

# Initial Application

## Part I

Received: 06/27/2022

*This application is placed in file for record. It MAY or MAY NOT have been  
reviewed to be determined Administratively Complete*

RECEIVED: 06/27/2022	REVIEWER:	TYPE: SWD	APP NO: PJZT2218742963
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ABOVE THIS TABLE FOR OCD DIVISION USE ONLY

**NEW MEXICO OIL CONSERVATION DIVISION**  
**- Geological & Engineering Bureau -**  
1220 South St. Francis Drive, Santa Fe, NM 87505



**ADMINISTRATIVE APPLICATION CHECKLIST**

THIS CHECKLIST IS MANDATORY FOR ALL ADMINISTRATIVE APPLICATIONS FOR EXCEPTIONS TO DIVISION RULES AND REGULATIONS WHICH REQUIRE PROCESSING AT THE DIVISION LEVEL IN SANTA FE

**Applicant:** Marina SWD New Mexico, LLC

**OGRID Number:** 330409

**Well Name:** Lowenbruck I

**API:** 30-015-21602

**Pool:** SWD; Devonian

**Pool Code:** 96101

**SUBMIT ACCURATE AND COMPLETE INFORMATION REQUIRED TO PROCESS THE TYPE OF APPLICATION INDICATED BELOW**

**1) TYPE OF APPLICATION:** Check those which apply for [A] **SWD-2496**

A. Location – Spacing Unit – Simultaneous Dedication

NSL       NSP<sub>(PROJECT AREA)</sub>       NSP<sub>(PRORATION UNIT)</sub>       SD

B. Check one only for [ I ] or [ II ]

[ I ] Commingling – Storage – Measurement

DHC     CTB     PLC     PC     OLS     OLM

[ II ] Injection – Disposal – Pressure Increase – Enhanced Oil Recovery

WFX     PMX     SWD     IPI     EOR     PPR

**2) NOTIFICATION REQUIRED TO:** Check those which apply.

- A.  Offset operators or lease holders
- B.  Royalty, overriding royalty owners, revenue owners
- C.  Application requires published notice
- D.  Notification and/or concurrent approval by SLO
- E.  Notification and/or concurrent approval by BLM
- F.  Surface owner
- G.  For all of the above, proof of notification or publication is attached, and/or,
- H.  No notice required

**FOR OCD ONLY**

- |                          |                              |
|--------------------------|------------------------------|
| <input type="checkbox"/> | Notice Complete              |
| <input type="checkbox"/> | Application Content Complete |

**3) CERTIFICATION:** I hereby certify that the information submitted with this application for administrative approval is **accurate** and **complete** to the best of my knowledge. I also understand that **no action** will be taken on this application until the required information and notifications are submitted to the Division.

**Note: Statement must be completed by an individual with managerial and/or supervisory capacity.**

Brian Wood

Print or Type Name

Signature

6-27-22

Date

505 466-8120

Phone Number

brian@permitswest.com

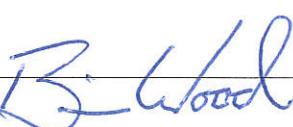
e-mail Address

**APPLICATION FOR AUTHORIZATION TO INJECT**

- I. PURPOSE: Secondary Recovery Pressure Maintenance XXX Disposal Storage  
Application qualifies for administrative approval? XXX Yes No
- II. OPERATOR: MARINA SWD NEW MEXICO, LLC  
ADDRESS: P. O. BOX 1020, ARTESIA, NM 88211  
CONTACT PARTY: BRIAN WOOD (PERMITS WEST, INC.) PHONE: 505 466-8120
- III. WELL DATA: Complete the data required on the reverse side of this form for each well proposed for injection.  
Additional sheets may be attached if necessary.
- IV. Is this an expansion of an existing project? Yes XXX No  
If yes, give the Division order number authorizing the project: \_\_\_\_\_
- V. Attach a map that identifies all wells and leases within two miles of any proposed injection well with a one-half mile radius circle drawn around each proposed injection well. This circle identifies the well's area of review.
- VI. Attach a tabulation of data on all wells of public record within the area of review which penetrate the proposed injection zone. Such data shall include a description of each well's type, construction, date drilled, location, depth, record of completion, and a schematic of any plugged well illustrating all plugging detail. Lowenbruck 1
- VII. Attach data on the proposed operation, including: Devonian (96101)
1. Proposed average and maximum daily rate and volume of fluids to be injected;
  2. Whether the system is open or closed;
  3. Proposed average and maximum injection pressure;
  4. Sources and an appropriate analysis of injection fluid and compatibility with the receiving formation if other than reinjected produced water; and,
  5. If injection is for disposal purposes into a zone not productive of oil or gas at or within one mile of the proposed well, attach a chemical analysis of the disposal zone formation water (may be measured or inferred from existing literature, studies, nearby wells, etc.).
- \*VIII. Attach appropriate geologic data on the injection zone including appropriate lithologic detail, geologic name, thickness, and depth. Give the geologic name, and depth to bottom of all underground sources of drinking water (aquifers containing waters with total dissolved solids concentrations of 10,000 mg/l or less) overlying the proposed injection zone as well as any such sources known to be immediately underlying the injection interval.
- IX. Describe the proposed stimulation program, if any.
- \*X. Attach appropriate logging and test data on the well. (If well logs have been filed with the Division, they need not be resubmitted).
- \*XI. Attach a chemical analysis of fresh water from two or more fresh water wells (if available and producing) within one mile of any injection or disposal well showing location of wells and dates samples were taken.
- XII. Applicants for disposal wells must make an affirmative statement that they have examined available geologic and engineering data and find no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.
- XIII. Applicants must complete the "Proof of Notice" section on the reverse side of this form.
- XIV. Certification: I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

NAME: BRIAN WOOD

TITLE: CONSULTANT

SIGNATURE: 

DATE: JUNE 20, 2022

E-MAIL ADDRESS: brian@permitswest.com

\* If the information required under Sections VI, VIII, X, and XI above has been previously submitted, it need not be resubmitted. Please show the date and circumstances of the earlier submittal: \_\_\_\_\_

### III. WELL DATA

A. The following well data must be submitted for each injection well covered by this application. The data must be both in tabular and schematic form and shall include:

- (1) Lease name; Well No.; Location by Section, Township and Range; and footage location within the section.
- (2) Each casing string used with its size, setting depth, sacks of cement used, hole size, top of cement, and how such top was determined.
- (3) A description of the tubing to be used including its size, lining material, and setting depth.
- (4) The name, model, and setting depth of the packer used or a description of any other seal system or assembly used.

Division District Offices have supplies of Well Data Sheets which may be used or which may be used as models for this purpose. Applicants for several identical wells may submit a "typical data sheet" rather than submitting the data for each well.

B. The following must be submitted for each injection well covered by this application. All items must be addressed for the initial well. Responses for additional wells need be shown only when different. Information shown on schematics need not be repeated.

- (1) The name of the injection formation and, if applicable, the field or pool name.
- (2) The injection interval and whether it is perforated or open-hole.
- (3) State if the well was drilled for injection or, if not, the original purpose of the well.
- (4) Give the depths of any other perforated intervals and detail on the sacks of cement or bridge plugs used to seal off such perforations.
- (5) Give the depth to and the name of the next higher and next lower oil or gas zone in the area of the well, if any.

### XIV. PROOF OF NOTICE

All applicants must furnish proof that a copy of the application has been furnished, by certified or registered mail, to the owner of the surface of the land on which the well is to be located and to each leasehold operator within one-half mile of the well location.

Where an application is subject to administrative approval, a proof of publication must be submitted. Such proof shall consist of a copy of the legal advertisement which was published in the county in which the well is located. The contents of such advertisement must include:

- (1) The name, address, phone number, and contact party for the applicant;
- (2) The intended purpose of the injection well; with the exact location of single wells or the Section, Township, and Range location of multiple wells;
- (3) The formation name and depth with expected maximum injection rates and pressures; and,
- (4) A notation that interested parties must file objections or requests for hearing with the Oil Conservation Division, 1220 South St. Francis Dr., Santa Fe, New Mexico 87505, within 15 days.

NO ACTION WILL BE TAKEN ON THE APPLICATION UNTIL PROPER PROOF OF NOTICE HAS BEEN SUBMITTED.

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NOTICE: Surface owners or offset operators must file any objections or requests for hearing of administrative applications within 15 days from the date this application was mailed to them.

# **PERMITS WEST**

**PROVIDING PERMITS for LAND USERS**

37 Verano Loop, Santa Fe, New Mexico 87508 505-466-8120

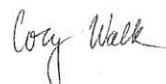
NM Oil Conservation Division  
1220 S. St. Francis Dr.  
Santa Fe, NM 87505

**Re: Geology Statement**  
**Marina SWD New Mexico, LLC**  
**Lowenbruck SWD #1**  
**Section 24, T. 21S, R. 26E**  
**Eddy County, New Mexico**

To whom it may concern:

Publicly available geologic and engineering data related to the proposed well have been thoroughly reviewed, and no evidence for open faults or any other hydrologic connection between the proposed Devonian injection zone and any underground sources of drinking water has been found. Please see the attached seismic risk assessment for additional information.

Sincerely,



Cory Walk  
Geologist

**Seismic Risk Assessment  
Marina SWD New Mexico, LLC  
Lowenbruck SWD No. 1  
Section 24, Township 21 South, Range 26 East  
Eddy County, New Mexico**

**Cory Walk, M.S.**



**Geologist**

**Permits West Inc.**

**June 10, 2022**

## GENERAL INFORMATION

Lowenbruck SWD No. 1 is located in the NE 1/4, section 24, T.21S, R.26E, about 4 miles north-northwest of Carlsbad, NM in the Permian Basin. Marina SWD New Mexico, LLC proposes to re-enter, deepen, and convert the existing Lowenbruck 1 to a saltwater disposal well and dispose within the Devonian Formation through an open hole from 12,250'-13,271' below ground surface. This report assesses any potential concerns relating to induced seismicity along deep penetrating Precambrian faults or the connection between the injection zone and known underground potable water sources.

## SEISMIC RISK ASSESSMENT

### *Historical Seismicity*

**Searching the USGS earthquake catalog resulted in no (0) earthquakes above a magnitude 2.5 within 6 miles (9.7 km) of the proposed deep disposal site since 1970 (Fig. 1).** The nearest earthquake occurred on March 25, 2022 about 11.9 miles (~19.2 km) northwest of the proposed SWD site and had a magnitude of 2.6.

### *Basement Faults and Subsurface Conditions*

A structure contour map (Fig. 1) of the Precambrian basement shows the Lowenbruck SWD #1 is approximately 8.9 miles (14.3 km) from the nearest basement-penetrating fault inferred by Ewing et al (1990). **Information about known nearby faults based on GIS data from Ruppel et al. (2009) is listed in Table 1.**

Snee and Zoback (2018) state, “In the western part of Eddy County, New Mexico,  $S_{H\max}$  is ~north-south (consistent with the state of stress in the Rio Grande Rift; Zoback and Zoback, 1980) but rotates to ~east-northeast-west-southwest in southern Lea County, New Mexico and the northernmost parts of Culberson and Reeves counties, Texas.” **Around the Lowenbruck SWD #1 site, Snee and Zoback indicate a  $S_{H\max}$  direction of N035°E and an  $A_\phi$  of 0.52, indicating an extensional (normal) stress regime.**

Induced seismicity is a growing concern of deep SWD wells. Relatively new software developed by the Stanford Center for Induced and Triggered Seismicity allows for the probabilistic screening of deeply penetrating faults near the proposed injection zone (Walsh et al., 2016; Walsh et al., 2017). This software uses parameters such as stress orientations, fault strike/dip, injection rates, fault friction coefficients, etc. to estimate the potential for fault slip. Using the best available data as input parameters (Table 2) including the subject well injecting at the proposed maximum of 20,000 bbls/day and all other existing SWDs within a 6 mile radius injecting at their individual historical peak annual volume and 4 pending SWDs injecting at 20,000 bbls/day (7 total SWD wells), the Fault Slip Potential (FSP) models suggest a fifteen (0.15) percent chance of slip on a nearby fault, inferred by Frenzel et al (1988) and Ewing et al. (1990), through the year 2042 (Fig. 2; Table 1). **This model also suggests a pore pressure increase of 10.3 psi on the nearest publicly known fault (Fault 10; Fig. 3; Table 1) by the year 2042.** Geomechanical modeling shows that the primary fault of concern (fault 10) would need a pressure increase of 1968 psi to reach a 100% probability of slip on the fault. A 50% probability requires an increase of 329 psi which is 30x greater than the modeled increase of 10.3 psi (Fig. 3).

## GROUNDWATER SOURCES

The Capitan Aquifer (Grayburg, Queen, Seven Rivers, Yates, and Tansill Formations) acts as the principal aquifer used for potable ground water near the Lowenbruck SWD #1 location (Richey et al., 1985). Around the Lowenbruck SWD #1, the base of the Capitan Aquifer (Delaware Sands Formation top) lies at a depth of approximately 2332' bgs.

