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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE 15307
(cont'd from 9/17/15)

APPLICATION OF OASIS WATER SOLUTIONS, LLC, FOR APPROVAL OF A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

EXAMINER HEARING

EXHIBITS

October 1, 2015

Santa Fe, New Mexico

BEFORE: PHILLIP GOETZE, CHIEF EXAMINER
WILLIAM V. JONES, EXAMINER
GABRIEL WADE, LEGAL EXAMINER

This matter came on for hearing before the New Mexico Oil Conservation Division, Phillip Goetze, Chief Examiner, William V. Jones, Examiner, and Gabriel Wade, Legal Examiner, on October 1, 2015, at the New Mexico Energy, Minerals, and Natural Resources Department, Wendell Chino Building, 1220 South St. Francis Drive, Porter Hall, Room 102, Santa Fe, New Mexico.

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Education

Ph.D., Geology, Princeton University (1980)
B.S., Geology, Iowa State University (1967)

Experience and Background

Technical:

Geology and hydrology of Dockum Group, southeastern New Mexico and west Texas

Groundwater availability model of Rustler Formation

Evaluation of evaporite dissolution in Permian Basin evaporites in support of site studies for WCS and GNEP

Halite stability and preservation studies in southeastern New Mexico and west Texas

Evaluation of brine well and injection well locations in west Texas and southeastern New Mexico

Geological environments of cellulose and viable Permian-age bacteria preserved in halite

Permian Dewey Lake Formation cements and isolated perched groundwater

Geological studies for realignment of New Mexico Highway 128 (for The Larkin Group)

Geostatistical analyses of pressurized brine reservoirs and hydrogeological controls, Waste Isolation Pilot Plant

Review, contribute to performance assessment (PA) scenarios and parameters, Waste Isolation Pilot Plant

Member of National Academy of Sciences panel reviewing Ward Valley (CA) LLRW disposal project

Evaluate historical compliance issues, revise Project Technical Baseline document for Waste Isolation Pilot Plant

Site selection, characterization of new landfill site, Carlsbad and Eddy County, NM

Subsidence studies of potash mines for Waste Isolation Pilot Plant

Chairman, external review panel for the Yucca Mountain Project, reviewing tectonic and hydrologic concerns

Integrated studies of hydrogeology of the Permian Rustler Formation in southeastern New Mexico

Water table controls on evaporite deposition: Permian Salado Formation and Death Valley, CA

Shaft mapping (4 shafts) for the Waste Isolation Pilot Plant project east of Carlsbad, NM

Geology of Cenozoic volcanic sediments in Argentina for paleoenvironmental reconstruction and stratigraphy

Proprietary studies of frontier sulfur prospects in NM and other areas; consulting on evaporite brine sources

Geological investigations of Permian Castile, Salado, Rustler, and Dewey Lake Formations in the Delaware Basin (USA) and region to determine depositional patterns and dissolution history

Geological and geophysical studies of the Waste Isolation Pilot Plant (WIPP) site from 1975 to 1980 as part of site characterization for a repository for radioactive waste

Geological investigations of Mio-Pliocene sediments in the rift valley of northwestern Kenya

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Experience and Background, cont.

Management:

Start and manage consulting business (since 1988). Clients have included:

JOAB, Inc.; SAIC; IT Corporation; Westinghouse; Sandia National Laboratories; Mobil; Freeport McMoran; Gallegos Law Firm; The Larkin Group; United Salt Corporation; Intrepid Potash Company – NM; Washington TRU Solutions; Washington Safety Management Solutions; Gordon Environmental; Waste Control Specialists; West Texas Water Well Services; Cook-Joyce, Inc.; Golder and Associates, Inc.; URS; Basic Energy Services; Intera; Key Energy Services; CJ Energy/Trinity Environmental

Assistant Professor, Department of Geological Science, UTEP, 1983-1988: contracts, research and theses.

Supervisor, Earth Sciences Division, Sandia National Laboratories (SNL), 1980-1983. Technical staff of eight with expertise in geology, geophysics, geochemistry, hydrology, modeling, structural geology, petrology. Supervised a matrix group from SNL (1980-81) to select areas of crystalline rocks in the Lake Superior region that might be suitable for further characterization for radioactive waste disposal.

Represented Sandia geotechnical work on the WIPP to numerous groups such as the Governor's Task Force (NM), Environmental Evaluation Group (NM), Environmental Protection Agency, and both the WIPP Panel and the Committee on Radioactive Waste Management of the National Academy of Sciences.

Witness/Testimony:

Technical expertise, deposition for Hartman in *Hartman v. Texaco*

Testimony for NM Environment Department hearings on permit for Sand Point landfill, Carlsbad, NM

Technical expertise, rebuttal testimony, RCRA Permit Hearings for WIPP (1999) by NM Environment Department

Extensive presentations to EPA and Peer Review Panel (for EPA) on geology and hydrology of WIPP and surrounding area (2003-2008)

Written testimony, RCRA Permit Hearings for WIPP (2010) by NM Environment Department

Testimony to Blue Ribbon Commission on America's Nuclear Future (January, 2011)

Chronology:

Consultant (self-employed), 1988 to present.

Assistant Professor, Dept. Geological Science, University of Texas at El Paso, 1983-1988.

Supervisor, Earth Sciences Division, Sandia National Laboratories, from 1980 to 1983.

Member of Technical Staff, Sandia National Laboratories, 1975-1980.

Affiliations:

Geological Society of America (Fellow)

New Mexico Geological Society

International Association of Sedimentologists (IAS)

SEPM (Society for Sedimentary Geology)

Licensing/Registration:

Licensed Professional Geologist (Illinois), License No. 196-001032, inactive 3/31/13

Professional Geoscientist (Geology) (Texas), License No. 167, expires 4/30/16

Other Professional Activities:

Corresponding Editor, *Journal of Sedimentary Research* (formerly *Journal of Sedimentary Petrology*)(1995-96)

Adjunct Professor, *Department of Geology and Geological Engineering*, University of Mississippi, University, MS

Member, *National Academy of Sciences Panel on Ward Valley* (1994-1995)

PARTIAL LIST OF PUBLICATIONS

Journal Articles and Reviewed Publications/Documents:

Ewing, J.E., Kelley, V.A., Jones, T.L., Yan, T., Singh, A., Powers, D.W., Holt, R.M., and Sharp, J.M., 2012, Final Groundwater Availability Model Report for the Rustler Aquifer: report for Texas Water Development Board. http://www.twdb.texas.gov/groundwater/models/gam/rslr/RSLR_GAM_Report.pdf

Holt, R.M., and Powers, D.W., 2011, Synsedimentary dissolution pipes and the isolation of ancient bacteria and cellulose: Geological Society of America Bulletin, v. 123, p. 1513-1523, DOI:10.1130/B30197.1.

Holt, R.M., and Powers, D.W., 2010, Evaluation of halite dissolution at a radioactive waste disposal site, Andrews County, TX: Geological Society of America Bulletin, v. 122, p. 1989-2004, DOI: 10.1130/B30052.1.

Griffith, J.D., Willcox, S., Powers, D.W., Nelson, R., and Baxter, B.K., 2008, Discovery of abundant cellulose microfibers encased in 250 Ma Permian halite: a macromolecular target in the search for life on other planets: Astrobiology, v. 8, p. 215-228.

Kay, R.F., Fleagle, J.G., Mitchell, T., Colbert, M., Bown, T., and Powers, D.W., 2008, The anatomy of *Dolichocebus gaimanensis*, a primitive platyrrhine monkey from Argentina: Journal of Human Evolution, v. 54, p. 323-382.

Powers, D.W., and Holt, R.M., 2008, Lessons from early site investigations at the Waste Isolation Pilot Plant, *in* Rempe, N.T., ed., *Deep Geologic Repositories*: Geological Society of America Reviews in Engineering Geology, v. XIX, p. 83-97, doi: 10.1130/2008.4019(09), March.

Hovorka, S.D., Holt, R.M., and Powers, D.W., 2007, Depth indicators in Permian Basin evaporites, *in* Schreiber, B.C., Lugli, S., and Babel, M., eds., Evaporites Through Space and Time: Geological Society of London, Special Publications 285, p. 301-330.

Beauheim, R.L., McKenna, S.A., Powers, D.W., and Holt, R.M., 2007, Geoscientific data collection and integration for the Waste Isolation Pilot Plant: *Linkage of Geoscientific Arguments and Evidence in Supporting the Safety Case, Second AMIGO Workshop Proceedings*, Toronto, Canada, 20-22 September 2005, OECD NEA, p. 125-132 (ISBN 978-92-64-01966-9).

Powers, D.W., Holt, R.M., Beauheim, R.L., and Richardson, R.G., 2006, Advances in depositional models of the Permian Rustler Formation, southeastern New Mexico, *in* Caves & Karst of Southeastern New Mexico, L. Land and others, eds., NM Geological Society Fifty-seventh Annual Field Conference Guidebook, p. 267-276.

Powers, D.W., Beauheim, R.L., Holt, R.M., and Hughes, D.L., 2006, Evaporite karst features and processes at Nash Draw, Eddy County, New Mexico, *in* Caves & Karst of Southeastern New Mexico, L. Land and others, eds., NM Geological Society Fifty-seventh Annual Field Conference Guidebook, p. 253-266.

Holt, R.M., Powers, D.W., and Lowenstein, T.K., 2006, Halite depositional cycles in the Upper Permian Salado Formation, *in* Caves & Karst of Southeastern New Mexico, L. Land and others, eds., NM Geological Society Fifty-seventh Annual Field Conference Guidebook, p. 78-80.

Lowenstein, T.K., Satterfield, C.L., Vreeland, R.H., Rosenzweig, W.D., and Powers, D.W., 2005, New evidence for 250 Ma age of halotolerant bacterium from a Permian salt crystal: Reply, Geology Online Forum, DOI 10.1130/0091-7613(2005)31 (http://www.gsajournals.org/i0091-7613-31-6-e93.pdf.)

Holt, R.M., Beauheim, R.L., and Powers, D.W., 2005, Predicting fractured zones in the Culebra Dolomite, *in* Faybishenko, B, Witherspoon, P.A., and Gale, J., eds., Dynamics of Fluids and Transport in Fractured Rock: AGU Geophysical Monograph Series, v. 162, p. 103-116.

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Powers, D.W., Holt, R.M., Beauheim, R.L., and McKenna, S.A., 2003, Geological factors related to the transmissivity of the Culebra Dolomite Member, Permian Rustler Formation, Delaware Basin, Southeastern New Mexico, *in* Johnson, K.S., and Neal, J.T., eds., Evaporite karst and engineering/environmental problems in the United States: Oklahoma Geological Survey Circular 109, p. 211-218.

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Vreeland, R.H., Rosenzweig, W.D., and Powers, D.W., 2000, Isolation of a 250-million-year-old halotolerant bacterium from a primary salt crystal: *Nature*, v. 407, p. 897-900.

Powers, D.W., and Holt, R.M., 2000, The salt that wasn't there: mudflat facies equivalents to halite of the Permian Rustler Formation, southeastern New Mexico: *Journal of Sedimentary Research*, v. 70, no. 1, p. 29-36.

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Powers, D.W., 1990, Recent research advances in the geology of the Permian Castile Formation of southeastern New Mexico, *in* Powers, D.W., Holt, R.M., Beauheim, R.L., and Rempe, N., eds., 1990, Geological and Hydrological Studies of Evaporites in the Northern Delaware Basin for the Waste Isolation Pilot Plant (WIPP): Guidebook 14, Geological Society of America (Dallas Geological Society), p. 33-44.

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Holt, R.M., and Powers, D.W., 1988, Facies variability and post-depositional alteration within the Rustler Formation in the vicinity of the Waste Isolation Pilot Plant, southeastern New Mexico: WIPP-DOE-88-004, Department of Energy, Carlsbad, NM, 88221.

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Fleagle, J.G., Powers, D.W., Conroy, G.C., and Waters, J.P., 1987, New fossil platyrrhines from Santa Cruz Province, Argentina: Folia Primatol., v. 48, p. 65-77.

Powers, D.W., and LeMone, D.V., 1987, A summary of Ochoan stratigraphy, western Delaware Basin: Guidebook 18, El Paso Geological Society, p. 63-68.

Robinson, J.Q., and Powers, D.W., 1987, A clastic deposit within the lower Castile Formation, western Delaware Basin: Guidebook 18, El Paso Geological Society, p. 69-79.

Holt, R.M., and Powers, D.W., 1987, The Permian Rustler Formation at the WIPP site, southeastern New Mexico: Guidebook 18, El Paso Geological Society, p. 140-148.

Powers, D.W., Holt, R.M., and Hoffer, J.M., 1987, Preliminary studies of near-surface sediments, Salt Flat graben, west Texas: Guidebook 18, El Paso Geological Society, p. 184-194.

Powers, D.W., 1986, A simple rack for slabbing small diameter rock core with a rock saw: J. Sed. Pet., v. 56, p. 553-554.

Holt, R.M., and Powers, D.W., 1986, Geotechnical activities in the exhaust shaft, Waste Isolation Pilot Plant: DOE-WIPP 86-008, Department of Energy, Carlsbad, NM 88221.

Powers, D.W., and Hassinger, B.W., 1985, Synsedimentary dissolution pits in halite of the Permian Salado Formation, southeastern New Mexico: J. Sed. Pet., v. 55, p. 769-773.

Holt, R.M., and Powers, D.W., 1984, Geotechnical activities in the waste handling shaft, Waste Isolation Pilot Plant (WIPP) project, southeastern New Mexico: WTSD-TME 038, Department of Energy, Carlsbad, NM 88221.

Borns, D.J., Barrows, L.J., and Powers, D.W., 1983, Deformation of evaporites near the Waste Isolation Pilot Plant site: SAND82-1069, Sandia National Laboratories, Albuquerque, NM 87185.

Jarolimek, L., Timmer, M.J., and Powers, D.W., 1983, Correlation of drill and shaft logs, Waste Isolation Pilot Plant (WIPP) project, southeastern New Mexico: TME 3179, Department of Energy, Albuquerque, NM.

Keller, G.R., Veldhuis, M.J., and Powers, D.W., 1983, An analysis of gravity and magnetic anomalies in the Diablo Plateau area, *in* Geology of the Sierra Diablo and Southern Hueco Mountains, West Texas: Permian Basin Sec., SEPM, Pub. 83-22, p. 152-165.

Powers, D.W., and Easterling, R.G., 1982, Improved methodology for using embedded Markov chains to describe cyclical sediments: J. Sed. Pet., v. 52, p. 913-923.

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Maglio, V.J., and Powers, D.W., 1981, Exploration for Miocene faunas of East Africa: Nat. Geog. Soc. Res. Reports, v. 13, p. 405-418.

Reilinger, R., Brown, L., and Powers, D.W., 1980, New evidence for tectonic uplift in the Diablo Plateau region, west Texas: Geophysical Research Letters, v. 7, p. 181-184.

Anderson, R.Y., and Powers, D.W., 1978, Salt anticlines in Castile-Salado evaporite sequence, northern Delaware Basin, *in* Austin, G.S., ed., Geology and mineral deposits of Ochoan rocks in Delaware Basin and adjacent areas: New Mex. Bur. Mines and Min. Res. Circ. 159, p. 79-84.

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Yuhr, L., and Powers, D.W., Geophysical logging of new upper Dockum wells at Waste Control Specialists, LLC location December 2010: report to Waste Control Specialists, March 2011.

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+ numerous abstracts and formal presentations at professional meetings, public hearings

+ proprietary reports to sulfur companies on frontier prospect areas.

