% gravel, 10% fines, hard, non-plastic, dry	SP-SM		
	Sandstone, weathered, maroon, 10R 5/4, (Dockum), 95% sand, 5% fines, hard, non-plastic, dry			
20/4 Si	40 Colorado llica Sand 0 ft - 48.0 ft	Sand, medium to fine, red, 10R 4/4, 85% sand, 15% fines, hard, non-plastic, slightly moist Sand, as above, with minor gravel (up to 1/2 in, well rounded) 10% sand, 80% gravel, 10% fines, hard, non-plastic, dry		

## ATTACHMENT D

PHOTO RECORDS OF DRILL CORES, WELL CONSTRUCTION MATERIALS AND SURFACE COMPLETIONS

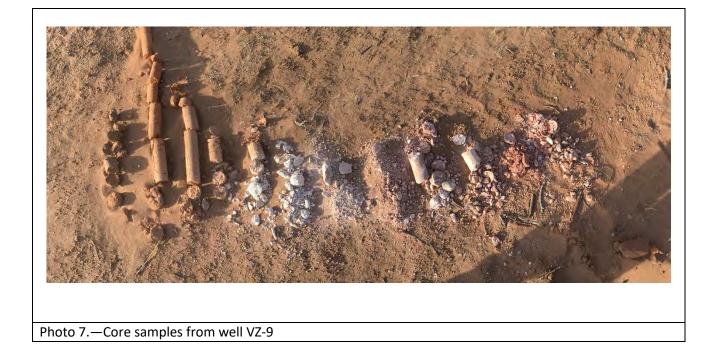












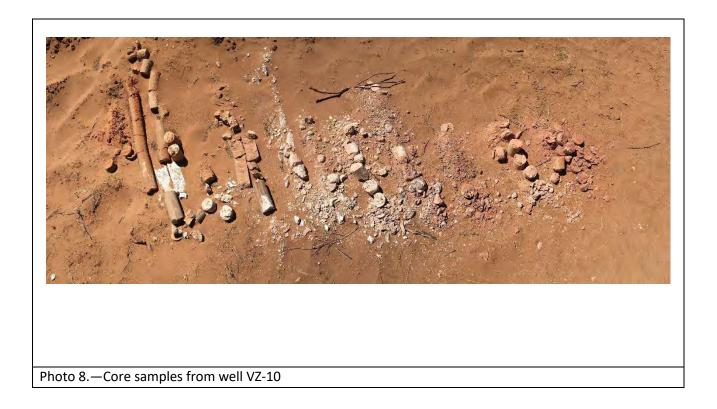
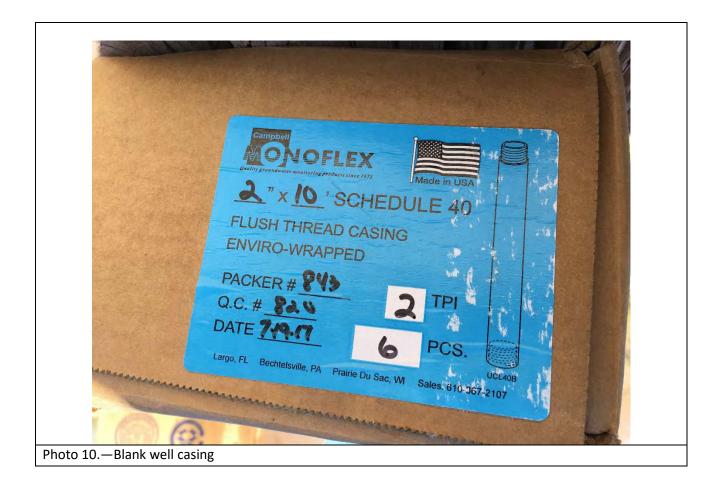
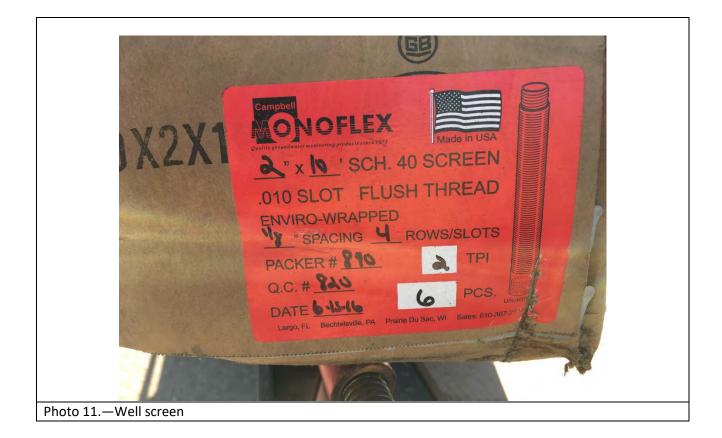




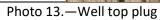
Photo 9.—Hollow stem auger drill equipment and crew





