BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico

June 7, 1962

EXAMINER HEARING

IN THE MATTER OF:
Application of Waterflood Associates, Inc., for approval of a waterflood project, Eddy County, New Mexico. Applicant, in the above-styled cause, seeks approval of a waterflood project in the Artesia Pool by the injection of water to be through one well located in the W/2 NW/4 of Section 21, Township 18 South, Range 28 East, Eddy County, New Mexico; applicant requests that the waterflood project be governed by Rule 701.

CASE No. 2582

BEFORE: Daniel S. Nutter, Examiner

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 2582.

MR. MORRIS: Application of Waterflood Associates, Inc. for approval of a waterflood project, Eddy County, New Mexico.

MR. LOSEE: A. J. Losee, Losee and Stewart, appearing for the applicant. One witness, Harold Porter.

MR. PORTER: Let the record show Mr. Porter was sworn in Case 2580.

(Whereupon Applicant's Exhibits 1 through 6 marked for identification.)

HAROLD PORTER,

called as a witness, having been first duly sworn on oath, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. LOSEE:

Q You are Harold Porter of Artesia, New Mexico, and a petroleum geologist, and have previously testified before this Commission?

A Yes, sir.

MR. LOSEE: Are his qualifications acceptable, Mr. Examiner?

MR. NUTTER: Yes, sir.

Q (by Mr. Losee) Please refer to what has been marked as Exhibit 1 and state what that portrays.

A Exhibit 1 is a plat of a portion of the Artesia Field showing the Waterflood Associates Mershon and Walters leases outlined in yellow. These are the West Half Northwest Quarter of Section 21, and the Southeast and Northeast of Section 20. Also shows the offset operators, and I would like to draw attention to the Southwest Quarter of Section 21 which is the Graridge waterflood in that area, or part of the Graridge waterflood.

Q It shows the wells and the leases within two miles of your project area?

A Yes, sir.

Q Please refer to Exhibit 2 and explain what that portrays.

A Exhibit 2 is a plat of the same area showing the water injection wells of Graridge Corporation connected by a green line. These wells have been on injection for considerable amount of time and the red lines show, the solid red line shows how we propose to expand this pattern by converting Mershon State No. 3 to water injection, and then the dashed red line shows how possibly later on the same pattern will be expanded from the 10-acre location to the 40-acre location pattern further to the west.

Q Your injection well would then be the Mershon No. 3?

A Yes, sir, that's the well that we are applying for for injection well at this time. As you notice, it falls -- the injection pattern would fall -- this "4" would be in an injection location. By our putting water in No. 3 and Graridge injecting in 13, a fairly equal, logical lease line balance can be maintained between these two leases.

Q Is Graridge receiving any response in their present program?

A Yes, sir. Their waterflood has been very successful.

Q Please refer to Exhibit 3A and explain what that portrays.

A Exhibit 3A is a tabulation of the oil production from the Mershon lease from the time it was drilled in 1950 up to the present time. I do not have the oil production history from our Powell lease which is offsetting this lease to the west. I do not have it with me; however, that lease has produced on the order of 6,000 barrels of primary oil and is now producing only approximately

a barrel and a half a day. From this tabulation and with reference to Exhibit 3B, which is merely a graphic presentation of this same data, you can see that these wells declined down. Well 1 and 2 declined down to approximately 28 barrels per month in 1958 and then Well No. 3 was drilled and it declined until November of 1961. It declined down to approximately 100 barrels. The lease declined down to approximately a hundred barrels per month, which is about a barrel per day per well for the lease, and at that point production began to increase. This was caused by waterflood response in the Mershon State No. 1 well, as a result of Graridge's injection.

Q Actually, then, on 3A your figures for the months of December '61 and January through April of '62 reflect the response that your Mershon No. 1 is receiving from the Graridge flood?

A Yes, sir, that's correct. That well has increased up to approximately 30 barrels of oil per day. The other two wells are making approximately one barrel a day each.

Q Did you, yourself, do anything to that well to stimulate the production in it?

A No, sir, we didn't do a thing. The production just began coming up. Now, as these exhibits show, these wells were in an advanced stage of depletion at one time, until they started getting this waterflood response and they would be classed as stripper wells, prior to this response.

Q All right, now, is the same thing true with respect to

your -- I'm kind of lost. You call it the Humble lease, the Powell lease?

A Yes, sir, those are the same one. We bought it from Mr. Powell and it is, as I testified before, also down in the stripper stage, about a barrel and a half per day.

Q Please refer to your Exhibit 4B, well, 4A and 4B-- if you'll explain those.

