# Protested SWD Application

By Matador 9/25/20

## Lamkin, Baylen, EMNRD

**From:** Goetze, Phillip, EMNRD
**Sent:** Friday, September 25, 2020 9:35 PM
**To:** Lamkin, Baylen, EMNRD; Rose-Coss, Dylan H, EMNRD
**Cc:** Murphy, Kathleen A, EMNRD; Salvidrez, Marlene, EMNRD
**Subject:** FW: Matador - Protest of BC&D Operating's Jal Public Trust 11-24-35 SWD 1
**Attachments:** 3254_001.pdf

Sent to hearings e-mail; please note into record and prepare a response once your back from GWPC. PRG

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**From:** Kyle Perkins <KPerkins@matadorresources.com>
**Sent:** Friday, September 25, 2020 7:40 PM
**To:** Hearings, OCD, EMNRD <OCD.Hearings@state.nm.us>; Goetze, Phillip, EMNRD <Phillip.Goetze@state.nm.us>
**Subject:** [EXT] Matador - Protest of BC&D Operating's Jal Public Trust 11-24-35 SWD 1

Gentlemen,

Matador Production Company and MRC Permian Company hereby protest BC&D's application for its proposed Jal Public Library Trust 11-24-35 SWD 1. A copy of the referenced application is attached for your convenience.

Please advise if this case is set for hearing.

Best regards,

**Kyle Perkins**
**Senior Operations and Regulatory Counsel**
**Matador Resources Company**
**5400 LBJ Freeway, Suite 1500**
**Dallas, TX 75240**
**(972) 371-5202 (office)**
**(214) 866-4802 (fax)**
**kperkins@matadorresources.com**

PERMITS WEST
PROVIDING PERMITS for LAND USERS
37 Verano Loop, Santa Fe, New Mexico 87508 505-466-8120

September 18, 2020

SEP 21 2020

MRC Permian Co
5400 LBJ Fwy Ste 1500
Dallas, TX 75240

BC & D Operating Inc. is applying (see attached application) to drill its Jal Public Library Trust 11-24-35 SWD 1 well as 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: Jal Public Library Trust 11-24-35 SWD 1 (fee lease) TD = 17,433'
Proposed Disposal Zone: Devonian & Silurian (15,246' – 17,433')
Location: 200' FSL & 200' FEL Sec. 11, T. 24 S., R. 35 E., Lea County, NM
Approximate Location: ≈11 air miles NW of Jal, NM
Applicant Name: BC & D Operating Inc. (405) 837-8147
Applicant's Address: P. O. Box 302, Hobbs NM 88241

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.

Please call me if you have any questions.

Sincerely,

B Wood

Brian Wood

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL
RESOURCES DEPARTMENT

**Oil Conservation Division**
**1220 South St. Francis Dr.**
**Santa Fe, New Mexico 87505**

FORM C-108
Revised June 10, 2003

**APPLICATION FOR AUTHORIZATION TO INJECT**

I. PURPOSE: ________ Secondary Recovery ________ Pressure Maintenance XXX Disposal ________ Storage
Application qualifies for administrative approval? ________ Yes ________ No

II. OPERATOR: BC & D OPERATING INC.

ADDRESS: P. O. BOX 302, HOBBS NM 88241

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.

VII. Attach data on the proposed operation, including: **JAL PUBLIC LIBRARY TRUST 11-24-35 SWD 1**

**SWD; Devonian-Silurian**

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: B Wood DATE: SEPT. 18, 2018

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: ________

DISTRIBUTION: Original and one copy to Santa Fe with one copy to the appropriate District Office

Side 1

# INJECTION WELL DATA SHEET

OPERATOR: BC & D OPERATING INC.

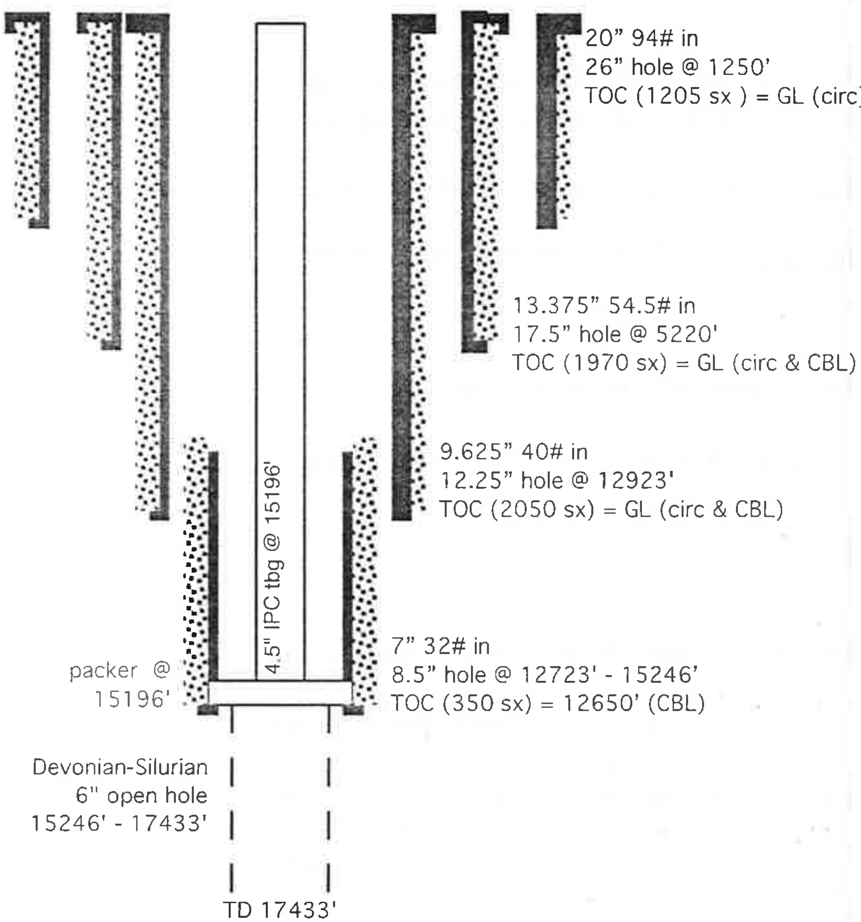
WELL NAME & NUMBER: JL PUBLIC LIBRRY TRUST 11-24-35 SWD 1