## VERTICAL MIGRATION OF FLUIDS

Permeability barriers exist above (Woodford shale; 70 ft thick) and below (Simpson Group; 90 ft thick) the targeted Devonian injection zone (Plate 2, Comer et al., 1991; Fig. 8, Frenzel et al., 1988). Precambrian structure contours (Ruppel, 2009) show the basement to be at a depth of approximately 13,970' in this area. Therefore, the injection zone lies approximately 1,720' above the Precambrian basement and approximately 9,920' below the previously stated lower limit of potable water at the base of the Capitan Aquifer (Delaware Sands Formation top).

## CONCLUDING STATEMENTS

After examination of publically available geologic and engineering data, there is no evidence of open faults or any other hydrologic connection between the disposal zone and any underground sources of drinking water.

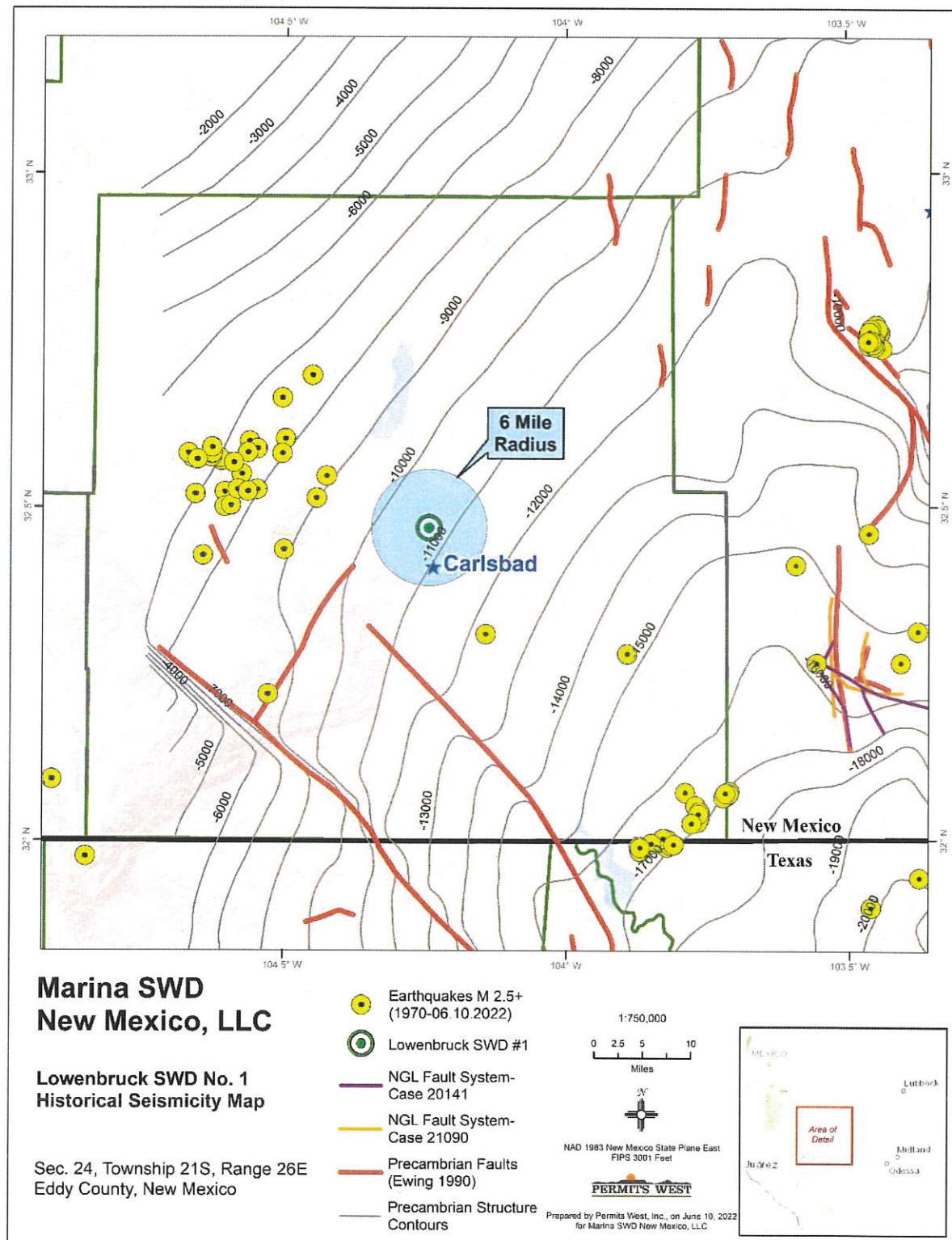


Figure 1. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). Lowenbruck SWD #1 well lies ~8.9 miles northeast of the closest deeply penetrating fault and ~11.9 miles southeast from the closest historic earthquake.

**Table 1: Nearby Basement Fault Model Results**

Fault Number	Distance to proposed SWD (mi)	Strike (°)	Dip (°)	FSP (2042)	Δ Pore Pressure after 20 years (psi)	Δ Pore Pressure needed for 100% FSP (psi)	Δ Pore Pressure needed for 50% FSP (psi)
Fault 10	8.9	40	50-90	0.15	10.3	1968	329
Fault 3	12.0	315	50-90	0	8.3	4371	2558

**Table 2: Fault Slip Potential model input parameters**

Faults	Value	Notes
Friction Coefficient	0.58	Ikari et al. (2011)
Dip Angle (deg)	70	Snee and Zoback (2018)
<b>Stress</b>		
Vertical stress gradient (psi/ft)	1.1	Hurd and Zoback (2012)
Max Horizontal Stress Direction (deg)	35	Snee and Zoback (2018)
Depth for calculations (ft)	13270	Proposed injection zone
Initial Reservoir Pressure Gradient (psi/ft)	0.7	calculated from mud wt (ppg) used in drilling at these depths
A Phi Parameter	0.52	Snee and Zoback (2018)
Reference Friction Coefficient	0.58	Ikari et al. (2011)
<b>Hydrology</b>		
Aquifer thickness (ft)	1000	Proposed injection zone
Porosity (%)	6	
Permeability (mD)	150	
Injection Rate (bbl/day)	20000	Maximum proposed injection rate

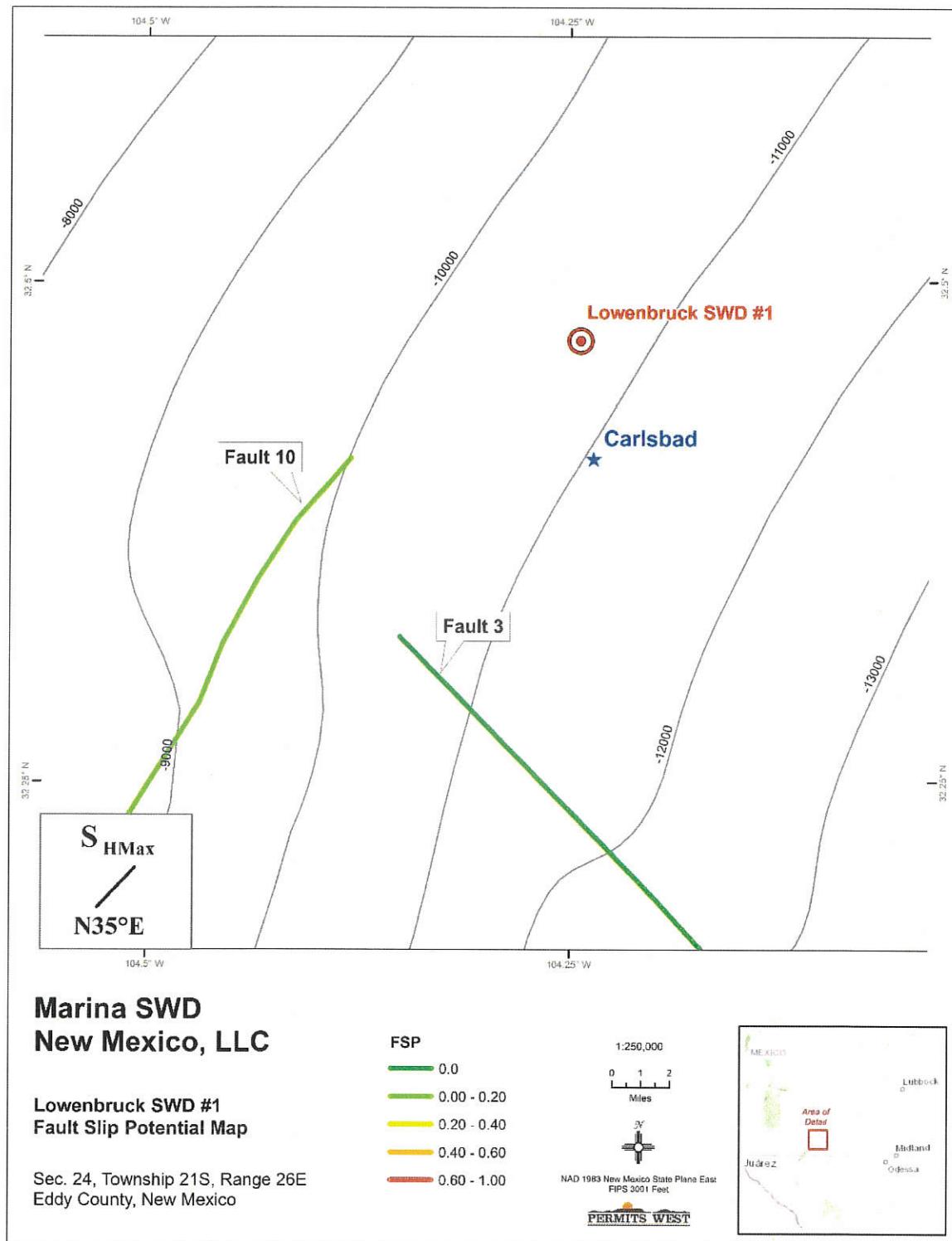


Figure 2. Precambrian fault map of the Lowenbruck SWD area as mapped by Ewing et al. (1990). Faults are colored based on probability of fault slip as modeled using Fault Slip Potential software (Walsh and Zoback, 2016). Labeled values represent the calculated fault slip potential using the parameters indicated in Table 2. Contours show the top of the Precambrian basement in feet below sea level.

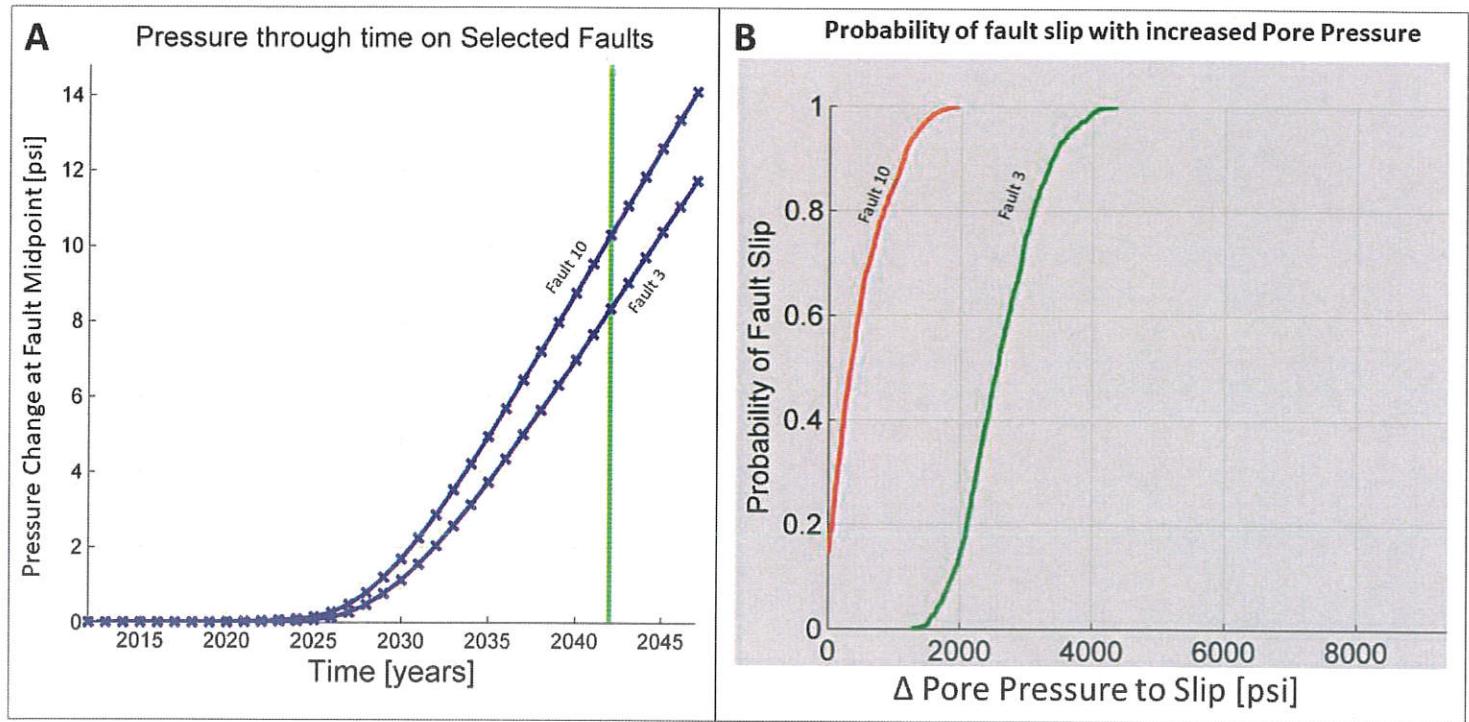


Figure 3. A) Plot showing the modeled change of pore pressure on nearby faults through time as a response to the proposed SWD well. B) Plot showing the required pore pressure increase needed to produce specific probabilities of fault slip on nearby faults.