A Exhibit 4A is a copy, reproduction of an electric log run on Graridge Corporation McNutt No. 16, which is the new well just to the south of our Mershon State lease shown on the plat, and Exhibit 4B is an electric log run on our Well No. 3, Mershon State No. 3, which is the one we are applying for for conversion; and from these two exhibits it's possible to see where these wells are producing from and the zones that we intend to waterflood. The zone shown at about 2,050 is the first Grayburg. The zones, that's on Exhibit 4A, the zones shown at about 2150 are the second Grayburg, which is the Metex and the zone shown at approximately 2300 is the Premier, and the top of the San Andres on that log is about 2326, and these zones do correlate across very well.

Q Are these same zones present in your Mershon State No. 3, the 4B?

A Yes, sir, they are.

Q Those are the zones that will be opened to water injection?

A Yes, sir, they are all open now, as you can see on 4B.

I have the perforation marked and also the individual frac treatments that each zone was given.

Q Do you have any other logs on the other wells in your lease, electric logs?

A No, sir, I don't have an electric log on either of the wells immediately offsetting this well. This is the only log I have. I do have some, however, further to the west, but I didn't think that they were significant to this case.

Q You don't have any logs on the wells in this case, though?

A No, sir, none other than these right here.

Q Please refer to Exhibit 5A.

A Exhibit 5A shows the well data and this, the well that we are applying for for an injection well is the Mershon State No. 3. You will notice that it has 8 5/8ths-inch casing set at 520 feet and cemented with 50 sacks. Now, this is set into the salt section. The production string is set at 2368 and cemented with 100 sacks. The perforations are shown to the right. The 5½-inch casing is cemented with sufficient amount of cement to give a top of that cement column at 1,051 feet below the surface, and any shallow water which might be present in this area is sufficiently protected by two strings of casing and two cement jobs to where we feel -- and we request permission to inject water down the casing in this instance, and we feel any shallow water will properly be protected by the casing.

Q Is there any sufficient amounts of water available in the area?

A No, sir, there's not. Grayburg Corporation did some exploratory work and they couldn't find enough water to justify or to satisfy their requirements and they had to build a pipeline approximately eight miles north into the Red Lake where they are getting their water, and it's being piped down to them, and we have made arrangements with them to purchase pressure water for this particular project from their plant.

Q Your system will be closed?

A Yes, sir, it will be a closed system.

Q Please refer to Exhibit 5B and explain what it portrays.

A Exhibit 5B is a continuation of 5A and shows further information on the various wells, the stimulations and the initial potentials and the producing rates and the zones which are producing and the cumulative primary recovery. We feel that this will be a successful waterflood and that we will recover possibly as high as two times primary from this program.

Q Has Graridge experienced anything close to two times primary down in their --

A Yes, sir, some of their individual wells have gone that high and higher.

Q Please refer to your Exhibit 6, which is a copy of the letter to the State Engineer and tell whether you have discussed this application with the State Engineer's office.

A Yes, sir, I have discussed it with the State Engineer's Office and Exhibit 6 is a letter dated May 29, 1962, to Mr. Frank Irby setting out the details of this case. Also, I have given a copy of each one of these exhibits to the State Land Office.

A Is the State of New Mexico the beneficiary under these leases?

A Yes, sir, it is a state lease. Now, I'm not sure of which institution is the beneficiary; however, discussing with Mrs. Rhea, I told her that we intended to operate on a lease line agreement and that agreement would be submitted to her for her approval.

Q Do you feel this project will promote the conservation of natural resources and prevent their waste?

A Yes, sir, it certainly will.

Q Were Exhibits 1 through 5B prepared by you or under your direction?

A Yes, sir.

Q Exhibit 6 is a copy of a letter that you mailed the State Engineer?

A Yes, sir.

MR. LOSEE: Applicant moves the introduction of Exhibits 1 through 6.

MR. NUTTER: Applicant's Exhibits 1 through 6 will be admitted in the record.

(Whereupon Applicant's Exhibits 1 through 6 admitted in evidence.)

MR. LOSEE: I have no further questions.

MR. NUTTER: Does anyone have any questions of Mr. Porter? Go ahead, Mr. Irby.

CROSS EXAMINATION

BY MR. IRBY:

Q Mr. Porter, you didn't testify, or at least if you did I missed it, as to where this surface string of casing is landed, what formation it's in.

A Sir, it's set into the salt. It's set at 520 feet. It's set deep into the salt. The salt should be around 200 feet, right here.

Q Thank you.

CROSS EXAMINATION

BY MR. NUTTER:

Q Well, Mr. Porter, in the last three cases, I have noticed that you have testified that any shallow water sands will be protected by two strings of pipe and two sheaths of cement. Now, I don't understand how you arrive at that conclusion. Now here in this case you have got this Mershon No. 3, which is the injection well, it's at 8 5/8ths at 520 feet, cemented with 50 sacks. Now, how high up would 50 sacks come then?