WELL LOCATION:

| FOOTAGE LOCATION | UNIT LETTER | SECTION | TOWNSHIP | RANGE |
|---|---|---|---|---|
| 200 FSL & 200 FEL | P | 11 | 24 S | 35 E |

***WELLBORE SCHEMATIC***

(not to scale)




***WELL CONSTRUCTION DATA***

Surface Casing

Hole Size: 26" Casing Size: 20"

Cemented with: 1205 sx. *or* ____ ft$^3$

Top of Cement: SURFACE Method Determined: CIRCULATE

Intermediate Casing

Hole Size: 17.5" Casing Size: 13.375"

Cemented with: 1970 sx. *or* ____ ft$^3$

Top of Cement: SURFACE Method Determined: CIRCULATE & CBL

Production Casing

Hole Size: 12.5" & 8.5" Casing Size: 9.625" & 7"

Cemented with: 2050 & 350 sx. *or* ____ ft$^3$

Top of Cement: GL & 12,650' Method Determined: CBL

Total Depth: 15,246' CASING & 17,433' HOLE

Injection Interval

6" HOLE SIZE 15246 feet to 17433'

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

I. Goal is to drill a 17,433' deep commercial saltwater disposal well. Proposed disposal interval will be 15,246' - 17,433' in the SWD; Devonian-Silurian (97869). See Exhibit A for C-102 and map. Well is staked on fee surface and fee minerals.

II. Operator: BC & D Operating Inc. [OGRID 25670]
Operator phone number: (405) 837-8147
Operator address: P. O. Box 302, Hobbs NM 88241
Contact for Application: Brian Wood (Permits West, Inc.)
Phone: (505) 466-8120

III. A. (1) Lease name: Jal Public Library Trust 11-24-35 SWD (fee)
Well name and number: Jal Public Library Trust 11-24-35 SWD 1
Location: 200' FSL & 200' FEL Section 11, T. 24 S., R. 35 E.

A. (2) Surface casing (20", 94#, J-55, BTC) will be set at 1,250' in a 26" hole and cemented to GL with 1,205 sacks.

Intermediate casing 1 (13.375", 61#, L-80, BTC) will be set at 5,220' in a 17.5" hole and cemented to GL with 1,970 sacks. Casing shoe depth will be ≥100' below the Capitan Reef base as determined by the mud logger. GR/CNL/CDN logs will be run to identify the Reef. CBL will be run after the casing is cemented.

Intermediate casing 2 (9.625", 40#, L-80, BTC) will be set at 12,923' in a 12.25" hole and cemented in 2 stages to GL. DV tool will be set at ≈5,500'. First stage will consist of 1,140 sacks. Second stage will consist of 910 sacks. TOC will be verified with CBL.

Intermediate casing 3, aka liner, (7", 32#, P-10 HC, BTC SpCL) will be set from 12,723' to 15,246' in an 8.5" hole and cemented with 350 sacks to 12,650'. TOC will be verified with CBL. Liner has a coupling OD of 7.375" and will yield a 0.563" clearance inside the open hole.

VI. No Devonian penetrator is within a mile. Deepest (14,940' TVD) well within a mile bottomed in the Morrow, 306' above the Devonian.

VII. 1. Average injection rate will be ≈20,000 bwpd.
Maximum injection rate will be 25,000 bwpd.
2. System will be open and closed. Water will both be trucked and piped.
3. Average injection pressure will be ≈2,500 psi.
Maximum injection pressure will be 3,049 psi (= 0.2 psi/foot x 15,246' (top of open hole)).
4. Disposal water will be produced water, mainly Bone Spring. There are 165 approved Bone Spring wells in T. 24 S., R. 35 E. and the adjacent T. 23 S., R. 35 E. The well will take other Permian Basin waters (e. g., Delaware, Morrow, Wolfcamp) too. Abstracts from the NM Produced Water Quality Database v.2 for wells in T. 24 S., R. 35 E. and the 8 adjacent townships are in Exhibit F. A table of TDS ranges from those wells is below

| Formation | TDS range (mg/l) |
|---|---|
| Artesia | 1,506 – 316,728 |
| Atoka | 51,475 |
| Bone Spring | 204,652 |
| Brushy Canyon | 67,516 |
| Capitan | 44,270 |
| Delaware | 52,115 |
| Devonian | 71,708- 176,234 |
| Morrow | 282,741 |
| Penn | 196,831 |

No compatibility problems have been reported from the closest active Devonian; SWD well. At least 32,285,325 barrels have been disposed in 30-025-42448 (>6.3 miles west in N-14-24s-34e). (Closest pending SWD well (SWD-2362) is BC & D's Jal Public Library Trust SWD 1 staked 1.61 miles southwest in E-23-24s-35e.)

(CP 01056) and one other well (CP 01057) are both completed in the Capitan. Water bearing strata in the 2 wells were reported from 4399' to 5396'. Deepest water well within 2-miles is 5396'. There will be 9850' of vertical separation, including confining shales, between the bottom of the Capitan Reef and the top of the Devonian.

More likely source of drinking water (due to better quality) are the red bed siltstones, mudstones, and sandstones from the surface to the top of the Rustler. Six water wells within 2-miles targeted the red beds. There are >2,000' of salt and anhydrite between the bottom of the red beds and top of the Devonian, and overall >2-1/2 miles of vertical separation between the bottom of the red beds and top of the Devonian.

No underground source of drinking water is below the proposed disposal interval.