## References Cited

- Comer, J. B., 1991, Stratigraphic Analysis of the Upper Devonian Woodford Formation, Permian Basin, West Texas and Southeastern New Mexico: The University of Texas at Austin, Bureau of Economic Geology, Report of Investigations No. 201, 63 p.
- Ewing, T. E., 1990, The tectonic map of Texas: Austin, Bureau of Economic Geology, The University of Texas at Austin.
- Frenzel, H. N., Bloomer, R. R., Cline, R. B., Cys, J. M., Galley, J. E., Gibson, W. R., Hills, J. M., Lowenbruck, W. E., Seager, W. R., Kottlowski, F. E., Thompson, S., III, Luff, G. C., Pearson, B. T., and Van Siclen, D. C., 1988, The Permian Basin region, in Sloss, L. L., ed., Sedimentary cover—North American Craton, U.S.: Boulder, Colorado, Geological Society of America, The Geology of North America, v. D-2, p. 261–306.
- Hendrickson, G. E., and Jones, R. S., 1952, Geology and Ground-Water Resources of Eddy County, New Mexico: New Mexico Bureau of Mines and Mineral Resources, Ground-Water Report 3, 179 pp., 6 plates.
- Hurd, O; Zoback, MD, 2012, Intraplate earthquakes, regional stress and fault mechanics in the Central and Eastern U.S. and Southeastern Canada. *Tectonophysics*, 581:182-92.
- Ikari, M. J.; C. Marone, and D. M. Saffer, 2011, On the relation between fault strength and frictional stability, *Geology*, 39, 83–86.
- Richey, S., Wells, J., and Stephens, K., 1985, Geohydrology of the Delaware Basin and Vicinity, Texas and New Mexico: United States Geological Survey, Water-Resources Investigations Report 84-4077, 101 pp.
- Ruppel, S.C., 2009, Integrated synthesis of the Permian basin: data and models for recovering existing and undiscovered oil resources from the largest oil-bearing basin: U.S. Oil & Natural Gas Technology, Bureau Economic Geology, The University of Texas at Austin, p. 1-959.
- Snee, J.-E.L., Zoback, M.D., 2018, State of stress in the Permian Basin, Texas and New Mexico: Implications for induced seismicity: *Leading Edge*, v. 37, p. 127–134.
- Walsh, F. R., and Zoback, M. D., (2016) Probabilistic assessment of potential fault slip related to injection induced earthquakes: Application to north central Oklahoma, USA, *Geology, Data Repository item 2016334*, doi:10.1130/G38275.1
- Walsh, F. R., Zoback, M. D., Pais, D., Weingarten, M., and Tyrrell, T. (2017) FSP 1.0: A Program for Probabilistic Estimation of Fault Slip Potential Resulting From Fluid Injection, User Guide from the Stanford Center for Induced and Triggered Seismicity, available at SCITS.Stanford.edu/software
- Zoback, M. L., and M. D. Zoback, 1980, State of stress in the conterminous United States: *Journal of Geophysical Research*, 85, no. B11, 6113–6156, <https://doi.org/10.1029/JB085iB11p06113>.



EXHIBIT I

PHONE (575) 393-2326 ° 101 E. MARLAND ° HOBBS, NM 88240

May 26, 2022

LELAN ANDERS  
SPC RESOURCES, LLC  
P.O. BOX 1020  
ARTESIA, NM 88271

RE: WATER SAMPLES

Enclosed are the results of analyses for samples received by the laboratory on 05/20/22 7:50.

Cardinal Laboratories is accredited through Texas NELAP under certificate number T104704398-21-14. Accreditation applies to drinking water, non-potable water and solid and chemical materials. All accredited analytes are denoted by an asterisk (\*). For a complete list of accredited analytes and matrices visit the TCEQ website at [www.tceq.texas.gov/field/qa/lab\\_accred\\_certif.html](http://www.tceq.texas.gov/field/qa/lab_accred_certif.html).

Cardinal Laboratories is accredited through the State of Colorado Department of Public Health and Environment for:

Method EPA 552.2	Haloacetic Acids (HAA-5)
Method EPA 524.2	Total Trihalomethanes (TTHM)
Method EPA 524.4	Regulated VOCs (V1, V2, V3)

Accreditation applies to public drinking water matrices.

This report meets NELAP requirements and is made up of a cover page, analytical results, and a copy of the original chain-of-custody. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink that reads "Celey D. Keene".

Celey D. Keene  
Lab Director/Quality Manager

**Analytical Results For:**

SPC RESOURCES, LLC  
 LELAN ANDERS  
 P.O. BOX 1020  
 ARTESIA NM, 88271  
 Fax To:

Received:	05/20/2022	Sampling Date:	05/19/2022
Reported:	05/26/2022	Sampling Type:	Water
Project Name:	WATER SAMPLES	Sampling Condition:	** (See Notes)
Project Number:	NONE GIVEN	Sample Received By:	Brandi Oldaker
Project Location:	NONE GIVEN		

**Sample ID: #1 DOMESTIC (H222157-01)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride*</b>	<b>370</b>	4.00	05/23/2022	ND	104	104	100	0.00		
<b>TDS 160.1</b>	<b>mg/L</b>		Analyzed By: GM							
Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier										
<b>TDS*</b>	<b>2140</b>	5.00	05/24/2022	ND	492	98.4	500	2.56		

**Sample ID: #2 IRRIGATION WELL (H222157-02)**

Chloride, SM4500Cl-B		mg/L		Analyzed By: AC						
Analyte	Result	Reporting Limit	Analyzed	Method Blank	BS	% Recovery	True Value QC	RPD	Qualifier	
<b>Chloride*</b>	<b>910</b>	4.00	05/23/2022	ND	104	104	100	0.00		
<b>TDS 160.1</b>	<b>mg/L</b>		Analyzed By: GM							
Analyte Result Reporting Limit Analyzed Method Blank BS % Recovery True Value QC RPD Qualifier										
<b>TDS*</b>	<b>3670</b>	5.00	05/25/2022	ND	492	98.4	500	2.56		

Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



Celey D. Keene, Lab Director/Quality Manager

**Notes and Definitions**

ND	Analyte NOT DETECTED at or above the reporting limit
RPD	Relative Percent Difference
**	Samples not received at proper temperature of 6°C or below.
***	Insufficient time to reach temperature.
-	Chloride by SM4500Cl-B does not require samples be received at or below 6°C
	Samples reported on an as received basis (wet) unless otherwise noted on report

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Cardinal Laboratories

\*=Accredited Analyte

PLEASE NOTE: Liability and Damages. Cardinal's liability and client's exclusive remedy for any claim arising, whether based in contract or tort, shall be limited to the amount paid by client for analyses. All claims, including those for negligence and any other cause whatsoever shall be deemed waived unless made in writing and received by Cardinal within thirty (30) days after completion of the applicable service. In no event shall Cardinal be liable for incidental or consequential damages, including, without limitation, business interruptions, loss of use, or loss of profits incurred by client, its subsidiaries, affiliates or successors arising out of or related to the performance of the services hereunder by Cardinal, regardless of whether such claim is based upon any of the above stated reasons or otherwise. Results relate only to the samples identified above. This report shall not be reproduced except in full with written approval of Cardinal Laboratories.



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Celey D. Keene, Lab Director/Quality Manager



## Marina

### Lowenbruck SWD #1 Nearby Fresh Water Well Map

Section 24, Township 21S, Range 26E  
Eddy County, New Mexico

- ▲ H2O Sites
- BLM
- BOR
- Private
- State

1:13,000

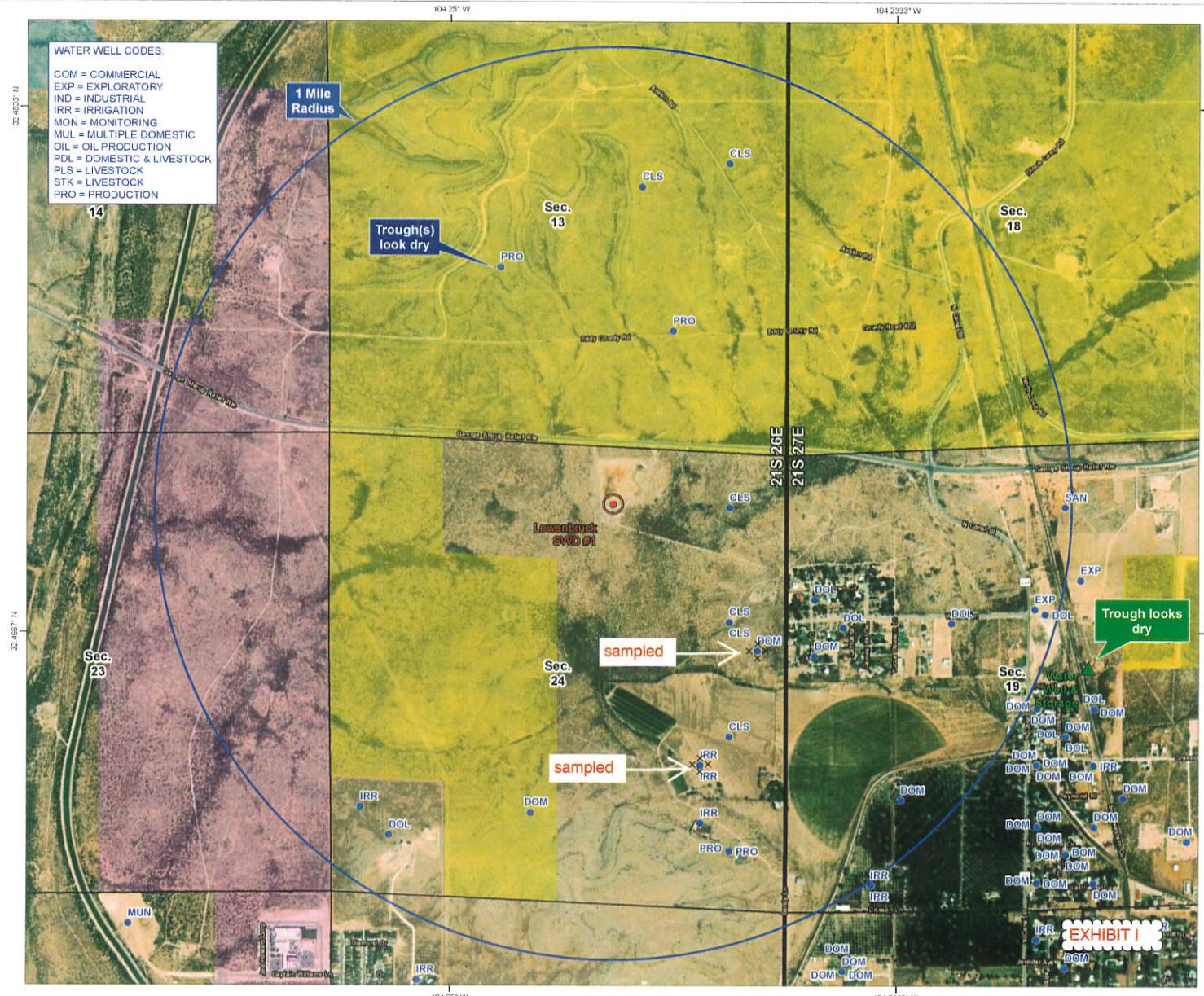
0 0.125 0.25 0.5  
Miles



NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet

**PERMITS WEST**

Prepared by Permits West, Inc., April 29, 2022  
for Marina



MARINA SWD NEW MEXICO, LLC  
LOWENBRUCK 1  
660' FNL & 1980' FEL  
SEC. 24, T. 21 S., R. 26 E., EDDY COUNTY, NM

PAGE 1

30-015-21602

I. Goal is to re-enter, deepen, and convert a 11,393' deep P&A well to a 13,271' deep saltwater disposal well. Proposed disposal interval will be 12,250' – 13,271' in the SWD; Devonian (96101). See Exhibit A for C-102 and map. The well is on fee surface and fee minerals.