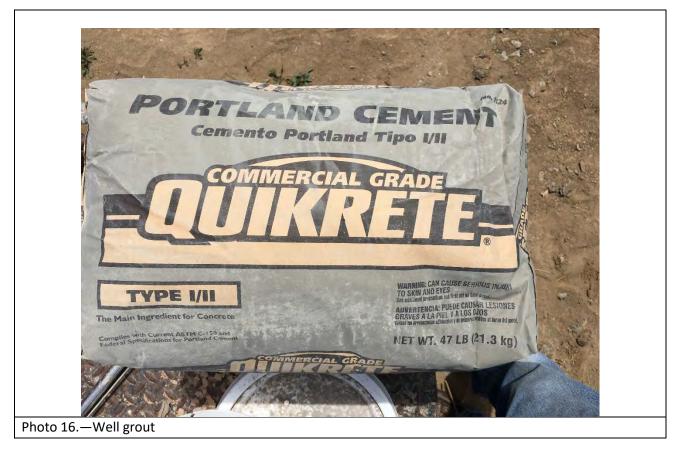


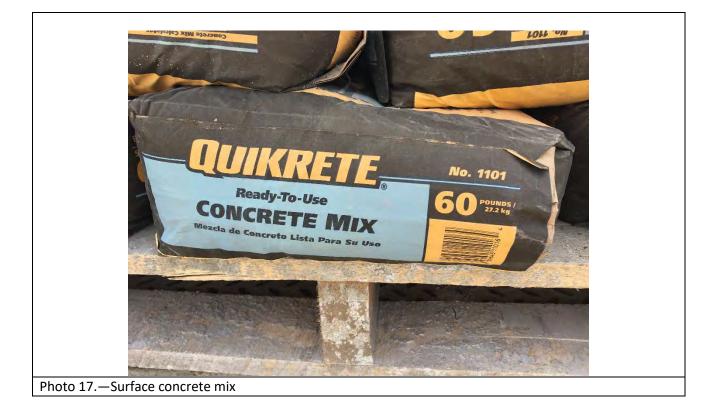




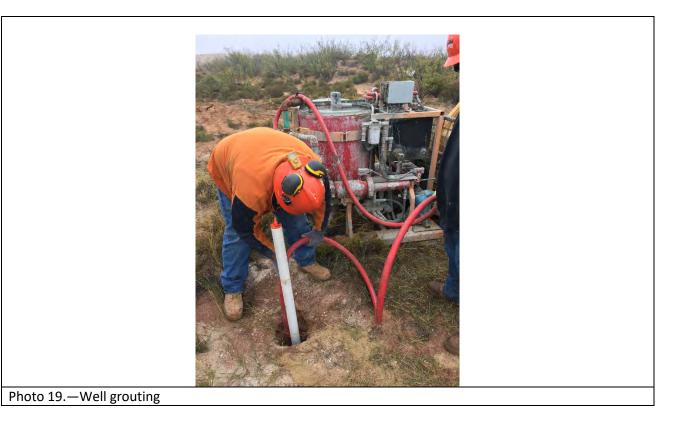














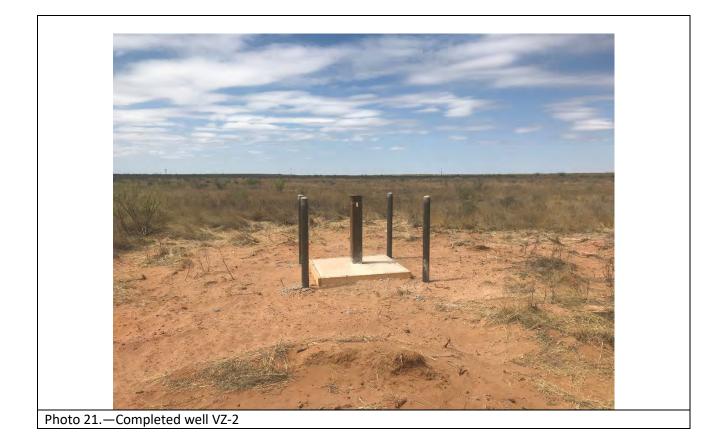












Photo 26.—Completed well VZ-8





## ATTACHMENT E

NMOSE WELL RECORDS FOR VADOSE ZONE WELLS



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

AMENDED

www.ose.state.nm.us

											<u></u>
		ER (WEL	L NUMBER)				OSE FILE NUN	ABER(S)			
GENERAL AND WELL LOCATION	VZ-1						CP 1016				
TI	WELLOWN	IER NAM	E(S)				PHONE (OPTIC	DNAL)			
00	Sundan	ce Ser	vices, Inc.; Co	ontact Mr. Joe Ca	arrillo, Plant Ma	nager	545-394-2	2511			
LL	WELLOWN	NER MAIL	ING ADDRESS				CITY STATE Z				ZIP
/EL	1001 6tl	h Stree	et				Eunice NM 8823				
DW		T		DEGREES	MINUTES SE	CONDS	l				···
AN	WELI						* ACCURACY REQUIRED: ONE TENTH OF A SECOND				
AL	LOCATI	i	LATITUDE	32	26	59.50 N		UIRED: WGS 84	in or Abbo	JOND	
NER	(FROM C	JPS)	LONGITUDE	103	5	28.60 W	· DATOM REC	UIRED. WUS 84			
GEN	DESCRIPT	ION RELA	ATING WELL LOCAT	ION TO STREET ADDRE	SS AND COMMON LAN	IDMARKS					
-i											
					· · · · · · · · · · · · · · · · · · ·	······				1	
	(2.5 ACF	RE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION		TOWNSHIP	NORTH	RANGE	🗹 EAST
ΑL	NE 🥠	4	NE 1/4	NE ¼	SE ¼		30	21	🖌 south	38	WEST
ION	SUBDIVISI					LOT NUN	IBER	BLOCK NUMBER		UNIT/TRA	СТ
OPTIONAL	in L	ea Co	unty								
2. C	HYDROGR	APHIC SU	JRVEY					MAP NUMBER		TRACT NU	IMBER
	LICENSE N	UMBER	NAME OF LIC	ENSED DRILLER			·	NAME OF WELL D	RILLING CON	MPANY	
	WE	)225	John Agui	rre				Rodgers & C	o., Inc.		
	DRILLING	STARTED			PLETED WELL (FT)	BORE HO	LE DEPTH (FT)	DEPTH WATER FI		TERED (FT)	
7	4/1	9/09	4/19/09		28		150 Unknown				
DRILLING INFORMATION								STATIC WATER LE	VEL IN COM	PLETED WEI	LL (FT)
TAL	COMPLETI	ED WELL	IS: ARTESIA	N DRY HOLE			N/A				
OR						I					
NF	DRILLING FLUID:										
Ū,	DRILLING	METHOD	ROTARY	HAMMER	ER – SPECIFY: Hollow stem auger						
FI	DEPT	H (FT)	BORE HO	LE	CASING		NECTION	INSIDE DIA. CAS		G WALL	SLOT
RIL	FROM	TO	DIA. (IN	) M	ATERIAL	TYPE	(CASING)	CASING (IN)	THICKN	VESS (IN)	SIZE (IN)
3. D	0	23	7.25	P\	/C casing	Flush f	hread joint	2	Sch 4	0 PVC	~.
	23	28	7.25	PV	/C screen	Flush f	hread joint	2		0.216	0.010
									Ĩ	NOS INI	
ĺ									C.	8m	
	DEPT	`H (FT)	THICKNE	co E	ORMATION DESCR		DINCIDAL W	ATER READING	TTP ATA	E B	VIELD
Y.	FROM	то	THICKNE (FT)	55 F	(INCLUDE WAT	ER-BEARING	CAVITIES O	R FRACTURE ZO	NES)	L, NEW	YIELD (GPM)
TAT	13	27	14				ne to fine; It.		σ	<del>TA</del>	
STI										<u>≈g</u>	
NG	27	28	1			Claystone	to siltstone;	ury		m <u>e</u>	
<b>VRI</b>										E FF	
BE/									<u>–</u> 5–	<u><u></u></u>	
ER									~		1.
4. WATER BEARING STRATA		JSED TO	ESTIMATE YIELD OF	WATER-BEARING STR.	АТА			TOTAL ESTIMATE			
4. //	N/A								N/A	A	
									7	.021	22-1
	FOR OSI	e inter	NAL USE					WELL RECO	ORD & LO	Version 6	73/08
	FILE NU			16	POD NUM	4BER		TRN NUMB	er 42	8017	
	LOCATI		21 28 3	16	l			ł	ť	PAGE 1	OF 2

Monitor

₽ Į	TYPE OF	F PUMP:	SUBMER		☐ JET □ CYLINDER	☑ NO PUMP – WELL NOT EQUIPPED □ OTHER – SPECIFY:					
SEAL AND PUMP			DEPTH		BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHO PLACE			
AL	ANNU SEAL		0	19	7.25	Cement/bentointe	4.9	Tremie			
5. SE	GRAVE	L PACK	19	21	7.25	Bentonite pellets	.5	Tremie			
47			21	28	7.25	10/20 silica sand	1.8	Tremie			
	DEPTI	H (FT)	THICK			COLOR AND TYPE OF MATERIAL ENCOUNT		WAT			
	FROM	ТО	(FT	r)	(INCLU	JDE WATER-BEARING CAVITIES OR FRACTU	URE ZONES)	BEARING?			
	0	8	8		Sar	Sand; v. fine to fine; med. rust/tan; dry to s. moist					
	8	13	5	5		Caliche; white to light tan		🗖 YES	□ NO		
	13	27	14	1		Sand; v. fine to fine; lt. tan		🗆 YES	🗆 NO		
	27	28	1	······		Claystone to siltstone; dry		🗆 YES	🗆 NO		
ΓΓ								🗖 YES	🗆 NO		
WE								🗆 YES	□ NO		
OF								🗖 YES	🗆 NO		
LOG								🗖 YES	□ NO		
GIC								T YES	□ NO		
GEOLOGIC LOG OF WELL								🗆 YES	□ NO		
GEC								T YES	□ NO		
6.							· · · ·	🗖 YES	□ NO		
								☐ YES	🗆 NO		
								🗖 YES	□ NO		
								VES	□ NO		
								S YES	🗆 NO		
								TYES	🗆 NO		
			ATTACH	ADDITION	AL PAGES AS NE	EEDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL				
0			METHOD:	BAILE	R 🗌 PUMP	AIR LIFT OTHER – SPECIFY:	·····				
NAL INFO	WELL	. TEST				ATA COLLECTED DURING WELL TESTING, I AND DRAWDOWN OVER THE TESTING PERIC		ME, END TI	ME,		
IAN	ADDITION	LAL STATES	AENTS OR EXPL								
7. TEST & ADDITIO	MP-2.	AL STATES	IEN 15 OK EAPL	ANATIONS:							
VDD											
\ <b>&amp;</b>											
TEST											
7.7											
	THEIN	DEBSICNI			UAT TO THE DE						
SIGNATURE	CORREC	CT RECOR	D OF THE AB	OVE DESCH	<b>UBED HOLE ANI</b>	EST OF HIS OR HER KNOWLEDGE AND BELIE D THAT HE OR SHE WILL FILE THIS WELL RE ON OF WELL DRILLING:					
	C	John	azun	re //	2	05/20/09					
×			SIGNATUR	E OF DRILI	ÉR	DATE					
L						· · · · ·		<u> </u>			

FOR OSE INTERNAL USE		WELL RECORD & LOG	(Version 6/9/08)
FILE NUMBER CP-1016	POD NUMBER	TRN NUMBER $423$	1017
LOCATION 21, 38, 30, 4222			PAGE 2 OF 2

Monitor



# WELL RECORD & LOG

OFFICE OF THE STATE ENGINEER

AMENDED

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					······							
		ER (WEL	L NUMBER)				OSE FILE NUN	(BER(S)				
NO	VZ-4						CP 1018					
TT	WELL OW	VER NAM	IE(S)				PHONE (OPTIC	DNAL)				
0C	Sundan	ce Sei	rvices, Inc.; Co	ontact: Mr. Joe C	arrillo, Plant Ma	nager	575-394-2	511				
L L	WELL OW	VER MAII	LING ADDRESS				СІТҮ		STATE		ZIP	
'EL	1001 6t	n Stree	et				Eunice		NM	88	231	
MO						<u> </u>						
AN	WELI	-		DEGREES		CONDS	* ACCURACY REQUIRED: ONE TENTH OF A SECOND					
ΔL	LOCATI	-	LATITUDE	32	26	37.40 N			TH OF A SEC	UND		
GENERAL AND WELL LOCATION	(FROM C	(PS)	LONGITUDE	103	6	26.20 <sup>W</sup>	* DATUM REQ	UIRED: WGS 84				
GEN	DESCRIPT	ION REL	ATING WELL LOCAT	TION TO STREET ADDRE	SS AND COMMON LANI	DMARKS						
1. 0												
					· · · · · · · · · · · · · · · · · · ·							
	(2.5 ACI	· I	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION		TOWNSHIP	NORTH	RANGE	🗸 EAST	
AL	NW y	/4	SW ¼	SW 1/4	SW 1/4		30	21	 SOUTH	38	WEST	
NO	SUBDIVISI	ON NAM	E	•	•	LOT NUM	(BER	BLOCK NUMBER		UNIT/TRA	СТ	
OPTIONAL	in L	.ea Co	ounty									
2. 0	HYDROGR	APHIC SU	URVEY			•		MAP NUMBER		TRACT NU	JMBER	
	LICENSE N	UMBER	NAME OF LIC	CENSED DRILLER				NAME OF WELL DE	ULLING CON	IPANY		
	ļ	0225	John Agu					Rodgers & Co				
	DRILLING		-		PLETED WELL (FT)	ROPE HO	LE DEPTH (FT)	DEPTH WATER FIR		TEDED (FT)		
		4/09	4/24/09		60		150	DEI III WATERII	Unkna	• •		
NOI	-172		172 110	5				STATIC WATER LE			L (ET)	
IAT	COMPLET	ED WELL	IS: ARTESIA	N DRY HOLE	CONFINED)		SIAILC WATER LE	VEE IN COM N/A		JE (11)		
RN						l						
NFC	DRILLING FLUID: AIR MUD ADDITIVES – SPECIFY:											
101	WOULD       ARTESIAN       DRY HOLE       SHALLOW (UNCONFINED)       STATIC WATER LEVEL IN COMPLETED WEL         COMPLETED WELL IS:       ARTESIAN       DRY HOLE       SHALLOW (UNCONFINED)       N/A         DRILLING FLUID:       AIR       MUD       ADDITIVES - SPECIFY:       N/A         DRILLING METHOD:       ROTARY       HAMMER       CABLE TOOL       OTHER - SPECIFY:       Hollow stem auger         DEPTH (FT)       BORE HOLE       CASING       CONNECTION       INSIDE DIA.       CASING WALL         FROM       TO       DIA. (IN)       MATERIAL       TYPE (CASING)       CASING (IN)       THICKNESS (IN)											
	DEPT	TH (FT)	BORE HO	LE	CASING CONT			INSIDE DIA.	CASIN	G WALL	SLOT	
RIL	FROM	то	DIA. (IN		ATERIAL		(CASING)	CASING (IN)	+	IESS (IN)	SIZE (IN)	
3. D	0	50	10.75	P\	/C casing	Flush	thread joint	2	Sch 4	0 PVC		
	50	60			/C screen		thread joint	2		0 PVC	0.010	
						_	,		~	RS		
					har an a an				9	SC		
	DEPT	TH (FT)										
Y	FROM		THICKNE	.55 F	ORMATION DESCR			ATER-BEARING S R FRACTURE ZON		LI C.NG	YIELD (GPM)	
4. WATER BEARING STRATA	45	60	. ,						<u> </u>		(01)	
STF	45	60	15			Claystone	to siltstone;	ary				
UC N									<b>&gt;</b>	22		
<b>NRI</b>												
BE/												
ER								·····	ۍ ر	i ⊃∺		
/AT	METHOD	JSED TO	ESTIMATE YIELD O	F WATER-BEARING STR	АТА			TOTAL ESTIMATE	O WELL YIE	LD (GPM)		
4. 1	N/A								N/A	<b>\</b>		
<u> </u>	l									<u></u>		
	FOR OS	EINTER	NAL USE					WELL RECO	RD&IO	ULS C	7708	
	FILE NU		CP-101	18	POD NUM	BER		TRN NUMBI		280-	7-7	
	1		1.38.30	0 2721	1.001.001				<u> </u>	PAGE 1	OF 2	
	LUCAT	$\sim \mathcal{A}$	1.00,30	11 2231						FAGEL	Or 4	