IX. Well will be stimulated with acid as needed.

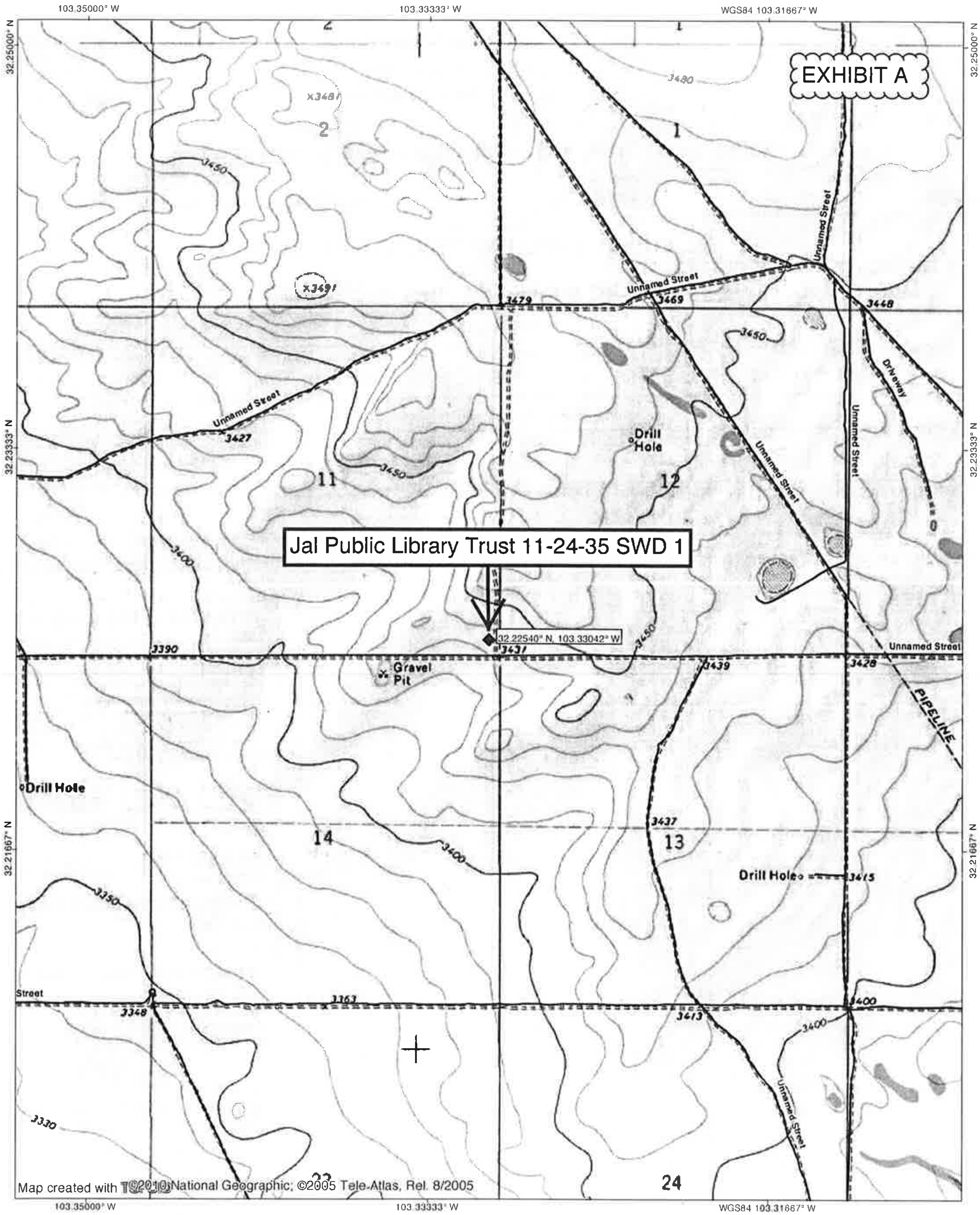
X. Deviation surveys and CBL and GR/CNL/CDN logs will be run.

XI. According to State Engineer records (Exhibit H), eight water wells are within a 2-mile radius. Three were found and sampled during a July 28, 2020 field inspection.

XII. BC & D Operating Inc. (Exhibit I) is not aware of any geologic or engineering data that may indicate the Devonian-Silurian is in hydrologic connection with any underground sources of water. Deepest water well within a 2-mile radius is 5396'. There are 165 active Devonian SWD wells in New Mexico, of which 19 are also Silurian.

XIII. A legal ad (Exhibit J) was published on July 31, 2020. Notice (Exhibit K) and this application has been sent to the surface owner (Jal Public Library Fund), all

TOPO! map printed on 07/20/20 from "Untitled.tpo"