+ proprietary reports to service companies in the oil and gas industry

+ contributed to and edited 23 additional reviewed drillhole basic data reports (BDR) from Sandia National Laboratories; limited listing of individual authors:

BDR - ERDA 6	SAND79-0267	BDR - WIPP 21	SAND79-0277
BDR - AEC 7	SAND79-0268	BDR - WIPP 22	SAND79-0278
BDR - AEC 8	SAND79-0269	BDR - WIPP 25	SAND79-0279
BDR - ERDA 9	SAND79-0270	BDR - WIPP 26	SAND79-0280
BDR - ERDA 10	SAND79-0271	BDR - WIPP 27	SAND79-0281
BDR - WIPP 11	SAND79-0272	BDR - WIPP 28	SAND79-0282
BDR - WIPP 13	SAND79-0273	BDR - WIPP 29	SAND79-0283
BDR - WIPP 13	SAND82-1880	BDR - WIPP 30	SAND79-0284
BDR - WIPP 14	SAND82-1783	BDR - WIPP 32	SAND80-1102
BDR - WIPP 15	SAND79-0274	BDR - WIPP 33	SAND80-2011
BDR - WIPP 18	SAND79-0275	BDR - WIPP 34	SAND81-2643
BDR - WIPP 19	SAND79-0276		

General Geophysical Cross-Section Displaying Structure and Partial Stratigraphic Relationships From Proposed Oasis SWD Location to Eastern Margin of Capitan Reef

Capitan Margin Relationships Generally Based on Hiss (1975) Resource Map 5

Other Correlations are Partially Based on Data From OCD Online

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 5

30-025-20607
(British American Oil North Wilson Deep Unit #1)
ref elev: 3653 ft amsl
GR/acoustic
T20S, R36E, section 31 (660 fsl, 1980 fel)

30-025-38080
(Osudo 32 St. Com 1)
ref elev: 3650 ft amsl
GRN/density
T20S, R36E, section 32
(1980 fsl, 1100 fel)

30-025-38486
(Osudo 33 St Com 1)
ref elev: 3615 ft amsl
GRN/density
T20S, R36E, section 33
(1160 fnl, 660 fwl)

30-025-27195
(Falk St #1)
ref elev: 3600 ft amsl
GRN/density
T20S, R36E, section 34 (330 fnl, 1980 fwl)

Oasis SWD

Rustler
Salado
Vaca Triste
Cowden
Tansill
Yates
Seven Rivers
Capitan
Queen/Penrose
Grayburg
Artesia Group
San Andres
San Andres LS
Delaware Mountain Group
Glorieta
"Capitan aquifer"
"Capitan aquifer"
Sea Level

30-025-27009
(Elliot A St #1)
ref elev: 3592 ft amsl
GRN/density
T20S, R36E, section 27
(660 fsl, 1980 fel)

30-025-29820
(Eunice Monument S. Unit 164)
ref elev: 3558 ft amsl
GRN/density
T20S, R36E, section 36
(2280 fsl, 1980 fwl)

30-025-21053
(St. NM "H" no 28)
ref elev: 3551 ft amsl
GRN
T20S, R37E, section 31
(990 fnl, 660 fel)

30-025-06280
(Reeves #2)
ref elev: 3527 ft amsl
GRN/sp/resistivity
T20S, R37E, section 29
(440 fnl, 440 fwl)

top San Andres 3840' from OCD records

30-025-06141
(Anderson 5))
ref elev: 3550 ft amsl
GRN
T20S, R37E, section 17
(1980 fnl, 1980 fwl)

4170 ft - proposed top of injection

Not a design for injection well - shows depth relationships

TD ~4900 ft

30-025-34281
(Anderson 14))
ref elev: 3547 ft amsl
GRN/density
T20S, R37E, section 17
(660 fnl, 810 fwl)

30-025-33284
(Hendrix St CC 16 #1)
ref elev: 3544 ft amsl
GRN/density
T20S, R37E, section 16
(330 fnl, 2080 fwl)

(Note: Log Horizontal Spacing is not to Scale)

Dennis W. Powers, Ph.D.
Consulting Geologist
September 2015
Prepared for Use by Padilla Law Firm, P.A.

Elevation of top of Grayburg

(ft amsl; 25 ft contours)

From: C. V. Babcock, 1956

Eunice Monument Field

Grayburg - San Andres

(A symposium of Oil and Gas Fields of Southeastern New Mexico: Roswell Geological Society, p. 164-165)

Oasis SWD
(Unit F)

MONUMENT - GOR LIMIT 3000-1

EUNICE - GOR LIMIT 6000-1

GAMMA RAY NEUTRON

TOP GRAYBURG

RBY IS FOUND ANYWHERE IN BRACKETED SECTION BETWEEN -150 AND -400 DATUMS, VARYING IN POSITION IN THE SECTION ACCORDING TO STRUCTURAL POSITION OF WELL

-150 APPROX. GAS-OIL CONTACT

TOP SAN ANDRES

-400 APPROX. OIL-WATER CONTACT

3300'
3400'
3500'
3600'
3700'
3800'
3900'
4000'
4100'

EUNICE-MONUMENT FIELD
LEA COUNTY, NEW MEXICO

STRUCTURAL CONTOURS ON TOP OF GRAYBURG

NOTE ONLY EUNICE-MONUMENT WELLS SPOTTED

SCALE IN MILES

C.V. BABCOCK MAY, 1956

R35E R36E

T 19 S T 20 S T 21 S

OCD Case# 15307
Oasis Water Solutions, LLC
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Ex# 6

Elevation of top of Penrose

(ft amsl; 20 ft contours)

From: J. L. Sharp, 1956

EuMont Field

Yates - Seven Rivers - Queen

(A symposium of Oil and Gas Fields of Southeastern New Mexico: Roswell Geological Society, p. 162-163)

Oasis SWD

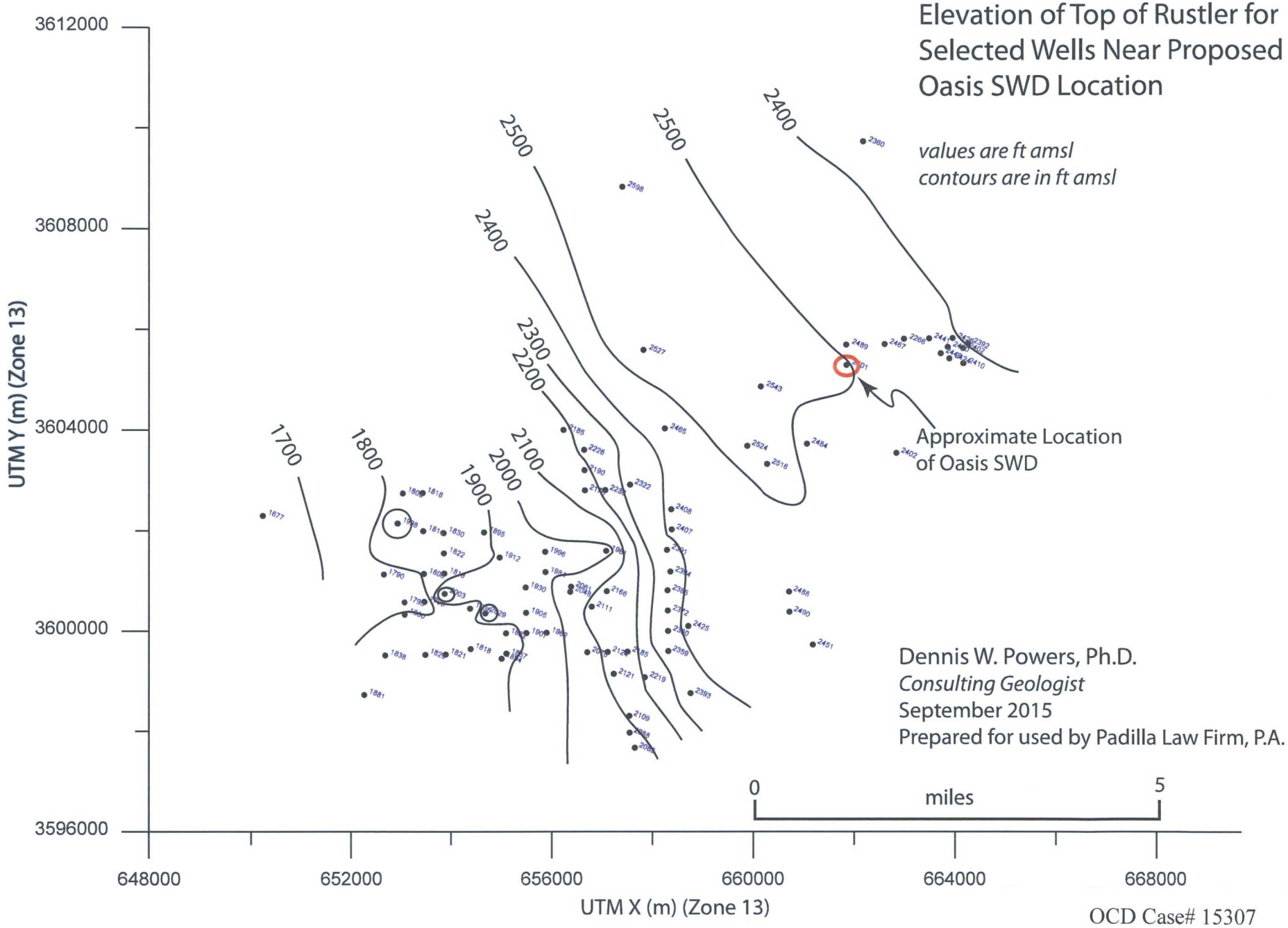
(Unit F)

ELECTRICAL LOG

GAMMA RAY

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 7

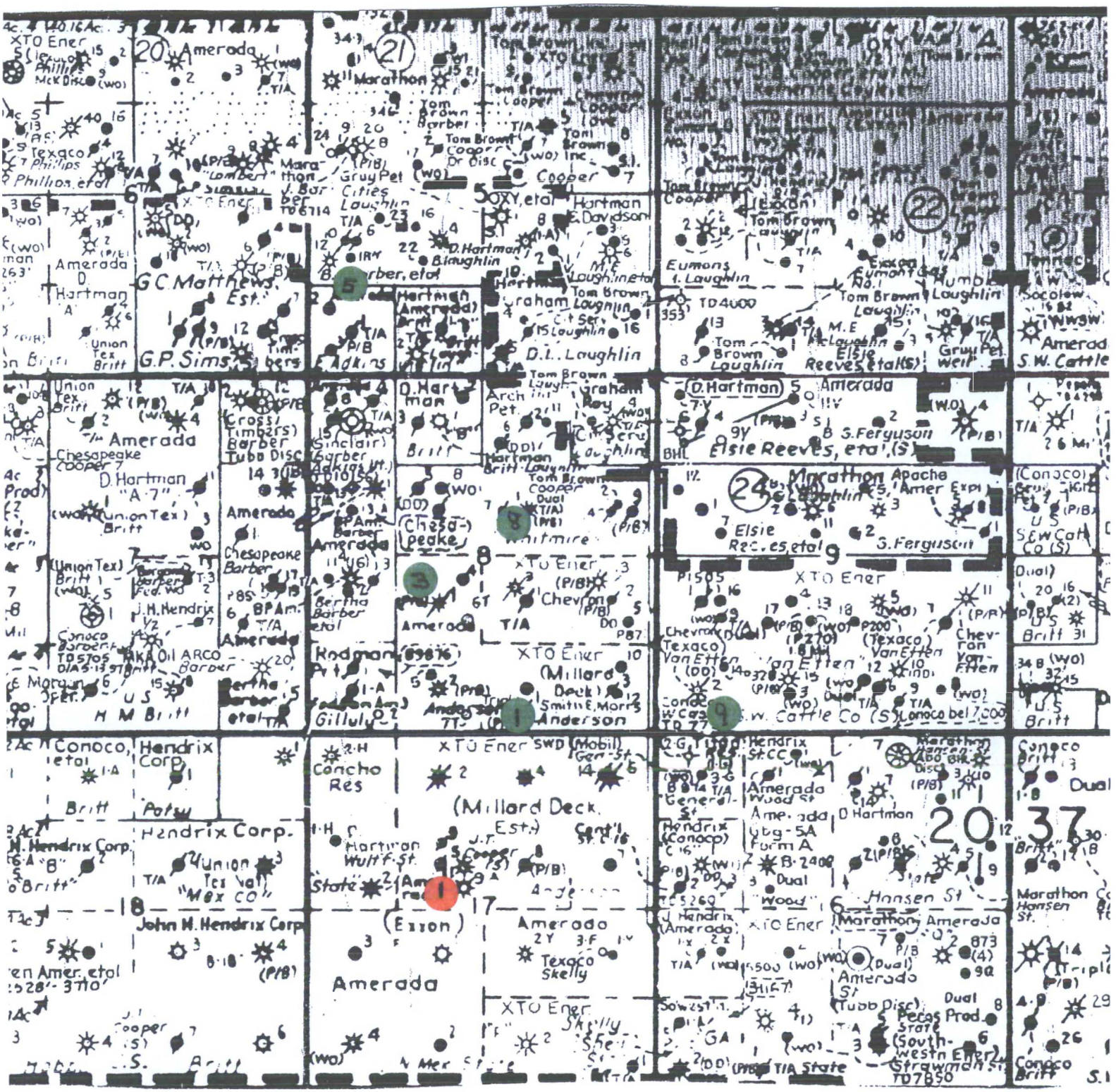
EUMONT FIELD
LEA COUNTY, NEW MEXICO
STRUCTURAL CONTOURS ON TOP OF PENROSE
SCALE IN MILES
J.L. SHARP MAY, 1956



OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 8

● Permitted SWD - San Andres

● Oasis Proposed SWD



OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 9

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

(5)

CASE NO. 1531
Order No. R-1277

APPLICATION OF RICE ENGINEERING &
OPERATING, INC., FOR AN ORDER
AUTHORIZING A SALT WATER DISPOSAL
WELL IN SECTION 5, TOWNSHIP 20 SOUTH,
RANGE 37 EAST, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on October 22, 1958, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 5th day of November, 1958, the Commission, a quorum being present, having considered the application, the evidence adduced and the recommendations of the Examiner, Elvis A. Utz, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Rice Engineering & Operating, Inc., seeks an order authorizing the disposal of produced salt water into the San Andres formation through the Adkins Well No. 2, located 990 feet from the South line and 330 feet from the West line of Section 5, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, with the proposed injection zone from 4490 feet to 4950 feet.

(3) That the casing in said Adkins Well No. 2 should be pressure tested under 2,000 psi surface pressure prior to utilization of said well as a disposal well.

(4) That disposal should be through tubing and the casing-tubing annulus should be filled with "sweet" oil as a protective measure.

(5) That approval of the subject application is in the interest of conservation.

IT IS THEREFORE ORDERED:

(1) That the applicant, Rice Engineering & Operating, Inc., be and the same is hereby authorized to dispose of produced salt water into the San Andres formation through the Adkins Well No. 2, located 990 feet from the South line and 330 feet from the West line of Section 5, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, with the injection zone from 4490 feet to 4950 feet;

PROVIDED HOWEVER, That disposal shall be through tubing and that the casing-tubing annulus shall be kept full of "sweet" oil to prevent corrosion, and

PROVIDED FURTHER, That the casing in said Adkins Well No. 2 shall be pressure tested under 2,000 psi surface pressure and the results of such test approved by the Commission prior to utilization of said well as a disposal well.

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1119 of the Commission's Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

EDWIN L. MECHEM, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

ir/

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

(8)

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 7424
Order No. R-6855

APPLICATION OF RICE ENGINEERING AND OPERATING, INC., FOR SALT WATER DISPOSAL, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on November 19, 1981, at Santa Fe, New Mexico, before Examiner Richard L. Stamets.

NOW, on this 18th day of December, 1981, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Rice Engineering and Operating, Inc., is the owner and operator of the Eunice-Monument Eumont SWD "G" Well No. 8, located in Unit G of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico.

(3) That the applicant proposes to utilize said well to dispose of produced salt water into the Lower San Andres formation, with injection into the perforated interval from approximately 4300 feet to 4852 feet.

(4) That the injection should be accomplished through 5 1/2-inch plastic lined tubing under an oil blanket; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing or tubing.

(5) That if injection is at pressure greater than hydrostatic pressure, the injection well or system should be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 860 psi.

(6) That the operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(7) That the operator should report to the superviosr of the Hobbs district office of the Division at the start of disposal operations the gravity and level of the inert fluid in the annulus.

(8) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(9) That approval of the subject application will prevent the drilling of unnecessary wells and otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED:

(1) That the applicant, Rice Engineering and Operating, Inc., is hereby authorized to utilize its Eunice-Monument Eumont SWD "G" Well No. 8, located in Unit G of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, to dispose of produced salt water into the Lower San Andres formation, injection to be accomplished through 5 1/2-inch tubing with injection under an oil blanket into the perforated interval from approximately 4300 feet to 4852 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That, if injection is at greater than hydrostatic pressure, the injection well or system shall be equipped with a pop-off valve or acceptable substitute which will limit the wellhead pressure on the injection well to no more than 860 psi.

(3) That the operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of

the installation of disposal equipment so that the same may be inspected.

(4) That the operator shall report to the supervisor of the Hobbs district office of the Division at the start of disposal operations the gravity and level of the inert fluid in the annulus.