Monitor

Ρ	TYPE O	F PUMP:	SUBMER		JET	NO PUMP – WELL NOT EQUIPPED						
MU				E	CYLINDER	OTHER – SPECIFY:						
SEAL AND PUMP	ANNI	JLAR	DEPTH FROM	TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHO PLACE				
EAL	SEAL	AND	0	46	10.75	Cement/bentonite	27.5	Trei	mie			
5. SI	GRAVE	L PACK	46	48	10.75	Bentonite pellets	1.2	Tremie				
			48	60	10.75	silica sand	7.2	Trei	mie			
	DEPT	H (FT) TO	THICKI (FT			COLOR AND TYPE OF MATERIAL ENCOUNT DE WATER-BEARING CAVITIES OR FRACTU		WA BEAR				
	0	45										
	45	150	45 10		San	Sand; silty v. fine to fine; It. buff to pinkish tan; dry						
	40	130	10	J		Claystone to siltstone; dry		YES YES	□ NO □ NO			
								☐ YES				
ELL								TYES				
FW								YES	□ NO			
0 0								T YES	□ NO			
CLO								☐ YES	□ NO			
0010								☐ YES	□ NO			
GEOLOGIC LOG OF WELL								☐ YES	□ NO			
GE.								TYES	□ NO			
6.								□ YES	□ NO			
								☐ YES	□ NO			
		ļ						🗌 YES	🗆 NO			
								🗖 YES	🗍 NO			
								□ YES	□ NO			
								🗖 YES	🗌 NO			
			ATTACH	ADDITION	IAL PAGES AS NE	EDED TO FULLY DESCRIBE THE GEOLOGIC	LOG OF THE WELL					
0			METHOD:	🗌 BAILE	R DPUMP	AIR LIFT OTHER – SPECIFY:						
NAL INFO	WELL	. TEST	TEST RESUL	LTS - ATTA LE SHOWI	CH A COPY OF D NG DISCHARGE A	ATA COLLECTED DURING WELL TESTING, I	NCLUDING START TI DD.	ME, END TI	ME,			
	ADDITION	AL STATEN	I IENTS OR EXPLA									
7. TEST & ADDITIO	MP-4.											
ADI	Test bo	re grout	ed back to	ground le	vel and a 2-in.	monitor well constructed adjacent						
T&	į.	5. s. a										
res		÷										
7.		e										
	THEIN	DERSIGN		EDTIFIER	TUAT TO THE DE	ST OF HIS OR HER KNOWLEDGE AND BELIE	E THE EODECODIC I		NID			
SIGNATURE	CORREC	CT RECOR	D OF THE AB	OVE DESC	RIBED HOLE AND	O THAT HE OR SHE WILL FILE THIS WELL RE ON OF WELL DRILLING:	CORD WITH THE STA	TE ENGINE	EER AND			
NAT			Λ ·	· · · · · ·								
SIG	$( \zeta )$	Ohr	agun	$\nu I I^{0}$	K	07/02/09						
×			GNATUR	E OF DRIL	ler	DATE						
t	•		· · · · · · · · · · · · · · · · · · ·									

FOR OSE INTERNAL USE		WELL RECORD & LOG	
FILE NUMBER CP-1018	POD NUMBER	TRN NUMBER $-4$	28022
LOCATION 21.38,30,3331		•	PAGE 2 OF 2

Monitor



## WELL RECORD & LOG office of the state engineer

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Section Section	OSE POD NO. (VZ-2) CP-			WELL TAG ID NO.		OSE FILE NO(	S).		
- Selection	WELL OWNER		)			PHONE (OPTI	ONAL)		
	WELL OWNER PO Box 173		J ADDRESS			CITY Eunice		STATE NM 88231	ZIP
F	WELL			EGREES MINUTES S 32 26	ECONDS 53.3 N	* ACCURACY	REQUIRED: ONE TEN	TH OF A SECOND	
	(FROM GPS		TITUDE NGITUDE	103 06	10.1 W	* DATUM RE	QUIRED: WGS 84		_
F	DESCRIPTIO	NRELATIN	NG WELL LOCATION TO	D STREET ADDRESS AND COMMON LA	NDMARKS – PLS	S (SECTION, TO	WNSIIJIP, RANGE) WI	IERE AVAILABLE	
	LICENSE NO. 1575	5	NAME OF LICENSED	DRILLER Shane Currie	,		NAME OF WELL DR	ILLING COMPANY Talon/LPE	
-	DRILLING ST		DRILLING ENDED 3-7-18	DEPTH OF COMPLETED WELL (FT) 50	BORE HO	LE DEPTH (FT) 50	DEPTH WATER FIR	ST ENCOUNTERED (FT) Dry	)
-	COMPLETED WELL IS:			Z DRY HOLE	INCONFINED)	STATIC WATER LEVEL IN COMPLETED W Dry			ELL (FT)
t	DRILLING FL	UID:	AIR	MUD ADDITIVES-	SPECIFY:				
t	DRILLING ME	THOD:	ROTARY		ОТНЕ	R - SPECIFY:		HSA	
	DEPTH (feet bgl) BORE HOL FROM TO DIAM (inches)			CASING MATERIAL AND/OF GRADE (include each casing string, and note sections of screen)	CONT	ASING NECTION TYPE ling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SL SI (incl
ł	-3	40	7 7/8	PVC		sh Joint	2	Schedule 40	bla
t	40	50	7 7/8	PVC	Flu	sh Joint	2	Schedule 40	0.0
									-
E									_
-									
T	DEPTH (	feet bgl)	BORE HOLE	LIST ANNULAR SEAL			AMOUNT	METHO	
T	FROM	то	DIAM. (inches)	GRAVEL PACK SIZE-RA	NGE BY INTE	RVAL	(cubic feet)	PLACEN	1114
T	0	37	7 7/8	Grout, portland neat cement w	and a strength of the strength of the	te powder	11.1	tremm	10.01
T	37	38	7 7/8	1/4 inch benton			0.3	pour	
-	38	50	7 7/8	20/40 grade si	lica sand		3.6	pour	ed
F			_						
-								-	

