



NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

July 18, 2001

Lori Wrotenbery
Director
Oil Conservation Division

Sage Energy Company
P.O. Drawer 3068
Midland, Texas 79702-3068

Attn: Mr. George M. Harris, Jr.

**RE: *Injection Pressure Increase
North Vacuum (Abo) North Unit Waterflood Project
Lea County, New Mexico***

Dear Mr. Harris:

Reference is made to your request dated June 5, 2001 to increase the surface injection pressure on three wells within the North Vacuum (Abo) North Unit Waterflood Project. This request is based on step rate tests conducted on these wells on June 6, 2001. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure for these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
North Vacuum (Abo) North Unit "5B" Well No. 1 API No. 30-025-24341 Unit Letter P, Section 1, Township 17 South, Range 34 East	4115 PSIG
North Vacuum (Abo) North Unit "10" Well No. 1 API No. 30-025-25059 Unit Letter D, Section 1, Township 17 South, Range 34 East	4410 PSIG
North Vacuum (Abo) North Unit "13" Well No. 1 API No. 30-025-25066 Unit Letter B, Section 2, Township 17 South, Range 34 East	4270 PSIG

Injection Pressure Increase
Sage Energy Company
June 18, 2001
Page 2

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



Lori Wrotenbery
Director

LW/DRC

cc: Oil Conservation Division - Hobbs
Files: 4th Qtr 2001 IPI; Case File No.10103 /



NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

June 25, 1997

Sage Energy Company
P.O. Drawer 3068
Midland, Texas 79702-3068

Attn: Mr. Jay H. Hardy

**RE: Injection Pressure Increase,
North Vacuum (Abo) North Unit Waterflood Project,
Lea County, New Mexico**

Dear Mr. Hardy:

Reference is made to your request dated April 24, 1997 to increase the surface injection pressure on 16 wells in the above referenced project. This request is based on step rate tests conducted on these wells between April 3 and 16, 1997. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure all of the wells is justified at this time.

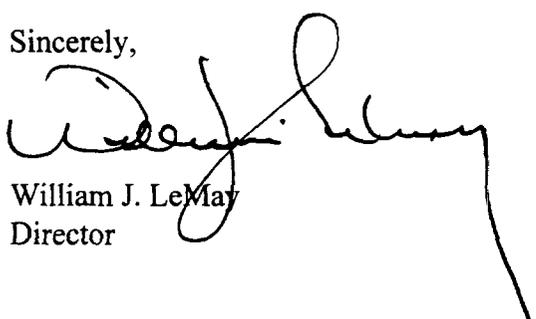
You are therefore authorized to increase the surface injection pressure on the following wells:

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
North Vacuum (Abo) North Unit Well No.2A-1 Unit Letter N, Section 1, Township 17 South, Range 34 East	4170 PSIG
North Vacuum (Abo) North Unit Well No.5B-1 Unit Letter P, Section 1, Township 17 South, Range 34 East	3945 PSIG
North Vacuum (Abo) North Unit Well No.14-1 Unit Letter D, Section 12, Township 17 South, Range 34 East	4420 PSIG
North Vacuum (Abo) North Unit Well No.14-2 Unit Letter F, Section 12, Township 17 South, Range 34 East	4180 PSIG
North Vacuum (Abo) North Unit Well No.3-1 Unit Letter J, Section 1, Township 17 South, Range 34 East	4520 PSIG
North Vacuum (Abo) North Unit Well No.4A-1 Unit Letter L, Section 1, Township 17 South, Range 34 East	4680 PSIG