(5) That the operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing or casing in said well or the leakage of water or the inert fluid from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(7) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1120 of the Division Rules and Regulations.

(8) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JOE D. RAMEY
Director

S E A L

State of New Mexico
Energy, Minerals and Natural Resources Department

Administrative Order SWD-1434
September 17, 2013

3

ADMINISTRATIVE ORDER
OF THE OIL CONSERVATION DIVISION

Pursuant to the provisions of 19.15.26.8B. NMAC, J. Cooper Enterprises, Incorporated (the "operator"), seeks an administrative order to utilize its T. Anderson Well No. 3 with a location of 2173 feet from the South line and 2173 feet from the East line, Unit letter J of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, for produced water disposal purposes.

THE DIVISION DIRECTOR FINDS THAT:

The application has been duly filed under the provisions of 19.15.26.8B. NMAC and satisfactory information has been provided that affected parties as defined in said rule have been notified and no objections have been received within the prescribed waiting period. The applicant has presented satisfactory evidence that all requirements prescribed in 19.15.26.8 NMAC have been met and the operator is in compliance with 19.15.5.9 NMAC.

IT IS THEREFORE ORDERED THAT:

The applicant, J. Cooper Enterprises, Incorporated (OGRID 244835), is hereby authorized to utilize its T. Anderson Well No. 3 (API 30-025-06031) with a location of 2173 feet from the South line and 2173 feet from the East line, Unit letter J of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, for commercial disposal of oil field produced water (UIC Class II only) into the lower San Andres formation through perforations from approximately 4300 feet to 4871 feet. Injection will occur through internally coated tubing and a packer set within 100 feet of the permitted interval.

The operator shall conduct remedial actions for the following plugged and abandoned wells prior to commencing injection operations:

(a) **Bertie Whitmire Well No. 5 (API No. 30-025-06015), Unit F, Sec. 8, T20S, R37E**
(b) **Barber Gas Com. Well No. 4 (API No. 30-025-06029), Unit L, Sec. 8, T20S, R37E**
(c) **Theodore Anderson Well No. 10 (API No. 30-025-33236), Unit P, Sec. 8, T20S, R37E**

Two wells, Barber Gas Com. Well No. 4 and Theodore Anderson Well No. 10, contain annulus between the borehole and production casing that permits migration of injected fluids outside of the approved injection interval. The third well, Bertie Whitmire Well No. 5, has open

perforations within the injection interval in production casing with a prior event of casing failure. The operator shall provide the Division's district I office for approval a re-entry plugging plan for each well that include the following requirements:

(a) For the Bertie Whitmire Well No. 5, the open perforations from 4350 feet to 4800 feet shall be sealed by cement squeezed into the perforations or equivalent method such as a cast-iron bridge plug (CIBP) with cement cap placed above the shallowest perforation.
(b) For the Barber Gas Com. Well No. 4, perforation and squeezing of the annulus for the 7-inch casing from approximately 4350 feet (the top of lower San Andres formation) to 300 feet above.
(c) For the Theodore Anderson Well No. 10, perforation and squeezing of the annulus for the 5.5-inch casing from the top of cement of the CIBP at 4245 feet to 300 feet above.

The operator shall provide cement bond logs (or equivalent) for the remedial actions of the Theodore Anderson Well No. 10 and Barber Gas Com. Well No. 4. The operator shall notify the district I office of the dates and times of the re-plugging of these wells so that the work can be witnessed and approved.

IT IS FURTHER ORDERED THAT:

The operator shall take all steps necessary to ensure that the disposed water enters only the approved disposal interval and is not permitted to escape to other formations or onto the surface. This includes the well rehabilitation proposed and described in the application.

After installing tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths in this well.

The wellhead injection pressure on the well shall be limited to **no more than 860 psig**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate Test.

The operator shall notify the supervisor of the Division's district I office of the date and

time of the installation of disposal equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's district office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.24 NMAC.

Without limitation on the duties of the operator as provided in Division Rules 19.15.29 and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's district I office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

The injection authority granted under this order is not transferable except upon division approval. The division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

The division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

The disposal authority granted herein shall terminate two (2) years after the effective date of this order if the operator has not commenced injection operations into the subject well. One year after the last date of reported disposal into this well, the Division shall consider the well abandoned, and the authority to dispose will terminate *ipso facto*. The Division, upon written request mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing, terminate the disposal authority granted herein.

JAMI BAILEY
Director

JB/prg

cc: Oil Conservation Division – Hobbs District Office

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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 13511
ORDER NO. R-12375

APPLICATION OF SMITH & MARRS, INC. FOR APPROVAL OF A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on June 16, 2005, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 28th day of June, 2005, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner,

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) The applicant, Smith & Marrs, Inc. ("Smith & Marrs" or "applicant"), seeks authority to utilize its Anderson Well No. 1 (**API No. 30-025-29962**), located 330 feet from the South line and 1980 feet from the East line (Unit O) of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, to dispose of produced water into the Lower San Andres and Glorieta formations from a depth of 4,350 feet to 5,180 feet.

(3) Smith & Marrs originally filed the subject application for administrative approval on December 8, 2004. On December 13, 2004, the Division received a letter of objection to the application from Rice Operating Company. On December 15, 2004, the Division also received a letter of objection to the application from Amerada Hess Corporation, an offset operator to the proposed disposal well. The subject application was subsequently set for hearing before a Division examiner.

(4) Rice Operating Company ("Rice") appeared at the hearing through legal counsel in opposition to the application. Rice cross-examined Smith & Marrs' witness, but presented no evidence or testimony.

(5) Amerada Hess Corporation did not appear at the hearing.

(6) Smith & Marrs presented evidence that demonstrates that:

(a) the injection interval in the Anderson Well No. 1 was originally proposed to encompass the Lower San Andres, Glorieta, Blinebry and Tubb formations; however, due to concerns expressed by Amerada Hess Corporation regarding injection into the Blinebry and Tubb intervals, the injection interval in the well is to be contracted to include only the Lower San Andres and Glorieta intervals from a depth of 4,350 feet to 5,180 feet;

(b) the Anderson Well No. 1 is cased and cemented adequately to preclude the movement of fluid from the injection zone into other formations, including any fresh water aquifers;

(c) the Anderson Well No. 1 will be utilized for the commercial disposal of produced water from various oil and gas pools in this area. Approximately 3,000-5,000 barrels of water per day will be disposed of in the subject well; and

(d) all "area of review" wells are cased and cemented and/or plugged and abandoned adequately so as to confine the injected fluid to the proposed injection interval.

(7) Rice currently operates three (3) commercial disposal wells in this area. These wells are identified as the: i) EME SWD Well No. 5 (API No. 30-025-05902) located in Unit M of Section 5, Township 20 South, Range 37 East, NMPM; ii) EME SWD Well No. 8 (API No. 30-025-06017) located in Unit G of Section 8, Township 20 South, Range 37 East, NMPM, and; iii) EME SWD Well No. 9 (API No. 30-025-12801) located in Unit M of Section 9, Township 20 South, Range 37 East, NMPM. Testimony in this case demonstrates that all of Rice's wells are injecting into the same interval that will be utilized in the Anderson Well No. 1.

(8) Rice's concern is that approval of the subject application will adversely affect its ability to inject water into its EME SWD Wells No. 5, 8 and 9 due to the finite reservoir capacity of the San Andres formation.

(9) The Division is not statutorily obligated to protect the rights of operators with regards to conducting produced water disposal operations, unless such injection activities impair an operator's ability to produce hydrocarbons.

(10) Approval of the application will prevent the drilling of unnecessary wells and will otherwise prevent waste and protect correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Smith & Marrs, Inc., is hereby authorized to utilize its Anderson Well No. 1 (**API No. 30-025-29962**), located 330 feet from the South line and 1980 feet from the East line (Unit O) of Section 8, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, to dispose of produced water into the Lower San Andres and Glorieta formations from a depth of 4,350 feet to 5,180 feet.

(2) The operator shall take all steps necessary to ensure that the injected fluids enter only the proposed injection interval and are not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(3) Injection shall be accomplished through 3-1/2 inch internally plastic-lined tubing installed in a packer set at approximately 4,250 feet. The casing-tubing annulus shall be filled with an inert fluid and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(4) The injection well or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than 870 psi.

(5) The Division Director may administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(6) Prior to commencing injection operations, the applicant shall effectively isolate all formations deeper than the Glorieta formation in the well. This shall be accomplished by setting a cast iron bridge plug (CIBP) with cement on top at a depth of approximately 5,300 feet; provided however, that the supervisor of the Division's Hobbs District Office may approve an alternate method to isolate these formations in the well.

(7) Prior to commencing injection operations and every five years thereafter, the casing shall be pressure tested throughout the interval from the surface down to the proposed packer setting depth to assure the integrity of such casing.

(8) The operator shall give advance notice to the Supervisor of the Division's Hobbs District Office of the date and time the following operations are to be conducted on the Anderson Well No. 1 in order that these operations may be witnessed; i) disposal equipment installed; ii) all formations deeper than the Glorieta formation isolated; and iii) the conductance of the mechanicial integrity pressure test.

(9) The operator shall immediately notify the Supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer in the disposal well or the leakage of water, oil or gas from or around any producing or plugged and abandoned well within the area, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(10) The operator shall submit monthly reports of the disposal operations on Form C-120-A in accordance with Division Rules No. 19.15.9.706 and 19.15.13.1120.

(11) The injection authority granted herein for the Anderson Well No. 1 shall terminate one year after the date of this order if the operator has not commenced injection operations into the well; provided, however, the Division, upon written request by the operator, may grant an extension for good cause.

(12) Pursuant to the requirements set forth on Part VI(4) of Division Form C-108, the applicant shall provide the Division an analysis of all source water that is to be disposed of in the Anderson Well No. 1. This shall be accomplished within six months after commencement of injection operations, and each time thereafter a new source of injected fluid is placed in the well.

(13) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P. E.
Director

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

(9)

CASE NO. 1751
Order No. R-1483

APPLICATION OF RICE ENGINEERING &
OPERATING, INC., FOR AN ORDER
AUTHORIZING A SALT WATER DISPOSAL
WELL IN SECTION 9, TOWNSHIP 20
SOUTH, RANGE 37 EAST, LEA COUNTY,
NEW MEXICO

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on September 2, 1959, at Santa Fe, New Mexico, before Elvis A. Utz, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 14th day of September, 1959, the Commission, a quorum being present, having considered the application, the evidence adduced, and the recommendations of the Examiner, Elvis A. Utz, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Rice Engineering & Operating, Inc., seeks an order authorizing the disposal of produced salt water into the San Andres formation through the E-M-E SWD Well No. M-9 to be completed at an unorthodox location 100 feet from the south line and 250 feet from the West line of Section 9, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, with the proposed injection zone from 4300 feet to 4900 feet.

(3) That the applicant proposes to complete the said disposal well as follows: 9-5/8 inch OD casing set at 800 feet with cement circulated to the surface, 7-inch OD casing set at 4300 feet and cemented to the base of the 9-5/8 inch casing, and 5½ inch plastic coated casing hung at 4300 feet as an injection string, the annulus between the 7 inch and the 5-1/2 inch casing to be filled with "sweet" oil as a protective measure.

(4) That the applicant's proposed salt water disposal program will not jeopardize the production of oil, gas, or fresh water in the area and is consonant with sound conservation practices.

IT IS THEREFORE ORDERED:

(1) That the applicant, Rice Engineering & Operating, Inc., be and the same is hereby authorized to dispose of produced salt water into the San Andres formation through the E-M-E SWD Well No. M-9 to be completed at an unorthodox location 100 feet from the South line and 250 feet from the West line of Section 9, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, with the injection zone from 4300 feet to 4900 feet.

PROVIDED HOWEVER, That disposal shall be through inner casing and that the casing-casing annulus shall be kept full of "sweet" oil to prevent corrosion.

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1119 of the Commission's Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

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BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

(20)

CASE NO. 1605
Order No. R-1348

APPLICATION OF RICE ENGINEERING AND
OPERATING, INC., FOR AN ORDER AUTHORIZING
A SALT WATER DISPOSAL WELL ON AN UNORTHODOX
LOCATION IN SECTION 20, TOWNSHIP 20 SOUTH,
RANGE 37 EAST, LEA COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on February 25, 1959, at Santa Fe, New Mexico, before E. J. Fischer, Examiner duly appointed by the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission," in accordance with Rule 1214 of the Commission Rules and Regulations.

NOW, on this 11th day of March, 1959, the Commission, a quorum being present, having considered the application, the eviden adduced and the recommendations of the Examiner, E. J. Fischer, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Rice Engineering and Operating, Inc seeks an order authorizing the disposal of produced salt water into the San Andres formation through its E-M-E SWD Well No. H-20 to be located 2475 feet from the North line and 165 feet from the East line of Section 20, Township 20 South, Range 37 East, NMPM, Lea County, New Mexico, with the proposed injection interval from 4,450 feet to 5,000 feet.

(3) That disposal should be through tubing and the casing-tubing annulus should be filled with a non-corrosive fluid as a protective measure.

(4) That the applicant's proposed salt water injection program will not jeopardize the production of oil, gas, or fresh water in the area and is consonant with sound conservation practice

IT IS THEREFORE ORDERED:

(1) That the applicant, Rice Engineering & Operating, Inc., be and the same is hereby authorized to dispose of produced salt water into the San Andres formation through its E-M-E SWD Well No. H-20 to be located 2475 feet from the North line and 165 feet from the East line of Section 20, Township 20 South, Range 37 East, NMPM Lea County, New Mexico, with the injection interval from 4450 feet to 5000 feet.

PROVIDED HOWEVER, That disposal shall be through tubing and the casing-tubing annulus shall be filled with a non-corrosive fluid.

(2) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 704 and 1119 of the Commission's Rules and Regulations.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JOHN BURROUGHS, Chairman

