

**STATE OF NEW MEXICO
DEPARTMENT OF ENERGY, MINERALS AND NATURAL RESOURCES
OIL CONSERVATION DIVISION**

**APPLICATIONS OF GOODNIGHT MIDSTREAM
PERMIAN, LLC FOR APPROVAL OF
SALTWATER DISPOSAL WELLS,
LEA COUNTY, NEW MEXICO**

CASE NOS. 23614-23617

**APPLICATION OF GOODNIGHT MIDSTREAM
PERMIAN, LLC TO AMEND ORDER NO. R-22026/SWD-2403
TO INCREASE THE APPROVED INJECTION RATE
IN ITS ANDRE DAWSON SWD #1,
LEA COUNTY, NEW MEXICO**

CASE NO. 23775

**APPLICATIONS OF EMPIRE NEW MEXICO LLC
TO REVOKE INJECTION AUTHORITY,
LEA COUNTY, NEW MEXICO**

CASE NOS. 24018-24020, 24025

**APPLICATION OF GOODNIGHT PERMIAN
MIDSTREAM, LLC FOR APPROVAL OF A
SALTWATER DISPOSAL WELL,
LEA COUNTY, NEW MEXICO**

**DIVISION CASE NO. 22626
ORDER NO. R-22869-A
COMMISSION CASE NO. 24123**

SELF-AFFIRMED SUPPLEMENTAL STATEMENT OF JOHN C. MCBEATH, P.E.

1. My name is John C. McBeath, P.E. I am a consulting petroleum engineer and founding partner of Austin Consulting Petroleum Engineers Inc (“ACPE”), a petroleum engineering consulting firm located in Austin, Texas. ACPE provides a wide range of petroleum engineering services to oil and gas stakeholders from large corporations to individuals, including for example reservoir engineering studies, economic evaluations, regulatory consulting, reserve

determination, fair market value analysis, reservoir simulation, log analysis and operational investigations.

2. I provided direct written testimony in these cases that was finalized on August 23, 2024, and filed with the Commission on August 26, 2024, in a document entitled **SELF-AFFIRMED STATEMENT OF JOHN C. MCBEATH, P.E.** That statement included **Goodnight Exhibit F-1**, a copy of my curriculum vitae, which is incorporated herein by reference. I also provided additional testimony on February 7, 2025 in a document entitled **SELF-AFFIRMED REBUTTAL STATEMENT OF JOHN C. MCBEATH, P.E.** I believe my credentials, my experience and my analyses and review of the information in this matter qualify me to testify as an expert in petroleum and reservoir engineering.

3. I have been asked to review the available data and information relating to the applications filed by Goodnight Midstream (“GM”) in these cases. I have conducted a study of this information and this, along with my experience, forms the basis of my opinions expressed herein. This supplemental statement contains additional responses to the testimony of certain Empire witnesses based on data and information that would have been presented by Mr. Curtis Scott of Rice Operating Company (“Rice”) some of which only recently became available. I reserve the right to respond if any additional testimony, clarification or information relating to Empire’s witness statements becomes available, for example, during the continuation of the hearing. All the opinions and conclusions I provide in this statement are rendered to a reasonable degree of engineering certainty.

4. I have considered the following data and information in forming my opinions:
- a. Data and information produced by GM in this matter.
 - b. Data and information produced by Empire in this matter.

- c. Well data obtained from the NMOCD website.
- d. Well logs obtained from the NMOCD website.
- e. Well data obtained from the subscription services Enverus and S&P Global.
- f. Previously filed testimony of both Empire's and GM's witnesses provided by Attorneys.
- g. Discussions with GM personnel.
- h. Discussions with Netherland Sewell & Associates ("NSAI").
- i. August 2024 statements of GM's witnesses.
- j. August 2024 statements of Empire's witnesses.
- k. February 2025 rebuttal statements of GM's witnesses.
- l. February 2025 rebuttal statements of Empire's witnesses.
- m. Depositions in the above styled cases.
- n. Additional data and information provided by Empire witnesses.
- o. Attendance of the hearing proceedings from February 25, 2025 through February 28, 2025.
- p. Data from Rice.
- q. Discussion with Mr. Curtis Scott.

5. On March 26, 2025, I participated in a conference call discussion with Mr. Scott Curtis of Rice. Mr. Curtis provided historic drilling and operating information related to Rice disposal wells that are completed in and dispose into the San Andres disposal zone also utilized by GM. Mr. Curtis confirmed that the wells drilled by Rice into the San Andres formation, experienced significant drilling fluid return losses, similar to the losses experienced by GM.¹

¹Mr. Curtis noted that some of Rice's wells were recompletions from deeper zones. In the case of those wells, he did not have drilling records for drilling through the San Andres formation.