FILE NO. POD NO. TRN N	
	0.
LOCATION WELL TAG IE	NO. PAGE I OF 2

	DEPTH (	fect bgl)	1.1.1.1.1.1	COLOR AN	D TYPE OF MATERIAL E	NCOUNTERED -		WATER	ESTIMATED
	FROM	то	THICKNESS (feet)	INCLUDE WATE	R-BEARING CAVITIES Coplemental sheets to fully d	R FRACTURE ZONI	ES	BEARING? (YES / NO)	YIELD FOR WATER- BEARING ZONES (gpm)
	0	3		Soil, Sandy, N	Ion-plastic, Dry, Orange, 51	'R 5/6, Fine grained		Y √N	
	3	10		Sand	I, Fine to Med, Silty, Moist,	2.5YR 4/8		Y √N	
	10	23		Caliche (sand)	), Silty, Non-plastic, Dry, Pi	nk-white, 2.5YR 8/2		Y √N	
	23	29		Sand, Solty, Fine to Mo	ed, Non-plastic, Dry, Minor	gravel, up to 1/3", Yel	lowish-	Y √N	
	29	32		Sand, Gravel	up to 1", Non-plastic, Dry, I	ink-white, 5YR 8/2		Y √N	
-	32	39		Sand, Fine toned, Silty,	Minor gravel 1/8 sub-round	led, Non-plastic, Dry,	Pink 51	Y √N	
WEI	39	43		Gravel, Fine to 1/2",	Sandy, Silty, Non-plastic, D	ry, Pink-yellow, 7.5YI	R 7/4	Y √N	
OF	43	47	1	Sand,	Fine to Med, Silty, Orange	2.5YR 5/8	1711	Y √N	
00	47	50		С	laycy, Moist, Red/green, 2.5	YR 3/6		Y √N	
iCI.								Y N	
LOC								Y N	
4. HYDROGEOLOGIC LOG OF WELL								Y N	
RO								Y N	
НУD								Y N	
4.								Y N	•
10								Y N	
								Y N	
		1						Y N	
	1 march -	1.111	()					Y N	
								Y N	
	. i				1			Y N	
	METHOD U			OF WATER-BEARING	3 STRATA: HER – SPECIFY:		1.117.200	L ESTIMATED L YIELD (gpm):	0.00
4	WELL TES	T TEST STAR	RESULTS - ATT T TIME, END TI	ACH A COPY OF DAT ME, AND A TABLE SH	A COLLECTED DURING	WELL TESTING, IN D DRAWDOWN OV	CLUDIN ER THE	G DISCHARGE N TESTING PERIC	METHOD, D.
TEST; RIG SUPERVISION			FORMATION:					TION OTHER TU	
5. TE	PRINT NAM		KILL RIG SUPER	CVISOR(S) THAT PRO	VIDED ONSITE SUPERVI	SION OF WELL CON	arkuc	HON OTHER TH	AN LICENSEI
SIGNALUKE	CORRECT I	ECORD O	F THE ABOVE I	DESCRIBED HOLE AN	EST OF HIS OR HER KNO D THAT HE OR SHE WIL PLETION OF WELL DRIL	L FILE THIS WELL	IEF, TH	E FOREGOING I O WITH THE ST/ 5/22/2018	S A TRUE AN TE ENGINEE
ė	$\bigcirc$	SIGNAT	URE OF DRILLE	R / PRINT SIGNEE	NAME			DATE	
FOR	OSE INTER	NAL USE				WR-20 WE	LL REC	ORD & LOG (Ver	sion 06/30/201
FIL	E NO.				POD NO.	TRN NO.			
LOC	CATION					WELL TAG ID NO.			PAGE 2 OF

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18T

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17.00	Z-3) CP-169	_	1.7									
	ELL OWNER NA ndance West	1000						PHONE (OPTI	DNAL)			
	ELL OWNER MA Box 1737	AILING	ADDRESS					CITY Eunice		STATE NM 8	88231	ZIP
	WELL			GREES 32	MINUTES 26	SECON 45.3		* ACCURACY	REQUIRED: ONE TEN	TH OF A SECO	ND	
A. 6	(FROM GPS)		ITUDE	103	06	10.1		• DATUM REC	QUIRED: WGS 84			
DI	ESCRIPTION RE	LATIN	G WELL LOCATION TO	STREET ADD	RESS AND COMMO	N LANDMA	RKS – PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	IERE AVAILAI	3LE	
LIC	CENSE NO. 1575	-	NAME OF LICENSED	DRILLER	Shane Currie			NAME OF WELL DRILLING COMPANY Talon/LPE				
DR	JLLING START 3-6-18	ED	DRILLING ENDED 3-6-18	DEPTH OF COMPLETED WELL (FT) BORE HOLE DEPTH 45 45 45				DEPTH WATER FIR	ST ENCOUNTE Dry	ERED (FT)		
со	MPLETED WEI	.L. 1S:	artesian	DRY HO	DRY HOLE SHALLOW (UNCONFINED)			STATIC WATER LEVEL IN COMPLETED WELL (FT Dry				
DR	ILLING FLUID:	1	AIR.	MUD ADDITIVES - SPECIFY:								
DR	ILLING METHO	DD:	ROTARY	🗍 намме	R 🗌 CABLE	TOOL	OTHE	R - SPECIFY:		HSA		
-	DEPTH (feet bgl) BORE HOLE FROM TO DIAM (inches)		(include	(include each casing string, and		CONN	ASING NECTION YPE ling diameter)	CASING INSIDE DIAM. (inches)	CASING THICKN (incho	VESS	SL SI (incl	
-	-3	35	7 7/8		PVC	-		sh Joint	2	Schedul	le 40	bla
	35	45	7 7/8		PVC		Flu	sh Joint	2	Schedul	le 40	0.0
	DEPTH (fect		BORE HOLE DIAM. (inches)		ST ANNULAR S				AMOUNT (cubic feet)		METHO	
F		TO 32	7 7/8		portland neat cem				9.6		tremm	ied
		33	7 7/8	Grout,	the second	entonite pe			0.3		poure	1.411.4.
_		45	7 7/8			ide silica s	A LO LA COMPANY		3.6		poure	ed
		_										
_												

FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE I OF 2

	DEPTH (	ect bgl)		COLOR AND TYP	E OF MATERIAL ENC	OUNTERED -	WATER	ESTIMATEL YIELD FOR
	FROM	то	THICKNESS (feet)	INCLUDE WATER-BEA		RACTURE ZONES	BEARING? (YES / NO)	WATER- BEARING ZONES (gpm
	0	8		Soil, Sandy, Fine, Well sort	d, Friable, Non-plastic,	Dry, Orange, 5YR 6/6	Y √N	
	8	10		Sand, Fine to Med	, Silty, Stiff, Moist, Ora	nge 5YR 6/6	Y √N	
	10	12		Sand with caliche,	Hard, Moist, buff to wh	ite, 2.5YR 8/2	Y √N	
	12	14		Sand, S	Silty, Moist, Red 5YR 5	/6	Y √N	
	14	25		Caliche, Sand, Fine to M	fed, Non-plastic, Dry, b	ouff-pink, 5YR 8/3	Y √N	
-	25	29		Caliche, AA, Minor fin	e to med gravel, Mixed	Non-plastic, Dry	Y .√N	
WEL	29	32		Sand fine, Caliche,	Non-plastic, Dry, pink-	buff, 5YR 8/3	Y √N	
4. HYDROGEOLOGIC LOG OF WELL	32	41	()	Sand, Fine, No	on-plastic, Dry, Orange,	5YR 7/8	Y √N	
50	41	45		Sandy, Non-plas	tic, Dry, Maroon, 2.5YI	3/6, Hard	Y √N	
1							Y N	
200							Y N	1
D'T'							Y N	
S.				1			Y N	
UTE							Y N	
÷							Y N	
			111111				Y N	
							Y N	
			· · · · · · · · · · · · · · · · · · ·				Y N	
			1				Y N	
			1				Y N	
							Y N	
				OF WATER-BEARING STRA		OTAL ESTIMATED VELL YIELD (gpm):	0.00	
	WELL TEST	TEST	RESULTS - ATT	ACH A COPY OF DATA COL ME, AND A TABLE SHOWING	LECTED DURING WE G DISCHARGE AND I	LL TESTING, INCLU DRAWDOWN OVER	IDING DISCHARGE	METHOD, DD.
I ES I; KIG SUPEKVISION			FORMATION:	VISOR(S) THAT PROVIDED	ONSITE SUPER VISIO	N OF WELL CONSTI	RUCTION OTHER TH	IAN LICENSE
i.	Ronnie Rodr	iguez						
	CORRECT R	ECORD O	F THE ABOVE D	IES THAT, TO THE BEST OF ESCRIBED HOLE AND THA DO DAYS AFTER COMPLETION	T HE OR SHE WILL F	ILE THIS WELL REC	, THE FOREGOING 1 CORD WITH THE ST 5/22/2018	S A TRUE AN ATE ENGINEE
5	$\nearrow$	SIGNAT	URE OF DRILLE	- inde			DATE	
	OSE INTERN	IAL USE				WR-20 WELL	RECORD & LOG (Ve	rsion 06/30/201
.( )!-	COL INTER	TE OSE						
	E NO.			POD	NO.	TRN NO.		

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	OSE POD NO. ( (VZ-5) CP-1				WELL TAG ID NO	<b>D</b> .		OSE FILE NO(	5).				
T	WELL OWNER Sundance W							PHONE (OPTI	ONAL)				
	WELL OWNER PO Box 173		ADDRESS					сіту Eunice		STATE NM 88231	ZIP		
11	WELL LOCATION		D	EGREES 32	MINUTES 26	SECONDS 38.29	N	• ACCURACY	REQUIRED: ONE TEN	TH OF A SECOND			
	(FROM GPS)	1.00	NGITUDE	103	05	28.2	w	DATUM REQUIRED: WGS 84					
F	DESCRIPTION	RELATIN	IG WELL LOCATION TO	O STREET ADDRE	SS AND COMMO	N LANDMAR	(S – PLŞ	S – PLSS (SECTION, TOWNSHIP, RANGE) WHERE AVAILA					
I	LICENSE NO. 1575		NAME OF LICENSEE		Shane Currie		-	NAME OF WELL DRILLING COMPANY Talon/LPE					
	DRILLING STA 3-7-18		DRILLING ENDED 3-7-18	The set are a set and the set of		E DEPTH (FT).	DEPTII WATER FIR	ST ENCOUNTERED (FT Dry	)				
	COMPLETED V	VELL IS:		DRY HOLE					STATIC WATER LEVEL IN COMPLETED WELL (FT Dry				
DRILLING FLUID:													
	DRILLING MET	TIOD:	ROTARY	HAMMER	CABLE	TOOL I	] OTHE	R - SPECIFY:		HSA			
	DEPTH (feet bgl) BORE HOLE FROM TO DIAM (inches)		(include ca	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen)		CONN	SING IECTION YPE ing diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SLC SIZ (incl			
-	-3	25	7 7/8		PVC			sh Joint	2	Schedule 40	bla		
	25	35	7 7/8		PVC		Flu	sh Joint	2	Schedule 40	0.0		
	DEPTH (fc	ect bgl) TO	·BORE HOLE DIAM. (inches)		r annular s el pack sizi					METHO	D OF MENT		
1	0	22	7 7/8	Grout, po	rtland neat cem	ent with 5%	entoni	e powder	6.6	tremm			
	22	23	7 7/8	1.		entonite pello			0.3	pour			
	23	35	7 7/8		20/40 gra	de silica san	ł		3.6	pour	ed		
-				-				_			_		