NATIONAL GEOGRAPHIC

0.0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 miles
0.0 0.5 1.0 km

TN MN 6.5°
07/20/20

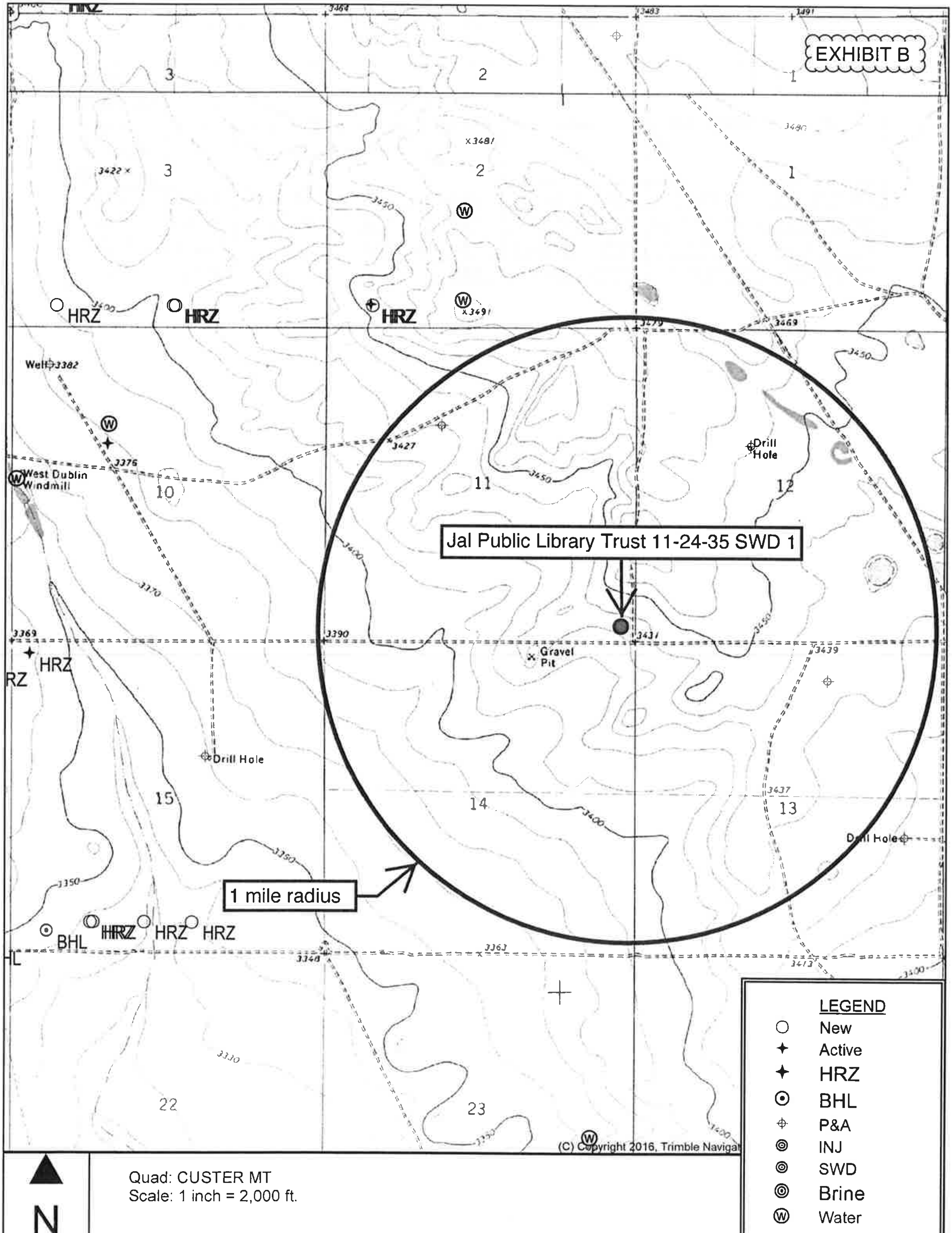


EXHIBIT B
Jal Public Library Trust 11-24-35 SWD 1
1 mile radius
Gravel Pit
Drill Hole
Drill Hole
Drill Hole
Well 3382
West Dublin Windmill
HRZ
HRZ
HRZ
HRZ
HRZ
HRZ
HRZ
BHL
(C) Copyright 2016, Trimble Navigat
LEGEND
New
Active
HRZ
BHL
P&A
INJ
SWD
Brine
Water
N
Quad: CUSTER MT
Scale: 1 inch = 2,000 ft.

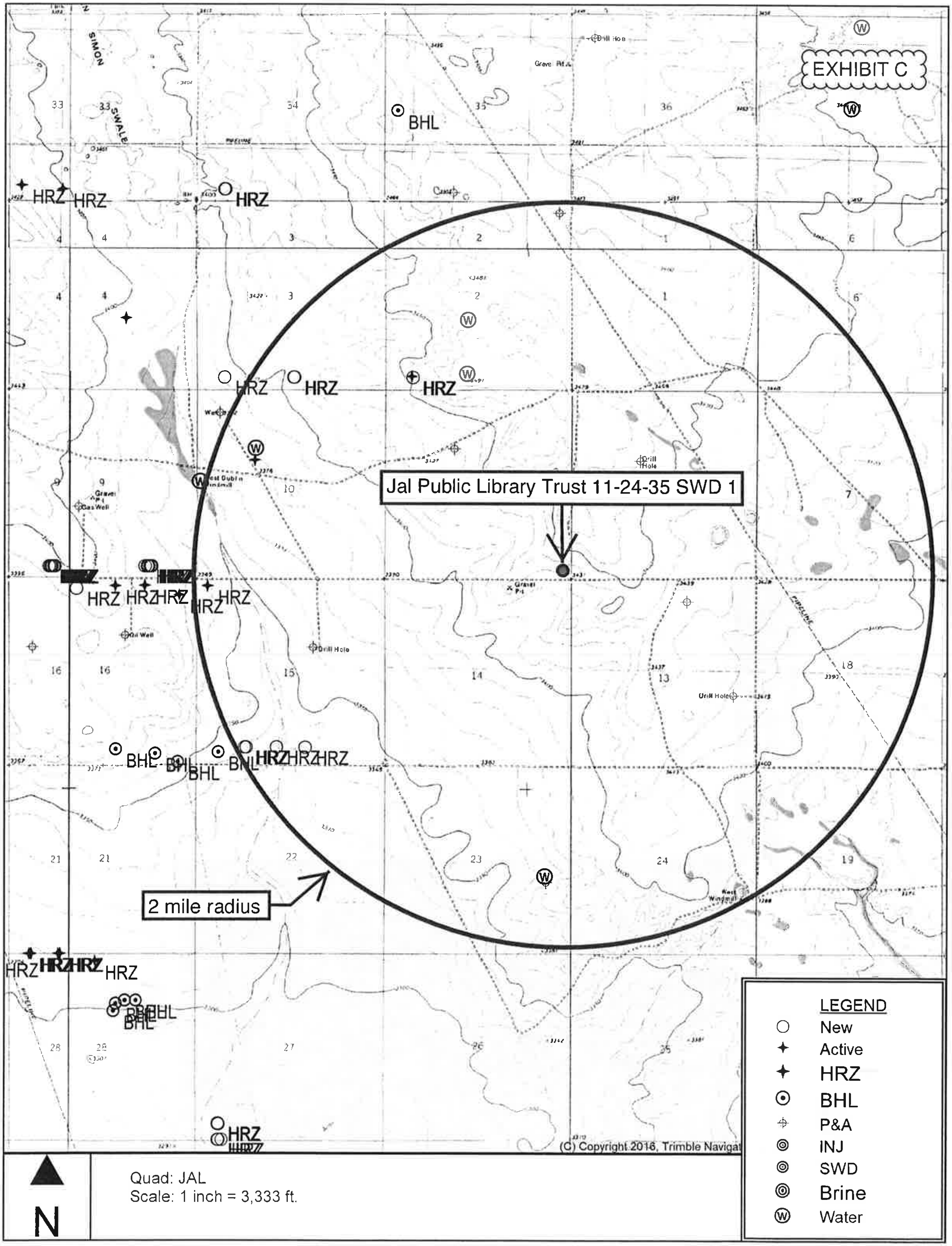


EXHIBIT C
Jal Public Library Trust 11-24-35 SWD 1
2 mile radius
SIMON
SWALE
PIPELINE
BHL
HRZ
Drill Hole
Gravel Pit
Gas Well
Oil Well
West Dublin Windmill
West Windmill
LEGEND
New
Active
HRZ
BHL
P&A
INJ
SWD
Brine
Water
(C) Copyright 2016, Trimble Navigat
Quad: JAL
Scale: 1 inch = 3,333 ft.
N