MURRAY E. MORGAN, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

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API	Well Name	NUM	Type	Lease	Stat	Init APD Dt	U/L	Lot	OCD U/L	Sec	Twn	Rng	Footages	Current Operator	District
30-005-20558	SUN STATE	#001	SWD	S	A	3/1/1977	M		M	36	07S	30E	660 FSL, 660 FWL	[258867] STEVENSON OIL COMPANY, INC.	Hobbs
30-005-20532	HAHN FEDERAL	#005	SWD	F	A	1/1/1900	K		K	27	07S	31E	1980 FSL, 1980 FWL	[286614] CROSS BORDER RESOURCES, INC.	Hobbs
30-005-20530	MILLER FEDERAL	#006H	SWD	F	A	2/5/1976	M		M	34	07S	31E	660 FSL, 660 FWL	[286614] CROSS BORDER RESOURCES, INC.	Hobbs
30-005-20686	TOM 36 STATE	#001H	SWD	S	A	7/1/1979	A		A	36	07S	31E	660 FNL, 660 FEL	[286614] CROSS BORDER RESOURCES, INC.	Hobbs
30-041-20769	TUCKER	#005	SWD	P	A	5/1/1990	M		M	24	07S	32E	1310 FSL, 1310 FWL	[164557] RIDGEWAY ARIZONA OIL CORP.	Hobbs
30-041-20477	CONE FEDERAL	#008	SWD	F	A	6/1/1979	P		P	31	07S	32E	660 FSL, 660 FEL	[248802] CANO PETRO OF NEW MEXICO, INC.	Hobbs
30-041-10588	MIDWEST MORGAN FEDERAL	#001	SWD	F	A	1/1/1900	I		I	13	07S	33E	1980 FSL, 660 FEL	[164557] RIDGEWAY ARIZONA OIL CORP.	Hobbs
30-005-20488	INGRAM FEDERAL	#002	SWD	F	A	6/1/1976	I		I	5	08S	31E	1980 FSL, 660 FEL	[248802] CANO PETRO OF NEW MEXICO, INC.	Hobbs
30-005-20814	WATTAM FEDERAL	#006H	SWD	F	A	7/10/1981	A		A	7	08S	31E	643 FNL, 782 FEL	[286614] CROSS BORDER RESOURCES, INC.	Hobbs
30-005-20809	GRIFFIN	#004	SWD	P	A	11/1/1982	A		A	10	08S	32E	660 FNL, 660 FEL	[210091] DKD,LLC	Hobbs
30-005-10478	KM CHAVEROO SA UNIT	#035	SWD	S	A	1/1/1900	C	3	C	1	08S	33E	660 FNL, 1980 FWL	[6515] DUGAN PRODUCTION CORP	Hobbs
30-005-10178	TOBAC SWD G	#016	SWD	S	A	1/1/1900	G		G	16	08S	33E	1989 FNL, 1997 FEL	[190595] ENDEAVOR ENERGY RESOURCES, LP	Hobbs
30-005-20474	LOVELADY SWD	#001	SWD	S	A	4/1/1986	J		J	31	08S	33E	1980 FSL, 1980 FEL	[25575] YATES PETROLEUM CORPORATION	Hobbs
30-005-20413	NEW MEXICO CR STATE	#002	SWD	S	A	4/1/1976	M		M	32	09S	30E	660 FSL, 660 FWL	[260245] WESPAC ENERGY, LLC	Hobbs
30-025-24264	NEW MEXICO 8 STATE	#003	SWD	S	A	1/1/1900	F		F	8	09S	33E	1980 FNL, 1980 FWL	[2832] BRIDWELL OIL CO	Hobbs
30-025-23726	SCHWALBE	#001	SWD	P	A	4/1/1985	P		P	21	09S	37E	660 FSL, 560 FEL	[37636] ROBINSON OIL INC	Hobbs
30-025-38569	JCT 24 FEDERAL	#001	Inj	F	A	9/20/2007	A		A	24	09S	37E	438 FNL, 860 FEL	[11181] J CLEO THOMPSON	Hobbs
30-025-24358	U S M	#002	SWD	F	A	1/1/1900	H		H	27	09S	37E	1980 FNL, 810 FEL	[309220] SOGO III LLC	Hobbs
30-025-25344	SFPRR	#021	SWD	P	A	1/1/1977	O		O	27	09S	37E	660 FSL, 1980 FEL	[309220] SOGO III LLC	Hobbs
30-025-23247	PEARL MARR	#001	SWD	P	A	1/1/1993	P		P	33	09S	37E	660 FSL, 660 FEL	[309220] SOGO III LLC	Hobbs
30-025-24344	SFPRR	#015	SWD	P	A	3/1/1986	B		B	34	09S	37E	800 FNL, 2121 FEL	[309220] SOGO III LLC	Hobbs
30-025-36993	PETER GRANDE	#001	SWD	S	A	12/13/2004	M		M	1	10S	32E	330 FSL, 400 FWL	[231429] MANZANO LLC	Hobbs
30-025-22551	CONTINENTAL STATE	#001	SWD	S	A	1/1/1900	F		F	18	10S	34E	1977 FNL, 1970 FWL	[15878] NEW MEXICO SALT WATER DISPOSAL COMPANY	Hobbs
30-025-25241	SANTA FE	#002	SWD	P	A	7/1/1979	D		D	35	10S	36E	660 FNL, 660 FWL	[151228] MAR OIL & GAS CORP.	Hobbs
30-025-04989	SUNDOWN SWD	#001	SWD	S	A	3/28/1997	I		I	22	10S	37E	2310 FSL, 990 FEL	[240974] LEGACY RESERVES OPERATING, LP	Hobbs
30-025-30090	COLE 25 STATE	#001	SWD	S	A	4/8/1998	A		A	25	10S	37E	990 FNL, 990 FEL	[240974] LEGACY RESERVES OPERATING, LP	Hobbs
30-025-01195	MAUD SAUNDERS	#004	SWD	P	A	7/1/1983	L		L	34	14S	33E	1815 FSL, 660 FWL	[24650] TARGA MIDSTREAM SERVICES LLC	Hobbs
30-025-00350	STATE BH	#001	SWD	S	A	2/19/1961	P		P	32	15S	32E	990 FSL, 330 FEL	[6137] DEVON ENERGY PRODUCTION COMPANY, LP	Hobbs
30-025-27950	VULTURE VP STATE SWD	#001	SWD	S	A	8/1/1987	D		D	14	15S	33E	330 FNL, 330 FWL	[210091] DKD,LLC	Hobbs
30-025-02690	CABOT Q STATE SWD	#001	SWD	S	A	6/1/1985	L	3	L	7	15S	35E	1980 FSL, 560 FWL	[151416] FASKEN OIL & RANCH LTD	Hobbs
30-025-29565	BAER	#001	SWD	P	A	5/1/1986	F		F	32	15S	35E	1900 FNL, 1650 FWL	[162928] ENERGEN RESOURCES CORPORATION	Hobbs
30-025-31110	RED HAT STATE SWD	#001	SWD	S	A	7/1/1991	G	15	G	2	16S	33E	3300 FSL, 1980 FEL	[25575] YATES PETROLEUM CORPORATION	Hobbs
30-025-39734	SOUTH DENTON 6 STATE	#002	SWD	S	A	4/15/2010	D	4	D	6	16S	38E	330 FNL, 330 FWL	[160825] BC OPERATING, INC.	Hobbs

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 10

30-025-27789	AETNA EAVES	#002	SWD	P	A	1/1/1900	A		A	26	16S	38E	330 FNL, 990 FEL	[12627] KEVIN O BUTLER & ASSOC INC	Hobbs
30-025-37746	WHITE	#001	SWD	P	A	3/9/2006	I		I	30	16S	38E	1886 FSL, 511 FEL	[113315] TEXLAND PETROLEUM-HOBBS, LLC	Hobbs
30-025-07287	KNOWLES SWD	#002	SWD	P	A	1/1/1900	P		P	34	16S	38E	660 FSL, 660 FEL	[300017] SILVER SPIKE ENERGY OPERATING OF NM, LLC	Hobbs
30-025-01337	CORBIN ABO SWD	#031	SWD	P	A	1/1/1900	G		G	31	17S	33E	1980 FNL, 1980 FEL	[281994] LRE OPERATING, LLC	Hobbs
30-025-30675	STATE 35	#006	SWD	S	A	12/1/1989	N		N	35	17S	33E	990 FSL, 1980 FWL	[13837] MACK ENERGY CORP	Hobbs
30-025-29675	BRIDGES STATE	#511	SWD	S	TA	6/1/1987	O		O	23	17S	34E	474 FSL, 1904 FEL	[298299] CROSS TIMBERS ENERGY, LLC	Hobbs
30-025-28433	BUCKEYE 8601	#002	SWD	S	A	9/1/1986	E		E	29	17S	36E	2310 FNL, 990 FWL	[260297] BTA OIL PRODUCERS, LLC	Hobbs
30-025-07306	F M HOLLOWAY	#001	SWD	P	A	1/1/1900	B		B	13	17S	38E	660 FNL, 1980 FEL	[295770] RESOLUTE NATURAL RESOURCES CO., LLC	Hobbs
30-025-07303	J G COX SWD	#001	SWD	P	A	1/19/1993	C		C	13	17S	38E	660 FNL, 1980 FWL	[295770] RESOLUTE NATURAL RESOURCES CO., LLC	Hobbs
30-025-29988	NEW MEXICO Z STATE NCT-1	#001	SWD	S	A	6/2/1993	C	3	C	2	18S	34E	660 FNL, 2200 FWL	[4323] CHEVRON U S A INC	Hobbs
30-025-23096	LEA OR STATE	#003	SWD	S	A	3/1/1986	P		P	12	18S	36E	660 FSL, 660 FEL	[243978] SABER OIL & GAS VENTURES, LLC	Hobbs
30-025-30125	MARALO STATE	#002	SWD	S	A	1/1/1988	N		N	28	18S	37E	330 FSL, 1650 FWL	[21355] SOUTHWEST ROYALTIES INC	Hobbs
30-025-12802	RICE SWD F	#029	SWD	P	A	1/1/1900	F		F	29	18S	38E	1880 FNL, 1745 FWL	[294873] PYOTE WELL SERVICE, LLC	Hobbs
30-025-07950	HOBBS EAST S A	#104	SWD	P	A	1/1/1900	F		F	30	18S	39E	1980 FNL, 2310 FWL	[230835] RUTHCO OIL, LLC	Hobbs
30-025-32605	MALLON 34 FEDERAL	#001	SWD	F	A	7/27/1994	D		D	34	19S	34E	660 FNL, 990 FWL	[162683] CIMAREX ENERGY CO. OF COLORADO	Hobbs
30-025-12482	GRAHAM STATE NCT-F	#007	SWD	S	A	1/1/1979	O		O	36	19S	36E	330 FSL, 1650 FEL	[24650] TARGA MIDSTREAM SERVICES LLC	Hobbs
30-025-23786	STATE AB SWD	#001	SWD	S	A	1/1/1900	C	3	C	3	19S	37E	660 FNL, 1980 FWL	[295925] NABORS COMPLETION & PRODUCTION SERVICE	Hobbs
30-025-31173	CBM	#001	SWD	P	A	5/1/1991	P		P	24	19S	37E	467 FSL, 467 FEL	[222759] BUCKEYE DISPOSAL, L.L.C.	Hobbs
30-025-21496	E M E SWD	#033	SWD	P	A	1/1/1900	K		K	33	19S	37E	1485 FSL, 1485 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-36432	SHELLEY 34 STATE	#003	SWD	S	P	10/1/2003	B		B	34	19S	37E	990 FNL, 1700 FEL	[162683] CIMAREX ENERGY CO. OF COLORADO	Hobbs
30-025-07701	HOBBS SWD	#016	SWD	P	A	1/1/1900	P		P	16	19S	38E	660 FSL, 660 FEL	[246368] BASIC ENERGY SERVICES, LP	Hobbs
30-025-07713	A N ETZ	#001	SWD	P	A	11/27/2000	P		P	26	19S	38E	660 FSL, 660 FEL	[294873] PYOTE WELL SERVICE, LLC	Hobbs
30-025-04150	E M E SWD	#001	SWD	S	A	1/1/1900	I		I	1	20S	36E	2310 FSL, 660 FEL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-05902	E M E SWD	#005	SWD	P	A	1/1/1900	M		M	5	20S	37E	990 FSL, 330 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-06017	E M E SWD	#008	SWD	P	A	1/1/1900	G		G	8	20S	37E	1980 FNL, 2310 FEL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-29962	ANDERSON	#001	SWD	P	A	5/1/1988	O		O	8	20S	37E	330 FSL, 1980 FEL	[244835] J COOPER ENTERPRISES, INC.	Hobbs
30-025-12801	E M E SWD	#009	SWD	P	A	1/1/1900	M		M	9	20S	37E	100 FSL, 250 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-12800	E M E SWD	#020	SWD	S	A	1/1/1900	H		H	20	20S	37E	2475 FNL, 165 FEL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-24918	SEMU SKAGGS B	#095	SWD	F	A	1/1/1900	J		J	23	20S	37E	2130 FSL, 1980 FEL	[217817] CONOCOPHILLIPS COMPANY	Hobbs
30-025-12786	E M E SWD	#033M	SWD	S	A	1/1/1900	M		M	33	20S	37E	165 FSL, 165 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-07743	WARREN MCKEE UNIT	#001	SWD	P	A	4/28/1953	F		F	7	20S	38E	2310 FNL, 2331 FWL	[192463] OXY USA WTP LP	Hobbs
30-025-07753	M B WEIR B	#005	SWD	P	A	1/1/1900	M	4	M	7	20S	38E	660 FSL, 766 FWL	[4323] CHEVRON U S A INC	Hobbs
30-025-39193	HOUSE SWD	#001	SWD	P	A	10/10/2008	M		M	12	20S	38E	990 FSL, 500 FWL	[873] APACHE CORP	Hobbs
30-025-36226	HOWSE	#001	SWD	P	A	3/17/2003	L		L	17	20S	39E	1980 FSL, 330 FWL	[4323] CHEVRON U S A INC	Hobbs

SA SWD

30-025-04484	EUNICE MONUMENT SOUTH UNIT	#001	SWD	F	A	3/2/1987	O		W	4	21S	36E	660 FSL, 1980 FEL	[5380] XTO ENERGY, INC	Hobbs
30-025-21852	E M E SWD	#021	SWD	S	A	1/1/1900	L		L	21	21S	36E	1520 FSL, 440 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-38789	PARKER ENERGY SWD	#005	SWD	S	A	2/29/2008	A		A	24	21S	36E	1200 FNL, 990 FEL	[245739] PARKER ENERGY SUPPORT SERVICES INC.	Hobbs
30-025-06558	LOCKHART B-13 A	#004	SWD	F	A	1/1/1900	K		K	13	21S	37E	1980 FSL, 1980 FWL	[873] APACHE CORP	Hobbs
30-025-06603	ARGO	#006	SWD	P	A	4/1/1984	K		K	15	21S	37E	1650 FSL, 2310 FWL	[873] APACHE CORP	Hobbs
30-025-09915	ARGO	#007	SWD	P	A	10/1/1983	L		L	15	21S	37E	2310 FSL, 990 FWL	[873] APACHE CORP	Hobbs
30-025-26491	PENROC STATE E TR 27	#002	SWD	S	A	11/16/1993	M	4	M	18	21S	37E	330 FSL, 880 FWL	[273479] PIPER ENERGY, LLC	Hobbs
30-025-26317	STATE E TRACT 27	#001	SWD	S	A	5/3/1979	N		N	18	21S	37E	430 FSL, 1980 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-22943	ROYALTY HOLDING	#004	SWD	P	TA	4/1/1986	A		A	25	21S	37E	660 FNL, 660 FEL	[149972] SUNDANCE SERVICES, INC.	Hobbs
30-025-33328	V M HENDERSON	#015	SWD	P	A	3/14/1996	G		G	30	21S	37E	1650 FNL, 1650 FEL	[4323] CHEVRON U S A INC	Hobbs
30-025-38528	BLINEBRY DRINKARD SWD	#032	SWD	S	A	10/20/2006	E		E	32	21S	37E	1327 FNL, 244 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-07898	WYLIE FEDERAL	#003	SWD	F	A	1/1/1900	K	3	K	9	21S	38E	1650 FSL, 1650 FWL	[252496] SHERIDAN PRODUCTION COMPANY, LLC	Hobbs
30-025-24399	BLINEBRY DRINKARD	#002	SWD	S	A	1/1/1900	C	3	C	2	22S	37E	660 FNL, 2305 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-09954	NEW MEXICO S STATE	#104	SWD	S	A	2/1/1993	O		O	2	22S	37E	660 FSL, 1980 FEL	[5380] XTO ENERGY, INC	Hobbs
30-025-22583	EUNICE PLANT 161	#001	SWD	P	A	1/1/1900	H		H	3	22S	37E	2255 FNL, 908 FEL	[24650] TARGA MIDSTREAM SERVICES LLC	Hobbs
30-025-22039	SIMMONS	#002	SWD	P	TA	9/1/1991	G		G	5	22S	37E	2310 FNL, 1980 FEL	[258350] VANGUARD OPERATING, LLC	Hobbs
30-025-37042	ELLIOTT B	#009	SWD	F	A	1/7/2005	P		P	6	22S	37E	330 FSL, 330 FEL	[873] APACHE CORP	Hobbs
30-025-10143	BRUNSON ARGO	#011	SWD	P	A	1/1/1900	A		A	9	22S	37E	731 FNL, 589 FEL	[241333] CHEVRON MIDCONTINENT, L.P.	Hobbs
30-025-25616	BLINEBRY DRINKARD	#018	SWD	S	A	1/1/1900	N		N	18	22S	37E	1150 FSL, 2250 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-37168	BLINEBRY DRINKARD SWD	#020	SWD	S	A	4/19/2005	D		D	20	22S	37E	330 FNL, 660 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-25211	BLINEBRY DRINKARD	#022	SWD	P	A	1/1/1900	A		A	22	22S	37E	817 FNL, 965 FEL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-10500	CHRISTMAS	#003	SWD	P	A	1/1/1900	B		B	28	22S	37E	330 FNL, 2310 FEL	[19797] KEY ENERGY SERVICES, LLC	Hobbs
30-025-25412	A L CHRISTMAS	#001	SWD	P	A	1/1/1900	F		F	28	22S	37E	1780 FNL, 1980 FWL	[240974] LEGACY RESERVES OPERATING, LP	Hobbs
30-025-22797	BLINEBRY DRINKARD	#035	SWD	P	P	1/1/1900	H		H	35	22S	37E	1872 FNL, 233 FEL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-12131	C H LOCKHART FEDERAL NCT-1	#008	SWD	F	A	1/1/1900	P		P	18	22S	38E	660 FSL, 660 FEL	[4323] CHEVRON U S A INC	Hobbs
30-025-12144	A H BLINEBRY FEDERAL NCT-1	#011	SWD	F	A	4/1/1989	L		L	28	22S	38E	1980 FSL, 330 FWL	[4323] CHEVRON U S A INC	Hobbs
30-025-20463	STATE A A/C 1	#101	SWD	S	A	1/1/1900	M		M	11	23S	36E	660 FSL, 660 FWL	[14591] MERIT ENERGY COMPANY, LLC	Hobbs
30-025-24318	GULF STATE	#001	SWD	S	A	1/1/1900	M		M	2	23S	37E	660 FSL, 660 FWL	[181109] CAMERON OIL & GAS INC	Hobbs
30-025-28425	GULF STATE	#002	SWD	S	A	1/1/1900	N		N	2	23S	37E	660 FSL, 1980 FWL	[181109] CAMERON OIL & GAS INC	Hobbs
30-025-32443	B F HARRISON B	#016	SWD	P	A	3/4/1994	D		D	9	23S	37E	996 FNL, 531 FWL	[4323] CHEVRON U S A INC	Hobbs
30-025-27682	LEA	#002	SWD	P	A	5/1/1989	A		A	17	23S	37E	850 FNL, 950 FEL	[246368] BASIC ENERGY SERVICES, LP	Hobbs
30-025-22609	C E LAMUNYON	#041	SWD	F	A	1/1/1900	M		M	21	23S	37E	860 FSL, 660 FWL	[16696] OXY USA INC	Hobbs
30-025-22471	C E LAMUNYON	#001	SWD	F	A	3/1/1981	O		O	22	23S	37E	660 FSL, 2180 FEL	[16696] OXY USA INC	Hobbs
30-025-22373	E C HILL A	#001	SWD	P	A	12/27/1993	O		O	27	23S	37E	990 FSL, 2310 FEL	[16696] OXY USA INC	Hobbs