II. Operator: Marina SWD New Mexico, LLC [OGRID 330409]

Operator phone number: (575) 736-3250

Operator address: P. O. Box 1020, Artesia NM 88211

Contact for Application: Brian Wood (Permits West, Inc.)  
Phone: (505) 466-8120

III. A. (1) Lease name: Lowenbruck (fee)

Well name and number: Lowenbruck 1

Location: 660' FNL & 1980' FEL Section 24, T. 21 S., R. 26 E.

A. (2) Surface casing (16", 65#) was set at 150' in a 20" hole and cemented to GL with 150 sacks.

Intermediate casing 1 (9.625", 47. 40, & 36#) was set at 1,503' in a 15" and 12.25" hole and cemented to GL with 700 sacks. Circulated out an estimated 50 sacks.

Intermediate casing 2 (7.875", 29.7#) was set at 2,510' in a 12.25" hole and cemented to GL with 1,000 sacks. Circulated out an estimated 500 sacks.

(A 6.75" hole was drilled to TD (11,393') and the well was plugged 2 days later. No long string was run.)

Marina will drill out the plugs with a 6.75" bit and continue to 12,250'. Marina will run 5.5" 17# L-80 production casing and cement to above 2,500' with 846 sacks (>25% excess).

A 4.75" hole will be drilled to TD (13,271') and the well completed open hole (12,250' – 13,271').

- A. (3) IPC 3.5" 9.3# tubing will be set at 12,200'. (Disposal interval will be 12,250' to 13,271'.)
- A. (4) A stainless-steel or nickel-plated packer will be set at 12,200'. (Top of the open hole will be 12,250'.)
- B. (1) Disposal zone will be the Devonian (SWD; Devonian (96101) pool). Estimated fracture gradient is ≈0.65 psi per foot.
- B. (2) Disposal interval will be open hole from 12,250' to 13,271'.
- B. (3) Well was spudded on 8-8-75 as a Morrow gas well. It did not produce. It was P&A on 11-13-75.
- B. (4) No perforated intervals are in the well. Deepest current casing is 2,510' in the 11,393' well. Seven plugs were set: 0' – 55' (10 sx), 2,460' – 2,560' (25 sx), 4,950' – 5,050' (25 sx), 6,750' – 6,850' (25 sx), 8,525' – 8,625' (25 sx), 9,900' – 10,000' (25 sx), and 10,900' – 11,000' (25 sx).
- B. (5) Potentially productive zones in the area of review and above the Devonian (12,238') are the Yates (316'), Seven Rivers (493'), Delaware (2,333'), Bone Spring (4,736'), Wolfcamp (8,589'), Penn (9,660'), Strawn (9,972'), Atoka (10,431'), and Morrow (10,707'). No oil or gas zone is below the Devonian in the area of review.

IV. This is not an expansion of an existing injection project. It is disposal only.

V. Exhibit B shows and tabulates the 14 existing wells within a one-mile radius. Thirteen of the wells are P&A. Deepest of the 14 wells is 11,890' TVD. Exhibit C

shows all 168 existing wells (109 water + 24 oil or gas + 35 P&A) within a two-mile radius. There are no SWD wells, active or pending, within 2-miles.

All leases within a one-mile radius are BLM or fee. Exhibit D shows and tabulates all leases within a one-mile radius. Two-mile radius leases are BLM, fee, or NMSLO (Exhibit E).

VI. No Devonian penetrator is within a mile. Deepest (11,890' TVD) well within a mile bottomed in the Barnett, 348' above the Devonian (12,238'). No active or pending Devonian SWD well is within 2 miles according to the NMOCD SWD Applications Map dated 2-14-22. The only Devonian well drilled to date in 21s-26e or 21s-27e is an SWD; Devonian well in 3-21s-27e.

- VII.
1. Average injection rate will be ≈15,000 bwpd.  
Maximum injection rate will be 20,000 bwpd.
  2. System will be open and closed. Water will both be trucked and piped.
  3. Average injection pressure will be ≈2,250 psi. Maximum injection pressure will be 2,450 psi (= 0.2 psi/ft x 12,250' (top of open hole)).
  4. Disposal water will be produced water, mainly Bone Spring and Wolfcamp, but also Atoka, Delaware, Morrow, Strawn, et al. There are 56 approved Bone Spring wells and 33 approved Wolfcamp wells in T. 21 S., R. 26 & 27 E. Abstracts from the NM Produced Water Quality Database v.2 for wells in T. 20 S., R. 28 E. are in Exhibit F. A table of TDS ranges from those wells in T. 20 S., R. 28 E. is below. Devonian samples from 30-015-02475 (11 miles east) found TDS at 16,223 and 19,941.

Formation	TDS range (mg/l)
Artesia	3,211 – 81,000
Bone Spring	1,595 – 197,409
Capitan	22,198 – 22,205
Delaware	7,792 – 161,114
Morrow	31,643 – 44,978
Rustler	3,735

30-015-21602

San Andres	210,774
Tansill	3,237 – 3,728
Wolfcamp	40,785 – 297,557

No compatibility problems have been reported from the closest (3-1/2 miles northeast) Devonian; SWD well. At least 4,246,899 barrels have been disposed in 30-015-32274 since 2013.

5. No Devonian producer is within 6 miles.

VIII. The disposal interval (estimated 1021' thick) is limestone and dolomite. Closest possible underground source of drinking water above the proposed disposal interval is the Quaternary alluvium at the surface. Several water wells produce from the Yates, Seven Rivers, and Capitan. State Engineer records (Exhibit G) show >100 water wells within a 2-mile radius. Average depth to water is 38' within the radius. Deepest water well within the radius is 3205'. No underground source of drinking water is below the proposed disposal interval.

Estimated formation tops are:

Quaternary = 0'  
Tansill = 176'  
Yates = 316'  
Seven Rivers = 493'  
Capitan = 546'  
Delaware = 2332'  
Bone Spring = 4736'  
Wolfcamp = 8589'  
Penn = 9660'  
Strawn = 9972'  
Atoka = 10431'  
Morrow = 10707'  
Barnett = 11358'  
*current TD = 11393'*  
Mississippian = 11762'  
Woodford = 12144'  
Devonian = 12238'

MARINA SWD NEW MEXICO, LLC  
LOWENBRUCK 1  
660' FNL & 1980' FEL  
SEC. 24, T. 21 S., R. 26 E., EDDY COUNTY, NM

PAGE 5

30-015-21602

*disposal interval = 12250' - 13271'*

*proposed TD = 13271'*

*Simpson = 13441'*

*Ellenburger = 13591'*

According to State Engineer records (Exhibit G), the deepest water well within 2-miles is 3205'. There will be >12,000' of vertical separation including multiple layers of shale and anhydrite between the bottom of the only likely underground water source (Quaternary) and the top of the Devonian.

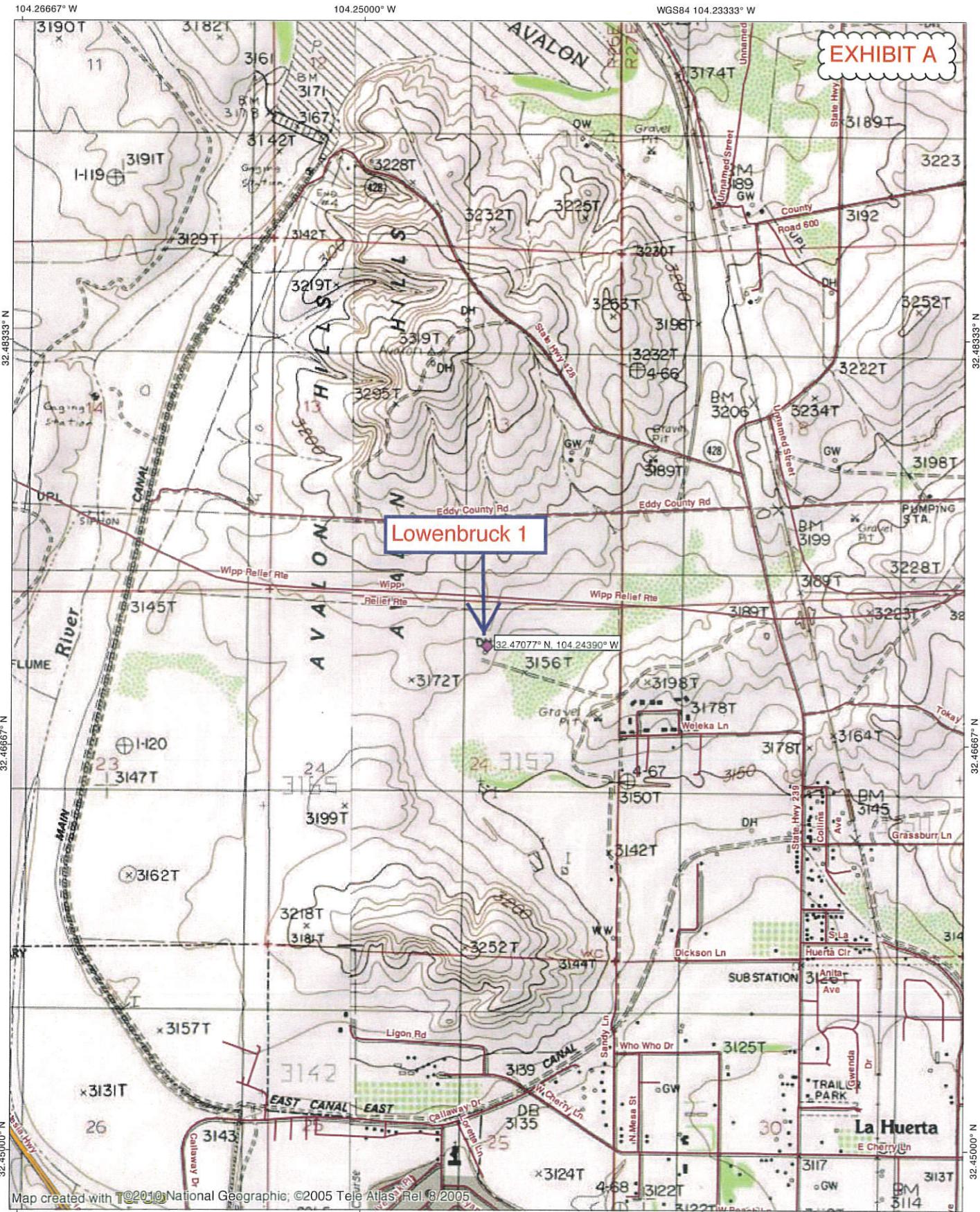
IX. Well will be stimulated with acid as needed.

X. GR-neutron and DLL logs were run and are on file with NMOCD.

XI. According to State Engineer records (Exhibit G), >100 water wells are within a 2-mile radius. The well's intermediate casing penetrated the Capitan Reef and is cemented to the surface.

XII. Marina SWD New Mexico, LLC (Exhibit H) is not aware of any geologic or engineering data that may indicate the Devonian is in hydrologic connection with any underground sources of water. Two water wells within a 3,300' radius were sampled (Exhibit I). Deepest water well within a 2-mile radius is 3205'. There are 170 active Devonian SWD wells in New Mexico.

XIII. A legal ad (Exhibit J) was published on May 11, 2022. Notice (Exhibit K) and this application has been sent to the surface owner (Santo Royalty Company LLC), all well operators regardless of depth, government lessors, lessees, and operating right holders within a mile.



NEW MEXICO OIL CONSERVATION COMMISSION  
WELL LOCATION AND ACREAGE DEDICATION PLAT

Form C-102

EXHIBIT A

All distances must be from the outer boundaries of the Section.