JAL PUBLIC LIBRARY TRUST 11-24-35 SWD 1 AREA OF REVIEW LEASES

| Aliquot Parts in Area of Review (T. 24 S., R. 35 E.) | Lessor | Lease | Lessee(s) of Record | Well Operator (If any, all shallower than Devonian) |
|---|---|---|---|---|
| SWSW Sec. 1 | BLM | NMNM-138885 | Blackbeard | none |
| S2SE4 Sec. 2 | NMSLO | V0-9554-0001 | EOG | none |
| E2SE4 Sec. 10 | NMSLO | LG-5105-0003 | COG | COG |
| NENE Sec. 11 | BLM | NMNM-134884 | Blackbeard | none |
| NWNE, N2NW4, S2N2, & S2 Sec. 11 | fee | Merrells | COG | none |
| N2N2, SWNW, S2NE4, & S2 Sec. 12 | BLM | NMNM-134884 | Blackbeard | none |
| N2, N2S2, S2SW4, & SWSE Sec. 13 | BLM | NMNM-138888 | MRC, Franklin Mt. | none |
| NE4, E2NW4, & SWNW Sec. 14 | BLM | NMNM-138888 | MRC, Franklin Mt. | none |
| NWNW Sec. 14 | fee | Rufus Merrell | COG | none |
| NESE Sec. 14 | BLM | NMNM-132080 | Franklin Mt. | none |
| W2SE4 & SESE Sec. 14 | BLM | NMNM-032458 | Devon, Occidental, & XTO | none |
| N2SW4 & SESW Sec. 14 | BLM | NMNM-132080 | Franklin Mt. | none |

EXHIBIT D

WATER ANALYSES (in mg/l) T 23 - 25 S., 34 - 36 E.

EXHIBIT F

| API | Section | Township | Range | Formation | TDS | Chloride | Bicarbonate | Sulfate |
|---|---|---|---|---|---|---|---|---|
| 3002509236 | 3 | 23S | 36E | Artesia | 247652 | 149800 | 139 | 282 |
| 3002509236 | 3 | 23S | 36E | Artesia | 174624 | 105400 | 243 | 480 |
| 3002509254 | 4 | 23S | 36E | Artesia | 11694 | 5494 | 1341 | 882 |
| 3002509270 | 5 | 23S | 36E | Artesia | 6230 | 1820 | 1260 | 1190 |
| 3002509285 | 9 | 23S | 36E | Artesia | 41343 | 23090 | 1175 | 1608 |
| 3002509285 | 9 | 23S | 36E | Artesia | 35656 | 19660 | 1239 | 1700 |
| 3002509288 | 9 | 23S | 36E | Artesia | 12307 | 4572 | 1309 | 2014 |
| 3002520245 | 10 | 23S | 36E | Artesia | 16011 | 6179 | 1580 | 3039 |
| 3002509351 | 14 | 23S | 36E | Artesia | 17740 | 9843 | 703 | 896 |
| 3002510783 | 17 | 23S | 36E | Artesia | 123722 | 79130 | 89 | 2831 |
| 3002512761 | 17 | 23S | 36E | Artesia | 4761 | 2622 | 402 | 2 |
| 3002509362 | 20 | 23S | 36E | Artesia | 164005 | | | |
| 3002510809 | 20 | 23S | 36E | Artesia | 16978 | 9513 | 896 | 693 |
| 3002509370 | 21 | 23S | 36E | Artesia | 9048 | 2799 | 1067 | 2195 |
| 3002509374 | 22 | 23S | 36E | Artesia | 41375 | 22400 | 3050 | 500 |
| 3002509393 | 23 | 23S | 36E | Artesia | 161405 | 95830 | 791 | 1605 |
| 3002509433 | 27 | 23S | 36E | Artesia | 80249 | 50140 | 886 | 1143 |
| 3002509441 | 28 | 23S | 36E | Artesia | 17332 | 9989 | 690 | 505 |
| 3002509442 | 28 | 23S | 36E | Artesia | 47070 | 23890 | 1133 | 2575 |
| 3002509447 | 33 | 23S | 36E | Artesia | 13588 | 7638 | 552 | 683 |
| 3002509448 | 33 | 23S | 36E | Artesia | 15788 | 8932 | 794 | 784 |
| 3002509448 | 33 | 23S | 36E | Artesia | 15775 | 8888 | 778 | 837 |
| 3002509448 | 33 | 23S | 36E | Artesia | 13492 | 6968 | 1007 | 831 |
| 3002509448 | 33 | 23S | 36E | Artesia | 34426 | 19580 | 1005 | 887 |
| 3002509448 | 33 | 23S | 36E | Artesia | 12078 | 6393 | 1035 | 530 |
| 3002509448 | 33 | 23S | 36E | Artesia | 12541 | 6854 | 524 | 827 |
| 3002509448 | 33 | 23S | 36E | Artesia | 14249 | 7820 | 930 | 590 |
| 3002509448 | 33 | 23S | 36E | Artesia | 14782 | 7812 | 1497 | 610 |
| 3002509455 | 33 | 23S | 36E | Artesia | 9360 | 3720 | 1380 | 1190 |
| 3002509456 | 33 | 23S | 36E | Artesia | 10241 | 4899 | 750 | 946 |
| 3002509457 | 34 | 23S | 36E | Artesia | 11982 | 5277 | 928 | 1161 |
| 3002509462 | 34 | 23S | 36E | Artesia | 17162 | 9078 | 855 | 1401 |
| 3002509518 | 4 | 24S | 36E | Artesia | 12146 | 5583 | 1257 | 991 |
| 3002509517 | 4 | 24S | 36E | Artesia | 7680 | 3277 | 1876 | 10 |
| 3002509518 | 4 | 24S | 36E | Artesia | 8809 | 4261 | 592 | 836 |
| 3002509535 | 10 | 24S | 36E | Artesia | 9777 | 4800 | 950 | 500 |
| 3002509536 | 10 | 24S | 36E | Artesia | 8349 | 2814 | 1507 | 1286 |
| 3002509606 | 23 | 24S | 36E | Artesia | 6510 | 1540 | 1130 | 1820 |
| 3002509610 | 23 | 24S | 36E | Artesia | 23770 | 11000 | 1080 | 3600 |
| 3002509616 | 23 | 24S | 36E | Artesia | 11728 | 5963 | 1140 | 413 |
| 3002509616 | 23 | 24S | 36E | Artesia | 8300 | 3540 | 1560 | 310 |