FOR OSE INTERNAL USE		WR-20 WELL RECORD	& LOG (Version 06/30/17)
FILE NO.	POD NO.	TRN NO.	
LOCATION		WELL TAG ID NO.	PAGE 1 OF 2

	DEPTH (1	čet bgl)	State La constate	COLOR AN	ND TYPE OF MATERIAL	ENCOUNTE	RED -	WATER	ESTIMATED YIELD FOR
	FROM	то	THICKNESS (feet)	INCLUDE WAT	ER-BEARING CAVITIES	OR FRACTU	RE ZONES	BEARING? (YES / NO)	WATER- BEARING ZONES (gpm)
	0	3		Soil, S	Sandy, Non-plastic, Dry, B	rown, 5YR 7/4		Y VN	
	3	9		Sand, Fir	ne, Silty, Non-plastic, Dry,	Orange, 5YR	5/8	Y √N	
	9	13		Ca	aliche sand, Non-plastic, D	ry, Orange		Y √N	
	13	18		Sand, Fine to med, Si	lty Non-plastic, Dry, Pink,	5YR 8/4, Less	caliche cement	Y √N	
	18	23		Sand, Fine, Silty, G	ravel to pebbles, Non-plas	ic, Dry, Light	oink, 5YR 8/2	Y √N	
4	23	28		Sand, No	on-plastic, Dry, A.A darke	pink, 2.5YR 7	/6	Y √N	
VEL	28	30		Sand, Silty, Pebbly, M	oist, Green 10YR 5/2 to or	ange 2.5YR 4/	8, Caliche in vert	Y √N	
4. HYDROGEOLOGIC LOG OF WELL	30	32		29'	shale, weathered, Moist, F	ted to green		Y √N	
00	32	35		30-sha	ale, Moist, Clayey, Sandy,	red 7.5YR 4/4		Y √N	
ICT							1	Y N	1
00								Y N	
EOI		-						Y N	
ROG								Y N	
IVDI								Y N	
4. F			1					Y N	
157	-							Y N	
23								Y N	
								Y N	
								Y N	
								Y N	
		1						Y N	
	well							AL ESTIMATED L YIELD (gpm):	0.00
5.17	РОМР				THER - SPECIFY:	O WELL TEST			METHOD
KVISION	WELL TEST	STAR	FORMATION:	ME, AND A TABLE SP	HOWING DISCHARGE A	ND DRAWD	OWN OVER TH	E TESTING PERI	OD.
IESI; RIG SUPER									
0.1153	PRINT NAM Ronnie Rodr		RILL RIG SUPEI	RVISOR(S) THAT PRO	VIDED ONSITE SUPER'	VISION OF W	ELL CONSTRUC	CTION OTHER T	HAN LICENSEI
0. SIGNALUKE	CORRECT R	ECORD O ERMIT HO	of the above is a second secon	DESCRIBED HOLE AN DO DAYS AFTER COM	EST OF HIS OR HER KI ID THAT HE OR SHE W PLETION OF WELL DRI CUTTIE	ILL FILE THIS	AND BELIEF, TI S WELL RECOR	5/22/2018	IS A TRUE AN ATE ENGINEE
	0	SIGNAT	URE OF DRILLE	R / PRINT SIGNEE	NAME			DATE	
FOR	OSE INTERN	AL USE						CORD & LOG (Ve	ersion 06/30/201
FIL	E NO.				POD NO.	TR	N NO.	101223-194	1
LOC	CATION	1				WELL TAG	GID NO.		PAGE 2 OF

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(VZ-6) CP-				· · · · · ·							
WELL OWNER Sundance W	1						PHONE (OPTI	UNAL)			
WELL OWNER PO Box 173		ADDRESS					CITY Eunice		STATE NM	88231	ZIP
WELL			EGREES 32	MINUTES 26	SECONDS 34.7	N	• ACCURACY	REQUIRED: ONE TEN	TH OF A	SECOND	
(FROM GPS			103	05	50.8	w	• DATUM REC	QUIRED: WGS 84			
DESCRIPTION	RELATIN	G WELL LOCATION TO	O STREET ADDR	ESS AND COMMON	LANDMAR	KS – PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	ERE AVA	ULABLE	
LICENSE NO.	_	NAME OF LICENSED	DRILLER	Shane Currie				NAME OF WELL DRILLING COMPANY Talon/LPE			
DRILLING ST/ 4-5-1	ARTED	DRILLING ENDED 4-5-18	DEPTH OF COMPLETED WELL (FT) BORE HOLE		LE DEPTH (FT) 45	DEPTH WATER FIR		UNTERED (FT	)		
COMPLETED			ORY HOLE      SHALLOW (UNCONFINED)				STATIC WATER LEV	1.00	MPLETED WE	ELL (FT)	
DRILLING FLUID:				ADDITIV	ES - SPECIF	Y:					
DRILLING ME	THOD:				00L [	отне	R – SPECIFY:		HSA		
DEPTH (f	DEPTH (feet bgl) FROM TO DIAM (inches)		CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen) ((		and	CON	ASING NECTION TYPE ling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)		SLC SIZ (incl
-3	35	7 7/8		PVC		and the second se	ush Joint 2		Sch	nedule 40	bla
35	45	7 7/8		PVC	-	Flu	sh Joint	2	Sch	nedule 40	0.0
DEPTH (f	cet bgl)	BORE HOLE	LIS	ST ANNULAR SI		RIAL A	AND	AMOUNT		METHO	D OF
FROM	то	DIAM. (inches)	GRA	VEL PACK SIZE	RANGE B	Y INTE	RVAL	(cubic feet)		PLACEN	
0	32	7 7/8	Grout, p	ortland neat ceme	nt with 5%	bentoni	te powder	9.6		tremm	
32	33	7 7/8		1/4 inch be				0.3		pour	
33	45	7 7/8		20/40 grad	de silica san	d		3.6		pour	ed
						_		0 WELL RECORD		in the line	-

FILE NO.	POD NO.		TRN NO.	
LOCATION		WEL	L TAG ID NO.	PAGE 1 OF 2

	DEPTH (i	feet bgl)	The Const	COLOR AND TYPE OF MATERIAL ENCOUNTERE	D.		ESTIMATED
	FROM	то	THICKNESS (feet)	INCLUDE WATER-BEARING CAVITIES OR FRACTURE (attach supplemental sheets to fully describe all unit	ZONES	WATER BEARING? (YES/NO)	YIELD FOR WATER- BEARING ZONES (gpm
	0	4		Soil, Sandy, Non-plastic, Dry, Orange-brown, 5YR 6/4	4	Y VN	
	4	15		Sand, Silty, Minor gravel, Orange to gray 5YR 6/6 to 5YR 7/1	, Caliche	Y √N	
	15	23		Sand, Fine, Non-plastic, Dry, Orange 7.5YR 6/6, with caliche	laminae	Y √N	
	23	28		Caliche, Sand, Fine, Silty, Non-plastic, Dry, Pink-white 5Y	R 8/1	Y √N	
	28	33	1.00	Sand, Fine, Silty, Non-plastic, Dry, Orange to green 7.5YR 7/4 to	2.5GY 8/0	Y √N	
	33	37		Sand, Fine, Silty, Non-plastic, Dry, Orange-brown, 7.5YR 7/4, Gra	vel up to 1/4"	Y VN	
4. HYDROGEOLOGIC LOG OF WELL	37	42		Gravel, Sandy (gravel up to 1.25"), Well rounded, Non-plastic, Dry		Y √N	
10	42	45		Red bed, Maroon shale, Clayey with green laminae & spherical	and the same of the same	Y √N	
5						Y N	
5			1			Y N	
50						Y N	
SOL						Y N	
5						Y N	
Y DK						Y N	
H H		-				Y N	
		-					
						Y N	
						Y N	
						Y N	
	5					Y N	
		_	1				
						Y N	
	METHOD U			OF WATER-BEARING STRATA: ]BAILEROTHER SPECIFY:			0.00
ION		TEST			WEL	Y N ÅL ESTIMATED .L YIELD (gpm):	AETHOD.
	UPUMP	T TEST STAR	IR LIFT	BAILER OTHER - SPECIFY:	WEL	Y N ÂL ESTIMATED L YIELD (gpm): NG DISCHARGE N E TESTING PERIO	IETHOD, D.
	UPUMP	T TEST STAR	IR LIFT	BAILER OTHER – SPECIFY: ACH A COPY OF DATA COLLECTED DURING WELL TESTIN ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOW	WEL	Y N ÂL ESTIMATED L YIELD (gpm): NG DISCHARGE N E TESTING PERIO	IETHOD, D.
SIGNATURE S. TEST; RIG SUP	PUMP WELL TEST MISCELLAN PRINT NAM Ronnie Rodr THE UNDER CORRECT R	E(S) OF DI iguez SIGNED F ECORD O ERMIT HO	IR LIFT	BAILER OTHER – SPECIFY: ACH A COPY OF DATA COLLECTED DURING WELL TESTIN ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOW	G, INCLUDIA N OVER THI	Y N AL ESTIMATED L YIELD (gpm): NG DISCHARGE N E TESTING PERIO	AN LICENSE
6. SIGNATURE 5. TEST; RIG SUP	PUMP WELL TEST MISCELLAN PRINT NAM Ronnie Rodr THE UNDER CORRECT R AND THE PI	E(S) OF DI iguez SIGNED F ECORD O SIGNAT	IR LIFT	BAILER       OTHER - SPECIFY:         ACH A COPY OF DATA COLLECTED DURING WELL TESTIN         ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOW         VISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL         TES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AN         DAYS AFTER COMPLETION OF WELL DRILLING:         X         Share Curre         R / PRINT SIGNEE NAME	G, INCLUDIA N OVER THI	Y N AL ESTIMATED L YIELD (gpm): NG DISCHARGE N E TESTING PERIO CTION OTHER TH HE FOREGOING IS D WITH THE STA 5/22/2018 DATE	AN LICENSEI
	PUMP WELL TEST MISCELLAN PRINT NAM Ronnie Rodr THE UNDER CORRECT R	E(S) OF DI iguez SIGNED F ECORD O SIGNAT	IR LIFT	BAILER       OTHER - SPECIFY:         ACH A COPY OF DATA COLLECTED DURING WELL TESTIN         ME, AND A TABLE SHOWING DISCHARGE AND DRAWDOW         VISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL         TES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AN         DAYS AFTER COMPLETION OF WELL DRILLING:         X         Share Curre         R / PRINT SIGNEE NAME	G, INCLUDIN N OVER THI L CONSTRUC D BELIEF, TI VELL RECOR	Y N AL ESTIMATED L YIELD (gpm): NG DISCHARGE N E TESTING PERIO CTION OTHER TH HE FOREGOING IS D WITH THE STA 5/22/2018	AN LICENSER