A I don't have the table to calculate that right now; however, I believe 50 sacks behind 8 5/8ths in an 11-inch hole will give about 300 feet of cement.

Q The salt is at 200 feet, didn't you say?

A Yes, sir.

Q So where would the shallow water be? It would be pretty high.

A If there were any shallow water it would be above that. Now, what I meant was the cement job and the casing would be the protection because the cement job would seal off the bottom of the shoe and the annulus.

Q You haven't meant to imply there would be two strings of pipe and two sheaths of cement opposite any fresh waters up there?

A No, sir, I haven't meant to imply that at all. I meant the shoe of the pipe, the bottom of the pipe would be sealed by the cement.

Q I see.

A And the casing of course would extend up and protect it.

Q Now, the Mershon No. 3 is perforated in three intervals, whereas the offsetting Mershon No. 1 has only two intervals perforated. You anticipate opening up that third interval in that well?

A I don't know whether we will or not. It will depend a whole lot on whether we can get water in that bottom zone or not. I'm not sure. We may want to go in there and do that; however, that will have to be evaluated as we go along.

Q Do you know what Graridge is doing in their well to the southeast, how many zones do they have open in it?

A They drilled that well down and presently it's a relatively new well to start with and they opened up the premier section.

Q Now are you referring to the No. 16 --

A Yes, sir.

Q -- or their injection well No. 13?

A I'm referring to their No. 16, which the log is Exhibit 4A, and they have perforated in the premier which is the zone in the vicinity of 2300 feet. And they cored that and of course they know where their pay is and they are evaluating that, but they intend to come up and perforate all the porous sections up to including zone 1 of the Grayburg.

Q Do you know if they are flooding this third zone in the 13 well?

A No, sir, they are not. They are not that deep, and one thing they are doing is this No. 16, trying to evaluate as to whether or not it would be economical for them to go in and have a deepening program.

Q There may be a possibility then if No. 16 shows a pay there in the lower zone, that they might deepen No. 13 and inject in there?

A Yes, and in all their wells in that area.

Q In which case you would probably feel you would have to deepen your No. 1 to the third zone also?

A Yes, sir, that's right, depending upon their economic

evaluation of this Well No. 16. Now, as you go to the east, or pardon me, to the west, all these zones start being productive. As you go to the east, most of the wells quit up in the first Grayburg. It was so good that they didn't feel like it was necessary to keep digging. It's possible that they will go in and have a deepening program. However, as you move west and flood further west, we need to flood all the zones because they are open and they are productive.

Q I see. Now, on these production charts that you were showing, you were showing the production on this Mershon lease of only the No. 1 and 3 well. What's No. 2 up there in the north of that lease making?

A It's making about one barrel per day.

Q And then the Powell Humble well to the west you said was making about a barrel and a half a day?

A Yes, sir.

Q You going to use fresh water here?

A This water is not fresh. It has about 70,000 parts per million of chlorides.

Q What water will you be using?

A It's the water that Graridge is using.

Q Is it the recirculated water?

A Part of the water is recirculated; however, part of it is made up from water they piped from the Red Lake water wells, which is about eight miles north of here, and depending upon the

corrosiveness of this water, we may elect to set tubing and packer and inject underneath the packer. However, we would like to be able to determine that ourselves, based upon actual performance and the economics of the situation.

Q Is Graridge going down the casing in their wells in this area?

A In most instances they are going down tubing under packer and I feel like we probably will too.

Q Because of the corrosive nature of the water?

A Yes, sir.

Q Some of these wells in this area are pretty old, aren't they?

A Yes, sir, some of them are, down where Graridge's main part of their flood was in Section 28. They were some of the first wells drilled in New Mexico.

Q So that may not be in the best of condition?

A No, it may not; however, our wells are relatively new. This No. 3 being drilled shown on Exhibit 5A was drilled in 1958 and it's in real good shape.

Q And the No. 1 was drilled in 1950, I guess, wasn't it?

A Yes, sir.

MR. NUTTER: Any further questions of Mr. Porter?

You may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Losee?

MR. LOSEE: No, sir.

MR. NUTTER: Do you have anything, Mr. Irby?

MR. IRBY: No.

MR. NUTTER: Does anyone have anything they wish to offer in Case No. 2582?

We will take the case under advisement and the Hearing is adjourned.

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STATE OF NEW MEXICO)
) ss.
COUNTY OF BERNALILLO)

I, MARIANNA MEIER, NOTARY PUBLIC in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached transcript of proceedings was reported by me in stenotype and that the same was reduced to typewritten transcript under my personal supervision and contains a true and correct record of said proceedings, to the best of my knowledge, skill and ability.

Marianna Meier
NOTARY PUBLIC

My Commission Expires:

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 2582, heard by me on June 7, 1962.

....., Examiner
New Mexico Oil Conservation Commission