EXHIBIT G

*New Mexico Office of the State Engineer*

# Water Column/Average Depth to Water

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

(R=POD has been replaced, O=orphaned, C=the file is closed)

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

| POD Number | Code | POD Sub-basin | County | Q 64 | Q 16 | Q 4 | Sec | Tws | Rng | X | Y | Distance | Depth Well | Depth Water | Water Column |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CP 01056 POD1 | | CP | LE | 4 | 4 | 3 | 02 | 24S | 35E | 656465 | 3568304 | 1871 | 5396 | 4399 | 997 |
| CP 01057 POD1 | | CP | LE | 4 | 2 | 3 | 02 | 24S | 35E | 656464 | 3568762 | 2287 | 5390 | 4365 | 1025 |
| CP 01119 POD2 | | CP | LE | | | 4 | 23 | 24S | 35E | 657210 | 3564007 | 2636 | 1572 | | |
| CP 00573 | | CP | LE | 1 | 4 | 1 | 10 | 24S | 35E | 654657 | 3567638* | 2845 | 405 | 300 | 105 |
| CP 00845 POD1 | | CP | LE | | 1 | 3 | 10 | 24S | 35E | 654360 | 3567130* | 3002 | 190 | | |
| CP 00842 POD1 | | CP | LE | | 2 | 4 | 24 | 24S | 35E | 658834 | 3563982* | 3059 | 130 | | |
| CP 00366 POD1 | | CP | LE | 4 | 1 | 1 | 10 | 24S | 35E | 654447 | 3567834* | 3113 | 1250 | | |
| CP 01513 POD1 | | CP | LE | 3 | 3 | 1 | 10 | 24S | 35E | 654184 | 3567350 | 3218 | 186 | | |

Average Depth to Water: **3021 feet**

Minimum Depth: **300 feet**

Maximum Depth: **4399 feet**

**Record Count:** 8

**UTMNAD83 Radius Search (in meters):**

**Easting (X):** 657323 **Northing (Y):** 3566642 **Radius:** 3220

(3220 meters = 10,560' = 2 miles)

***UTM location was derived from PLSS - see Help**

EXHIBIT H

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Permits West
**Project:** BC&D
**Lab ID:** 2007E83-001
**Matrix:** AQUEOUS

**Client Sample ID:** Windmill/T #1
**Collection Date:** 7/28/2020 3:24:00 PM
**Received Date:** 7/29/2020 2:10:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 1664B** | | | | | | Analyst: | **SMS** |
| N-Hexane Extractable Material | ND | 9.88 | P | mg/L | 1 | 8/5/2020 | 54141 |
| **NOTES:** | | | | | | | |
| Sample not preserved properly; analyst added acid to adjust pH to <2.0. | | | | | | | |
| **EPA METHOD 300.0: ANIONS** | | | | | | Analyst: | **JMT** |
| Chloride | 11 | 5.0 | | mg/L | 10 | 7/29/2020 8:00:48 PM | R70716 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | Analyst: | **KS** |
| Total Dissolved Solids | 311 | 20.0 | | mg/L | 1 | 8/4/2020 10:40:00 AM | 54089 |

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

**Qualifiers:**

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

EXHIBIT H

# Hall Environmental Analysis Laboratory, Inc.

**CLIENT:** Permits West
**Project:** BC&D
**Lab ID:** 2007E83-003
**Matrix:** AQUEOUS

**Client Sample ID:** Windmill/T #3
**Collection Date:** 7/28/2020 5:09:00 PM
**Received Date:** 7/29/2020 2:10:00 PM

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed | Batch |
|---|---|---|---|---|---|---|---|
| **EPA METHOD 1664B** | | | | | | | Analyst: **SMS** |
| N-Hexane Extractable Material | ND | 9.93 | P | mg/L | 1 | 8/5/2020 | 54141 |
| **NOTES:** | | | | | | | |
| Sample not preserved properly; analyst added acid to adjust pH to <2.0. | | | | | | | |
| **EPA METHOD 300.0: ANIONS** | | | | | | | Analyst: **JMT** |
| Chloride | 68 | 5.0 | | mg/L | 10 | 7/29/2020 8:50:26 PM | R70716 |
| **SM2540C MOD: TOTAL DISSOLVED SOLIDS** | | | | | | | Analyst: **KS** |
| Total Dissolved Solids | 466 | 20.0 | | mg/L | 1 | 8/4/2020 10:40:00 AM | 54089 |

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

**Qualifiers:**

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

EXHIBIT H

# QC SUMMARY REPORT

## Hall Environmental Analysis Laboratory, Inc.

WO#: **2007E83**

*10-Aug-20*

**Client:** Permits West

**Project:** BC&D

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R70716** RunNo: **70716**

Prep Date: Analysis Date: **7/29/2020** SeqNo: **2460950** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R70716** RunNo: **70716**

Prep Date: Analysis Date: **7/29/2020** SeqNo: **2460951** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.6 | 0.50 | 5.000 | 0 | 92.4 | 90 | 110 | | | |

Sample ID: **MB** SampType: **mblk** TestCode: **EPA Method 300.0: Anions**

Client ID: **PBW** Batch ID: **R70834** RunNo: **70834**

Prep Date: Analysis Date: **8/4/2020** SeqNo: **2466494** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | ND | 0.50 | | | | | | | | |