	OSE POD NO. (VZ-7) CP-1				WELL TAG ID NO			OSE FILE NO(	s).				
	WELL OWNER Sundance We							PHONE (OPTI	ONAL)				
	WELL OWNER PO Box 1737		ADDRESS					CITY Eunice		STATE NM 88231	ZIP		
F	WELL LOCATION	<u> </u>	. DI	EGREES 32	MINUTES 26	SECON 34.1		• ACCURACY	REQUIRED: ONE TEN	TH OF A SECOND			
	(FROM GPS)		NGITUDE	103	05	55.0		• DATUM REC	* DATUM REQUIRED: WGS 84				
F	DESCRIPTION	RELATIN	G WELL LOCATION TO	O STREET AD	DRESS AND COMMON	N LANDMA	RKS – PLS	SS (SECTION, TOWNSIIJIP, RANGE) WHERE AVAILABLE					
	LICENSE NO. 1575		NAME OF LICENSED	DRILLER	Shane Currie			NAME OF WELL DRILLING COMPANY Talon/LPE					
-	DRILLING STA 4-4-18		DRILLING ENDED 4-4-18	The second		E DEPTII (FT) 50	DEPTII WATER FIR	ST ENCOUNTERED (FT Dry	)				
-	COMPLETED W	ELL IS:	🔲 ARTESIAN	🕖 DRY I				STATIC WATER LEVEL IN COMPLETED WELL (F Dry					
Ī	DRILLING FLU	D:	AIR	MUD	ADDITIV	ES - SPEC	FY:	_					
Ì	DRILLING MET	HOD:	ROTARY		IER CABLET	TOOL	Ο ΟΤΙΕ	R – SPECIFY:		HSA			
	DEPTH (feet bgl) BORE HOLE FROM TO DIAM (inches)		(inclue	CASING MATERIAL AND/OR GRADE (include each casing string, and note sections of screen) ((		CONN	SING IECTION YPE ing diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SL SI (incl			
	-3	40	7 7/8		PVC			sh Joint	2	Schedule 40	bla		
	40	50	7 7/8		PVC		Flu	sh Joint	2	Schedule 40	0.0		
	DEPTH (fe		BORE HOLE DIAM. (inches)		LIST ANNULAR SI RAVEL PACK SIZE				AMOUNT (cubic feet)	METHO	DD OF MENT		
-	FROM 0	TO 37	7 7/8	A Start Starting	t, portland neat ceme				11.1	tremn	nicd		
	37	38	7 7/8		1/4 inch be				0.3	pour	ed		
	38	50	7 7/8		20/40 grad				3.6	pour	ed		
							-			_			

FOR OSE INTERNAL USE		WK-20 WELL RECORD	a LOO (Version 00/30/17)	
FILE NO.	POD NO.	TRN NO.		
LOCATION		WELL TAG ID NO.	PAGE 1 OF 2	
LOCATION		TEED THO ID THE		

	DEPTH (	feet bgl)	-	1.7	WATER	ESTIMATED YIELD FOR		
	FROM	то	THICKNESS (feet)	INCLUDE WATER-BEARING CAVITIE (attach supplemental sheets to ful		ES	BEARING? (YES / NO)	WATER- BEARING ZONES (gpm
	0	8		Soil, Sandy, Lean, Non-plastic, D	ory, Brown 5YR 5/1		Y √N	
	8	18	1	Sand, Silty, Moist, Orange 5YR 5/6, Gravely,	13'15' (up to 1/4", sub-rou	unded)	Y √N	
	18	23		Sand, As above, with caliche in vertical joints,	Non-plastic, Dry, Orange	to grayi	Y √N	
	23	31		Caliche, Sandy, Non-plastic, Dry, Gr	rayish-white 10YR 8/1		Y, √N	
	31	36		Caliche, Sand, Laminated, Non-plast	tic, Dry, Pink 5YR 8/2		Y √N	
L.	36	45		Gravel, Fine, up to 1/2", Sub-rounded, Non	n-plastic, Dry, Red 10YR :	5/6	Y √N	
OF WELL	45	50		Siltstone, Sandy, Moist, Maroon to gre	cen 10YR 4/3 to 5G 7/1		Y √N	
OF							Y N	
ĐO							Y N	
ICI							Y N	
4. HYDROGEOLOGIC LOG	1	A					Y N	
EO	1.000						Y N	
ROC							Y N	
ПУD							Y N	
4.]	1						Y N	1
	(						Y N	
		-					Y N	
13							Y N	
6301N								
							Y N	
							Y N Y N	
Sec. Sec.								
	METHOD U			O OF WATER-BEARING STRATA: BAILER OTHER – SPECIFY:		1000.003	Y N	0.00
SUP	PUMI	P AI			NG WELL TESTING, IN AND DRAWDOWN OV	CLUDIN	Y N Y N L ESTIMATED . YIELD (gpm):	METHOD.
5. TEST; RIG SUPERVISION	PUMI WELL TES MISCELLAN PRINT NAM Ronnie Rod	P A	IR LIFT	BAILER OTHER – SPECIFY: ACH A COPY OF DATA COLLECTED DURIN ME, AND A TABLE SHOWING DISCHARGE	AND DRAWDOWN OV	WELL CLUDINA FER THE	Y N Y N L ESTIMATED . YIELD (gpm): G DISCHARGE TESTING PERIO	METHOD, OD. HAN LICENSEE
SIGNATURE 5. TEST; RIG SUP	PUMI WELL TES' MISCELLAN PRINT NAM Ronnie Rodu	P A	IR LIFT	BAILER OTHER – SPECIFY:	AND DRAWDOWN OV RVISION OF WELL COP KNOWLEDGE AND BEI WILL FILE THIS WELL	WELL CLUDIN( FER THE NSTRUCT	Y N Y N L ESTIMATED .YIELD (gpm): G DISCHARGE TESTING PERIO FION OTHER TI E FOREGOING D WITH THE ST 5/22/2018	METHOD, DD. HAN LICENSEE
6. SIGNATURE 5. TEST; RIG SUP	PUMI WELL TES' MISCELLAN PRINT NAM Ronnie Rodu THE UNDER CORRECT F AND THE P	P A	IR LIFT	BAILER OTHER - SPECIFY: ACH A COPY OF DATA COLLECTED DURIN ME, AND A TABLE SHOWING DISCHARGE RVISOR(S) THAT PROVIDED ONSITE SUPER FIES THAT, TO THE BEST OF HIS OR HER H DESCRIBED HOLE AND THAT HE OR SHE V SO DAYS AFTER COMPLETION OF WELL DI STrane Currie	AND DRAWDOWN OV RVISION OF WELL COM KNOWLEDGE AND BEI WILL FILE THIS WELL RILLING:	WELL CLUDIN( /ER THE NSTRUCT	Y N Y N L ESTIMATED YIELD (gpm): G DISCHARGE TESTING PERIO FION OTHER TH E FOREGOING WITH THE ST 5/22/2018 DATE	METHOD, DD. HAN LICENSEE: IS A TRUE AND ATE ENGINEER
6. SIGNATURE 5. TEST; RIG SUP	PUMI WELL TES' MISCELLAN PRINT NAM Ronnie Rodu	P A	IR LIFT	BAILER OTHER - SPECIFY: ACH A COPY OF DATA COLLECTED DURIN ME, AND A TABLE SHOWING DISCHARGE RVISOR(S) THAT PROVIDED ONSITE SUPER FIES THAT, TO THE BEST OF HIS OR HER H DESCRIBED HOLE AND THAT HE OR SHE V 30 DAYS AFTER COMPLETION OF WELL DI STrane Currie	AND DRAWDOWN OV RVISION OF WELL COM KNOWLEDGE AND BEI WILL FILE THIS WELL RILLING:	WELL CLUDIN( /ER THE NSTRUCT	Y N Y N L ESTIMATED .YIELD (gpm): G DISCHARGE TESTING PERIO FION OTHER TI E FOREGOING D WITH THE ST 5/22/2018	METHOD, DD. HAN LICENSEE: IS A TRUE AND ATE ENGINEER

