

**BEFORE THE STATE CORPORATION COMMISSION
OF THE STATE OF KANSAS**

Before Commissioners: Dwight D. Keen, Chair
 Shari Feist Albrecht
 Jay Scott Emler

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|---|---|------------------------------|
| In the Matter of the Application of ORCA |) | Docket No. 19-CONS-3266-CUIC |
| OPERATING COMPANY, LLC for a Permit to |) | |
| Authorize the Disposal of Produced Water into |) | CONSERVATION DIVISION |
| the Shoffner SWD 12-1 well Located in Reno |) | |
| County, Kansas |) | KCC License No. 34358 |
| _____ |) | |

PREFILED TESTIMONY

OF

WAYNE K. TAYLOR

ON BEHALF OF APPLICANT,

ORCA OPERATING COMPANY, LLC

1 Q. Please state your name and business address.

2 A. My name is Wayne K. Taylor, and my business address is 437 South Boston, Suite 400,
3 Tulsa, OK 74103.

4 Q. By whom are you employed and in what capacity?

5 A. I am employed by EXACT Engineering Inc. as a Senior Engineer.

6 Q. What is the purpose of your testimony in this docket?

7 A. I work as a consultant for Orca Operating Company, LLC and have been asked to provide
8 testimony in support of its Application that is at issue in this docket.

9 Q. Please summarize your educational background.

10 A. I received both a BS and a MS from the University of Tulsa in Petroleum Engineering.

11 Q. Please summarize your professional experience.

12 A. I have spent the past 47 years working as a Petroleum Engineer in the oil and gas industry
13 including production engineering, reservoir engineering, drilling and completion of wells,
14 acquisitions, evaluations, pipeline design and recertification, gas storage, workovers, frac
15 design and oil and gas production equipment.

16 Q. Have you previously testified before the Kansas Corporation Commission or any other
17 state's oil and gas regulatory commission or board?

18 A. I have testified as an expert witness in numerous hearings before the Oklahoma
19 Corporation Commission. I have not previously testified before the Kansas Corporation
20 Commission, but I believe that I may have testified before the Kansas Tax Commission in
21 the early 1990's.

22 Q. Were your credentials to testify as an expert in the field of Petroleum Engineering accepted
23 by the Oklahoma Corporation Commission in all of the proceedings in which you testified?

24 A. Yes, they were.

1 Q. Are you familiar with the KCC Form U-1 that was filed by Orca Operating Company, LLC
2 ("Orca Operating") for the Shoffner SWD 12-1 well (the "Application") that is at issue in
3 this docket?

4 A. Yes, I am familiar with the Application for Injection Well filed by Orca Operating and with
5 the Shoffner SWD 12-1 well.

6 Q. Were you retained to advise and assist Orca Operating in connection with Shoffner well
7 and the preparation, submission and approval of that Application?

8 A. Yes, I was.

9 Q. Is the information that is set forth in that Application true and correct?

10 A. To the best of my knowledge, the information in the Application is true and correct.

11 Q. What is the purpose of the Application?

12 A. Orca Operating owns oil and gas leases in this area that they wish to develop for the
13 production of oil and/or gas from the Mississippian geologic system by drilling a horizontal
14 well or wells. That production will require a means to dispose of significant quantities of
15 water that will be produced along with the oil and gas. In order to dispose of produced
16 water in those quantities, an approved disposal well is required as a necessary part of that
17 development plan.

18 Q. Will the approval of the Application assist in the prevention of waste?

19 A. Yes, it will. Without approval, the producing well or wells will not be drilled and the oil
20 and gas reserves that could be recovered by those wells will not be produced. If those
21 reserves are not recovered, then the mineral owners, the State of Kansas, and the owners of
22 the leases will suffer economic loss and the underground waste of the oil and gas that will
23 not be recovered.

24 Q. In the Application, Orca Operating seeks authorization to inject up to a maximum of 10,000

1 barrels of fluid per day into the Shoffner SWD 12-1 well. Do you anticipate that they will
2 use all of that capacity and, if so, is that capacity necessary?

3 A. Yes, I believe that level of capacity could be necessary as initial production from the
4 horizontal well can be quite high but, as of now, is undetermined. Also, if additional
5 development wells are drilled by Orca Operating they will also supplying water to this well.
6 I anticipate that with success of this initial venture, an authorized maximum injection
7 volume of 10,000 BWPD is reasonable to cover spurious short term initial production peaks
8 and other production peaks that sometimes occur related to replacement of downhole
9 equipment and other events.

10 Q. Where will that water come from that will be injected into the Shoffner SWD 12-1 well?

11 A. This drilling pad is designed to accommodate not only the Shoffner disposal well, but also
12 the initial horizontal production well in this geologic prospect which is known as the Kelly
13 12-1-1H well. As stated in the Application, the Kelly 12-1-1H will supply the water that
14 will be injected in the Shoffner SWD 12-1. However, if the Kelly well is successful, Orca
15 Operating owns additional leasehold that could be developed with additional wells and the
16 water produced from those wells may also be brought to this disposal well, provided that
17 the proper Kansas Corporation Commission approval is received and that disposal complies
18 with the disposal permit.

