

BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS

In the Matter of the Application of Z & L Oil,) Docket No: 24-CONS-3009-CUIC
LLC (Operator) for a Permit to Authorize the)
Injection of Saltwater into its Pfhrem #3A Well) CONSERVATION DIVISION
Located in the NW/4 of Section 18, Township 31)
South, Range 10 East, Elk County, Kansas.) License No: 35610

PRE-FILED DIRECT TESTIMONY OF BRIAN G. FISHER

1 **I. BACKGROUND INFORMATION AND QUALIFICATIONS**

2 **Q. STATE YOUR NAME AND BUSINESS ADDRESS FOR THE RECORD.**

3 A. My name is Brian G. Fisher. My business address is: Fisher Consulting, 5762 N. Charles St.,
4 Wichita, Kansas 67204-1856.

5 **Q. HAVE YOU BEEN RETAINED IN THIS MATTER BY Z & L Oil, LLC ("Z&L")?**

6 A. Yes.

7 **Q. SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND WORK EXPERIENCE.**

8 A. I received a BS in Geology from Fredonia State University of New York in 1974. After
9 earning this degree I was hired by Resource Exploration in January 1975 and first worked as
10 Well Site Geologist (looking at well cuttings) and later worked as a Production and
11 Developmental Geologist. I supervised open hole geophysical logging, cementing production
12 casing and later perforated wells and also supervised some well acid treatments and
13 hydro-fracture well treatments. Later I worked in the main office in Canton, Ohio and did
14 mapping of sandstone trends. I also worked under a petroleum engineer doing decline curve
15 analysis for projecting future gas reserves. My employment was from January 1975 to May

1 1978. Later I took employment with the Texas Oil and Gas Corporation located in Wichita,
2 Kansas. I was employed as an Exploration Area Geologist prospecting for oil and gas in south
3 central Kansas. I was employed from June 1981 to October 1981. My next employment was
4 with American Energies Corporation in Wichita, Kansas from October 1981 to June 1983. I
5 did exploring for oil and gas in the same areas as before and worked additional counties in
6 central Kansas. I negotiated for oil and gas leases with a landman and reviewed drilling and
7 natural gas contracts. My next job was with Texas Energies Inc. of Wichita, Kansas as an
8 Exploration Manager from June 1983 to January 1986. We drilled from the central Kansas
9 uplift to the Oklahoma border and I oversaw a staff of three geologists, a draftsman and a
10 secretary. We drilled approximately 60 wells a year. I reviewed outside deals for management
11 from all parts of Kansas. I was involved as an expert geologist for the Kansas Corporation
12 Commission ("KCC") for new pool discovery applications. I was also an expert geological
13 witness for a lawsuit involving non development of a lease. Later the company was sold and
14 taken over by Woods Petroleum of Oklahoma City. Over time due to low oil and gas prices,
15 Woods Petroleum shrank staff and later closed the Wichita Office in 1988. I worked as a
16 self-employed consulting geologist from April 1988 to January 1990. Sold oil and gas deals,
17 did some limited well site work, did custom computer mapping for oil companies. In 1990,
18 I attended Groundwater School at Oklahoma State University and was retrained in the field
19 of Hydro-Geology. My next employment was with the KCC Oil and Gas Division from
20 January 1990 to October 1990. My position was Research Analyst, Petroleum Industry
21 Regulatory Technician. I helped establish surface casing depths to protect fresh and usable
22 water. Later I helped investigate environmental and regulatory complaints concerning