Operator <b>Hanagan Petroleum Corporation</b>			Lease <b>Lowenbruck</b>	Well No. <b>1</b>
Junit Letter <b>B</b>	Section <b>24</b>	Township <b>21 South</b>	Range <b>26 East</b>	County <b>Eddy</b>
Actual Footage Location of Well:				
1980	feet from the East	line and	660'	feet from the North
Ground Level Elev: <b>3184.1</b>	Producing Formation <b>Morrow</b>	Pool <i>Lewiston, Eddy Co., New Mexico</i>	Undesignated	Dedicated Acreage: <b>320</b> Acres

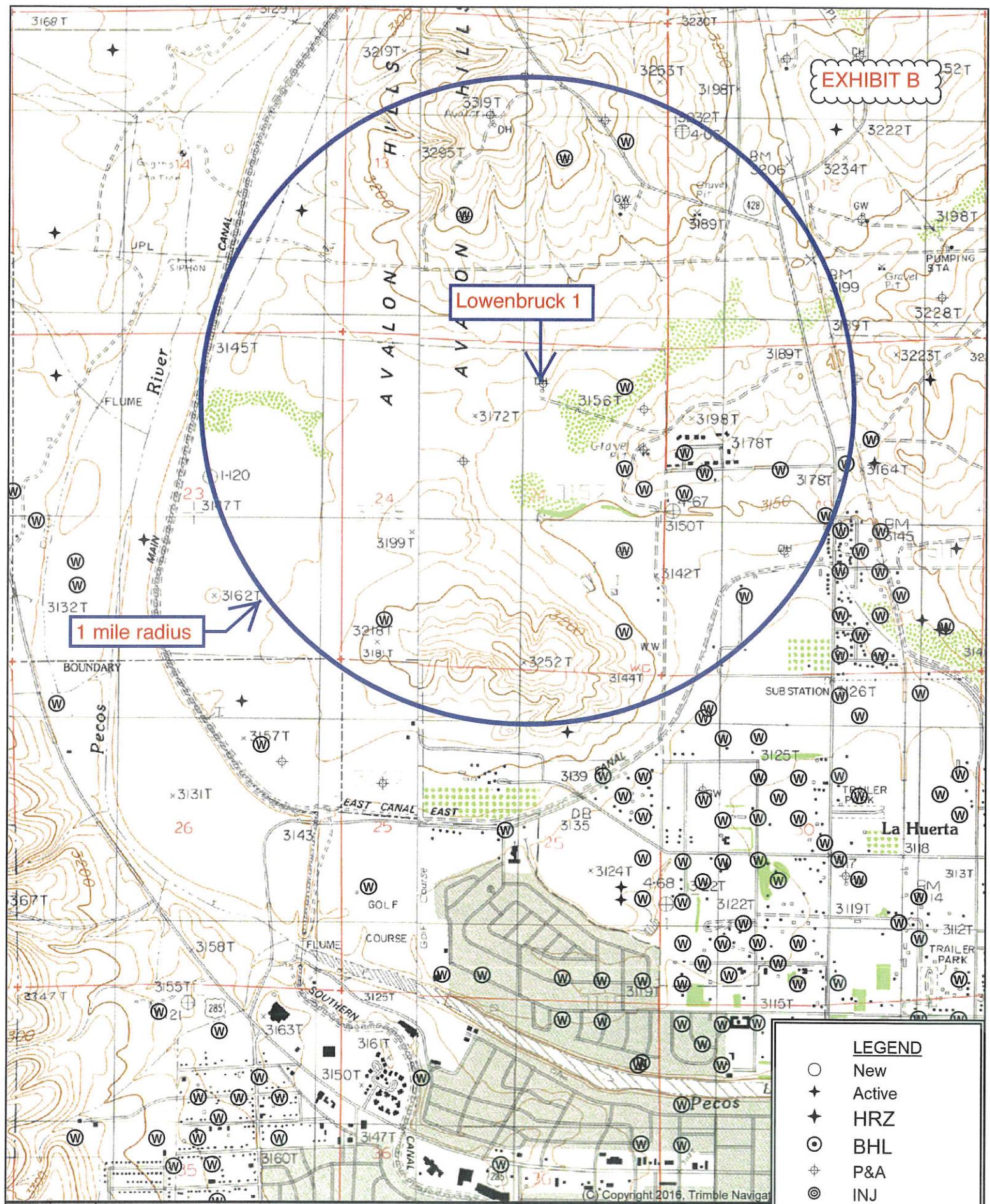
1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).
3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communityization, unitization, force-pooling, etc?

Yes  No . If answer is "yes," type of consolidation will be either by communityization or force-pooling

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) Hanagan & Hanagan-Fee-160 Acre-NE/NW/4,N/2 NE/4, & SW/NE/4

No allowable will be assigned to the well until all interests have been consolidated (by communityization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.

			CERTIFICATION	
			<p>I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><i>Hugh E. Hanagan</i></p> <p>Name <b>Hugh E. Hanagan</b></p> <p>Position <b>Vice President</b></p> <p>Company <b>Hanagan Petroleum Corporation</b></p> <p>Date</p>	
			<p>I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.</p> <p><i>[Signature]</i></p> <p>Date Surveyed <b>May 13, 1975</b></p> <p>Registered Professional Engineer and/or Land Surveyor</p> <p><i>[Signature]</i></p> <p>Certificate No. <b>N.M. 220</b></p>	



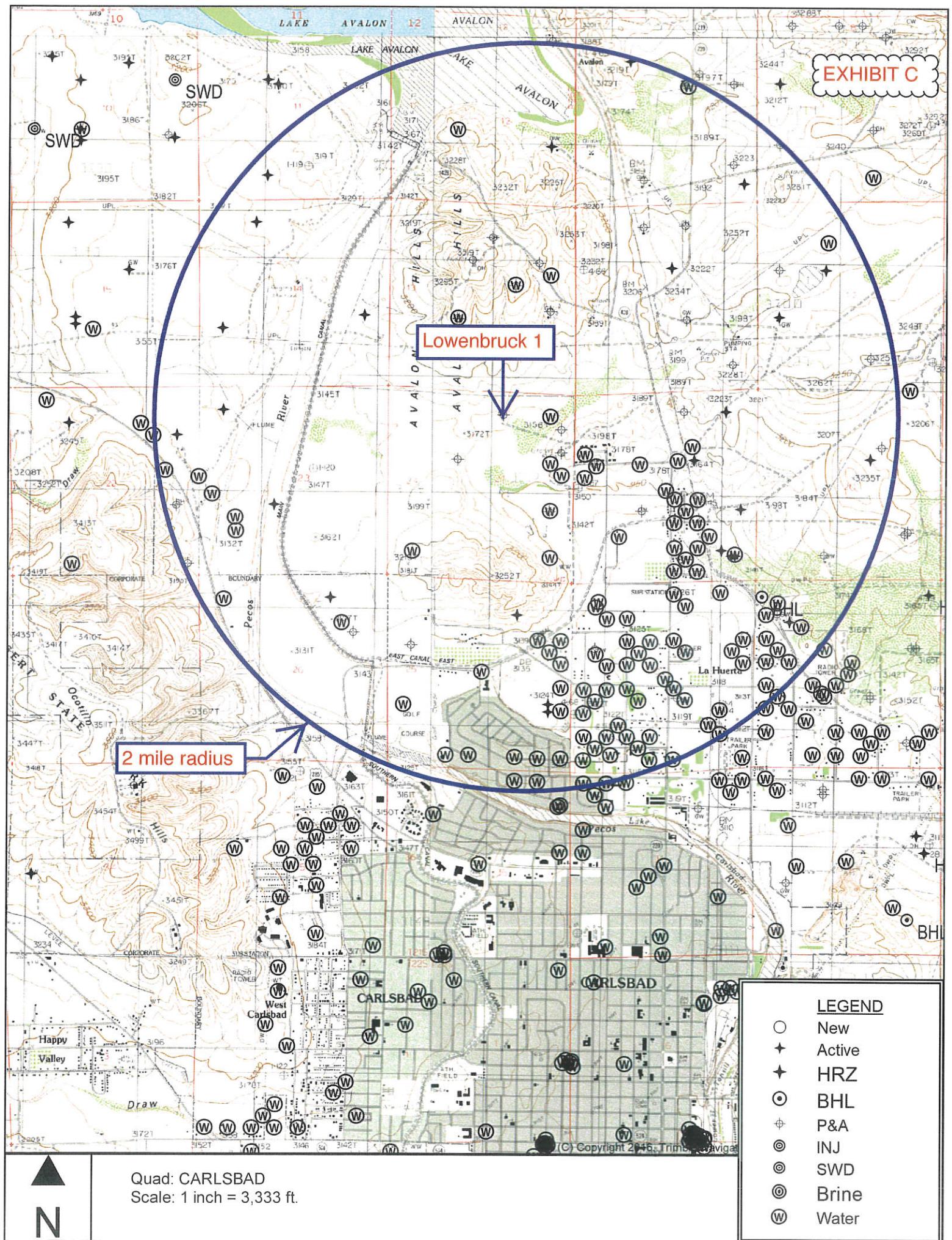
Quad: CARLSBAD EAST  
Scale: 1 inch = 2,000 ft.

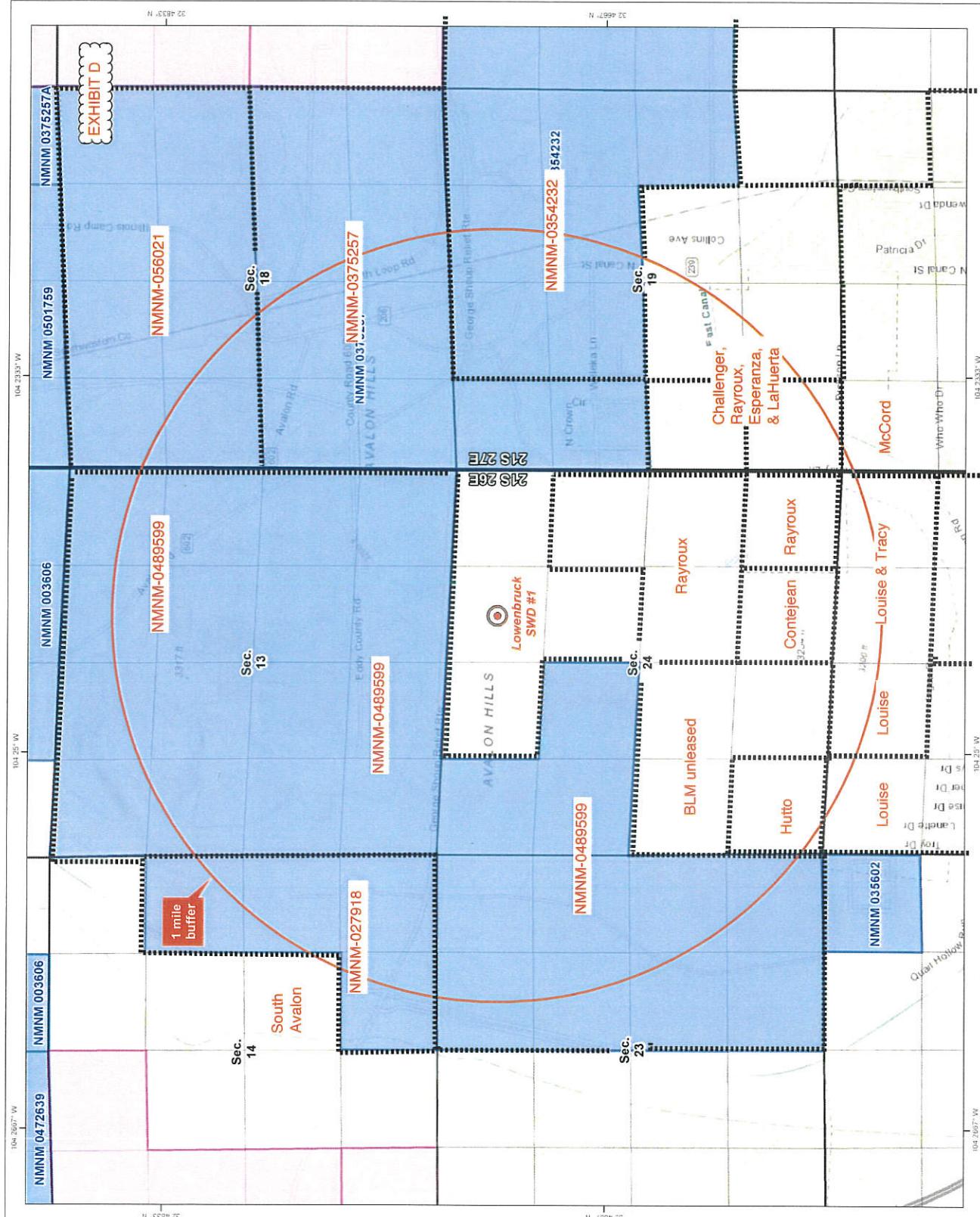


## WELLS WITHIN 1 MILE RADIUS OF LOWENBRUCK 1

API	OPERATOR	WELL	TYPE	UNIT-SECTION	TVD	ZONE @ TD	FEET FROM LOWENBRUCK 1
3001500368	JW Baker	John Lowenbrock 001	P&A	A-24	2662	Delaware	1707
3001500369	LR Barton	Barton Mobil Fed 001	P&A	F-24	2678	Delaware	1799
3001500323	Barber	L F Rayroux 001	P&A	H-24	2643	Delaware	1973
3001505932	GK Woods	DeKalb 001	P&A	E-19	2677	Delaware	2958
3001521100	Monsanto	Arco 001	P&A	K-13	707	Capitan Reef	2998
3001500325	GK Woods	L F Rayroux 002	P&A	I-24	2709	Delaware	3028
3001521591	Yates Pet.	Arco El Federal 001	P&A	I-13	11554	Morrow	3198
3001500364	Gordon M Cone	Rodke 001	P&A	G-13	775	Capitan Reef	3653
3001500365	Gordon M Cone	Rodke 002	P&A	H-13	318	Yates	4383
3001500322	W Neil	Vyall 001	P&A	F-13	1903	Capitan Reef	4434
3001522114	Mt. States	Rayroux Com 001	P&A	K-19	11542	Morrow	4827
3001523079	SPC	South Avalon MA Federal Com 001	G	I-14	11400	Morrow	4835
3001521137	Monsanto	Arco 002	P&A	B-13	11475	Morrow	4999
3001533494	Mewbourne	Esperanza 19 Federal Com 002	P&A	C-19	11890	Barnett	5137
3001524777	Devon	Pioneer Federal 001	G	G-19	11500	Morrow	5575