SA Disposals

30-025-11074	FOWLER SWD SYSTEM	#001	SWD	F	A	1/1/1900	I		I	9	24S	37E	1650 FSL, 660 FEL	[157984] OCCIDENTAL PERMIAN LTD	Hobbs
30-025-24761	JUSTIS SWD	#012	SWD	F	A	1/1/1900	B		B	12	25S	37E	880 FNL, 2310 FEL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-11787	JUSTIS SWD	#026	SWD	P	A	1/1/1900	N		N	26	25S	37E	346 FSL, 1433 FWL	[19174] RICE OPERATING COMPANY	Hobbs
30-025-11871	GREGORY EL PASO FEDERAL	#004	SWD	F	A	7/26/1993	K		K	33	25S	37E	1980 FSL, 1980 FWL	[268370] DC ENERGY LLC	Hobbs

Bradenhead Testing Data

Lower San Andres

Negative Pressure

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 11

1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

HOBBS OCD

MAR 28 2014

RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division Hobbs District Office

BRADENHEAD TEST REPORT

Operator Name	API Number
RICE OPERATING COMPANY	30-025-06017

Property Name	Well No.
E M E SWD	008

Surface Location

UL - Lot	Section	Township	Range		Feet from	N/S Line	Feet From	E/W Line	County
G	8	20S	37E		1980	N	2310	E	LEA

Well Status

Well Status	ACTIVE SHUT-IN	PRODUCING INJECTION SWD	DATE 3-12-14	

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

OBSERVED DATA

If bradenhead flowed water, check all of the descriptions that apply:

	(A)Surf-	(B)Interm(1)-	(C)Interm-	(D)Prod Csng	(E)Tubing
Pressure					~13
Flow Characteristics	0	0		0	
Puff	(Y) / N	Y / (N)	Y / N	(Y) / N	CO2 ___
Steady Flow	Y / (N)	Y / (N)	Y / N	Y / (N)	WTR ___
Surges	Y / (N)	Y / (N)	Y / N	Y / (N)	GAS ___
Down to nothing	Y / (N)	Y / (N)	Y / N	Y / (N)	Type of Fluid
Gas or Oil	Y / (N)	Y / (N)	Y / N	Y / (N)	Injected for Waterflood if
Water	Y / (N)	Y / (N)	Y / N	Y / (N)	applies.

If bradenhead flowed water, check all of the descriptions that apply:

CLEAR	FRESH	SALTY	SULFUR	BLACK

Remarks: Note – Please state for each string (A,B,C,D,E) pertinent information regarding bleed down or continuous build up if applies.

Accepted for Record Only

Bill Sonnamaker 3.28.14

Signature: [signature]	OIL CONSERVATION DIVISION
Printed name: Isuael Juarez	Entered into RBDMS
Title: Foreman	Re-test
E-mail Address:	
Date: 3-12-14 / Phone: 575-621-0959	
Witness: Yes	

1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

MAR 28 2014

RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division Hobbs District Office

BRADENHEAD TEST REPORT

Operator Name	API Number
RICE OPERATING COMPANY	30-025-12801

Property Name	Well No.
E M E SWD	009

7. Surface Location

UL - Lot	Section	Township	Range		Feet from	N/S Line	Feet From	E/W Line	County
M	9	20S	37E		100	S	250	W	LEA

Well Status

Well Status	ACTIVE	SHUT-IN	PRODUCING INJECTION (SWD)	DATE	
	(ACTIVE)		(INJECTION SWD)	3-12-14	

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

OBSERVED DATA

If bradenhead flowed water, check all of the descriptions that apply:

	(A)Surf	(B)Interm(1)	(C)Interm	(D)Prod Csng	(E)Tubing
Pressure					24
Flow Characteristics	0	0		0	CO2 ___ WTR ___ GAS ___ Type of Fluid Injected for Waterflood if applies.
Puff	(Y) / N	Y / (N)	Y / N	Y / (N)	
Steady Flow	Y / (N)	Y / (N)	Y / N	Y / (N)	
Surges	Y / (N)	Y / (N)	Y / N	Y / (N)	
Down to nothing	Y / (N)	Y / (N)	Y / N	Y / (N)	
Gas or Oil	Y / (N)	Y / (N)	Y / N	Y / (N)	
Water	Y / (N)	Y / (N)	Y / N	Y / (N)	

If bradenhead flowed water, check all of the descriptions that apply:

CLEAR	FRESH	SALTY	SULFUR	BLACK

Remarks: Note – Please state for each string (A,B,C,D,E) pertinent information regarding bleed down or continuous build up if applies.

(A) Surface - Bleed off in 3 minutes

Accepted for Record Only

B. A. Swanson 3.28.14

Signature:		OIL CONSERVATION DIVISION
Printed name: Ismael Ruvalcaba		Entered into RBDMS
Title: Foreman		Re-test
E-mail Address:		
Date: 3-12-14	Phone: 575-631-0959	
	Witness: Yes	

1625 N. French Dr., Hobbs. NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720

HOBBS OCD

MAR 28 2014

RECEIVED

State of New Mexico
Energy, Minerals and Natural Resources Department
Oil Conservation Division Hobbs District Office

BRADENHEAD TEST REPORT

Operator Name	API Number
RICE OPERATING COMPANY	30-025-12800
Property Name	**Well No.**
E M E SWD	020

7. Surface Location

UL - Lot	Section	Township	Range		Feet from	N/S Line	Feet From	E/W Line	County
H	20	20S	37E		2475	N	165	E	LEA

Well Status

Well Status	ACTIVE	SHUT-IN	PRODUCING / INJECTION (SWD)	DATE	
Closed				3-6-14	

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

OBSERVED DATA

If bradenhead flowed water, check all of the descriptions that apply:

	(A)Surf	(B)Interm(1)	(C)Interm	(D)Prod Csng	(E)Tubing
Pressure					-16" Vac.
Flow Characteristics					CO2 ___
Puff	Y / (N)	Y / N	Y / N	Y / (N)	WTR ___
Steady Flow	Y / (N)	Y / N	Y / N	Y / (N)	GAS ___
Surges	Y / (N)	Y / N	Y / N	Y / (N)	Type of Fluid Injected for Waterflood if applies.
Down to nothing	Y / (N)	Y / N	Y / N	Y / (N)	
Gas or Oil	Y / (N)	Y / N	Y / N	Y / (N)	
Water	Y / (N)	Y / N	Y / N	Y / (N)	

If bradenhead flowed water, check all of the descriptions that apply:

CLEAR	FRESH	SALTY	SULFUR	BLACK

Remarks: Note – Please state for each string (A,B,C,D,E) pertinent information regarding bleed down or continuous build up if applies.

Accepted for Record Only

Bill Samanatan 3.28.14

Signature:		OIL CONSERVATION DIVISION
Printed name: Isidro Juarez		Entered into RBDMS
Title: Foreman		Re-test
E-mail Address:		
Date: 3-6-14	Phone: 575-631-0959	
	Witness: Yes	

Energy, Minerals and Natural Resources Department
Oil Conservation Division Hobbs District Office

MAR 28 2014

BRADENHEAD TEST REPORT

RECEIVED

Operator Name	API Number
RICE OPERATING COMPANY	30-025-12786
Property Name	**Well No.**
E M E SWD	033M

Surface Location

UL - Lot	Section	Township	Range		Feet from	N/S Line	Feet From	E/W Line	County
M	33	20S	37E		165	S	165	W	LEA

Well Status

Well Status	ACTIVE / SHUT-IN	PRODUCING / INJECTION / SWD	DATE	
	ACTIVE	SWD	3-12-14	

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

OBSERVED DATA

If bradenhead flowed water, check all of the descriptions that apply:

	(A)Surf-	(B)Interm(1)-	(C)Interm-	(D)Prod Csng	(E)Tubing
Pressure					-22
Flow Characteristics	0			0	CO2 ___
Puff	(Y) / N	Y / N	Y / N	(Y) / N	WTR ___
Steady Flow	Y / (N)	Y / N	Y / N	Y / (N)	GAS ___
Surges	Y / (N)	Y / N	Y / N	Y / (N)	Type of Fluid Injected for Waterflood if applies.
Down to nothing	Y / (N)	Y / N	Y / N	Y / (N)	
Gas or Oil	Y / (N)	Y / N	Y / N	Y / (N)	
Water	Y / (N)	Y / N	Y / N	Y / (N)	

If bradenhead flowed water, check all of the descriptions that apply:

CLEAR	FRESH	SALTY	SULFUR	BLACK

Remarks: Note – Please state for each string (A,B,C,D,E) pertinent information regarding bleed down or continuous build up if applies.

Accepted for Record Only

Bill Jones 3.28.14

Signature:		OIL CONSERVATION DIVISION
Printed name: Israel Chavez		Entered into RBDMS
Title: Foreman		Re-test
E-mail Address:		
Date: 3-12-14	Phone: 575-631-0959	
	Witness: Yes	

Pressure Data

Upper San Andres/Grayburg

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 12

Submit to Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
District I
1625 N. French, Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-105
Revised June 10, 2003

WELL API NO. 30-025-06126
5. Indicate Type Of Lease STATE [X] FEE [ ]
6. State Oil & Gas Lease No. A-3071

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL [X] GAS WELL [ ] DRY [ ] OTHER
b. Type of Completion: NEW WELL [ ] WORK OVER [ ] DEEPEN [ ] PLUG BACK [ ] DIFF. RESVR. [X] OTHER

7. Lease Name or Unit Agreement Name: Hansen State

2. Name of Operator: Marathon Oil Company
8. Well No.: 3
3. Address of Operator: P.O. Box 3487 Houston, TX 77253-3487
9. Pool name or Wildcat: Eunice Monument Grayburg San Andres

4. Well Location
Unit Letter A : 660 Feet From The North Line and 990 Feet From The East Line
Section 16 Township 20-S Range 37-E NMPM Lea County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF & RKB, RT, GR, etc.)	14. Elev. Casinghead
10/09/07		10/19/2007	3562' GR	

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
7986'	5140				

19. Producing Interval(s), of this completion - Top, Bottom, Name: 4018' - 4092' Grayburg San Andres
20. Was Directional Survey Made: NO
21. Type Electric and Other Logs Run:
22. Was Well Cored: NO

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
9 5/8"	36#	266'	11"	200 sks	
7"	24#	3700'	8 3/4"	800 sks	
4 1/2"	11.6#	7963'	6 1/8"	730 sks	

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 3/8"	4184'	TAC@3892'

26. Perforation record (interval, size, and number)
4018'-22', 4025'-28, 4032'-34', 4043'-45', 4049'-51', 4052'-54', 4069'-72', 4076'-78', 4084'-86', 4088'-92' .380 diameter 26 holes

27. ACID, SHOT, FRACTURE, CEMENT, SQEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
4018'-4092'	168 gals 7 1/2% NEFE HCL Acid
4018'-4092'	1500 gals 15% NEFE HCL acid

28. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
10/20/2007	Pumping	Active

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
11/02/2007	24	N/A		36	579	222	16,083

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API -(Corr.)
165	165		36	579	222	38.6

29. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold
Test Witnessed By: Chris Chesser

30. List Attachments: Wellbore Diagram

31. I hereby certify that the information shown on both sides of this form is true and complete to the best of my knowledge and belief

Signature Charles E. Kendrix Printed Name Charles E. Kendrix Title Reg. Compliance Rep. Date 11/29/2007

E-mail address cekendrix@marathonoil.com

Submit To Appropriate District Office
State Lease - 6 copies
Fee Lease - 5 copies
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Rd., Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-105
Revised June 10, 2003

WELL API NO. 30-025-36691

5. Indicate Type of Lease STATE ☐ FEE ☒

State Oil & Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL ☒ GAS WELL ☐ DRY ☐ OTHER

b. Type of Completion: NEW WELL ☒ WORK OVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ OTHER

7. Lease Name or Unit Agreement Name: North Monument G/SA Unit 2119

2. Name of Operator: Amerada Hess Corporation

8. Well No. 336

3. Address of Operator: P.O. Box 840, Seminole, TX 79360

9. Pool name or Wildcat: Eunice Monument; Grayburg-San Andres

4. Well Location

Unit Letter B : 130 Feet From The North Line and 2402 Feet From The East Line

Section 5 Township 20S Range 37E NMPM Lea County

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF& RKB, RT, GR, etc.)	14. Elev. Casinghead
7/12/2004	7/20/2004	8/5/2004	3560' GR	

15. Total Depth	16. Plug Back T.D.	17. If Multiple Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
3916'	3892'				

19. Producing Interval(s), of this completion - Top, Bottom, Name: Eunice Monument; Grayburg San Andres 3672'-3882'

20. Was Directional Survey Made: No

21. Type Electric and Other Logs Run: CBL/Platform Express Three-detector LithoDensity/High Resolution Laterolog Array GR

22. Was Well Cored

23. CASING RECORD (Report all strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENTING RECORD	AMOUNT PULLED
8 5/8"	24#	1200'	11"	550 sx 'C'	
5 1/2"	15.5#	3892'	7 7/8"	790 sx 'C'	

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2 7/8"	3665'	

26. Perforation record (interval, size, and number)

3672'-3682', 3692'-3696', 3700'-3712', 3744'-3760', 3770-3778', 3790'-3800', 3806'-3822', 3828'-3848', 3854'-3882', Eunice Monument G/SA

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
3672'-3882'	Acidized w/8000 gals 15% NMGSAU blend

28 PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping - Size and type pump)	Well Status (Prod. or Shut-in)
8/5/2004	Pumping 2 1/2" X 2 1/4" THBC 20' pump A-1363	Producing

Date of Test	Hours Tested	Choke Size	Prod'n For Test Period	Oil - Bbl	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
8/23/2004	24			13	72	494	5760

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API - (Corr.)
50	50		13	72	494	34

29. Disposition of Gas (Sold, used for fuel, vented, etc.): Sold

Test Witnessed By

RECEIVED Hobbs OCD

30. List Attachments: C103, C104, C102, Logs

31. I hereby certify that the information shown on both sides of this form as true and complete to the best of my knowledge and belief

Signature Carol J. Moore Printed Name Carol J. Moore Title Senior Advisor/Regulatory Date 9/7/2004

E-mail Address cmoore@hess.com

State Lease - 6 copies
Fee Lease - 5 copies
DISTRICT I
P.O. Box 1980, Hobbs, NM 88240
DISTRICT II
P.O. Box Drawer DD, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

Energy, Minerals and Natural Resources Department

Revised 1-1-89

OIL CONSERVATION DIVISION

2050 Pacheco
Santa Fe, NM 87505

WELL API NO. 30-025-35741

5. Indicate Type of Lease STATE ☐ FEE ☑

6. State Oil / Gas Lease No.

WELL COMPLETION OR RECOMPLETION REPORT AND LOG

1a. Type of Well: OIL WELL ☑ GAS WELL ☐ DRY ☐ OTHER

b. Type of Completion: NEW WELL ☑ WORKOVER ☐ DEEPEN ☐ PLUG BACK ☐ DIFF RES. ☐ OTHER

7. Lease Name or Unit Agreement Name: North Monument G/SA Unit Blk. 21, No. 20

2. Name of Operator: Amerada Hess Corporation

8. Well No. 332

3. Address of Operator: P.O. Box 840, Seminole, TX 79360

9. Pool Name or Wildcat: Eunice Monument G/SA

4. Well Location
Unit Letter C : 65 Feet From The North Line and 1360 Feet From The West Line
Section 5 Township 20S Range 37E NMPM Lea COUNTY

10. Date Spudded	11. Date T.D. Reached	12. Date Compl. (Ready to Prod.)	13. Elevations (DF & RKB, RT, GR, etc.)	14. Elev. Csghead
12/06/2001	12/12/2001	01/04/2002	3559' GR	

15. Total Depth	16. Plug Back T.D.	17. If Mult. Compl. How Many Zones?	18. Intervals Drilled By	Rotary Tools	Cable Tools
3897'	3893' DOD			X	

19. Producing Interval(s), of this completion - Top, Bottom, Name
3655' - 3881' Eunice Monument G/SA

20. Was Directional Survey Made: Yes

21. Type Electric and Other Logs Run
DLL/CNL/LDT/CACL/GR/RFT/CMR, USIT

22. Was Well Cored: No

23. CASING RECORD (Report all Strings set in well)

CASING SIZE	WEIGHT LB./FT.	DEPTH SET	HOLE SIZE	CEMENT RECORD	AMOUNT PULLED
8-5/8"	24#	1143'	11"	450 Sks. Cl. "C" + Addit.	
5-1/2"	15.5#	3897'	7-7/8"	450 Sks. 35-65 "C" Poz	
				300 Sks. Cl. "C" + Addit.	