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
North Vacuum (Abo) North Unit Well No.1B-1 Unit Letter F, Section 1, Township 17 South, Range 34 East	3985 PSIG
North Vacuum (Abo) North Unit Well No.19-1 Unit Letter H, Section 2, Township 17 South, Range 34 East	4110 PSIG
North Vacuum (Abo) North Unit Well No.19-2 Unit Letter J, Section 2, Township 17 South, Range 34 East	3865 PSIG
North Vacuum (Abo) North Unit Well No.6C-1 Unit Letter B, Section 1, Township 17 South, Range 34 East	4145 PSIG
North Vacuum (Abo) North Unit Well No.7C-2 Unit Letter H, Section 1, Township 17 South, Range 34 East	3800 PSIG
North Vacuum (Abo) North Unit Well No.21A-1 Unit Letter F, Section 2, Township 17 South, Range 34 East	4130 PSIG
North Vacuum (Abo) North Unit Well No.15-1 Unit Letter N, Section 36, Township 16 South, Range 34 East	4255 PSIG
North Vacuum (Abo) North Unit Well No.10-1 Unit Letter D, Section 1, Township 17 South, Range 34 East	3670 PSIG
North Vacuum (Abo) North Unit Well No.13-1 Unit Letter B, Section 2, Township 17 South, Range 34 East	4100 PSIG
North Vacuum (Abo) North Unit Well No.17-1 Unit Letter P, Section 35, Township 16 South, Range 34 East	3480 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,


William J. LeMay
Director

WJL/BES

cc: Oil Conservation Division - Hobbs
Files: 3rd Q97 PSI-X; Case File No.10103

SAGE ENERGY COMPANY

P. O. DRAWER 3068
MIDLAND, TEXAS 79702

915/683-5271

RECEIVED OIL CONSERVATION DIVISION
RECEIVED

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JHM

October 8, 1990

New Mexico Oil & Gas Conservation Commission
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

ATTN: Mr. Jim Morrow
Examiner

RE: North Vacuum (Abo)
North Unit
Case No. 10103
Lea County, New Mexico

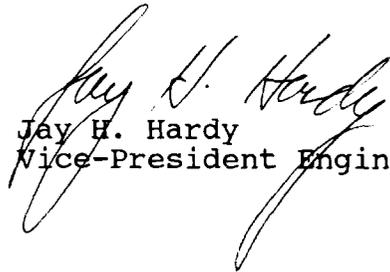
Dear Mr. Morrow:

Sage Energy Company respectfully requests that it be allowed to use unlined injection tubing in the nineteen injection wells of the subject unit. The tubing will be run on Baker Lokset packers and monitored in accordance with Rule 704-A and B. Fresh water from the Ogallala formation will be used and since the system will be closed, there will be very little corrosion.

The estimated cost to internally plastic coat the injection tubing is \$325,000.00. This is an addition to the 6 plus million dollars to install the waterflood. The initial investment is excessive because we are flooding a deep tight pay at 8400'. Consequently, the economics are marginal; a 25% ROR BFIT and a 4.8 year payout. Thus, Sage and it's working interest owners are seeking relief

from the additional investment of \$325,000.00. Your granting of this request would be greatly appreciated.

Very truly yours,



Jay H. Hardy
Vice-President Engineering

CC: Lee Patrick
San Antonio

Jim Bruce
Hinkle, Cox, Eaton Coffield and Hensley

SAGE ENERGY COMPANY

P. O. DRAWER 3068

MIDLAND, TEXAS 79702

915/683-5271

OIL CONSERVATION DIVISION
RECEIVED

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JHM

October 12, 1990

State of New Mexico Energy, Minerals and Natural Resources
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attn: Mr. Jim Morrow

RE: North Vacuum (Abo) Unit
Lea County, New Mexico
Case No. 10103

Dear Mr. Morrow:

As you requested at the hearing on October 3, 1990, for Case No. 10103, enclosed is the water analysis of two fresh water wells. These wells are located northwest of the commercial fresh water well which is located in section 36. The water analysis for the commercial well is attached to Sage Energy's C-108 application dated August 10, 1990.

If further information is needed please contact Jay Hardy at the Midland office or Lee Patrick at the San Antonio office.