**EXHIBIT C**





## Marina

### Lowenbruck SWD #1 1 Mile Lease Overview Map

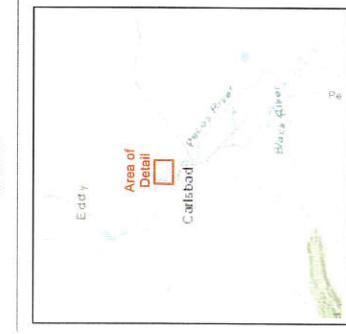
Sec. 22, Township 21N, Range 5W  
Sandoval County, New Mexico

- Leases**
- Federal O&G Lease
- State O&G Lease

1:15,000  
0 0.1 0.2 Miles

NAD 1983 New Mexico State Plane East  
FIPS 3001 Feet

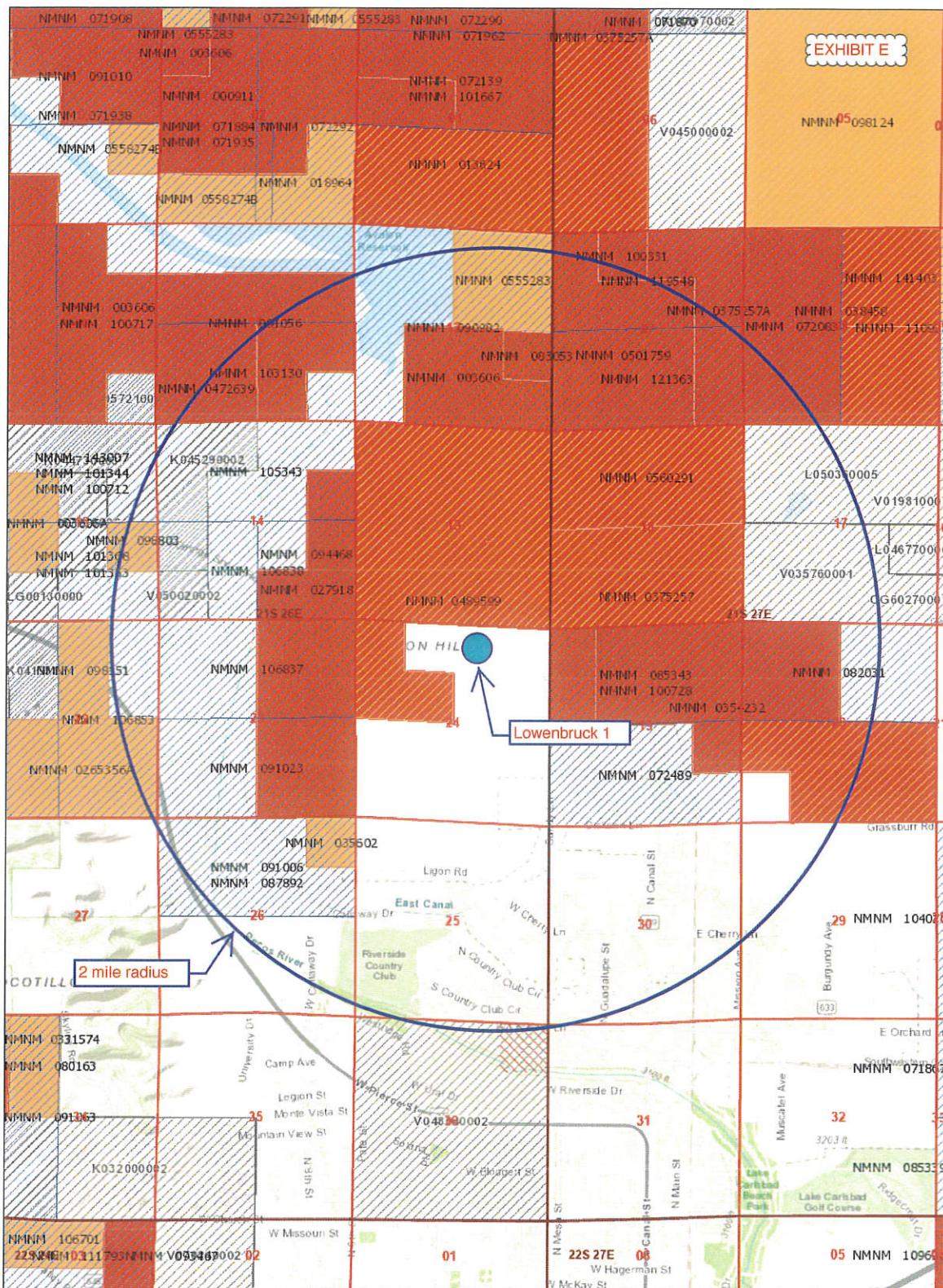
**PERMITS WEST**  
Prepared by Permits West, Inc., February 16, 2022  
for Maina



LOWENBRUCK 1 AREA OF REVIEW LEASES

Aliquot Parts in Area of Review	Lessor	Lease	Lessee(s) of Record	Well Operators (all shallower than Devonian)
Lots 1-16 13-21s-26e	BLM	NMNM-0489599	Devon	none
Lots 1-4 14-21s-26e	BLM	NMNM-027918	Oxy Y-1 & SPC	SPC
NWSE 14-21s-26e	fee	South Avalon	SPC	SPC
Lots 1-6 & 8 23-21s-26e	BLM	NMNM-0489599	Devon	SPC
N2NE4, SWNE, & NENW 24-21s-27e	fee	Lowenbruck	SPC	SPC
Lots 1-3 24-21s-26e	BLM	NMNM-0489599	Devon	SPC
SENE & N2SE4 24-21s-26e	fee	Rayroux	SPC	SPC
Lots 4-6 24-21s-26e	BLM	not leased	none	none
SWSW 24-21s-26e	fee	Hutto	none	none
SWSE 24-21s-26e	fee	Contejean	none	none
SESE 24-21s-26e	fee	Rayroux	none	none
N2NE4 & NENW 25-21s-26e	fee	Louise & Tracy	SPC	SPC
NWNW 25-21s-26e	fee	Louise	SPC	SPC
Lots 1-2 & SENW 18-21s-27e	BLM	NMNM-0560291	XTO	none
Lots 3-4, E2SW4, & W2SE4 18-21s-27e	BLM	NMNM-0375257	Oxy Y-1, EOG, & Sharbro	none
W2NE4 & E2NW4 19-21s-27e	BLM	NMNM-0354232	Devon & OXY USA WTP	Devon & Fe-NM
Lots 1-2 19-21s-27e	BLM	NMNM-0375257	Oxy Y-1, EOG, & Sharbro	Devon & Fe-NM
NWSE & E2SW4 19-21s-27e	fee	Challenger Rayroux, Esperanza, LaHuerta	Fe-NM & Mewbourne	Fe-NM & Mewbourne
Lot 3 19-21s-27e	fee	Challenger Rayroux, Esperanza, LaHuerta	Fe-NM & Mewbourne	Fe-NM & Mewbourne
Lot 4 19-21s-27e	fee	Challenger Rayroux, Esperanza, LaHuerta	Fe-NM & Mewbourne	Fe-NM & Mewbourne
Lot 1 30-21s-27e	fee	McCord	Fe-NM	Fe-NM

# OCD Well Locations



6/12/2022, 3:27:40 PM

1:36,112  
0 0.35 0.5 1 1.4 mi  
0 0.5 1 2 km  
U.S. Department of Interior, Bureau of Land Management (BLM)  
Sources: Esri, HERE, Garmin, Intermapper, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

## T. 20 S., R. 28 E. WATER SAMPLES (parameters in mg/l)

API	Section	UL	Formation	TDS	Sodium	Calcium	Iron	Magesium	Chloride	Bicarbonate	Sulfate
3001502406	19	E	Artesia	3211					130	98	2124
3001502419	23	A	Artesia	25500					11500	716	4590
3001502352	13	L	Artesia	50610					29400	861	1428
3001502395	13	F	Artesia	28980					14640	660	3080
3001502335	1	G	Artesia	32300					14800	1430	5450
3001502356	13	O	Artesia	81000					45500	684	4130
3001502361	13	O	Artesia	29100					14400	658	3620
3001502381	13	C	Artesia	40200					17400	1120	8470
3001502390	13	F	Artesia	24308					12310	884	2381
3001502353	13	J	Artesia	38600					17600	756	7230
3001502390	13	F	Artesia	27048					13330	894	2969
3001521640	29	J	Bone Spring	131898	46844	6407	5	1395	85954	635	2419
3001521640	29	J	Bone Spring	142444	45650	10949	5	1821	93828	679	1879
3001527288	4	P	Bone Spring	1595	1286	8	127	1	65	93	5
3001527288	4	P	Bone Spring	6038	2218	26	36	6	3352	221	142
3001540518	28	I	Bone Spring 1st	185448	61572	1308	9	344	119363	683	680
3001540517	28	J	Bone Spring 1st	192410	72267	1344	18	367	114048	2074	0
3001540518	28	I	Bone Spring 1st	197409	76634	1421	24	397	114243	2196	0
3001540517	28	J	Bone Spring 1st	184770	71077	1425	18	391	108741	720	0
3001540518	28	I	Bone Spring 1st	187017	72901	1420	15	392	109200	695	0
3001502406	19	E	Capitan	22198					11170	274	2692
3001502406	19	E	Capitan	22205	6502	1001		559	11176	274	2692
3001527070	24	G	Delaware	7792	496	1384	815	176	4767	93	31
3001524414	30	O	Delaware	110018	67321	1064	0	566	105500	1320	1368
3001524710	30	F	Delaware	131032	75440	1400	0	2600	125000	456	1320
3001524414	30	O	Delaware	113918	66125	1420	0	1880	108500	358	1600
3001524546	30	M	Delaware	100084	56097	2440	0	3660	100500	460	792
3001524637	30	L	Delaware	123556	71737	1840	0	1860	118000	392	1128
3001522235	19	N	Delaware	37852	74405	2120	17	4280	130000	228	1152
3001524637	30	L	Delaware	161114	53113	11872	19	2363	109216	692	1151

## T. 20 S., R. 28 E. WATER SAMPLES (parameters in mg/l)

API	Section	UL	Formation	TDS	Sodium	Calcium	Iron	Magesium	Chloride	Bicarbonate	Sulfate
3001527070	24	G	Delaware	32129	5253	4235	1123	1028	20380	110	159
3001522235	19	N	Delaware			1600	100	5126	41535	122	25
3001522002	19	N	Morrow			11000	9	1100	81792	122	1425
3001529234	16	H	Morrow	31643	11186	919	105	160	19505	273	87
3001528996	3	A	Morrow	44978	15978	1345	198	252	27888	467	31
3001521222	18	F	Morrow	36642		1120	0	1555	23004	183	13
3001522002	19	N	Morrow			10360	38	638	94572	122	1375
3001502406	19	E	Rustler	3735	581	571		230	130	98	2124
3001502416	22	O	San Andres	210774					123500	847	4512
3001522554	30	H	Strawn			1000	85	244	11502	122	3
3001502406	19	E	Tansill	3237		228		56	130	120	2122
3001502406	19	E	Tansill	3728	580	570		230	130	98	2120
3001502406	19	E	Tansill		581	228		56	130	120	2122
3001522299	21	J	Wolfcamp	41597					25000	449	76
3001522299	21	J	Wolfcamp	43441					26100	446	100
3001502416	22	O	Wolfcamp	55965					32400	252	2260
3001522299	21	J	Wolfcamp	40785					24300	688	44
3001522299	21	J	Wolfcamp	144926					87600	37	1350
3001502416	22	O	Wolfcamp	297557					186000	143	447











<a href="#">C_01248</a>	C	ED	3	3	1	29	21S	27E	573352	3590775*		3111	240	19	221
<a href="#">C_01047</a>	CUB	ED	3	1	29	21S	27E	573453	3590876*		3121	288	256	32	
<a href="#">C_01662</a>	C	ED	3	1	29	21S	27E	573453	3590876*		3121	40			
<a href="#">C_02304</a>	C	ED	4	1	2	22	21S	26E	567908	3592774*		3145	105	80	25
<a href="#">C_00427</a>	C	ED	2	1	2	36	21S	26E	571178	3589728*		3145	32	21	11
<a href="#">C_00458</a>	C	ED	2	1	2	36	21S	26E	571178	3589728*		3145	50		
<a href="#">C_02214</a>	C	ED	2	1	2	36	21S	26E	571178	3589728*		3145	75	27	48
<a href="#">C_00661</a>	C	ED	3	2	4	30	21S	27E	572952	3590354*		3153	200	10	190
<a href="#">C_02526</a>	C	ED	3	2	4	30	21S	27E	572952	3590354*		3153	41	14	27
<a href="#">C_01087</a>	C	ED		1	29	21S	27E	573654	3591077*		3160	310	16	294	
<a href="#">C_00471</a>	C	ED	1	2	2	36	21S	26E	571377	3589720*		3167	44	14	30
<a href="#">C_03958 POD1</a>	C	ED	4	2	1	17	21S	27E	573852	3594378*		3179	126	95	31
<a href="#">C_00129</a>	CUB	ED		4	30	21S	27E	572853	3590226*		3199	300			
<a href="#">C_00129 CLW193640</a>	O	CUB	ED	4	30	21S	27E	572853	3590226*		3199	188			
<a href="#">C_01188</a>	C	ED		4	30	21S	27E	572853	3590226*		3199	277	16	261	