6. Mr. Curtis also described the process by which Rice tests the disposal capacity of their wells. The Rice wells take disposal volumes on a vacuum without the use of surface pumps. Periodically, the wells are continuously loaded with fluid and the maximum disposal capacity is measured. Other than those attributable to downhole issues such as fill or scale, the Rice wells have experienced no decreases in their maximum disposal capacity. Any disposal capacity reductions that did occur were removed by working on the well. This means the temporary reduction was not caused by an increase in disposal zone pressure.

7. Rice provided a bottom hole pressure survey for their E-M-E SWD “H” 20 well (API 30-025-12800) located in Section 20, Township 20S, Range 37E. **Exhibit Goodnight F-28²** contains this pressure survey, conducted on July 15, 1959. As shown on this survey the pressure at 5000 feet was 1800 psi. Additional measurements were made at the depths of 500 ft., 100 ft., 1500 ft., 2000 ft., 3000 ft., and 4000 ft. The pressure survey reports a fluid level of 1050 ft. and notes that it was conducted “(Before Injection).” I calculated pressures at the mid-perf depth of the three San Andres intervals identified in the original completion records. The pressures are:

Interval (ft.)	Mid Perf Depth (ft.)	MSL (ft.)	Pressure (psi)	Pressure (psi) -430 ft. MSL
4882-4939	4911	-1389	1760	1342
4600-4726	4663	-1141	1647	1337
4451-4503	4477	-955	1563	1334

8. Dr. Buchwalter’s model results showing rapidly increasing San Andres pressures, (original model beginning in 2018 or the new Medium Grayburg Aquifer model beginning in about 2020) conflict with Rice’s real world well performance. If San Andres reservoir pressures were increasing as asserted by Dr. Buchwalter, Rice would have experienced decreasing maximum

² Exhibit numbering continued from my February 7, 2025, Self-Affirmed Rebuttal Statement.

disposal capacity beginning as early as 2018 and continuing to the present. **Exhibit Goodnight F-29** contains graphs of Dr. Buchwalter's modeled pressures as discussed above.

9. The 1959 pressure survey for the E-M-E SWD "H" 20 well shows that the calculated pressure for -430 feet MSL would be about 1,338 psi (taking the average calculated values from paragraph 7 above). That is more than 200 psi lower than Dr. Buchwalter's new Medium Grayburg Aquifer model projects for the San Andres at that time. That is a discrepancy of more than 13%. This is a big difference in pressures so early in model runs that purport to accurately calculate the San Andres pressure for another 81 years.

10. For his simulation model and history matching, Dr. Buchwalter relied upon pressure data from Empire.³ For example, Dr. Buchwalter's summary slides presented at the hearing on February 27th, 2025 included references to "Starting pressures", "1986 pressures" and "2024 pressures."

11. Dr. Buchwalter reported starting pressures of 1460 psia generally and 1747 psia specifically for the San Andres. The 1727 psi pressure can be found in Empire witness Mr. West's rebuttal statement and is referenced to a depth of -430 ft. MSL. Dr. Buchwalter had previously used a starting pressure of 1527 psi for the San Andres, also sourced from Mr. West in his August 2024 statement.

12. Dr. Buchwalter references a 1986 pressure of 1245 psia for the San Andres and 346-569 psia for the Grayburg. The San Andres pressure of 1245 psia is from an RFT measurement in the EMSU 211 well. The measurement was made at measured depths of 4006 ft, which is -430 ft. MSL.

³ Many of Dr. Buchwalter's slides refer to his original simulation model and results that used a different and lower starting pressure. Pressure discussed in paragraphs 8 - 13 above are taken from Dr. Buchwalter's Exhibit M-6.

13. Dr. Buchwalter reports a 2024 Grayburg pressure of 951 psia in the EMSU 378 (10/8/2024). Dr. Buchwalter also reports a 2024 San Andres pressure of 1447 psia from the EMSU 278 and EMSU 459. From Empire-provided information it is understood that this pressure is referenced to -250 ft. MSL. **Exhibit Goodnight F-30** is an Empire produced document that shows these pressure readings and their depth references as used by Dr. Buchwalter.

14. Comparison of model-wide average pressures with a single well pressure (1986) or a two-well average (2024) pressure is not meaningful and is very weak evidence of pressure history matching. The range of 1986 San Andres (model layer 8) pressures are from 1051 psi to 1600 psi. For the 2024 San Andres (model layer 8) pressures, the range is 1397 psi to 2038 psi.⁴

15. Dr. Buchwalter's starting pressures for the San Andres were referenced to -430 ft. MSL (paragraph 11. above), yet he reported 2024 San Andres pressures that are depth referenced to -250 MSL (paragraph 13. above). Comparing pressures from differing depth datums is non-standard and results in confusing and unreliable conclusions.