24. LINER RECORD

SIZE	TOP	BOTTOM	SACKS CEMENT	SCREEN

25. TUBING RECORD

SIZE	DEPTH SET	PACKER SET
2-7/8"	3869'	

26. Perforation record (Interval, size, and number)
Perf. w/4" csg. gun w/2 SPF, total 351 holes at following: 3655'-3672', 3684'-3694', 3706'-3720', 3732'-3778', & fr. 3795'-3881'.

27. ACID, SHOT, FRACTURE, CEMENT, SQUEEZE, ETC.

DEPTH INTERVAL	AMOUNT AND KIND MATERIAL USED
3655' - 3881'	Acidized w/8600 gal. 15% HCL acid.

28. PRODUCTION

Date First Production	Production Method (Flowing, gas lift, pumping - size and type pump)	Well Status (Prod. or Shut-in)
01/04/2002	Pumping 2-1/2" x 2" RHBC 20' x 3' x S x 0' Pump	Producing

Date of Test	Hours tested	Choke Size	Prod'n For Test Period	Oil - Bbl.	Gas - MCF	Water - Bbl.	Gas - Oil Ratio
01/06/2002	24 Hours			239	38	108	159

Flow Tubing Press.	Casing Pressure	Calculated 24-Hour Rate	Oil - Bbl.	Gas - MCF	Water - Bbl.	Oil Gravity - API -(Corr.)
65	65					

29. Disposition of Gas (Sold, used for fuel, vented, etc.)
Sold

Test Witnessed By

30. List Attachments C-102,C-103,C-104,Survey,Logs

31. I hereby certify that the information on both sides of this form is true and complete to the best of my knowledge and belief.

SIGNATURE [signature] Title Bus. Svc. Spec. II DATE 01/10/2002

TYPE OR PRINT NAME Roy L. Wheeler, Jr. Telephone No. 915-758-6778

DeSoto 2000 1.0

FORM C-106

NEW MEXICO OIL CONSERVATION COMMISSION

Santa Fe, New Mexico

REQUEST FOR PERMISSION TO CONNECT WITH PIPE LINE

This request should be SUBMITTED IN TRIPLICATE. See instructions in the Rules and Regulations of the Commission.

Monument, New Mexico (Place) June 23, 1937 (Date)

OIL CONSERVATION COMMISSION,
Santa Fe, New Mexico.

Gentlemen:

Permission is requested to connect Amerada Petroleum Corporation (Company or Operator) Laughlin (Lease)

Wells No. 3 in NW¼ NE¼ of Sec. 9, T. 20, R. 37, N. M. P. M.,

Monument Field, Lea County, with the pipe line of the

Shell Pipe Line Co. (Pipe Line Co.) (Address)

Status of land (State, Government or privately owned)

Location of tank battery 660' from North. 1320' from West. Section 9 - 20 - 37

Description of tanks 2 - High 500barrel wrought iron tanks.

Logs of the above wells were filed with the Oil Conservation Commission June 23, 1937, 19

All other requirements of the Commission have [~~have not~~] been complied with. (Cross out incorrect words.)

Additional information:

3856' Total depth. Gray lime. Set 2½" upset tubing at 3850'. Swabbed in and flowed 385 barrels pipe linecoil on 12 hour test. Through 40/64" Choke on 2½" tubing. Hourly average of 24 barrels. Daily gas rate of 249,000'. Gas oil ratio 458. Tubing pressure 180#. Casing pressure 750#.

DUPLICATE

Yours truly,

Permission is hereby granted to make pipe line connections requested above.

OIL CONSERVATION COMMISSION,

By G. D. Macy

Title State Geologist, N. M. Oil Cons. Com'n.

Date JUN 24 193

Amerada Petroleum Corporation (Owner or Operator)

By J. E. Lewis

Position Farm Boss

Address Monument, New Mexico

Water Analyses

San Andres-Grayburg

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 13

BAKER HUGHES

Permian Basin Area Laboratory
2101 S Market Street
Bldg. B

Report Date: 3/24/2015

Complete Water Analysis Report SSP v.8

Customer:	APACHE CORPORATION	**Sample Point Name**	NMGSAU 433
District:	New Mexico	**Sample ID:**	201501009803
Sales Rep:	Frank L Gardner	**Sample Date:**	3/19/2015
Lease:	MONUMENT	**Log Out Date:**	3/24/2015
Site Type:	Well Sites	**Analyst:**	Samuel Newman
Sample Point Description:	WELL HEAD		

APACHE CORPORATION, MONUMENT, NMGSAU 433

Field Data

Initial Temperature (°F):	250
Final Temperature (°F):	80
Initial Pressure (psi):	100
Final Pressure (psi):	15

pH:

pH at time of sampling:	6.8

Alkalinity by Titration:	mg/L	meq/L
Bicarbonate (HCO_3^-):	1098.0	18.0
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	

aqueous CO_2 (ppm):	100.0
aqueous H_2S (ppm):	391.0
aqueous O_2 (ppb):	ND
Calculated TDS (mg/L):	11475
Density/Specific Gravity (g/cm³):	1.0056
Measured Density/Specific Gravity	1.0092
Conductivity (mmhos):	ND
Resistivity:	59.64 ohm-cm @72.3°F
MCF/D:	No Data
BOPD:	No Data
BWPD:	No Data

Analysis of Sample

Anions:	mg/L	meq/L
Chloride (Cl^-):	5089.0	143.6
Sulfate (SO_4^{2-}):	882.4	18.4
Borate (H_3BO_3):	9.7	0.2
Fluoride (F^-):	ND	
Bromide (Br^-):	ND	
Nitrite (NO_2^-):	ND	
Nitrate (NO_3^-):	ND	
Phosphate (PO_4^{3-}):	ND	
Silica (SiO_2):	ND	

Organic Acids:	mg/L	meq/L
Formic Acid:	ND	
Acetic Acid:	ND	
Propionic Acid:	ND	
Butyric Acid:	ND	
Valeric Acid:	ND	

Anion/Cation Ratio:	0.88

Cations:	mg/L	meq/L
Sodium (Na^+):	3298.8	143.6
Potassium (K^+):	115.6	3.0
Magnesium (Mg^{2+}):	276.0	22.7
Calcium (Ca^{2+}):	688.3	34.3
Strontium (Sr^{2+}):	17.5	0.4
Barium (Ba^{2+}):	0.0	0.0
Iron (Fe^{2+}):	0.0	0.0
Manganese (Mn^{2+}):	0.0	0.0
Lead (Pb^{2+}):	ND	
Zinc (Zn^{2+}):	0.0	0.0
Aluminum (Al^{3+}):	ND	
Chromium (Cr^{3+}):	ND	
Cobalt (Co^{2+}):	ND	
Copper (Cu^{2+}):	ND	
Molybdenum (Mo^{2+}):	ND	
Nickel (Ni^{2+}):	ND	
Tin (Sn^{2+}):	ND	
Titanium (Ti^{2+}):	ND	
Vanadium (V^{2+}):	ND	
Zirconium (Zr^{2+}):	ND	
Total Hardness:	2878	N/A

ND = Not Determined

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi		0.000	0.60	126.541	-0.42	0.000	-0.67	0.000
99°F	24 psi		0.000	0.61	127.447	-0.42	0.000	-0.59	0.000
118°F	34 psi		0.000	0.64	132.792	-0.41	0.000	-0.49	0.000
137°F	43 psi		0.000	0.69	139.899	-0.39	0.000	-0.39	0.000
156°F	53 psi		0.000	0.76	147.986	-0.37	0.000	-0.27	0.000
174°F	62 psi		0.000	0.83	156.768	-0.33	0.000	-0.14	0.000
193°F	72 psi		0.000	0.91	166.262	-0.30	0.000	0.00	1.189
212°F	81 psi		0.000	1.01	176.655	-0.25	0.000	0.15	87.030
231°F	91 psi		0.000	1.12	187.277	-0.21	0.000	0.29	160.266
250°F	100 psi		0.000	1.23	198.063	-0.17	0.000	0.44	221.338

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	-0.35	0.000	-3.55	0.000	0	0.000		0.000
99°F	24 psi	-0.35	0.000	-3.57	0.000	0	0.000		0.000
118°F	34 psi	-0.33	0.000	-3.58	0.000	0	0.000		0.000
137°F	43 psi	-0.30	0.000	-3.59	0.000	0	0.000		0.000
156°F	53 psi	-0.26	0.000	-3.60	0.000	0	0.000		0.000
174°F	62 psi	-0.20	0.000	-3.60	0.000	0	0.000		0.000
193°F	72 psi	-0.14	0.000	-3.59	0.000	0	0.000		0.000
212°F	81 psi	-0.06	0.000	-3.58	0.000	0	0.000		0.000
231°F	91 psi	0.02	0.581	-3.57	0.000	0	0.000		0.000
250°F	100 psi	0.11	2.863	-3.55	0.000	0	0.000		0.000

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

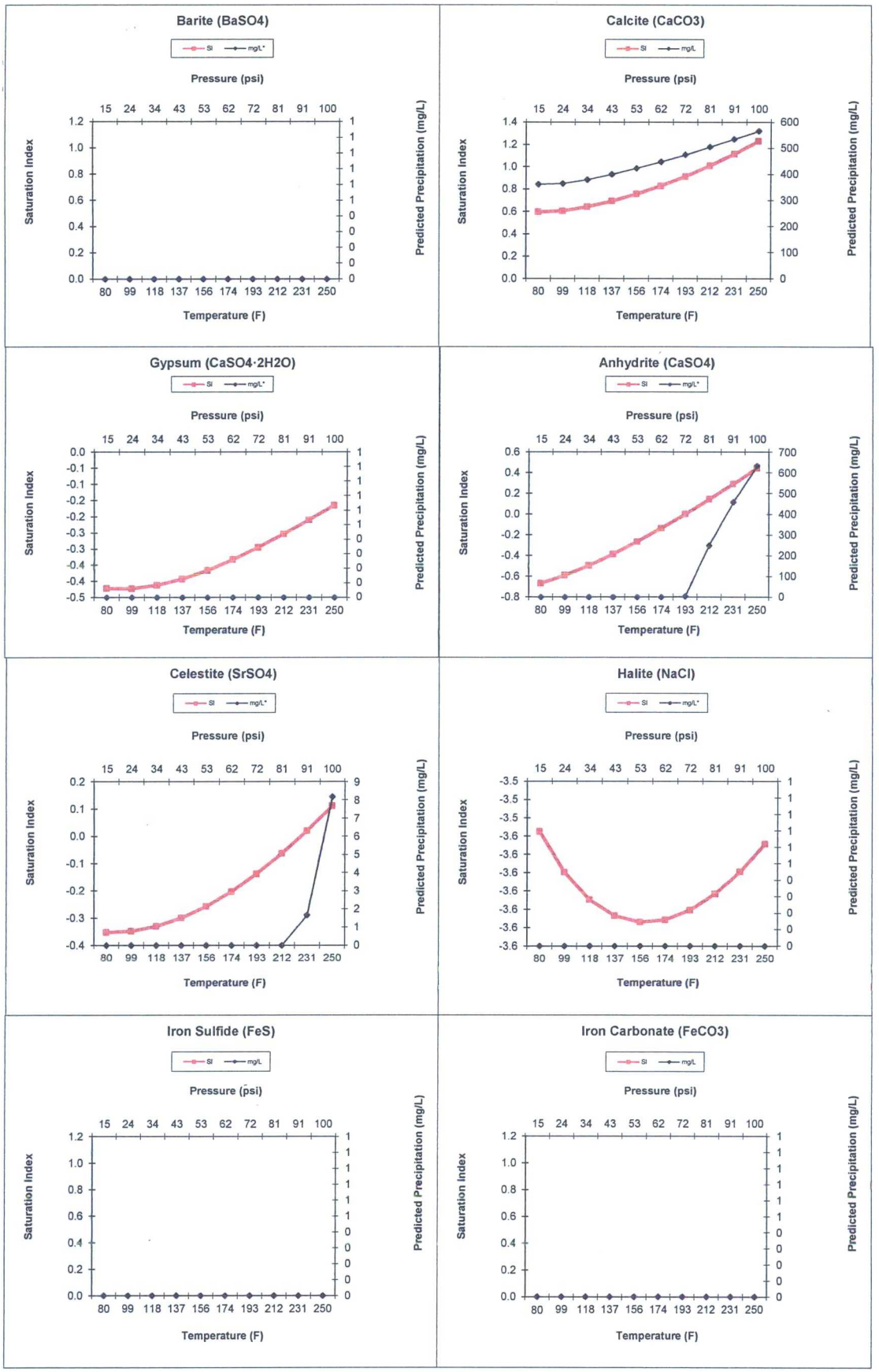
Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

Calculate

ScaleSoftPitzer™ SSP2010

Comments: _____

Sample ID: 42082 APACHE CORPORATION, MONUMENT, NMGSAU 433



BAKER HUGHES

Permian Basin Area Laboratory
2101 S Market Street
Bldg. B

Report Date: 3/24/2015

Complete Water Analysis Report SSP v.8

Customer:	APACHE CORPORATION	Sample Point Name	NMGSAU 440
District:	New Mexico	Sample ID:	201501009805
Sales Rep:	Frank L Gardner	Sample Date:	3/19/2015
Lease:	MONUMENT	Log Out Date:	3/24/2015
Site Type:	Well Sites	Analyst:	Samuel Newman
Sample Point Description:	WELL HEAD		

APACHE CORPORATION, MONUMENT, NMGSAU 440

Field Data

Initial Temperature (°F):	250
Final Temperature (°F):	80
Initial Pressure (psi):	100
Final Pressure (psi):	15

pH:

pH at time of sampling:	6.2

Alkalinity by Titration:	mg/L	meq/L
Bicarbonate (HCO_3^-):	1012.0	16.6
Carbonate (CO_3^{2-}):	ND	
Hydroxide (OH^-):	ND	

aqueous CO_2 (ppm):	120.0
aqueous H_2S (ppm):	357.0
aqueous O_2 (ppb):	ND
Calculated TDS (mg/L):	22966
Density/Specific Gravity (g/cm³):	1.0139
Measured Density/Specific Gravity	1.0171
Conductivity (mmhos):	ND
Resistivity:	31.01 ohm-cm @72.2°F
MCF/D:	No Data
BOPD:	No Data
BWPD:	No Data

Analysis of Sample

Anions:	mg/L	meq/L
Chloride (Cl^-):	11086.5	312.7
Sulfate (SO_4^{2-}):	1646.7	34.3
Borate (H_3BO_3):	16.4	0.3
Fluoride (F^-):	ND	
Bromide (Br^-):	ND	
Nitrite (NO_2^-):	ND	
Nitrate (NO_3^-):	ND	
Phosphate (PO_4^{3-}):	ND	
Silica (SiO_2):	ND	