Average Depth to Water: **38 feet**Minimum Depth: **10 feet**Maximum Depth: **256 feet****Record Count:** 186**UTMNAD83 Radius Search (in meters):****Easting (X):** 571052**Northing (Y):** 3592871**Radius:** 3220**\*UTM location was derived from PLSS - see Help**

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

2/3/22 9:26 AM

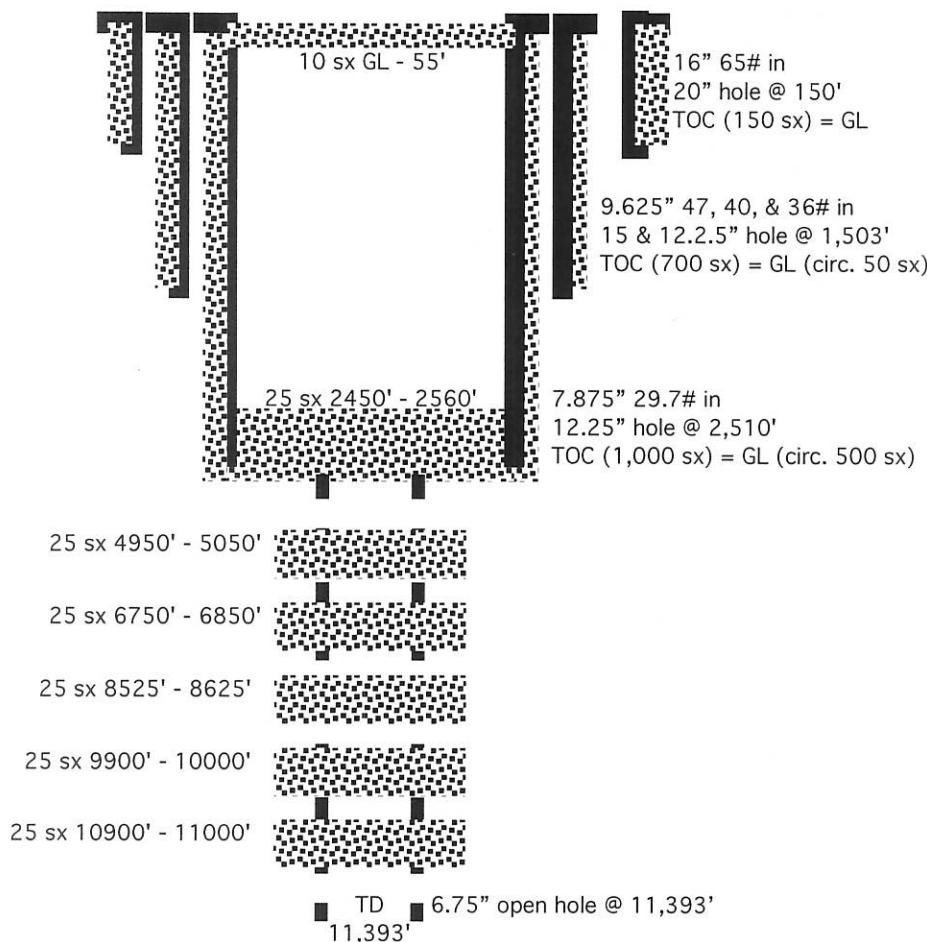
WATER COLUMN/ AVERAGE DEPTH TO WATER

## INJECTION WELL DATA SHEET

OPERATOR: MARINA SWD NEW MEXICO, LLC

WELL NAME &amp; NUMBER: LOWENBRUCK 1

WELL LOCATION: <u>660' FNL &amp; 1980' FEL</u>	B	24	21 S	26 E
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC(not to scale)  
"As Is"WELL CONSTRUCTION DATASurface CasingHole Size: 20" Casing Size: 16"Cemented with: 150 sx. or \_\_\_\_\_ ft<sup>3</sup>Top of Cement: GL Method Determined: not statedIntermediate Casing

Hole Size: 12.25" Casing Size: 9.625"  
700 sx

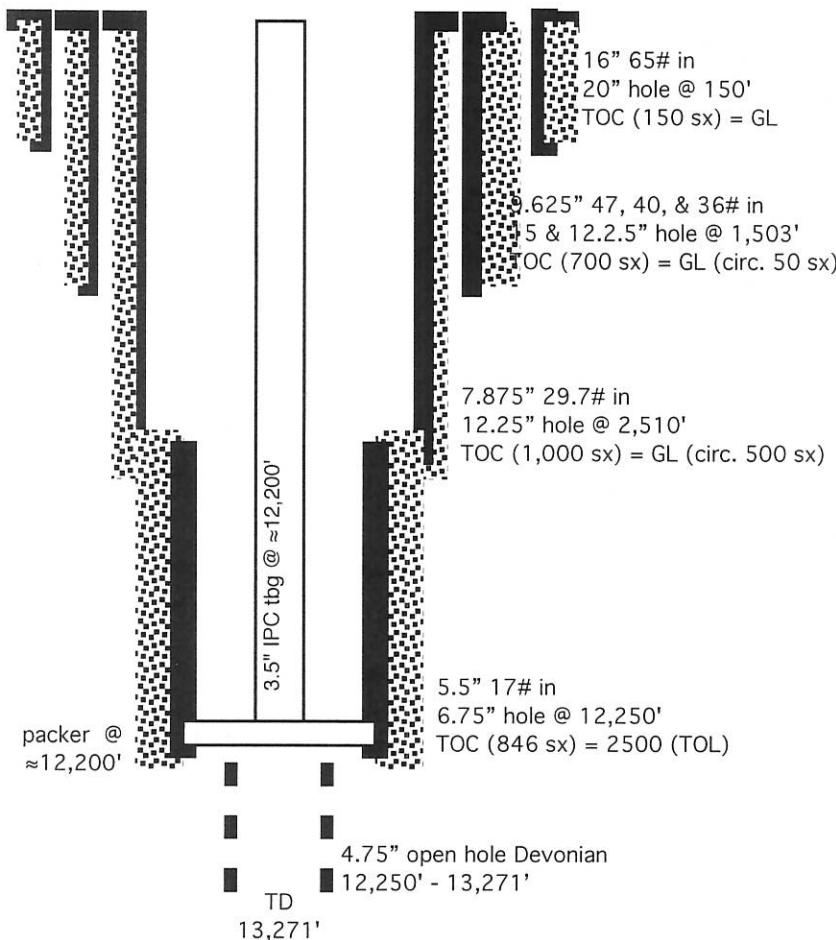
Cemented with: 1000 sx. or \_\_\_\_\_ ft<sup>3</sup>Top of Cement: GL & GL Method Determined: CIRC. 50 SX  
& 500 sxProduction CasingHole Size: 6.75" Casing Size: 5.5" @ 12,250'Cemented with: 846 sx. or \_\_\_\_\_ ft<sup>3</sup>Top of Cement: 2,500' Method Determined: TOLTotal Depth: CSG @ 12,250' & TD @ 13,271'Injection Interval4.75" OPEN HOLE 12,250 feet to 13,271'(Perforated or Open Hole; indicate which)

## INJECTION WELL DATA SHEET

OPERATOR: MARINA SWD NEW MEXICO, LLC

WELL NAME &amp; NUMBER: LOWENBRUCK 1

WELL LOCATION: 660' FNL & 1980' FEL	B	24	21 S	26 E
FOOTAGE LOCATION	UNIT LETTER	SECTION	TOWNSHIP	RANGE

WELLBORE SCHEMATIC(not to scale)  
"Proposed"WELL CONSTRUCTION DATASurface Casing

Hole Size: 20" Casing Size: 16"

Cemented with: 150 sx. or \_\_\_\_\_ ft<sup>3</sup>Top of Cement: GL Method Determined: not statedIntermediate Casing

Hole Size: 12.25" 700 sx  
 Casing Size: 7.875"

Cemented with: 1000 sx. or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: GL &amp; GL Method Determined: CIRC. 50 SX

Production Casing & 500 sx

Hole Size: 6.75" Casing Size: 5.5" @ 12,250'

Cemented with: 846 sx. or \_\_\_\_\_ ft<sup>3</sup>

Top of Cement: 2,500' Method Determined: TOL

Total Depth: CSG @ 12,250' &amp; TD @ 13,271'

Injection Interval

4.75" OPEN HOLE 12,250 feet to 13,271'

(Perforated or Open Hole; indicate which)  
██████████

**INJECTION WELL DATA SHEET**

Tubing Size: 3.5" Lining Material: IPC

Type of Packer: STAINLESS STEEL OR NICKEL

Packer Setting Depth: 12,200'

Other Type of Tubing/Casing Seal (if applicable): \_\_\_\_\_

**Additional Data**

1. Is this a new well drilled for injection? \_\_\_\_\_ Yes xxx No

If no, for what purpose was the well originally drilled? \_\_\_\_\_  
\_\_\_\_\_

2. Name of the Injection Formation: DEVONIAN

3. Name of Field or Pool (if applicable): SWD; DEVONIAN (POOL CODE 96101)

4. Has the well ever been perforated in any other zone(s)? List all such perforated intervals and give plugging detail, i.e. sacks of cement or plug(s) used. \_\_\_\_\_

NO  
\_\_\_\_\_

5. Give the name and depths of any oil or gas zones underlying or overlying the proposed injection zone in this area: \_\_\_\_\_

OVER: YATES (316'), 7 RIVERS (493'), DEL. (2333'), BONE SPRING (4736'),  
WOLFCAMP (8589'), PENN (9660'), STRAWN (9972'), ATOKA (10431'), MORROW (10707')  
\_\_\_\_\_

UNDER: NONE  
\_\_\_\_\_

# Carlsbad Current Argus.

Part of the USA TODAY Network

EXHIBIT J

## Affidavit of Publication

Ad # 0005251919

This is not an invoice

PERMITS WEST INC  
37 VERANO LOOP

SANTA FE, NM 87508-8351

I, a legal clerk of the **Carlsbad Current Argus**, a newspaper published daily at the City of Carlsbad, in said county of Eddy, state of New Mexico and of general paid circulation in said county; that the same is a duly qualified newspaper under the laws of the State wherein legal notices and advertisements may be published; that the printed notice attached hereto was published in the regular and entire edition of said newspaper and not in supplement thereof in editions dated as follows:

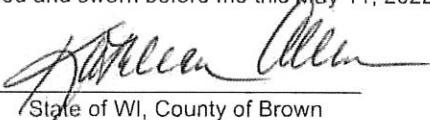
05/11/2022

Marina SWD New Mexico, LLC will apply to re-enter, deepen, and convert the Lowenbruck 1 to a saltwater disposal well. New well name will be Lowenbruck SWD 1. The well will dispose into the Devonian formation from 12,250' to 13,271'. It is 3-3/4 miles north-northwest of the junction of US 285 & US 62/180 in Carlsbad, NM at 660' FNL & 1980' FEL Sec. 24, T. 21 S., R. 26 E., Eddy County, NM. Maximum disposal rate will be 20,000 bwpd. Maximum injection pressure will be 2,450 psi. Interested parties must file objections or requests for hearing with the NM Oil Conservation Division, 1220 South Saint Francis Dr., Santa Fe, NM 87505, or ocd.engineer@state.nm.us within 15 days. Additional information can be obtained by contacting: Brian Wood, Permits West, Inc., 37 Verano Loop, Santa Fe, NM 87508. Phone number is (505) 466-8120.  
#0005251919, Current Argus, May 11, 2022



Legal Clerk

Subscribed and sworn before me this May 11, 2022:



State of WI, County of Brown  
NOTARY PUBLIC

1-7-25

My commission expires

KATHLEEN ALLEN  
Notary Public  
State of Wisconsin

Ad # 0005251919  
PO #: Marina - Lowenbruck SWD  
# of Affidavits 1

This is not an invoice

June 20, 2022

Santo Royalty Company LLC  
P. O. Box 1020  
Artesia NM 88211

Marina SWD New Mexico, LLC is applying (see attached application) to re-enter, deepen, and convert the Lowenbruck 1 well to a saltwater disposal well. As required by NM Oil Conservation Division (NMOCD) rules, I am notifying you of the following proposed saltwater disposal well. This letter is a notice only. No action is needed unless you have questions or objections.