19 Q. Does the Shoffner SWD 12-1 well comply with all applicable rules and regulations of the
20 Commission?

21 A. Yes, it does and it will. Once the Application is approved, Orca Operating will perform
22 and that well must pass a mechanical integrity test, in accordance with Commission
23 regulations, prior to the commencement of disposal operations.

24 Q. In your opinion, does the Shoffner SWD 12-1 well pose a risk to fresh and usable

1 groundwater formations in the area?

2 A. No, it does not. As will explained in more detail by Jason Andrews in his testimony, there
3 are adequate confining zones between the injection zone and the base of the usable water,
4 and redundant casing strings that are cemented across the fresh and usable water formation
5 are built into this well design adding insurance to that protection. With those protections in
6 place, I believe that fresh and usable groundwater formations in the area will be adequately
7 protected.

8 Q. In your opinion, will the proposed injection operations in the Shoffner SWD 12-1 well pose
9 a significant risk of the release of salt water at the surface?

10 A. It is my engineering opinion that the proposed injection operations pose no significant risk
11 of the release of salt water which would contaminate the surface and that any release would
12 be adequately contained at the site.

13 Q. Please describe the systems and equipment that Orca Operating plans to install that will
14 prevent the accidental release of salt water from the Shoffner SWD 12-1 well?

15 A. The environmental protection planning for this well includes equipment and piping with
16 pressure ratings many times higher than is required for this installation, impervious tank
17 battery walls, automated sump pumps inside the tank battery, automated tank controls with
18 electronic alerts to Orca Operating management, and local contract supervision to daily
19 inspect and monitor operations on site once disposal operations have commenced. Taylor
20 Exhibit "A" contains two pictures: The top picture is a tank battery constructed by Orca
21 Operating for a well in Oklahoma. This is similar to the facilities will be built for the
22 Shoffner SWD 12-1 well. The bottom picture is of the Bainum No. 1 SWD that is located
23 in the SW/4 of Sec 12-25S-9W, Reno County, and is very near the site of the Shoffner
24 SWD 12-1. As you can see from these pictures, the more modern facilities are planned and

1 built with a more environmentally cognizant design.

2 Q. Please describe Taylor Exhibit "B" that has been submitted with your prefiled testimony.

3 A. Taylor Exhibit B is a plat showing the pad for the Shoffner SWD 12-1 well and for the
4 Kelly 12-1-1H well that will be drilled by Orca Operating from that pad. Orca Operating
5 owns the land on which that pad is located.

6 Q. Please describe the surface facilities that will constructed by Orca Operating on that well
7 pad and tell the Commission how those facilities should prevent the release of any salt
8 water from that facility in the event a spill does occur?

9 A. As previously noted, in the unlikely event that there is an accidental release of salt water
10 within the tank battery there are dual system controls: First, the tank battery will be
11 surrounded by a containment structure and the capacity of that containment structure
12 exceeds the storage capacity of any single vessel within the tank battery. Second, there is an
13 automated sump system in the containment structure that is designed to pump collected
14 water back into the storage tank should the release be from another source within the tank
15 battery. Additionally, although a very low injection pressure has been requested for this
16 well, it is expected the disposal into the Arbuckle formation will be on vacuum which
17 should eliminate common the causes for surface equipment failures, that being pressure
18 leaks. Thus, there is a very low risk of any leaks or spills, and any leaks or spills that do
19 occur should be contained on the site.

20 Q. Have you prepared an exhibit that shows the location of the Picketts' residence and their
21 land in relation to the proposed disposal well?

22 A. Yes, I participated in the preparation of Taylor Exhibit "C" submitted with this prefiled
23 testimony which is an aerial photo showing the location the Shoffner SWD 12-1 well and
24 the Picketts' residence. As you will see, their residence is more than a quarter mile from the

1 proposed well and the boundary of their land is 775 feet from the subject well.

2 Q. In light of those distances, do you believe that it is likely that any salt water spilled could
3 travel on the surface and adversely impact the Picketts' property?

4 A. It is my belief the Picketts' property would not be adversely impacted in the unlikely event
5 of a spill of saltwater from the Shoffner SWD 12-1 well.

6 Q. Does this conclude your direct testimony?

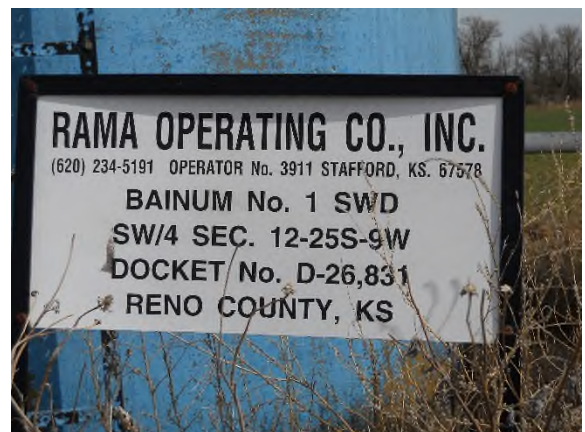
7 A. Yes, but I reserve the right to supplement my testimony.