Sincerely,

Jay Hardy

Jay Hardy
Vice President Engineering

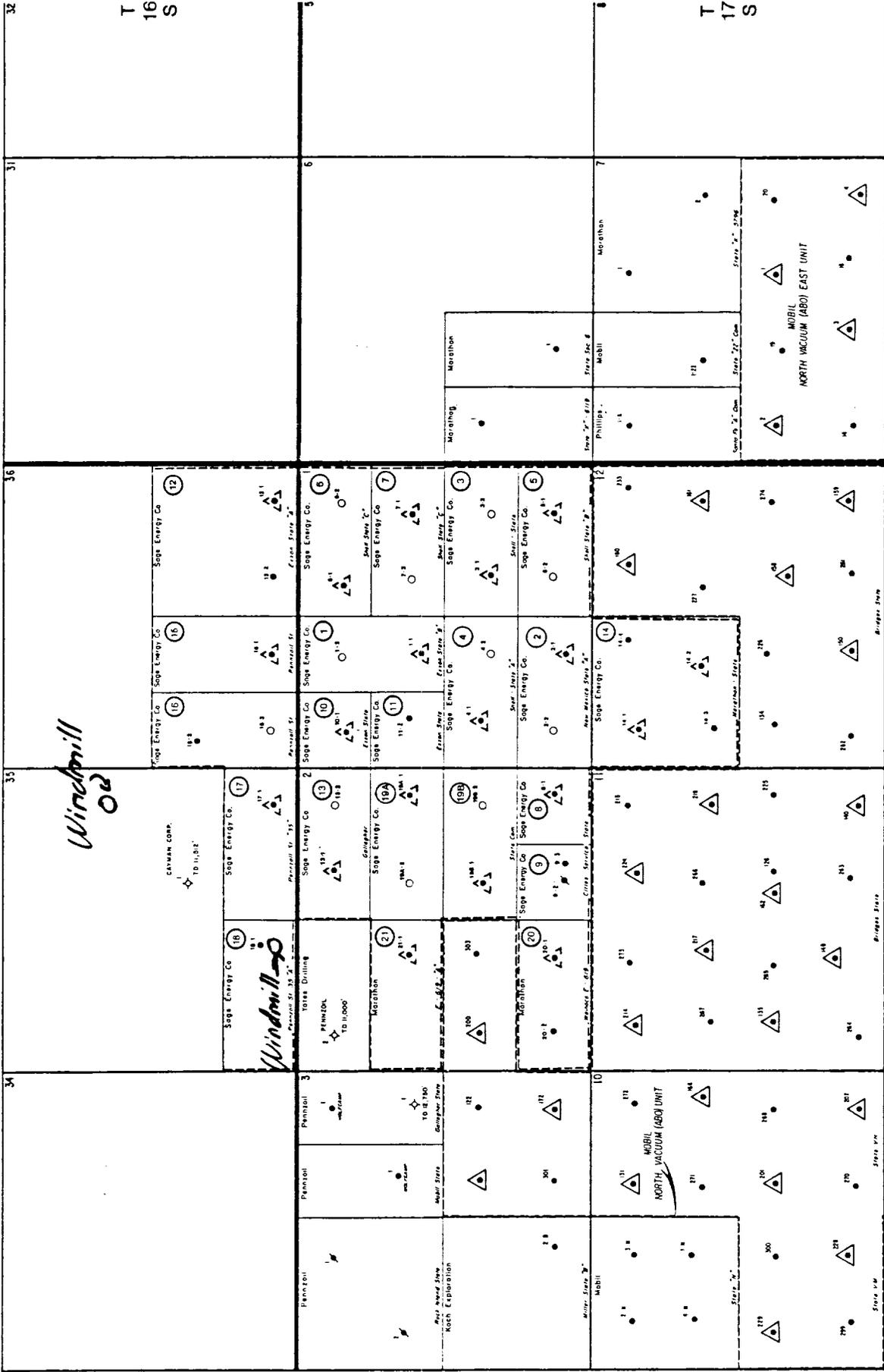
CC: James Bruce
Hinkle, Cox, Eaton, Coffield & Hensley