Sample ID: **LCS** SampType: **lcs** TestCode: **EPA Method 300.0: Anions**

Client ID: **LCSW** Batch ID: **R70834** RunNo: **70834**

Prep Date: Analysis Date: **8/4/2020** SeqNo: **2466495** Units: **mg/L**

| Analyte | Result | PQL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|
| Chloride | 4.9 | 0.50 | 5.000 | 0 | 97.7 | 90 | 110 | | | |

**Qualifiers:**

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

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EXHIBIT I

NM Oil Conservation Division
1220 S. St. Francis Dr.
Santa Fe, NM 8705

**Re: Geology Statement**
**BC&D Operating Inc.**
**Jal Public Library Trust 11-24-35 SWD No. 1**
**Section 11, T. 24S, R. 35E**
**Lea 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-Silurian 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

Cory Walk
Geologist

EXHIBIT I

## GENERAL INFORMATION

Jal Public Library Trust 11-24-35 SWD No. 1 is located in the SE 1/4, section 11, T24S, R35E, about 11 miles northwest of Jal, NM in the Permian Basin. BC&D Operating proposes the injection zone to be within the Devonian-Silurian formation through an open hole from 15,246'-17,433' 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 one (1) earthquake 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 October 21, 2019 about 5.28 miles (~8.50 km) northwest of the proposed SWD site and had a magnitude of 2.7.

### *Basement Faults and Subsurface Conditions*

A structure contour map (Fig. 1) of the Precambrian basement shows the Jal Public Library Trust 11-24-35 SWD #1 is approximately 2.4 miles from the nearest basement-penetrating fault inferred by Todd Reynolds on behalf of NGL Energy Solutions (NMOCD Case Numbers 20141 and 20142). **Information about nearby faults is listed in Table 1.**

Snee and Zoback (2018) state, "In the western part of Eddy County, New Mexico, $S_{Hmax}$ 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 Jal Public Library Trust SWD site, Snee and Zoback indicate a $S_{Hmax}$ direction of N075°E and an $A_\varphi$ of 0.60, 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 25,000 bbls/day and all other existing and proposed SWDs within a 6 mile radius injecting at 30,000 bbls/day (23 total SWD wells), the Fault Slip Potential (FSP) models suggest a three (0.03) percent chance of slip on nearby faults, inferred by Frenzel et al (1988), Ewing et al. (1990), and Todd Reynolds (NMOCD Case Nos. 20141 and 20142), through the year 2045 (Fig. 2; Table 1). **This model also suggests a pore pressure increase of 7.5 psi on the nearest fault (Fault 29; Fig. 3; Table 1) by the year 2045.** Geomechanical modeling shows that the primary fault of concern (fault 29) would need a pressure increase of 2382 psi to reach a 100% probability of slip on the fault. Even a 50% probability requires an increase of 774 psi which is far greater than the modeled increase of 7.5 psi (Fig. 3).