I affirm under penalty of perjury under the laws of the State of New Mexico that the foregoing statements are true and correct. I understand that this self-affirmed statement will be used as written testimony in this case. This statement is made on the date next to my signature below.


John C. McBeath, P.E.

4.2.2025
Date

⁴ From Dr. Buchwalter file Run 101 Results.xls

GRADIENT

-014

.038

.442

.430

.443

.442

.453

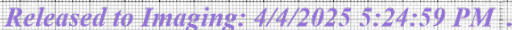


Exhibit Goodnight F-29

Exhibit E-7: Simulation Model Average Reservoir Pressure

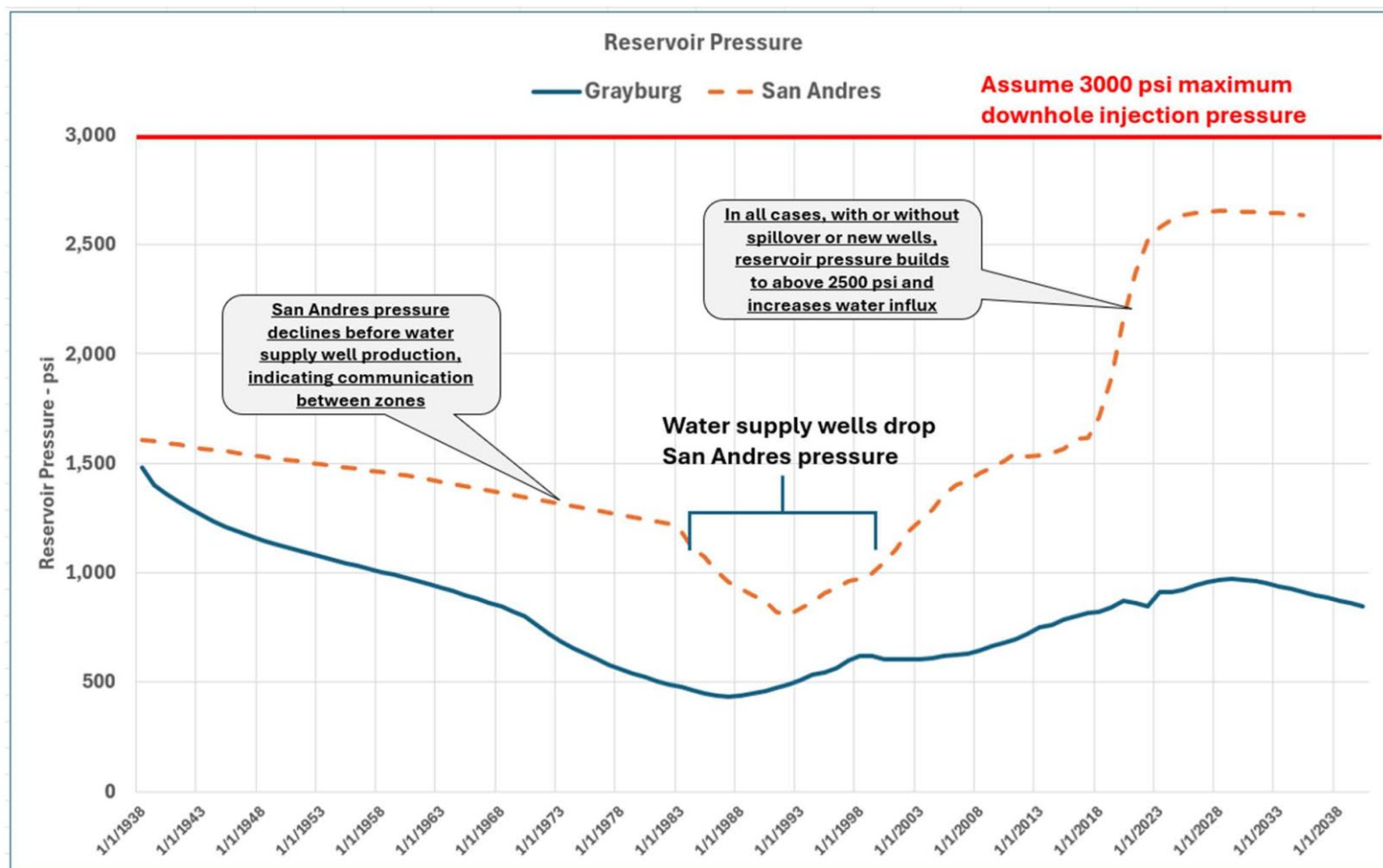


Exhibit Goodnight F-29

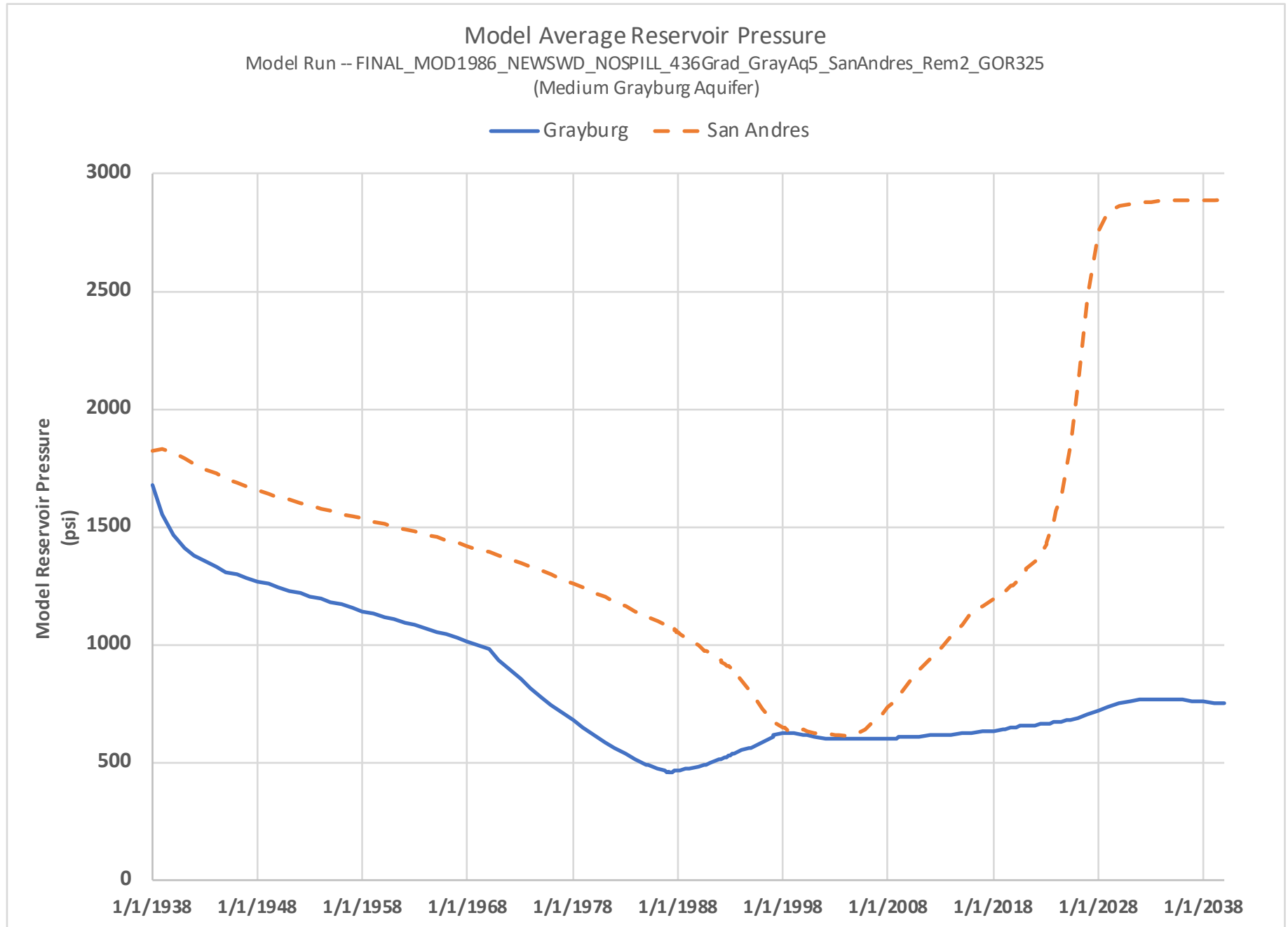


Exhibit Goodnight F-30

Grayburg Pressure Readings - JANUARY 2024

Well	Kelly Bushing Elevation	Depth of Pressure Reading	Subsea Depth of Pressure Reading	Pressure Reading (psi)	Corrected Pressure to -250' Subsea
AGU-359	3517	3753	-236	547	553
AGU-369	3490	3688	-198	903	925
EMSU-385	3568	3756	-188	106	133
EMSU-462	3607	3781	-174	590	623
EMSU-585	3560	3669	-109	655	716
EMSU-750	3573	3729	-156	433	473
EMSU-B #902	3585	3688	-103	759	822
Average Pressure (psi)					606

San Andres Pressure Readings - JANUARY 2024

Well	Elevation	Depth of Pressure Reading	Subsea Depth of Pressure Reading	Pressure Reading (psi)	Corrected Pressure to -250' Subsea
EMSU-278	3604	3619	-15	1346	1447
EMSU-459	3569	4076	-507	1557	1446
Average Pressure (psi)					1447