Lee Patrick
Sage Energy San Antonio

File

Enclosures

JH/bb



R 35 E

R 34 E

Sage Energy Company
Midland, Texas

PROPOSED NORTH VACUUM (ABO) NORTH UNIT
LEA COUNTY, NEW MEXICO

T 16 S
T 17 S

- INJECTION WELL
- △ UNIT BOUNDARY
- △ PROPOSED INJECTION WELL
- PROPOSED PRODUCING WELL

Scale 1" = 1000'

1989

Injection Pressure Increase
Sage Energy Company
August 21, 1995
Page 2

WJL/BES

cc: Oil Conservation Division - Hobbs
File: Case File No. 10103; PSI-X 3rd QTR 95



**NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT**

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

February 23, 2000

Sage Energy Company
P.O. Drawer 3068
Midland, Texas 79702-3068

Attn: Mr. George M. Harris, Jr.

**RE: *Injection Pressure Increase,
North Vacuum (Abo) North Unit Waterflood Project,
Lea County, New Mexico***

Dear Mr. Harris:

Reference is made to your request dated February 22, 2000 to increase the surface injection pressure on seven wells in the above referenced project. This request is based on step rate tests conducted on these wells on February 3rd and 4th, 2000. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure all of the wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
North Vacuum (Abo) North Unit Well No.1B-1 Unit Letter F, Section 1, Township 17 South, Range 34 East	4680 PSIG
North Vacuum (Abo) North Unit Well No.2A-1 Unit Letter N, Section 1, Township 17 South, Range 34 East	4605 PSIG
North Vacuum (Abo) North Unit Well No.6C-1 Unit Letter B, Section 1, Township 17 South, Range 34 East	4185 PSIG
North Vacuum (Abo) North Unit Well No.17-1 Unit Letter P, Section 35, Township 16 South, Range 34 East	4280 PSIG
North Vacuum (Abo) North Unit Well No.19-1 Unit Letter H, Section 2, Township 17 South, Range 34 East	4850 PSIG
North Vacuum (Abo) North Unit Well No.19-2 Unit Letter J, Section 2, Township 17 South, Range 34 East	4050 PSIG

August 21, 1995

Sage Energy Company
 P.O. Drawer 3068
 Midland, Texas 79702-3068

Attn: Mr. Jay H. Hardy

**RE: Injection Pressure Increase North Vacuum (Abo) North
 Unit Waterflood Project Lea County, New Mexico**

Dear Mr. Hardy:

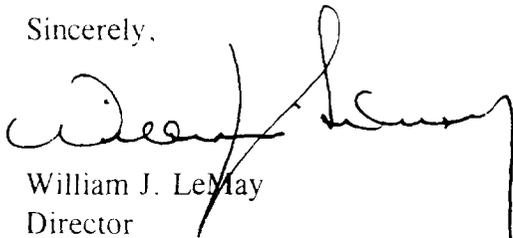
Reference is made to your request dated August 11, 1995 to increase the surface injection pressure on four wells in the above referenced waterflood project. This request is based on a step rate tests conducted between August 1 and 4, 1994. The results of the test have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

Well and Location	Maximum Injection Surface Pressure
NVANU 6C Well No.1, Unit B, Section 1 of Township 17 South	2740 PSIG
NVANU 7C Well No.2, Unit H, Section 1 of Township 17 South	2610 PSIG
NVANU 21A Well No.1, Unit F, Section 2 of Township 17 South	3480 PSIG
NVANU 15 Well No.1, Unit N, Section 36 of Township 16 South	3120 PSIG
All located in Range 34 East, Lea County, New Mexico.	