1 violations of KCC Regulations of the oil and gas industry. I also worked with a KCC attorney
2 (James Brown) to help oversee field personnel involving violations of oil and gas regulations.
3 Later I took a job with the Wichita Sedgwick County Department of Environmental Services
4 from October 1990 to September 2007. I first worked as a Water Quality Planner and later as
5 the City Geologist. During my employment with the City of Wichita I also continued to work
6 as a part time geologist prospecting for oil and gas. Later I left the City of Wichita and took
7 a position with Falcon Exploration from October 2007 to December 2021. I supervised well
8 site geologists, worked on special company projects. Did oil and gas prospecting in Western
9 Kansas and Eastern Colorado. Helped evaluate oil and gas reserves for possible purchase.
10 Later I helped determine future values of company oil and gas wells. My last work was mainly
11 as a geological engineer for old well work overs and evaluating new zones for completion.
12 Memberships: Member of Kansas Geological Society (since 1979); elected Kansas Geological
13 Society Secretary in 2001 and Treasurer 2002; I was later elected as Vice President in 2013
14 and President in 2014; I was elected again for Vice President 2020 and President in 2021. I
15 was also elected member of the Kansas Geological Foundation for 2018 and Vice President
16 in 2019. Other activities include: Member of Kansas Geological Society Digital Library;
17 recipient of Kansas Geological Foundation award for Education in 1999 and again in 2007;
18 Member of AAPG (since 1977); Certified Petroleum Geologist #5920; Professional Geologist
19 for Kansas #103.

20 Publication and Presentations: Contributing Author in: "Assessment of The Impact of
21 Storm Water Recharge from Unlined Earthen Pits on Ground-Water Quality in the Wichita
22 Area," Kansas Geological Survey Open-File Report 93-47, December 1993; talk presented to

1 the Kansas Geological Society: "The Nature of Groundwater Contamination," April 2003.
2 Contributing author in section - Spotlights on Scientists in children's book; "Skill Building for
3 Science, grades 5-6, Carson-Dellosa Publishing Company, Inc." by Jennifer Linrud Sinsel,
4 2006. Also wrote paper: "The Nature of Groundwater Contamination;" a Primer about
5 Groundwater for Health Professionals, for: Kansas Public Health Leadership Institute, Cycle
6 II, 2004-2005. I wish to be recognized as an expert witness on the basis of my work history
7 and experience in the as a geological area of well completions, disposal and the environmental
8 impact of saltwater to ground water contamination.

9 **Q. SUMMARIZE YOUR EXPERIENCE IN KANSAS OIL FIELDS.**

10 A. I have been actively involved in the Kansas oil and gas industry for nearly 50 years and have
11 been involved in the initial and redevelopment of many oil and gas fields in Kansas during that
12 time. I have been involved in the drilling and completion of wells in Kansas as recently as this
13 year. In short I have been involved in most all operational aspects related to the well oriented
14 extractive and injection/disposal industry.

15 **Q. SUMMARIZE YOUR EXPERIENCE IN THE AREA OF WELL COMPLETION.**

16 A. I have 20 years of industry experience in drilling, well completion, well work-overs and repair.
17 I have been involved in the completion of many wells over the course of my career and have
18 the knowledge and experience to determine the integrity of a well completion.

19 **Q. SUMMARIZE YOUR EXPERIENCE IN THE AREA OF DISPOSAL, WATER**
20 **FLOODING AND THE ENVIRONMENTAL IMPACT OF INJECTION WELLS.**

21 A. I have over seven years of experience in disposal and injection well permitting, construction
22 and operation. In addition, I have a great deal of education and experience in the area of

1 hydro-geology and have written on the subject of ground water contamination and protection.

2 **Q. WHAT IS THE PURPOSE THIS TESTIMONY?**

3 A. The purpose of this testimony is to support Z&L's Application to inject water into the
4 Mississippi Formation at the Pfhrem #3A enhanced recovery well, located in Section 18,
5 Township 31 South, Range 10 East, Elk County, Kansas. I have reviewed such application,
6 am familiar with the same and the authority it requests and feel that the granting of such
7 application will prevent waste without posing any real risk to fresh and usable water or
8 induced seismicity.