ORCA Operating Company Exhibit

ORCA Operating Tank Battery, Dewey County, Oklahoma



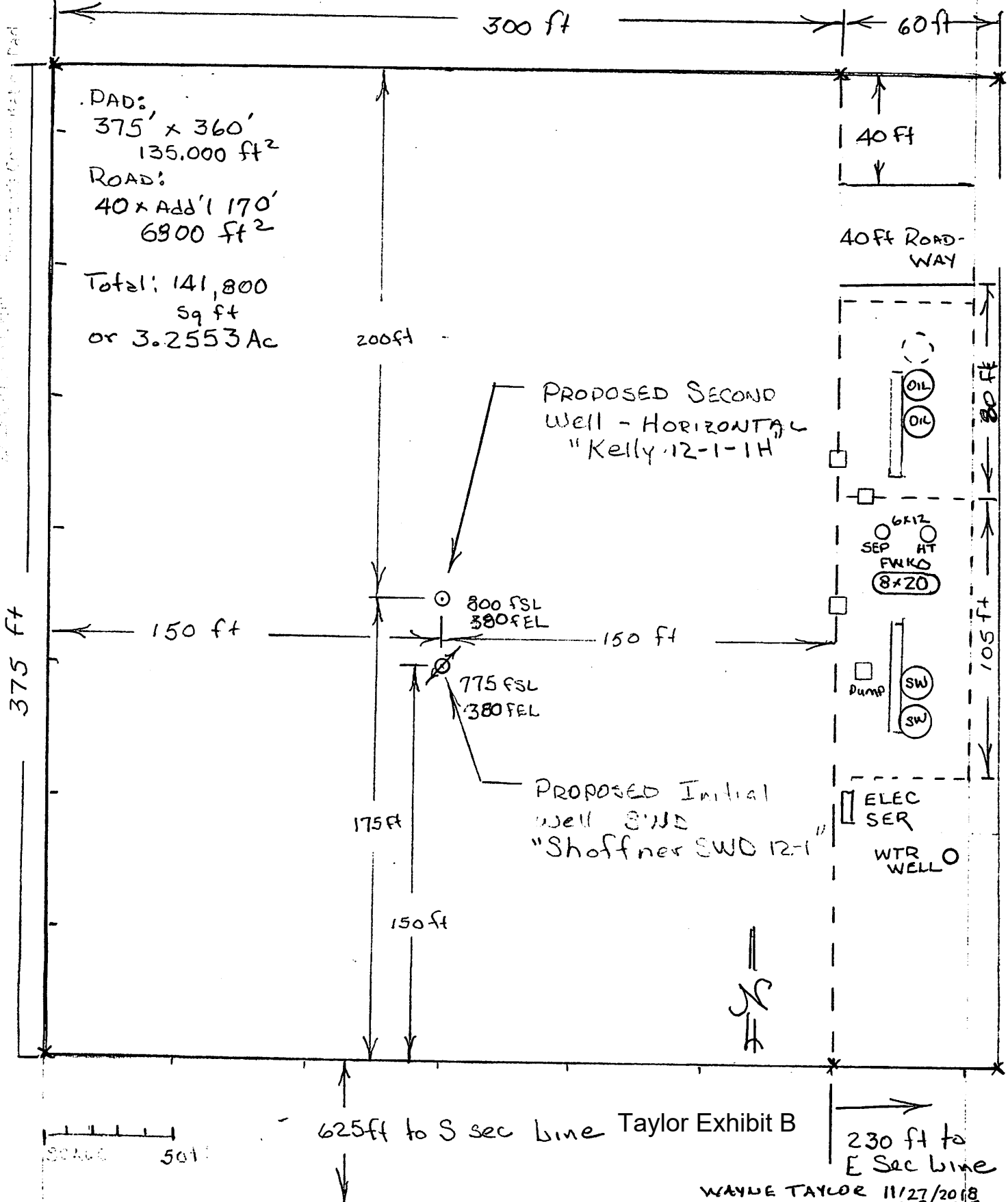
Bainum No. 1 SWD location, SW/4 Sec 12-T25S-09W, Reno County, Kansas



EXACT Engineering Inc
1573 Lakeside Ridge Drive
Sand Springs, OK 74063
918-599-9400

Taylor Exhibit A

ORCA OPERATING COMPANY
PLEASANT VALLEY DRILL PAD
SE SE Sec 12-T25S-R09W
RENO COUNTY, KS



WAYNE TAYLOR 11/27/2018
REV 11/29/2018