Organic Acids:	mg/L	meq/L
Formic Acid:	ND	
Acetic Acid:	ND	
Propionic Acid:	ND	
Butyric Acid:	ND	
Valeric Acid:	ND	

Anion/Cation Ratio:	0.88

Cations:	mg/L	meq/L
Sodium (Na^+):	7734.3	336.6
Potassium (K^+):	206.2	5.3
Magnesium (Mg^{2+}):	332.0	27.3
Calcium (Ca^{2+}):	910.0	45.4
Strontium (Sr^{2+}):	21.4	0.5
Barium (Ba^{2+}):	0.0	0.0
Iron (Fe^{2+}):	0.0	0.0
Manganese (Mn^{2+}):	0.0	0.0
Lead (Pb^{2+}):	ND	
Zinc (Zn^{2+}):	0.0	0.0
Aluminum (Al^{3+}):	ND	
Chromium (Cr^{3+}):	ND	
Cobalt (Co^{2+}):	ND	
Copper (Cu^{2+}):	ND	
Molybdenum (Mo^{2+}):	ND	
Nickel (Ni^{2+}):	ND	
Tin (Sn^{2+}):	ND	
Titanium (Ti^{2+}):	ND	
Vanadium (V^{2+}):	ND	
Zirconium (Zr^{2+}):	ND	
Total Hardness:	3667	N/A

ND = Not Determined

Conditions		Barite ($BaSO_4$)		Calcite ($CaCO_3$)		Gypsum ($CaSO_4 \cdot 2H_2O$)		Anhydrite ($CaSO_4$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi		0.000	0.13	32.322	-0.29	0.000	-0.52	0.000
99°F	24 psi		0.000	0.15	38.511	-0.28	0.000	-0.44	0.000
118°F	34 psi		0.000	0.21	52.540	-0.27	0.000	-0.35	0.000
137°F	43 psi		0.000	0.29	68.484	-0.26	0.000	-0.24	0.000
156°F	53 psi		0.000	0.37	84.681	-0.23	0.000	-0.13	0.000
174°F	62 psi		0.000	0.46	101.362	-0.21	0.000	0.00	0.000
193°F	72 psi		0.000	0.56	118.169	-0.18	0.000	0.13	126.382
212°F	81 psi		0.000	0.66	134.133	-0.14	0.000	0.26	242.151
231°F	91 psi		0.000	0.77	149.375	-0.11	0.000	0.40	342.965
250°F	100 psi		0.000	0.88	163.941	-0.07	0.000	0.54	429.356

Conditions		Celestite ($SrSO_4$)		Halite (NaCl)		Iron Sulfide (FeS)		Iron Carbonate ($FeCO_3$)	
Temp	Press.	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)	Index	Amt (ptb)
80°F	15 psi	-0.25	0.000	-2.88	0.000	0	0.000		0.000
99°F	24 psi	-0.24	0.000	-2.91	0.000	0	0.000		0.000
118°F	34 psi	-0.23	0.000	-2.92	0.000	0	0.000		0.000
137°F	43 psi	-0.20	0.000	-2.93	0.000	0	0.000		0.000
156°F	53 psi	-0.17	0.000	-2.93	0.000	0	0.000		0.000
174°F	62 psi	-0.12	0.000	-2.93	0.000	0	0.000		0.000
193°F	72 psi	-0.07	0.000	-2.93	0.000	0	0.000		0.000
212°F	81 psi	0.00	0.000	-2.92	0.000	0	0.000		0.000
231°F	91 psi	0.07	2.243	-2.91	0.000	0	0.000		0.000
250°F	100 psi	0.15	4.435	-2.90	0.000	0	0.000		0.000

Note 1: When assessing the severity of the scale problem, both the saturation index (SI) and amount of scale must be considered

Note 2: Precipitation of each scale is considered separately. Total scale will be less than the sum of the amounts of the eight (8) scales.

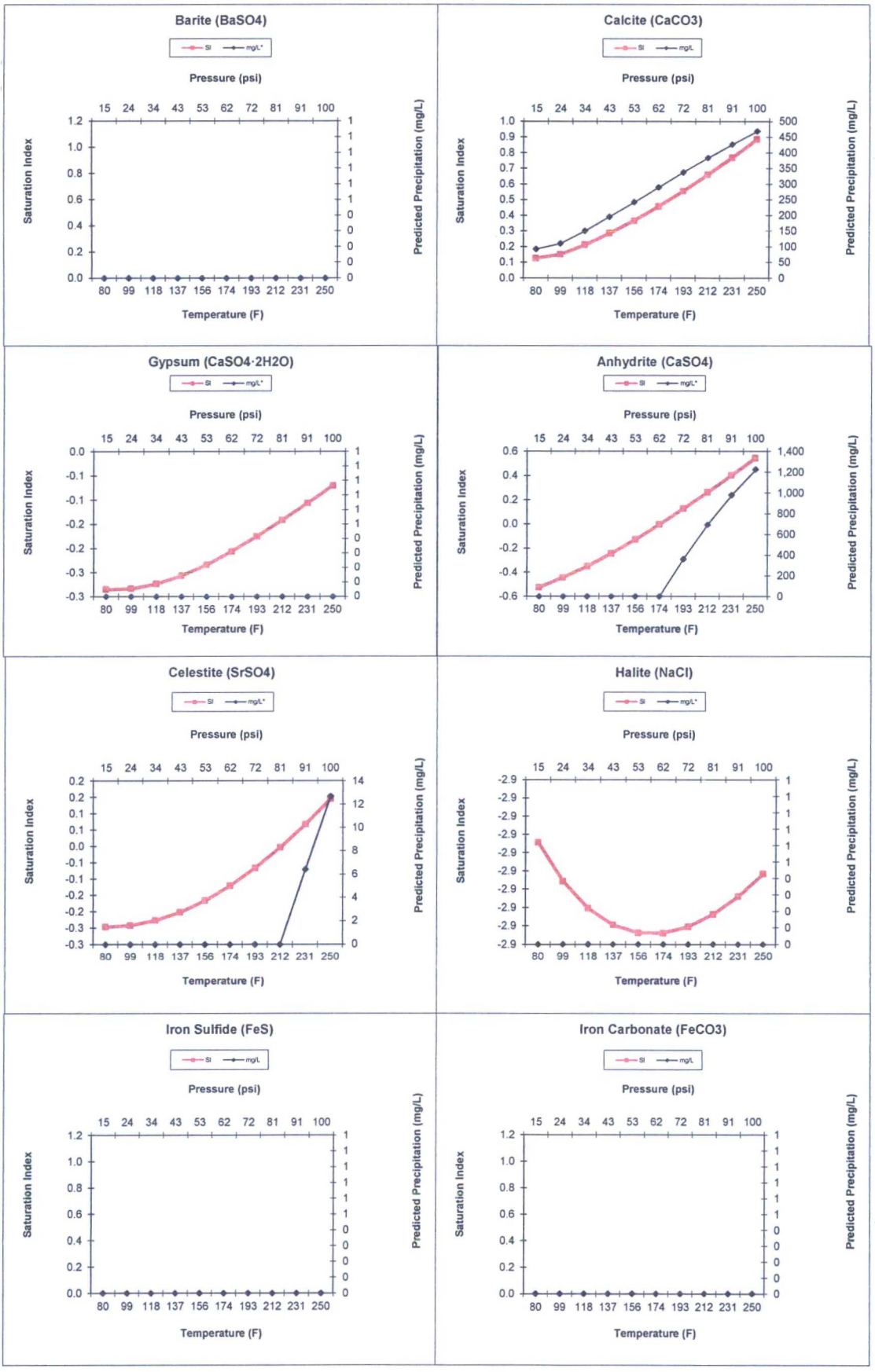
Note 3: Saturation Index predictions on this sheet use pH and alkalinity; $\%CO_2$ is not included in the calculations.

Calculate

ScaleSoftPitzer™ SSP2010

Comments: _____

Sample ID: 42082 APACHE CORPORATION, MONUMENT, NMGSAU 440



GROUND-WATER REPORT 6

Geology and Ground-Water Conditions in Southern Lea County, New Mexico

by ALEXANDER NICHOLSON, Jr.
and ALFRED CLEBSCH, JR.

UNITED STATES GEOLOGICAL SURVEY

STATE BUREAU OF MINES AND MINERAL RESOURCES
NEW MEXICO INSTITUTE OF MINING & TECHNOLOGY
CAMPUS STATION SOCORRO, NEW MEXICO

TABLE 9. CHEMICAL ANALYSES OF OIL-FIELD WATERS IN SOUTHERN LEA COUNTY, N. MEX. (continued)

PART B. ANALYSES REPORTED IN ROSWELL GEOL. SOC. (1956)*

(Chemical constituents are in parts per million and equivalents per million [underscored].)

Sample No.	Pool name	Location†	Pay zone‡	Calcium (Ca)	Magnesium (Mg)	Sodium plus potassium (Na+K)	Iron (Fe)	Bicarbonate (HCO_3)	Carbon-dioxide (CO_2)	Sulfate (SO_4)	Chloride (Cl)	Hydroxyl (OH)	Hydrogen sulfide (H_2S)	Dissolved solids	Resistivity	
															Ohm-meters	Degrees (°F)
82	Langlie-Mattix	T. 22 thru 26 S., R. 36, 37 E.	Yates, Seven Rivers Queen	214 10.68	233 19.16	922 40.09	—	1,364 22.36	—	29 .603	1,663 46.9	—	—	4,425	—	—
83	Littman	T. 21 S., R. 38 E.	San Andres	5,240 261.47	2,527 207.8	30,900 1,343.53	0	—	0	2,080 43.3	62,000 1,748.4	—	T	93,400	1.07	79
84	Maljamar	T. 17 S., R. 31, 32, 33 E., T. 18 S., R. 32 E.	Grayburg-San Andres	2,480 123.7	1,370 112.7	—	T	710 11.64	—	H	127,300 3,589.9	—	—	—	—	—
85	Maljamar (Devonian)	T. 17 S., R. 32 E.	Devonian	920 45.9	305 25.08	8,450 367.41	—	807 13.23	—	1.63 .034	14,000 394.8	—	—	25,000	—	—
86	Mason, North	T. 26 S., R. 31, 32 E.	Delaware	2,480 123.7	170 13.98	61,000 2,652.28	—	2,890 47.37	—	4,000 83.3	94,800 2,673.4	—	—	165,340	.06	65
87	Pearsall	T. 17, 18 S., R. 32 E.	Queen	6,500 324.4	4,530 372.5	—	—	95 1.56	—	M	123,000 3,468.6	—	—	—	—	—
88	San Simon	T. 21, 22 S., R. 35 E.	Yates	1,990 99.3	1,700 139.81	17,400 756.55	0	443 7.26	0	0	34,900 984.2	0	—	[56,208]	—	—
89	Skaggs	T. 20 S., R. 37, 38 E.	Queen-Grayburg	300 14.97	N	10,000 434.80	100	710 11.64	180	3,200 66.6	12,000 338.4	N	S	37,000	—	—
90	Skaggs (Drinkard)	T. 20 S., R. 37 E.	Drinkard	5,330 265.97	1,830 150.49	43,700 1,900.68	113	428 7.01	—	2,250 46.84	82,300 2,320.9	—	—	141,300	.052	76
91	Vacuum	T. 17, 18 S., R. 33, 34, 35 E.	Grayburg-San Andres	3,195 159.43	796 65.46	57,900 2,517.49	112	700 11.47	—	2,470 51.43	94,221 2,657.0	—	—	160,000	—	—
92	Wantz	T. 21 S., R. 37, 38 E.	Abo	3,375 168.4	0	19,500 847.86	10	744 12.19	103	1,689 35.16	44,325 1,249.9	N	175	81,208	0.08-0.106	—
93	Warren	sec. 27 and 28, T. 20 S., R. 38 E.	Drinkard	7,000 349.3	0	47,500 2,065.30	75	496 8.13	0	1,402 29.19	103,898 2,929.9	N	N	[166,800]	.080	60

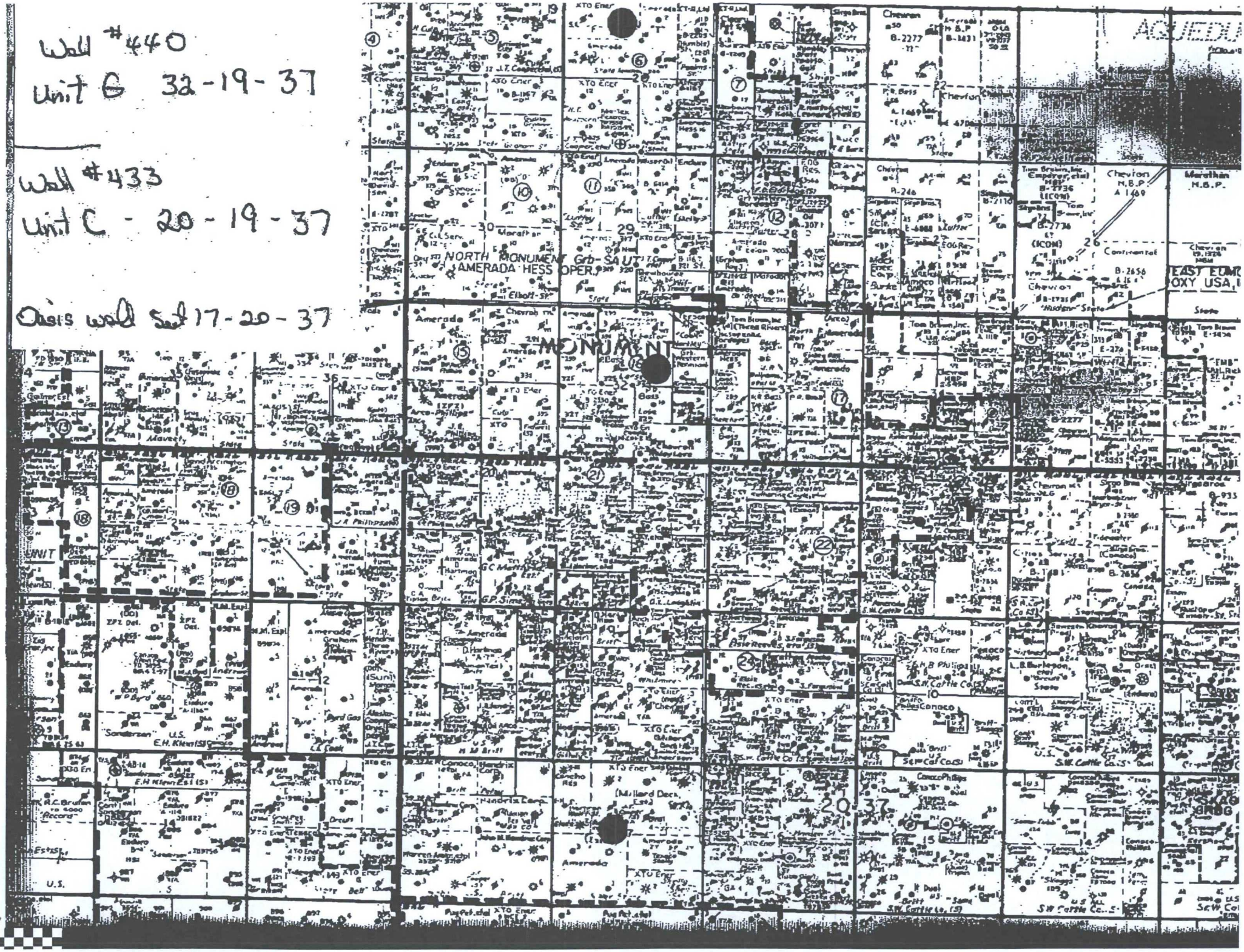
* Analyses are quoted verbatim except for calculated values, which are enclosed in brackets or underscored; N, none or nil; 2, trace; M, medium; H, heavy.