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. LeMay
 Director

*Injection Pressure Increase
Sage Energy Company
February 23, 2000
Page 2*

<i>Well and Location</i>	<i>Maximum Surface Injection Pressure</i>
North Vacuum (Abo) North Unit Well No.21A-1 Unit Letter F, Section 2, Township 17 South, Range 34 East	4500 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



Lori Wrotenbery
Director

LW/MWA/kv

cc: Oil Conservation Division - Hobbs
Files: 1st Qtr 2000 IPI; Case File No.10103 (Division Order No. R-9359)



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



BRUCE KING
 GOVERNOR
 ANITA LOCKWOOD
 CABINET SECRETARY

April 14, 1992

POST OFFICE BOX 2088
 STATE LAND OFFICE BUILDING
 SANTA FE, NEW MEXICO 87504
 (505) 827-5800

Sage Energy Company
 P.O. Drawer 3068
 Midland, Texas 79702

Case 10103

Attention: Jay H. Hardy

*RE: Injection Pressure Increase
 North Vacuum (Abo) North Unit
 6 Wells
 Lea County, New Mexico*

Dear Mr. Hardy:

Reference is made to your request dated May 5, 1992, to increase the surface injection pressure on six (6) wells in the North Vacuum (Abo) North Unit. This request is based on step rate tests conducted on these wells between April 29 & May 1, 1992. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

<u>WELL AND LOCATION</u>	<u>MAXIMUM INJECTION SURFACE PRESSURE</u>
NVANU 3 No. 1 1780' FSL & 1980' FEL Unit J, 1-17S-34E	3000 PSIG
NVANU 4A No. 1 1980' FSL & 860' FWL Unit L, 1-17S-34E	3200 PSIG

WELL AND LOCATION

MAXIMUM INJECTION
SURFACE PRESSURE

NVANU 5B No. 1
660' FSL & 860' FEL
Unit P, 1-17S-34E

3100 PSIG

NVANU 2A No. 1
460' FSL & 1980' FWL
Unit N, 1-17S-34E

3200 PSIG

NVANU 14 No. 1
860' FNL & 660' FWL
Unit D, 12-17S-34E

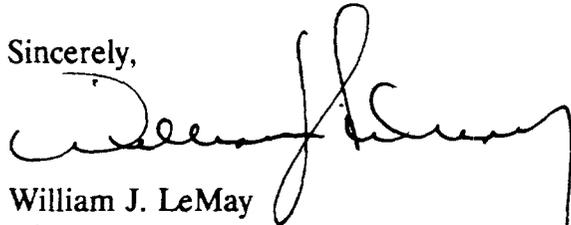
3000 PSIG

NVANU 14 No. 2
1980' FNL & 1780' FWL
Unit F, 12-17S-34E

2700 PSIG

The Division Director may rescind this injection pressure increase if it becomes apparent that the injected water is not being confined to the injection zone or is endangering any fresh water aquifers.

Sincerely,



William J. LeMay
Director

WJL/DC/jc

cc: Oil Conservation Division - Hobbs
File: R-9359 ✓
D. Catanach
R. Brown

HINKLE, COX, EATON, COFFIELD & HENSLEY

50 NOV 13 1990

ATTORNEYS AT LAW

500 MARQUETTE N.W., SUITE 800
ALBUQUERQUE, NEW MEXICO 87102-2121

(505) 768-1500

FAX (505) 768-1529

OF COUNSEL
O. M. CALHOUN*
MACK EASLEY
JOE W. WOOD
RICHARD S. MORRIS

CLARENCE E. HINKLE (190-1885)
W. E. BONDURANT, JR. (1913-1973)
ROY C. SNODGRASS, JR. (1941-1987)

November 14, 1990

LEWIS C. COX
PAUL W. EATON
CONRAD E. COFFIELD
HAROLD L. HENSLEY, JR.
STUART D. SHANOR
ERIC D. LANFHERE
C. D. MARTIN
PAUL J. KELLY, JR.
MARSHALL G. MARTIN
OWEN M. LOPEZ
DOUGLAS L. LUNSFORD
JOHN J. KELLY
T. CALDER EZZELL, JR.
WILLIAM B. BURFORD*
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RICHARD R. WILFONG*
THOMAS J. MCBRIDE
STEVEN D. ARNOLD
JAMES J. WECHSLER
NANCY S. CUSACK
JEFFREY L. FORNACIARI
JEFFREY D. HEWETT
JAMES BRUCE
JERRY F. SHACKELFORD*
JEFFREY W. HELLBERG*
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PATRICIA A. WATTS
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WILLIAM P. JOHNSON
ELLEN S. CASEY
S. BARRY PASNER
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LISA K. SMITH*