9 **II. PURPOSE OF THE SUBJECT APPLICATION**

10 **Q. PLEASE DESCRIBE THE PFHREM #3A WELL AND ITS INTENDED PURPOSE IF**
11 **MIDSTATES' APPLICATION IS GRANTED.**

12 A. The Pfhrem #3A well was drilled and completed in 2014 as a production well and was worked
13 over in 2023 in order to convert said well to an enhanced oil recovery well. The Pfhrem #3A
14 well was drilled to a total depth of 2,673 feet and completed into the Mississippi Formation
15 which is the same formation that the production wells located on the Pfhrem Lease are
16 completed into. Z&L believes that injection into the Pfhrem #3A will enhance the production
17 from the Pfhrem Lease and prevent waste and therefore seeks authority to place such well into
18 service as an injection well. The injection well will push more fluid to the adjacent production
19 wells over time. The Z&L Application seeks authority to inject water through the Pfhrem #3A
20 well into the Mississippi Formation through the present completions at a maximum volume
21 of 1000 barrels of water per day and at maximum injection pressure of 700 PSI.

22 **Q. WHAT WOULD BE THE PURPOSE OF INJECTING WATER INTO THE WELL**

1 **THAT IS THE SUBJECT OF THIS DOCKET?**

2 A. The purpose of injection into this well would be to increase the length of time for the recovery
3 of oil from the production wells located upon the lease and to provide a mechanism to return
4 the produced water from production wells on the subject lease back into the same producing
5 formation. As fluids are removed from a reservoir the reservoir pressure is reduced, therefore
6 water is injected into the producing formation in an attempt to maintain as much of the
7 reservoir pressure as possible. Thus, the ultimate purpose of the proposed injection is to
8 increase the production of oil and the ultimate recovery of oil from the reservoir by lowering
9 lease production costs, thereby preventing underground waste, and also to provide a safe and
10 environmentally friendly way of returning produced water to the same producing formation.

11 **Q. IN YOUR OPINION WILL GRANTING Z&L'S APPLICATION PREVENT**
12 **UNDER-GROUND WASTE?**

13 A. Yes.

14 **Q. WILL THE INJECTION WELL WHICH IS THE SUBJECT OF THE PENDING**
15 **APPLICATION COMPLY WITH ALL APPLICABLE RULES AND REGULATIONS**
16 **PROMULGATED BY THE KANSAS CORPORATION COMMISSION?**

17 A. Yes.

18 **Q. IN YOUR OPINION WILL INJECTION INTO THE MISSISSIPPI FORMATION**
19 **THROUGH THE SUBJECT INJECTION WELL BE CONTAINED WITHIN THE**
20 **MISSISSIPPI FORMATION?**

21 A. Yes. The Well Completion Report for the subject well indicates that when the well was drilled
22 the operator drilled down 42 feet, and set that length of 8.625 inch surface casing, cemented

1 it to the surface. Then they drilled down to the total depth of 2,673 feet using 5.5" casing and
2 cemented it to the surface. The casing was then perforated at 2,253' to 2,287' in the Mississippi
3 formation which is the producing formation. Then 2,215 feet of sealtite tubing was ran into
4 the well and a 2.375" Arrow J Type Packer was set at the bot-tom of said tubing. This well will
5 be subject to Mechanical Integrity Test ("MIT") to en-sure the integrity of the well
6 construction before it is placed into operation and every five years thereafter. All freshwater
7 strata above the Mississippi formation is protected by the surface and producing casing strings,
8 which are both cemented to the surface, as well as the tubing and packer and also by the
9 presence of a number of shale layers above the perforations. Thus, in my opinion the integrity
10 of the well completion for the subject well is sound and the integrity of the well construction
11 is sufficient to confine the injected water to the Mississippi formation.

12 Thus, in my opinion all water injected into the subject well will be confined with-in
13 the Mississippi formation by the well construction and also by the natural geological features
14 present in this well.