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1	(VZ-8) CP-1694 POD 6												
1.0	ELL OWNER 1 ndance We							PHONE (OPTI	ONAL)				
1.000	ELL OWNER M Box 1737		ADDRESS					CITY Eunice		STATE NM 88231	ZIP		
	WELL		DI	egrees 32	MINUTES 26	SECON 34.9		ACCURACY REQUIRED: ONE TENTIL OF A SECOND     ADATUM REQUIRED: WGS 84					
	(FROM GPS)		GITUDE	103	05	58.							
DI	ESCRIPTION I	RELATIN	G WELL LOCATION TO	O STREET ADI	DRESS AND COMMO	N LANDMA	RKS – PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	IERE AVAILABLE			
					ILLING COMPANY Talon/LPE								
DRILLING STARTED DRILLING E			[1] La Vial Advectation Constraints and the second seco	DEPTH OF C		-T)	BORE HO		DEPTH WATER FIR	ST ENCOUNTERED (FT) Dry	)		
COMPLETED WELL IS:				🗹 DRY HO	DLE 🗌 SHALLO	DW (UNCON	IFINED)		STATIC WATER LEVEL IN COMPLETED WELL Dry				
DR	ULLING FLUI	D:	AIR	MUD	ADDITI	ES - SPEC	FY:						
DR	DRILLING METHOD: ROTARY HAMMER CABLE TOOL OTHER - SPECIFY: HSA												
DEPTH (feet bgl) FROM TO			BORE HOLE DIAM (inches)	CASING MATERIAL AND/OR GRADE (include each easing string, and note sections of screen)		CONN	ASING NECTION YPE ling diameter)	CASING INSIDE DIAM. (inches)	CASING WALL THICKNESS (inches)	SL SI (inc			
-	-3	50	7 7/8		PVC	, 		sh Joint	2	Schedule 40	bla		
	50	60	7 7/8		PVC		Flu	sh Joint	2	Schedule 40	0.0		
	DEPTH (fee		BORE HOLE DIAM. (inches)		LIST ANNULAR SEAL MATERIAL AN GRAVEL PACK SIZE-RANGE BY INTER				AMOUNT (cubic feet)	METHO			
F	ROM 0	TO	7 7/8		portland neat ceme				14.1	tremm			
-	47	47	7 7/8	Grout,	1/4 inch be			e ponder	0.3	pour			
	47	48 60	7 7/8			de silica si			3.6 poured				
-													

FOR OSE INTERNAL USE		WR-20 WELL RECORD	& LOG (Version 06/30/17)		
FILE NO.	POD NO.	TRN NO.			
LOCATION		WELL TAG ID NO.	PAGE 1 OF 2		

	DEPTH (	feet bgl)		COLOR IND THE OF MAL		NAUTERED		ESTIMATED		
	FROM	то	THICKNESS (feet)	COLOR AND TYPE OF MA' INCLUDE WATER-BEARING CA (attach supplemental sheets	VITIES OR F	RACTURE ZONES	WATER BEARING? (YES / NO)	YIELD FOR WATER- BEARING ZONES (gpm)		
	0	5		Sand, Silty, Fine to Med, Non-	plastic, Dry, B	rown 7.YR 8/6	Y √N			
	5	13		Sand, Fine, Silty, Moi	st, Orange, 10Y	'R 5/8	Y √N			
	13	15		Gravel, Sandy, Up to 3/8", Rounded,	Non-plastic, I	Dry, Pink, 2.5YR 7/4	Y √N			
27	15	19		Caliche, Sandy, Fine to Med, No	on-plastic, Dry,	White 5YR 8/2	Y √N	-		
	19	24		Sand, Fine, Silty, Non-pla	stic, Dry, Buff	5YR 7/6	Y √N			
L.	24	28		Caliche, Fine, Silty, Sand, Non-	Y VN					
WEL	28	32		Caliche, Fine, Silty, Non=plastic	Y √N					
OF	32	45	1	Gravel, Coarse, up to 2", Well rounded, 5	vel, Coarse, up to 2", Well rounded, Sandy, Silty, Non-plastic, Dry, Red-bro					
00	45	48		Sand, Caliche, Non-plastic, Dry, Clasts o	f lt. green lime	stones, Fine grained sand	Y VN			
ICL	48	50		Sand, Fine, Silty	, Red 5YR 5/6		Y √N			
4. HYDROGEOLOGIC LOG OF WELL	50	56		Sand, Gravelly, Caliche, Non-p	blastic, Dry, Gr	cen L.S. clasts	Y √N			
EOI	56	60		Sandstone, Fine, Silty, Clayey	, Dry, Maroon	2.5YR 2.5/4	Y √N			
ROC		11.00		1.1			Y N	1.00		
CI AL							Y N			
4.1		-					Y N			
							Y N			
							Y N			
							Y N			
							Y N			
							Y N	1000		
							Y N			
							AL ESTIMATED LL YIELD (gpm):	0.00		
N	WELL TES	TEST	RESULTS - ATT	ACH A COPY OF DATA COLLECTED ME, AND A TABLE SHOWING DISCH	DURING WEI	L TESTING, INCLUDI RAWDOWN OVER TH	NG DISCHARGE I E TESTING PERIC	METHOD, D.		
5. TEST; RIG SUPERVISION	MISCELLANEOUS INFORMATION: PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE:									
è.	Ronnie Rod	- T	JEDEDV COD	TES THAT, TO THE BEST OF HIS OR	HER KNOW	EDGE AND BELIEF T	HE FOREGOING	SATRUE ANI		
6. SIGNATURE	CORRECT I	RECORD O	F THE ABOVE I	escribed hole and that he or to days after completion of we	SHE WILL FI	LE THIS WELL RECOI	5/22/2018	TE ENGINEE		
		SIGNAT	URE OF DRILLE	R / PRINT SIGNEE NAME			DATE			
FOR	OSE INTER	NAT TISE				WR-20 WELL RE	CORD & LOG (Ve	sion 06/30/2017		
	E NO.	The Obe		POD NO.	1	TRN NO.				
10.00	ATION					ELL TAG ID NO.	(	PAGE 2 OF		

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-	(VZ-9) CP-16 WELL OWNER							PHONE (OPTIO	ONAL)				
	Sundance We												
	WELL OWNER I PO Box 1737		ADDRESS				CITY Eunice		STATE NM 88231	ZIP			
-	WELL		ום	EGREES 32	MINUTES 26	SECON 35.		ACCURACY REQUIRED: ONE TENTH OF A SECOND     OATUM REQUIRED: WGS 84					
	(FROM GPS)		INTUDE	103	06	3.8							
F	DESCRIPTION	RELATIN	IG WELL LOCATION TO	O STREET ADDR	ESS AND COMMO	ON LANDMA	RKS - PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	ERE AVAILABLE			
T	LICENSE NO.	_	NAME OF LICENSED	DRILLER					NAME OF WELL DR				
	1575		2							Talon/LPE			
	DRILLING STARTED DRILLING ENDI 4-3-18 4-4-18			DEPTH OF CO	MPLETED WELL ( 65	FT)	BORE HO	E HOLE DEPTH (FT) DEPTH WATER FIRST ENCOUNTR 65 Dry					
	COMPLETED W	ELL IS:		DRY HOL	E 🗌 SHALL	OW (UNCO)	NFINED)	STATIC WATER LEVEL IN COMPLETED V Dry			LL (FT)		
	DRILLING FLUI	D:	□ AIR	MUD	ADDIT	VES - SPEC	IFY;		1				
	DRILLING MET	IOD:	ROTARY	HAMMER		TOOL	ОТНЕ	R – SPECIFY:		HSA			
F	DEPTH (fee	t bgl)	BORE HOLE	CASING MATERIAL AND/OR		SING	CASING	CASING WALL	SLC				
	FROM TO		DIAM (inches)		GRADE each casing string, and escetions of screen)		CONNECTION TYPE (add coupling diameter)		INSIDE DIAM. (inches)	THICKNESS (inches)	SIZ (inch		
F	-3	55	7 7/8		PVC			sh Joint	2	Schedule 40	blan		
1 1 1	55	65	7 7/8	PVC			Flush Joint		2	Schedule 40	0.01		
-													
-		_											
-													
L	DEPTH (fee		BORE HOLE DIAM. (inches)		ST ANNULAR ST VEL PACK SIZ				AMOUNT (cubic feet)	METHO			
┝	FROM 0	TO 3	7 7/8		crete, poured wi			A second s	0.9	poure	ed		
H	3	52	7 7/8		ortland neat cen				14.7	tremm	ied		
ł	52	53	7 7/8			entonite po			0.3	poure	ed		
-	53	65				ade silica s	M. C. States		3.6	pours	ed		
E		-	1								-		

NO. TRN NO.	
WELL TAG ID NO.	PAGE 1 OF 2
	WELL TAG ID NO.