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(915) 683-4691
FAX (915) 683-6518

700 TEAM BANK BUILDING
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AMARILLO, TEXAS 79105
(806) 372-5569
FAX (806) 372-9761

218 MONTEZUMA
POST OFFICE BOX 2068
SANTA FE, NEW MEXICO 87504
(505) 982-4554
FAX (505) 982-8623

Handwritten: AM 11-15-90
File

*NOT LICENSED IN NEW MEX CO

Mr. Jim Morrow
New Mexico Oil Conservation
Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Re: Sage Energy Company (Case No. 10,102 and 10,103)

Dear Mr. Morrow:

Regarding the COPAS attached to the Operating Agreement, I have notified my client of the juxtaposition of figures regarding overhead rates, and they will be sending you a corrected page. Also enclosed is a list of fresh water wells within the area of review.

Very truly yours,

HINKLE, COX, EATON, COFFIELD & HENSLEY

Handwritten signature: James Bruce
By: James Bruce

JB:le

SAGE ENERGY COMPANY

P. O. DRAWER 3068

MIDLAND, TEXAS 79702

915/683-5271

FILE COPY
OCT 15 '90

OCT 15 '90

October 12, 1990

State of New Mexico Energy, Minerals and Natural Resources
Oil Conservation Division
P. O. Box 2088
Santa Fe, New Mexico 87504

Attn: Mr. Jim Morrow

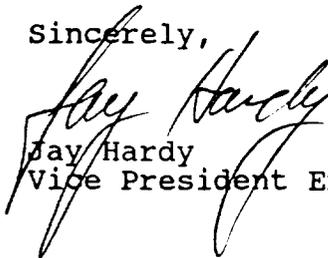
RE: North Vacuum (Abo) Unit
Lea County, New Mexico
Case No. 10103

Dear Mr. Morrow:

As you requested at the hearing on October 3, 1990, for Case No. 10103, enclosed is the water analysis of two fresh water wells. These wells are located northwest of the commercial fresh water well which is located in section 36. The water analysis for the commercial well is attached to Sage Energy's C-108 application dated August 10, 1990.

If further information is needed please contact Jay Hardy at the Midland office or Lee Patrick at the San Antonio office.

Sincerely,



Jay Hardy
Vice President Engineering

CC: James Bruce
Hinkle, Cox, Eaton, Coffield & Hensley

Lee Patrick
Sage Energy San Antonio

File

Enclosures

JH/bb

LABORATORY WATER ANALYSIS

No. 227

To: Sage Energy

Date: 10-11-90

Drawer 3068

Midland Texas

Att: Jay Hardy

This report is the property of Halliburton Company and neither it nor any part thereof nor a copy thereof is to be published or disclosed without first securing the express written approval of laboratory management; it may however, be used in the course of regular business operations by any person or concern and employees thereof receiving such report from Halliburton Company.

Submitted by _____ Date Rec. 10-11-90

Well No. _____ Depth _____ Formation _____

County _____ Field _____ Source _____

Windmill well south of Penzoil 35A^{#1}, Windmill well north of Penzoil 35^{#1}

SE1/4, SW1/4 Sec 35, T-16-S
R-34-E

SE1/4 NE1/4 Sec. 35 T-16-S
R-34-E

Resistivity _____

Specific Gravity 1.000 .095

pH 6.4 6.5

Calcium (Ca) 75 70 *MPL

Magnesium (Mg) 9 9

Chlorides (Cl) 100 100

Sulfates (SO₄) NIL NIL

Bicarbonates (HCO₃) 61 152.5

Soluble Iron (Fe) NIL NIL

Remarks: _____ *Milligrams per liter

Respectfully submitted,

Analyst: John Eubank
cc: _____

HALLIBURTON COMPANY

By _____
CHEMIST

NOTICE

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