EXHIBIT I

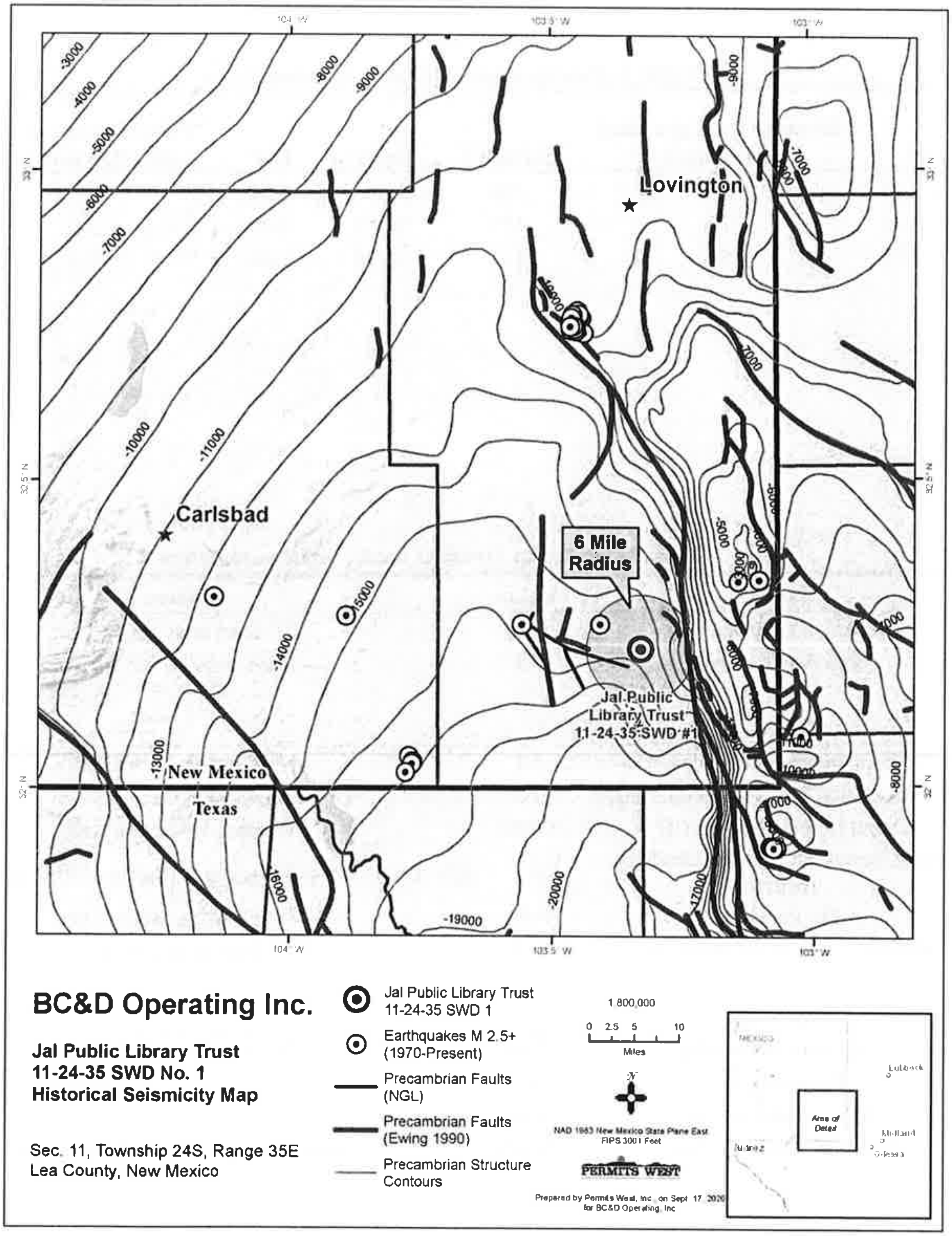


Figure 1. Structural contour map of the Precambrian basement in feet below sea level. Red lines represent the locations of Precambrian basement-penetrating faults (Ewing et al., 1990). Purple lines represent the locations of basement-penetrating faults inferred by Todd Reynolds representing NGL in NMOCD Case Nos. 20141 and 20142. The Jal Public Library Trust 11-24-35 SWD #1 well lies ~2.4 miles northeast of the closest deeply penetrating fault and ~5.3 miles southeast from the closest historic earthquake.

EXHIBIT I

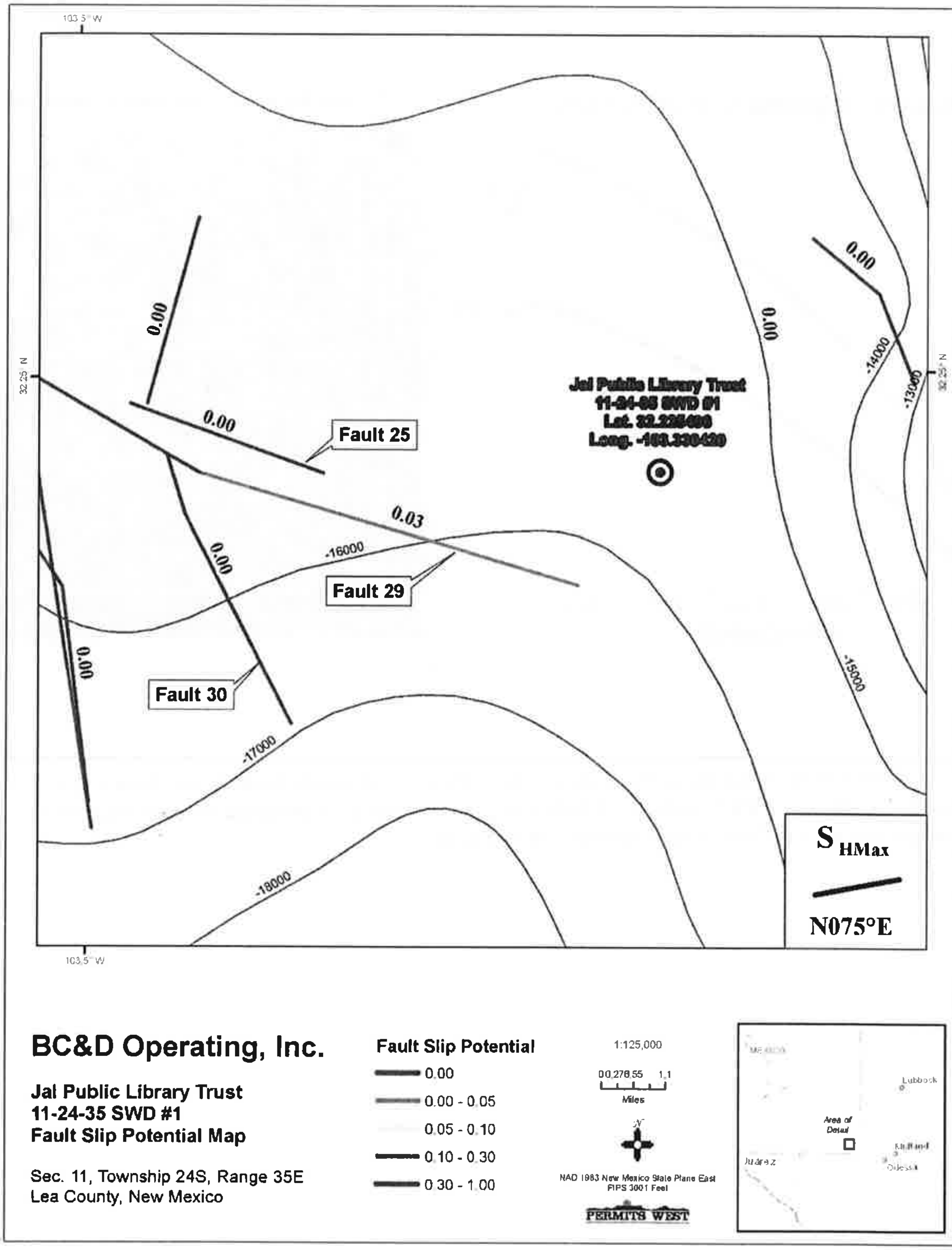


Figure 2. Precambrian fault map of Jal, NM. Faults are colored based on probability of fault slip as modeled using Fault Slip Potential software (Walsh and Zoback, 2016). Labeled values represent the calculated fault slip potential using the parameters indicated in Table 2. Contours show the top of the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

EXHIBIT I

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EXHIBIT K

September 18, 2020

BLM
620 E. Greene
Carlsbad NM 88220

BC & D Operating Inc. is applying (see attached application) to drill its Jal Public Library Trust 11-24-35 SWD 1 well as 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: Jal Public Library Trust 11-24-35 SWD 1 (fee lease) TD = 17,433'
Proposed Disposal Zone: Devonian & Silurian (15,246' – 17,433')
Location: 200' FSL & 200' FEL Sec. 11, T. 24 S., R. 35 E., Lea County, NM
Approximate Location: ≈11 air miles NW of Jal, NM
Applicant Name: BC & D Operating Inc. (405) 837-8147
Applicant's Address: P. O. Box 302, Hobbs NM 88241

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.

Please call me if you have any questions.

Sincerely,

B. Wood

Brian Wood