	DEPTH (	feet bgl)		COLOR AND TYPE OF MATERIA	AL ENCOUNTERED -		WATER	ESTIMATED YIELD FOR	
	FROM	то	(attach supplemental sneets to funy describe an units)					WATER- BEARING ZONES (gpm	
	0	4		Soil, Sandy, Loam, Non-plastic,	Dry, Brown 5YR 5/2		Y √N		
	4	11		Sand, Fine, Non-plastic, Dry, O	Drange, 7.5YR 7/8		Y √N		
	11	18		Sand, Fine, Low-plasticity, Moist,	Light orange 5YR 7/6		Y √N		
	18	23		Sand, Silty, Fine, Non-plastic, Dry, Orange	to green-white, Caliche co	ment	Y √N		
	23	30		Caliche, Sand, Silıy, Non	-plastic, Dry		Y √N		
-	30	36	1	Sand, Fine, Silty, Non-plastic, I	ory, Pink 10YR 8/2		Y √N		
VEL	36	45		Sand, Fine, Silty, Low-plasticity, Dry, Red-wl	Y √N				
ð.	45	50		Gravel, Sandy, up to 1", Mixed ign	cous, Non-plastic, Dry		Y √N		
30	50	62		Sand, Fine to Med, Silty, Low-plasticity, Dry,	Red 10YR 5/4 with grave	y zones	Y √N		
2	62	65	1	Shale, Silty, Clayey, Green-red	2.5YR 5/ to 5G 7/1		Y √N		
50							Y N		
FOI		1					Y N		
200							Y N		
4. HYDROGEOLOGIC LOG OF WELL							Y N		
4							Y N		
							Y N		
							Y N		
							Y N		
							Y N		
17							Y N	•	
		1					Y N	1	
						L ESTIMATED L YIELD (gpm):	0.00		
NOIGIANS		WELL TEST       TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING DISCHARGE METHOD, START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.         MISCELLANEOUS INFORMATION:							
				·					
31 .6	PRINT NAM Ronnie Rod		RILL RIG SUPEI	VISOR(S) THAT PROVIDED ONSITE SUPE	KVISION OF WELL CO	NSTRUC	TION OTHER TH	AN LICENSE	
DIGINALURE	CORRECT I	RECORD O	F THE ABOVE I	FIES THAT, TO THE BEST OF HIS OR HER DESCRIBED HOLE AND THAT HE OR SHE NO DAYS AFTER COMPLETION OF WELL D	WILL FILE THIS WELL	LIEF, TH RECOR	IE FOREGOING I D WITH THE STA 5/22/2018	S A TRUE AN TE ENGINEE	
0.51	$\bigcirc$	ni	C	Shane Currie			D.100		
	-	SIGNAT	URE OF DRILLE	ER / PRINT SIGNEE NAME			DATE		
OI	R OSE INTER	NAL USE				ELL REC	ORD & LOG (Ver	sion 06/30/201	
TL	E NO.			POD NO.	TRN NO.		1997 B. B.	1	
-00	CATION			· · · · · · · · · · · · · · · · · · ·	WELL TAG ID NO			PAGE 2 OF	

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	OSE POD NO. (W (VZ-10) CP-1								_			
	WELL OWNER N Sundance We				PHONE (OPTI-	ONAL)						
ŀ	WELL OWNER	AILING	ADDRESS					CITY		STATE		ZIP
	PO Box 1737							Eunice		NM	88231	114
F	WELL	1	Dł	GREES	MINUTES	SECONDS						
L	LOCATION	LAT	TITUDE	32	26	34.8	N	* ACCURACY	REQUIRED: ONE TEN	TH OF A S	ECOND	
	(FROM GPS)		GITUDE	103	06	10	10 W	• DATUM REC	QUIRED: WGS 84			
-	DESCRIPTION I	RELATIN	IG WELL LOCATION TO	STREET ADD	RESS AND COMMO	N LANDMARK	S – PLS	S (SECTION, TO	WNSHJIP, RANGE) WH	ERE AVA	ILABLE	
Ī	LICENSE NO.		NAME OF LICENSED	DRILLER	Ohana Carala				NAME OF WELL DR	ILLING CO Talon/L		
L	1575				Shane Currie		3.7		and the second	0 40 QA		
	DRILLING STAR 4-2-18	ŢED	DRILLING ENDED 4-2-18	DEPTH OF CO	OMPLETED WELL (F 60	T) BC		e depth (FT). 60	DEPTH WATER FIRST ENCOUNTERED (FT) Dry			
L	COMPLETED W	ELL IS:	ARTESIAN	DRY HO	LE 🔲 SHALLO	W (UNCONFI	VED)		STATIC WATER LEVEL IN COMPLETED WEL Dry			ell (FT)
	DRILLING FLUI	D:	AIR	MUD	ADDITIV	ES - SPECIFY	;					
F	DRILLING METH	IOD:	C ROTARY		R CABLET	TOOL I	OTHE	R - SPECIFY:		HSA		
F	DEPTH (fcc	t bgl)	BORE HOLE	CASING	MATERIAL ANI	D/OR		SING	CASING	CASE	NG WALL	SLC
ſ	FROM TO DIAM (inches)		DIAM	(include each easing string, and		CONN	VECTION YPE ing diameter)	INSIDE DIAM. (inches)	THI	CKNESS nches)	SIZ (inch	
F	-3	50	7 7/8		PVC			sh Joint	2 .	Sch	edule 40	blar
Ē	50	60	7 7/8		PVC		Flu	sh Joint	2 Schedule 40		edule 40	0.0
				11 million								-
L												-
ŀ				-								-
-							_					1
ŀ			-									
-			_				_					
Ē	DEPTH (fee	t bgl)	BORE HOLE		ST ANNULAR S				AMOUNT	T	метно	
F	FROM	то	DIAM. (inches)	GRA	VEL PACK SIZE	-RANGE BY	INTE	RVAL	(cubic fcct)		PLACEN	1997 L. /
	0	2	7 7/8	1 LP1	ncrete, poured with	A DAMA D A PERSONAL			0.6		pour	
	2	47	7 7/8	Grout,	portland neat ceme			e powder	13.5		tremm	
L	47	48	7 7/8			ntonite pelle			0.3		pour	
L	48	60			20/40 gra	de silica sand			3.6	-	pour	ea
Г										_		

FOR USE INTERNAL USE			WIC-20 WEED RECORD	de 1999 ( retainin versor r r
FILE NO.	POD NO.		TRN NO.	
LOCATION		WEL	L TAG ID NO.	PAGE 1 OF 2
				and the second se

	DEPTH (	fcct bgl)		COLOR AND TYPE OF MATER	IAL ENCOUNTERED -	WATER	ESTIMATED		
	FROM	то	THICKNESS (feet)	INCLUDE WATER-BEARING CAVIT (attach supplemental sheets to )	TES OR FRACTURE ZONES	WATER BEARING? (YES / NO)	YIELD FOR WATER- BEARING ZONES (gpm)		
	0	3		Soil, Sandy loam, Non-plastic, I	Dry, Brown 7.5YR 6/3	Y VN			
er:	3	11		Sand, Non-plastic, Dry, O	range, 7.5YR 7/8	Y √N	1		
	11	20		Sand, Silty, Low-plasticity, Moist, Yellow-o	range 10YR 6/2, Caliche in vertie	al Y √N			
	20	26		Sand, Fine, Silty, Non-plastic, Dry, Yellow-c	orange 7/6, Caliche in horizontal l	an Y √N	1		
	26	30		Caliche, Sand, Fine, Non-plastic, D	ry, White-pink 10YR 8/8	Y VN			
1	30	36		Caliche, Hard, Well cemente	d, Non-plastic, Dry	Y VN			
	36	41		Caliche, Sandy, Gravely (sub-rounded, up	to 1/2", quartz), Orange 5YR 8/3	Y VN			
2	41	45	-	Gravel, Coarse (up to 1.5", mixed igneous),	Non-plastic, Dry, Pink 2.5YR 7/	Y YN			
1	45	48		Grave, Coarse, Sandy (up to 1/2" rot	unded) Maroon 7.5YR 4/1	Y VN			
	48	51		Sand, Med to Fine, Non-plastic,	Moist, Red 10YR 4/4	Y √N	1.		
I	51	56		Same as above, with more gravel (to 1/2"	well rounded), Non-plastic, Dry	Y VN			
	56	60		Sandstone, Weathered, Non-plastic	, Dry, Maroon 10YR 5/4	Y √N			
))†				Y N					
3		<u>,</u>				Y N			
4. HIDROGEOLOGIC LOG OF WELL						Y N			
Ī						Y N			
F						Y N			
t						Y N			
ľ			1			Y N			
F						Y N			
						Y N			
	METHOD U	SED TO ES	STIMATE YIELD	OF WATER-BEARING STRATA:	1.87	TAL ESTIMATED ELL YIELD (gpm):			
	PUMP         AIR LIFT         BAILER         OTHER - SPECIFY:         WE						0.00		
	WELL TES			ACH A COPY OF DATA COLLECTED DUI ME, AND A TABLE SHOWING DISCHARG					
11	MISCELLA	VEOUS INI	FORMATION:				4		
H	PRINT NAME(S) OF DRILL RIG SUPERVISOR(S) THAT PROVIDED ONSITE SUPERVISION OF WELL CONSTRUCTION OTHER THAN LICENSEE: Ronnie Rodriguez								
	CORRECT R	ECORD O	F THE ABOVE D	IES THAT, TO THE BEST OF HIS OR HER ESCRIBED HOLE AND THAT HE OR SHE D DAYS AFTER COMPLETION OF WELL	WILL FILE THIS WELL RECO	ORD WITH THE ST.	IS A TRUE AND ATE ENGINEER		
C	Ì	SIGNAT	URE OF DRILLE	Shane Currie		5/22/2018 DATE			
R	OSE INTERN				WR-20 WELL R	ECORD & LOG (Ve	rsion 06/30/2017		
-	NO.	AL USE		POD NO.	TRN NO.				
20	ATION				WELL TAG ID NO.		PAGE 2 OF 2		

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