Well Name: Lowenbruck 1 (fee lease)      TD = 13,271'

Proposed Disposal Zone: Devonian (12,250' – 13,271')

Location: 660' FNL & 1980' FEL Sec. 24, T. 21 S., R. 26 E., Eddy County, NM

Approximate Location: 3-3/4 air miles NNW of Carlsbad, NM

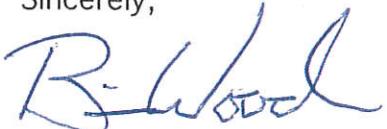
Applicant Name: Marina SWD New Mexico, LLC      (575) 736-3250

Applicant's Address: P. O. Box 1020, Artesia NM 88211

Submittal Information: Application for a saltwater disposal well will be filed with the NMOCD. If you have an objection, or wish to request a hearing, then it must be filed with the NMOCD within 15 days of receipt of this letter. NMOCD address is 1220 South St. Francis Dr., Santa Fe, NM 87505. Their phone number is (505) 476-3440. Their e-mail address is: ocd.engineer@state.nm.us.

Please call me if you have any questions.

Sincerely,



Brian Wood











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Return Receipt Requested	\$ 5.00
Certified Mail Received Delivery	\$ 5.00
Accts Signatures Required	\$ 5.00
Postage	\$ 5.00
Total Postage and Fees	\$ 15.00
Smt To	Lewenbruch SWB#4
Street and Apt. No., or P.O. Box No.	Carlsbad NM 88220
City State Zip/City	28544

PS Form 3800, April 2015 (Rev. 10/15) (GPO Stock No. 2015-000-00000-0)

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Return Receipt Requested	\$ 5.00
Certified Mail Received Delivery	\$ 5.00
Accts Signatures Required	\$ 5.00
Postage	\$ 5.00
Total Postage and Fees	\$ 15.00
Smt To	Lewenbruch SWB#4
Street and Apt. No., or P.O. Box No.	Carlsbad NM 88220
City State Zip/City	28544

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Return Receipt Requested	\$ 5.00
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Accts Signatures Required	\$ 5.00
Postage	\$ 5.00
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Smt To	Lewenbruch SWB#4
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City State Zip/City	28544

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Extra Services & Fees	Postage
Return Receipt Requested	\$ 5.00
Certified Mail Received Delivery	\$ 5.00
Accts Signatures Required	\$ 5.00
Postage	\$ 5.00
Total Postage and Fees	\$ 15.00
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Street and Apt. No., or P.O. Box No.	Carlsbad NM 88220
City State Zip/City	28544

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EXHIBIT K

100113



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Postmark  
Hans  
JUN 21 2022  
Postmark  
Dallas  
JUN 21 2022  
Postage  
MERIT ENERGY PARTNERS E-III LP  
Total Postage and Fees: \$332.40  
Dallas TX 75240  
Lawnbrush-SWP#44  
Sent To:  
Smart and Art. Inc., 2710 Bas St.  
City State: 28454-  
File Form 3800, April 2015 (for instructions)  
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JUN 21 2022  
Postmark  
Dallas  
JUN 21 2022  
Postage  
MERIT ENERGY PARTNERS E-III LP  
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Postage  
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JUN 21 2022  
Postage  
MERIT MANAGEMENT PARTNERS III LP  
Total Postage and Fees: \$332.40  
Dallas TX 75240  
Lawnbrush-SWP#44  
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Smart and Art. Inc., 2710 Bas St.  
City State: 28454-  
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Postage  
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Dallas TX 75240  
Lawnbrush-SWP#44  
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JUN 21 2022  
Postage  
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Total Postage and Fees: \$332.40  
Dallas TX 75240  
Lawnbrush-SWP#44  
Sent To:  
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Extra Services & Postage Due: add for an additional fee  
 Return Receipt Requested  
 Return Receipt (Priority)  
 Certified Mail Registered Delivery  
 Adult Signature Required  
 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
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 Return Receipt Requested  
 Return Receipt (Priority)  
 Certified Mail Registered Delivery  
 Adult Signature Required  
 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
 Sent To  
 Street and Apt. No., or PO Box No.  
 City State: TX 78546-44

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 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
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 Return Receipt Requested  
 Return Receipt (Priority)  
 Certified Mail Registered Delivery  
 Adult Signature Required  
 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
 Sent To  
 Street and Apt. No., or PO Box No.  
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 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
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 Return Receipt Requested  
 Return Receipt (Priority)  
 Certified Mail Registered Delivery  
 Adult Signature Required  
 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
 Sent To  
 Street and Apt. No., or PO Box No.  
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 Return Receipt Requested  
 Return Receipt (Priority)  
 Certified Mail Registered Delivery  
 Adult Signature Required  
 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
 Sent To  
 Street and Apt. No., or PO Box No.  
 City State: TX 78546-44

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 Return Receipt Requested  
 Return Receipt (Priority)  
 Certified Mail Registered Delivery  
 Adult Signature Required  
 Adult Signature Received Delivery  
 Postage  
 Total Postage and Fees  
 Sent To  
 Street and Apt. No., or PO Box No.  
 City State: TX 78546-44

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**EXHIBIT K**

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Postmark: NM 87503-303 JUN 2 2022 Postmark Here  
Return Receipt Requested  
Return Receipt (International)  
Certified Mail Restricted Delivery  
Add Signature Required  
Add Signature Received  
Postage  
Total Postage and Fees \$0.84  
Send To:  
ROBERT E. BRUNIG  
205 S EAST ST.  
ARTESIA, NM 88210-5024  
Lovenbruck SWD#4  
City/State/Zip: 28624-04

PS Form 2010, April 2015 (10-1250-00000) 04/01/2015  
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US Form 2010, April 2015 (10-1250-00000) 04/01/2015  
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Postmark: CO 80202 JUN 2 2022 Postmark Here  
Return Receipt Requested  
Return Receipt (International)  
Certified Mail Restricted Delivery  
Add Signature Required  
Add Signature Received  
Postage  
Total Postage and Fees \$1.50  
Send To:  
POTRIHAWK C/O BR  
5100 PLATTE ST STE 150  
DENVER CO 80202  
Lovenbruck SWD#11  
City/State/Zip: 80216-24

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Postmark: AR 72111 JUN 2 2022 Postmark Here  
Return Receipt Requested  
Return Receipt (International)  
Certified Mail Restricted Delivery  
Add Signature Required  
Add Signature Received  
Postage  
Total Postage and Fees \$1.15  
Send To:  
RPH HOLDINGS LLC  
104 TOWNE PARK DR  
KENNESAW, GA 30144  
Lovenbruck SWD#4  
City/State/Zip: 30046-24

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Return Receipt Requested  
Return Receipt (International)  
Certified Mail Restricted Delivery  
Add Signature Required  
Add Signature Received  
Postage  
Total Postage and Fees \$2.397  
Send To:  
RAYDUX RENNEY L & CAROLYN (NM)  
CARLSBAD NM 88221-3397  
Lovenbruck SWD#4  
City/State/Zip: 28624-24

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Postmark: Here  
Hero  
Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

<input type="checkbox"/> Extra Services & Fees (check box and fees as appropriate)
<input type="checkbox"/> Return Receipt Requested
<input type="checkbox"/> Domestic Mail Restricted Delivery
<input type="checkbox"/> Adult Signature Required
<input type="checkbox"/> Adult Signature Received
<input type="checkbox"/> Postage
Total Postage and Fees: \$0.00
Sent To: ROSEMARY PATRICIA HUTTON HRC-65-BOX-14 Total Postage and Fees: \$0.00
City/State: 28544-4 Comments: See Reverse for instructions

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Postmark: Here  
Hero  
Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

<input type="checkbox"/> Extra Services & Fees (check box and fees as appropriate)
<input type="checkbox"/> Return Receipt Requested
<input type="checkbox"/> Domestic Mail Restricted Delivery
<input type="checkbox"/> Adult Signature Required
<input type="checkbox"/> Adult Signature Received
<input type="checkbox"/> Postage
Total Postage and Fees: \$0.00
Sent To: ROSEMARY PATRICIA HUTTON HRC-65-BOX-14 Total Postage and Fees: \$0.00
City/State: 28544-4 Comments: See Reverse for instructions

PIS Form 3100, April 2015 (Rev. 2/15) Postage and Fees  
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Postmark: Here  
Hero  
Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

<input type="checkbox"/> Extra Services & Fees (check box and fees as appropriate)
<input type="checkbox"/> Return Receipt Requested
<input type="checkbox"/> Domestic Mail Restricted Delivery
<input type="checkbox"/> Adult Signature Required
<input type="checkbox"/> Adult Signature Received
<input type="checkbox"/> Postage
Total Postage and Fees: \$0.00
Sent To: ROGERS TERRY J. & LISI A (UT) 354-A CLOUDMAN CIRCLE CARLSBAD NM 88220 Lowerbruck SWD #14 Total Postage and Fees: \$0.00
City/State: 28544-4 Comments: See Reverse for instructions

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Postmark: Here  
Hero  
Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

<input type="checkbox"/> Extra Services & Fees (check box and fees as appropriate)
<input type="checkbox"/> Return Receipt Requested
<input type="checkbox"/> Domestic Mail Restricted Delivery
<input type="checkbox"/> Adult Signature Required
<input type="checkbox"/> Adult Signature Received
<input type="checkbox"/> Postage
Total Postage and Fees: \$0.00
Sent To: ROGERS TERRY J. & LISI A (UT) 354-A CLOUDMAN CIRCLE CARLSBAD NM 88220 Lowerbruck SWD #14 Total Postage and Fees: \$0.00
City/State: 28544-4 Comments: See Reverse for instructions

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See Reverse for instructions

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Postmark: Here  
Hero  
Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

<input type="checkbox"/> Extra Services & Fees (check box and fees as appropriate)
<input type="checkbox"/> Return Receipt Requested
<input type="checkbox"/> Domestic Mail Restricted Delivery
<input type="checkbox"/> Adult Signature Required
<input type="checkbox"/> Adult Signature Received
<input type="checkbox"/> Postage
Total Postage and Fees: \$0.00
Sent To: ROY BOYD AND PATRICIA BOYD 11501 N. CHAROLEAU DRIVE THEODORE, AL 36772-9400 Lowerbruck SWD #13 Total Postage and Fees: \$0.00
City/State: 28544-4 Comments: See Reverse for instructions

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Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

<input type="checkbox"/> Extra Services & Fees (check box and fees as appropriate)
<input type="checkbox"/> Return Receipt Requested
<input type="checkbox"/> Domestic Mail Restricted Delivery
<input type="checkbox"/> Adult Signature Required
<input type="checkbox"/> Adult Signature Received
<input type="checkbox"/> Postage
Total Postage and Fees: \$0.00
Sent To: ROY BOYD AND PATRICIA BOYD 11501 N. CHAROLEAU DRIVE THEODORE, AL 36772-9400 Lowerbruck SWD #13 Total Postage and Fees: \$0.00
City/State: 28544-4 Comments: See Reverse for instructions

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Postmark: Here  
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Date: 2020 Apr 20 2015  
Certified Mail Fee: \$0.00

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Certified Mail Fee

Postmark	Here
Date	7/20/2016
From	SHENKNER PAUL E & ANNE M [1]
To	CARLSBAD NM 88221-2263 Lovenbruck-SWB #4
Subject	Start routing and file Cert. Expire 4/15/2017 Sent To Shenker Paul E & Anne M [1] Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

PS Form 3000, April 2015 (for business mail)

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Certified Mail Fee

Postmark	Here
Date	7/20/2016
From	SHREWDY BREANNA R
To	PO BOX 224 CARLSBAD NM 88221-2234 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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Postmark	Here
Date	7/20/2016
From	TERESA R. SPENCER
To	1323 N NORTHSHANE GLENDALE, AZ 85304 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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Postmark	Here
Date	7/20/2016
From	SHEBA A. SIMS
To	2415 N CANAL STREET CARLSBAD NM 88220 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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Postmark	Here
Date	7/20/2016
From	SPENCER LOS MARIS IT AL
To	4814 W BURGEE ST-57 CARTSBAD NM 88220 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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Postmark	Here
Date	7/20/2016
From	TAYE M. GLASMIRE
To	10504 WALTER THOMPSON DRIVE VIENNA, VA 22181 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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Postmark	Here
Date	7/20/2016
From	SPC RESOURCES, LLC
To	P.O. BOX 4200 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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Postmark	Here
Date	7/20/2016
From	SOUTHWEST PETROLEUM SERVICES, LLC
To	400 N PENNSYLVANIA ROSWELL, NM 88203 Lovenbruck-SWB #4
Subject	Total Postage and Fees Cert. Expire 4/15/2017 Cert. Expire 4/15/2017 Cert. Expire 4/15/2017
Comments	File Form 3000, April 2015 (for business mail) See Reverse for instructions

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