15 **Q. IN YOUR OPINION DOES THE SUBJECT INJECTION WELL POSE A**
16 **SIGNIFICANT RISK TO FRESH AND USABLE GROUND WATER FORMATIONS**
17 **IN THE AREA?**

18 A. No. I have reviewed all the plugging reports at the KCC, the Kansas Geological Survey and
19 the Kansas Geological Library for the NW/4 of 18-31S-R10E. All of the dry holes and former
20 producing wells information shows several cement plugs in the top and/or directly above the
21 Mississippian formation (approximately 2150' to 2254' in depth). Several plugs of cement and
22 intervals of heavy mud were set to completely isolate the lowest usable water contained in the

1 Douglas Formation at approximately 400 feet. The upper plug was cemented to surface and
2 the surface casing was then cut off and sealed shut. The original cemented in surface casing
3 was set to protect the local surface water. The depth of surface casing was determined by the
4 KCC as part of the initial well permitting process. The upper part of the Mississippian
5 formation is described as an extremely vuggy and fractured type water drive reservoir.
6 Mississippian formation water is produced along with an oil cut, over time the oil cut will
7 decrease and the economic limit of the reservoir is often dictated by operational costs. This
8 application is only requesting to place produced Mississippian water back into the formation
9 it was produced from. Z&L does not currently plan to introduce any makeup water or other
10 added energy into this reservoir and instead only intends to reinject produced water from this
11 lease. Therefore, reservoir pressure will continue to decline from whatever presently exists
12 within the reservoir as production activities continue and volumes of oil are removed from the
13 reservoir.

14 **Q. IN YOUR OPINION WILL THE INJECTION PROPOSED IN Z&L'S APPLICATION**
15 **POSE A SIGNIFICANT RISK FOR INDUCING SEISMICITY?**

16 A. No. First, the proposed injection rate and pressure is low in the context of oil and gas
17 production operations. Generally speaking the potential for inducing seismicity only exists if
18 a well is in communication with the crystalline granite basement which is where seismicity
19 originates. In the instance of the well which is the subject of this docket the producing
20 formation is located 200-300 feet above the crystalline granite basement.

21 **Q. WHAT IS YOUR PROFESSIONAL OPINION REGARDING MIDSTATES'**
22 **APPLICATION?**

1 A. The Pfhrem #3A well will be an environmentally safe injection well and by its use to
2 re-pressure the producing reservoir it will prevent waste of natural resources. Therefore, I
3 highly recommend Z&L's Application be granted.

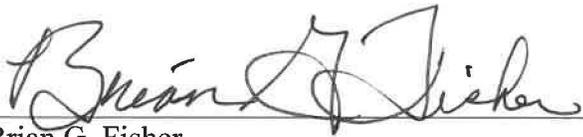
4 **Q. DOES THIS COMPLETE YOUR TESTIMONY TO THE COMMISSION?**

5 A. Yes.

VERIFICATION OF BRIAN G. FISHER

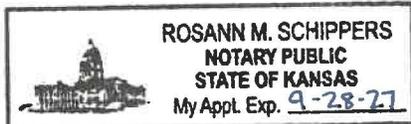
STATE OF KANSAS
COUNTY OF SEDGWICK, ss:

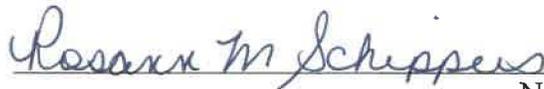
I, Brian G. Fisher, being first duly sworn on oath, depose and state that I am the witness identified in the foregoing Prefiled Testimony of Brian G. Fisher; that I have read the testimony and am familiar with its contents; and that the facts set forth therein are true and correct.



Brian G. Fisher

SUBSCRIBED AND SWORN to before me this 11 day of October, 2023.





Notary Public

Appointment/Commission Expires: 9/28/27

CERTIFICATE OF SERVICE

I hereby certify that a copy of the above and foregoing was sent via electronic mail this 13th day of October, 2023, addressed to:

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