† Location: The water analyses listed in the source reference are headed "Nature of producing zone water." The wells from which the sampl

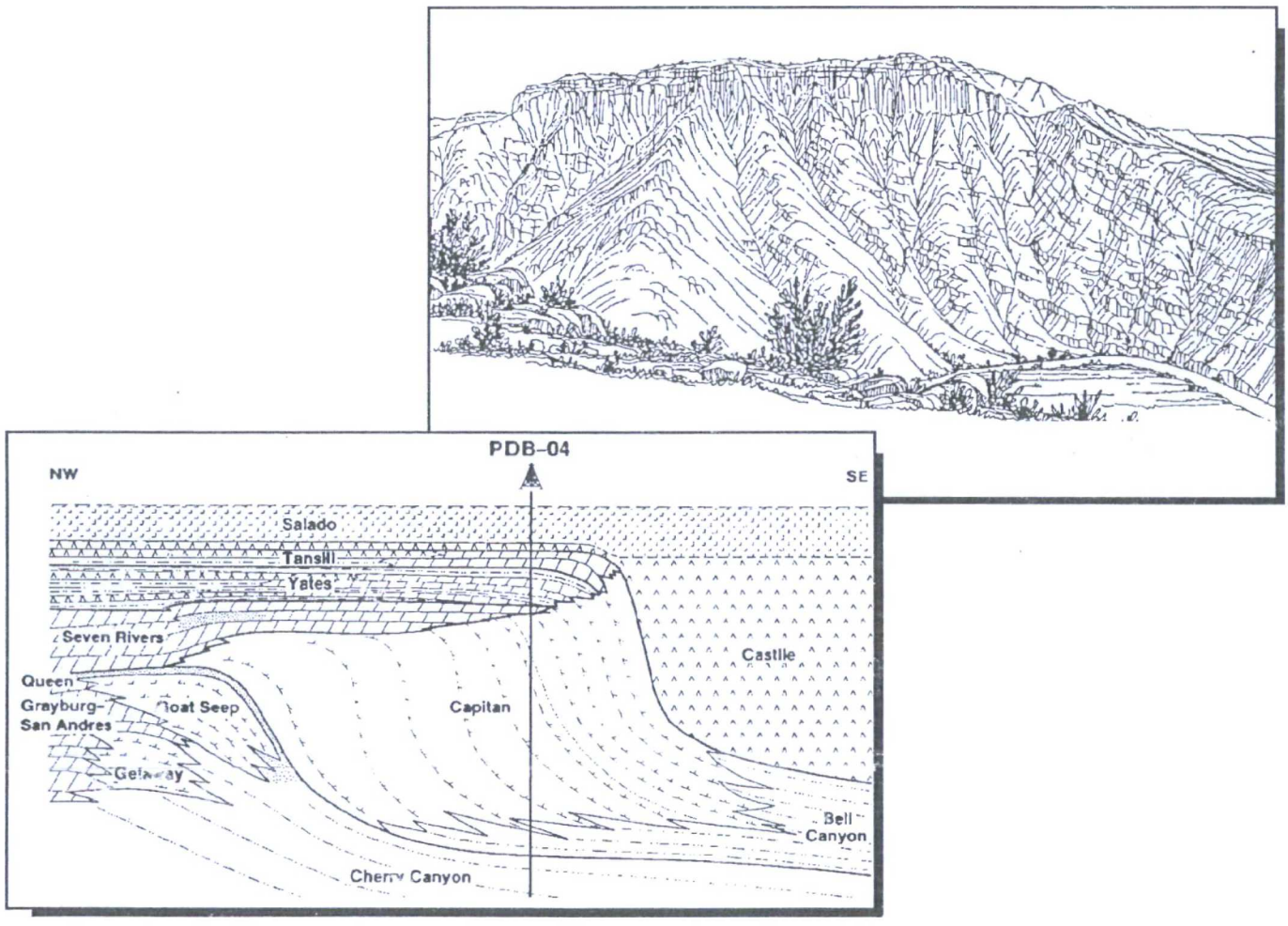
Water Sample Analysis

Pool	Location Section	Township	Range	Chlorides
North Justis Montoya	2	25S	37E	45440
North Justis McKee	2	25S	37E	58220
North Justis Fusselman	2	25S	37E	68533
North Justis Ellenburger	2	25S	37E	34151
Fowler Blinebry	22	24S	37E	116085
Skaggs Grayburg	18	20S	38E	84845
Warren McKee	18	20S	38E	85910
Warren Abo	19	20S	39E	91600
DK Drinkard	30	20S	39E	106855
Littman San Andres	8	21S	38E	38695
East Hobbs grayburg	29	18S	39E	6461
Halfway Yates	16	20S	32E	14768
Arkansas Junction San Andres	12	18S	36E	7171
Pearl Queen	28	19S	35E	114310
Midway Abo	17	17S	37E	38494
Lovinton Abo	31	16S	37E	22933
Lovington San Andres	3	16S	37E	4899
Lovington Paddock	31	16S	37E	93720
Mesa Queen	17	16S	32E	172530
Kemnitz Wolfcamp	27	16S	34E	49345
Hume Queen	9	16S	34E	124960
Anderson Ranch Wolfcamp	2	16S	32E	11040
Anderson Ranch Devonian	11	16S	32E	25702
Anderson Ranch Unit	11	16S	32E	23786
Caudill Devonian	9	15S	36E	20874
Townsend Wolfcamp	6	16S	36E	38695
Dean Permo Penn	5	16S	37E	44730
Dean Devonian	35	15S	36E	19525
South Denton Wolfcamp	26	15S	37E	54315
South Denton Devonian	36	15S	37E	34080
Medicine Rock Devonian	15	15S	38E	39760
Little Lucky Lake Devonian	29	15S	30E	23288
Wantz Abo	26	21S	37E	132770
Crosby Devonian	18	25S	37E	58220
Scarborough Yates Seven Rivers	7	26S	37E	3443(Reef)
Teague Simpson	34	23S	37E	114665
Teague Ellenburger	34	23S	37E	120345
Rhodes Yates 7 Rivers	27	26S	37E	144485
House SA	11	20S	38E	93365
House Drinkard	12	20S	38E	49700
South Leonard Queen	24	26S	37E	115375
Elliot Abo	2	21S	38E	55380
Scharb Bone Springs	5	19S	35E	30601
EK Queen	13	18S	34E	41890
East EK Queen	22	18S	34E	179630
Maljamar Grayburg SA	22	17S	32E	46079
Maljamar Paddock	27	17S	32E	115375
Maljamar Devonian	22	17S	32E	25418

Information from OCD H266



Subsurface and Outcrop Examination of the Capitan Shelf Margin, Northern Delaware Basin



SEPM Core Workshop No. 13
San Antonio, April 23, 1989

OCD Case# 15307
Oasis Water Solutions, LLC
September 17, 2015
Ex# 14

Subsurface and Outcrop Examination of the Capitan Shelf Margin, Northern Delaware Basin

Organized and Edited

By

Paul M. Harris

and

George A. Grover

SEPM Core Workshop No. 13
San Antonio, April 23, 1989

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PART 2 (contd.)

TABLE OF CONTENTS (contd.)

PART 2 (contd.)

THE ROLE OF HYDROGEN SULFIDE IN THE EVOLUTION OF CAVES IN THE GUADALUPE MOUNTAINS OF SOUTHEASTERN NEW MEXICO

HARVEY R. DuCHENE
Marsh Operating Company
1625 Broadway, Suite 2100
Denver, CO 80202

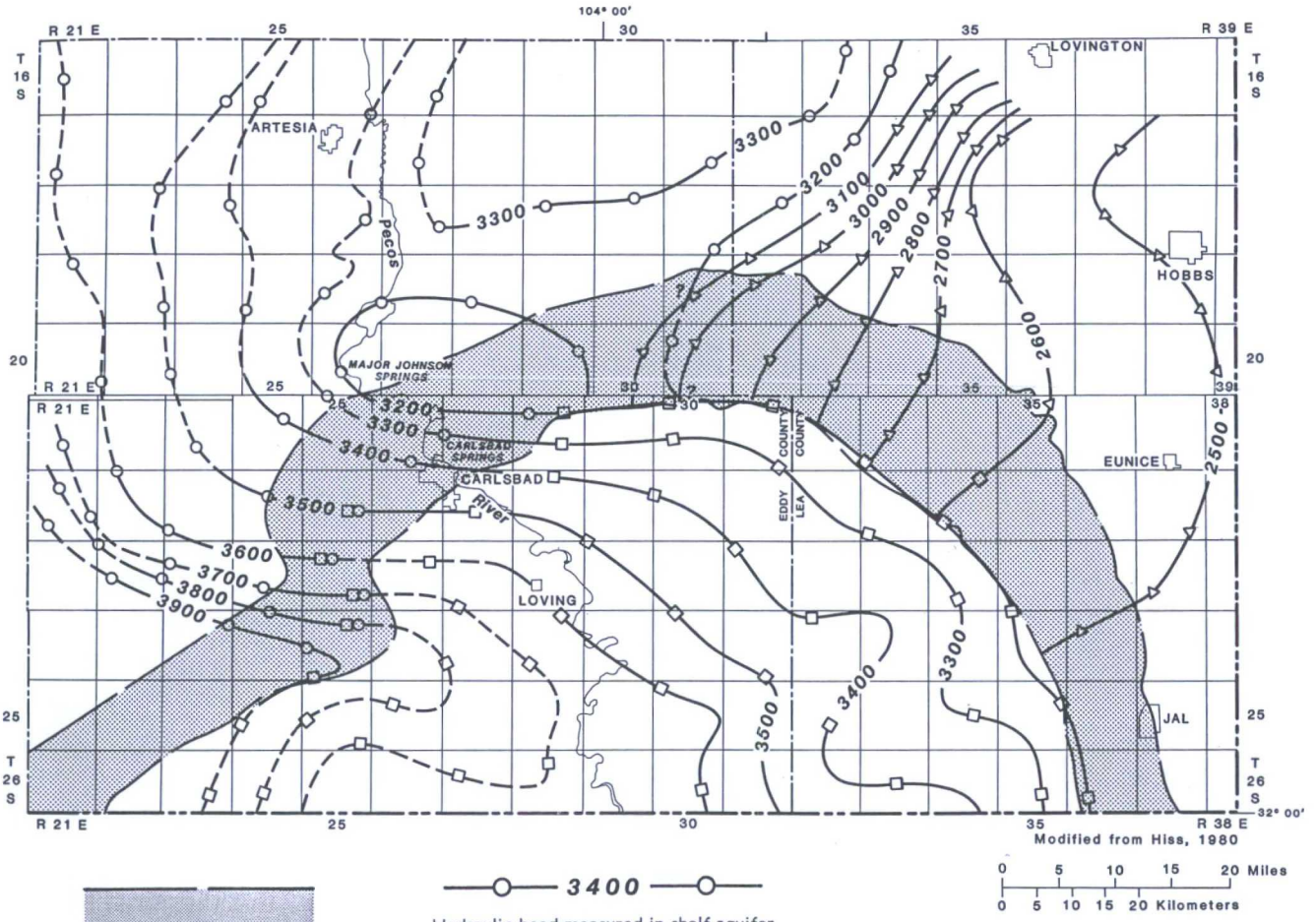
JOHN S. McLEAN
U.S. Geological Survey
Box 25046, MS 406
Denver Federal Center
Denver, CO 80225

Part of the Permian Capitan Reef Complex is exposed in the Guadalupe Mountains of southeastern New Mexico and western Texas (Fig. 1). The reef complex includes the Capitan Limestone and the carbonate backreef beds of the Artesia Group that comprise a lithosome called the Capitan aquifer (Hiss, 1976). This lithosome contains well-developed solution openings that range from microscopic to voids the size of Carlsbad Cavern. This solution porosity was once thought to be caused by weak carbonic acid in the phreatic zone within the Capitan aquifer (Bretz, 1949). During the last 15 years, however, workers have obtained evidence indicating that sulfuric acid may be a major cause of carbonate dissolution (Egemeier, 1973; Jagnow, 1977; Palmer et al., 1977; Maslyn, 1979; Davis, 1980; Kirkland, 1982; and Hill, 1987). Sulfuric acid is generated when oxygen (O_2) is introduced into solutions containing dissolved hydrogen sulfide (H_2S) gas (Hill, 1987).

Hydrogen sulfide is common in subsurface formations in southeastern New Mexico (Bjorklund and Motts, 1959; Hinds and Cunningham, 1970, pp. 4 and 7). In southeastern New Mexico and elsewhere along the subsurface trend of the Capitan reef, H_2S is present in accumulations of oil and gas and in associated saline water (Schram, 1956a, p. 103, and 1956b, p. 307; Wilson, 1956, p. 179; and Roswell Geological Society Symposium Committee, 1956a, p. 181, and 1956b, p. 291).

Hydrogen sulfide results from the metabolic reduction of sulfate by bacteria in the presence of hydrocarbons (Feely and Kulp, 1957; Davis and Kirkland, 1970). This process also causes the fractionation of sulfur isotopes, ^{32}S and ^{34}S, resulting in enrichment of ^{32}S in the more mobile phase each time metabolic reduction or oxidation occur. Because of this enrichment in ^{32}S, sulfur that has been metabolized has a distinct isotopic signature that allows it to be distinguished from nonmetabolized, primary sulfur compounds (Kirkland, 1982; Hill, 1987).

The concept of solution by sulfuric acid within the Capitan aquifer is supported by an abundance of secondary gypsum that is enriched in ^{32}S in caves of the Guadalupe Mountains (Kirkland, 1982; Hill, 1987). Gypsum is precipitated when limestone is dissolved by sulfuric acid and the resulting solution becomes supersaturated with gypsum (Hill, 1987, pp. 71-72). Gypsum is present in these caves as massive deposits on the floors of large rooms,



Approximate position of Capitan aquifer.

Potentiometric contours for formations of Permian Ochoan, Guadalupian, or Leonardian age. Values of hydraulic head are expressed as water with a specific gravity of 1.00. Contours are dashes wherever data are few or of doubtful reliability. Contour interval 100 feet. Datum is sea level. The contours represent a generalized regional hydraulic head considered to be representative of shelf and basin aquifers during 1960-70. Similarly contours for the Capitan aquifer are an interpretation of the hydraulic head representative of the later part of 1972.

3400

Hydraulic head measured in shelf aquifer system where the hydraulic connection with the Capitan aquifer is minimal

3400

Hydraulic head measured in basin aquifer system where the hydraulic connection with the Capitan aquifer is minimal.

3400

Hydraulic head measured in the Capitan and shelf aquifer systems where the hydraulic connection between the two aquifers systems is substantial.

Figure 3 Potentiometric surface of the Capitan aquifer and associated deposits.

Submit 1 Copy To Appropriate District Office
District I – (575) 393-6161
1625 N. French Dr., Hobbs, NM 88240
District II – (575) 748-1283
811 S. First St., Artesia, NM 88210
District III – (505) 334-6178
1000 Rio Brazos Rd., Aztec, NM 87410
District IV – (505) 476-3460
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, NM 87505

Form C-103
Revised July 18, 2013

WELL API NO. 30-025-29962	
5. Indicate Type of Lease STATE ☐ FEE ☒	
6. State Oil & Gas Lease No. NA	
SUNDRY NOTICES AND REPORTS ON WELLS (DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)	7. Lease Name or Unit Agreement Name 5. Anderson - SWD
1. Type of Well: Oil Well ☐ Gas Well ☒ Other SWD	8. Well Number 1
2. Name of Operator J. Cooper Enterprises	9. OGRID Number 244835
3. Address of Operator Box 55 Monument, NM 88265	10. Pool name or Wildcat Monument SA
4. Well Location Unit Letter O : 330 feet from the S line and 1980 feet from the E line Section 8 Township 20 Range 37 NMPM Lea County	
	11. Elevation *(Show whether DR, RKB, RT, GR, etc.)*

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:			
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☒	RE	E-PERMITTING <SWD___INJECTION>
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	CO	CONVERSION___ RBDMS___
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CA	RETURN TO___ TA___
DOWNHOLE COMMINGLE ☐			CSNG___ ENVIRO___ CHG LOC___
CLOSED-LOOP SYSTEM ☐			INT TO PA___ P&A NR___ P&A R___
OTHER: ☐			OTHER: ☐

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 19.15.7.14 NMAC. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

Proposed P & A

See Attached:

HOBBS OCD
AUG 10 2015
RECEIVED

The Oil Conservation Division
MUST BE NOTIFIED 24 Hours
Prior to the beginning of operations

EXHIBIT
Case No. 15307
Protestant 2
10-1-15

Spud Date: Rig Release Date:

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNATURE Eddie W. Seay TITLE Agent DATE 8/10/15

Type or print name Eddie W. Seay E-mail address: seay04@leaco.net PHONE: 575-392-2236

For State Use Only

APPROVED BY: Maley Brown TITLE Dist Supervisor DATE 8/11/2015

Conditions of Approval (if any):

AUG 12 2015

MD