



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS  
STATE ENGINEER

December 10, 1943

ADDRESS CORRESPONDENCE TO:  
STATE CAPITOL  
SANTA FE, N. M.

Mr. L. L. Porter, Jr.  
Secretary-Director  
Oil Conservation Commission  
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Marathon Oil Company which seeks to dispose of salt water by injection into a porous formation not productive of oil and gas. The water to be disposed of originates in the Lea Bone Springs and Lea Devonian formations. Generally, the water in the Devonian contains an extremely high concentration of chlorides, while the water in the so-called Capitan Reef or Seven Rivers contains a much better chemical quality of water. No analyses of either the brine or the water in the formation into which injection will be made was furnished with the application. A general knowledge of the quality of water in the respective zones indicates that the granting of this application would in time cause the water in the injection zone to be so highly concentrated that it could not be economically treated for use.


There has been considerable discussion of this proposed disposal well by staff members of this office for several weeks and we have received oral comments from independent hydrologists concerning this proposed disposal well.

I cannot agree to the granting of this application in view of the information I have, which is not contained in the application, and therefore must object to the granting of this application until additional information is obtained. It is a matter of record that the Capitan Reef produces water near the Texas-New Mexico State Line which contains less than 3000 parts per million of chlorides. Before this office can further consider withdrawing objection to the granting of this application, we will require analyses by an

independent laboratory of the water in the Lea Bone Springs formation, the Lea Devonian formation and the Seven Rivers formation into which the injection is to be made.

Yours truly,

S. W. Reynolds  
State Engineer

By: 

Frank E. Irby  
Chief  
Water Rights Division

FEI/ma  
cc-John R. Barber  
F. H. Hennighausen



## HALLIBURTON DIVISION LABORATORIES

HALLIBURTON COMPANY

LOVINGTON, NEW MEXICO

No. 1-242-53

**ILLEGIBLE**

## LABORATORY REPORT

Date November 29, 1963

TO Marathon Oil Company

Box 220

Hobbs, New Mexico

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Date Received

Well &amp; Lease Log Unit SWD #1 Depth 4013 Formation Seven Rivers

Location Field Source Produced

Specific gravity 1.017  
60/60 °F

Color, filtrate Cloudy

pH 7.6

Resistivity 76 °F .319  
ppm (mpl)

Chlorides, Cl 7.600

Sulfates, SO<sub>4</sub> 2.750Alkalinity, HCO<sub>3</sub> 185

Calcium, Ca 1.120

Magnesium, Mg 585

Iron, Fe Negl.

Sodium, Na<sup>+</sup> 3.910Sulfides, H<sub>2</sub>S 177

Remarks

ppm equals parts per million uncorrected or milligrams per liter  
\* includes Potassium as Na

Respectfully submitted,

HALLIBURTON COMPANY

By W.L. [Signature] Laboratory Analyst

Laboratory Analyst

Approved

**NOTICE**

This report is limited to the tests and analyses stated herein and is not to be used for any other purpose. The user is to be held responsible for any loss or damage resulting from the use of this report.

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## HALLIBURTON DIVISION LABORATORY

HALLIBURTON COMPANY

LOVINGTON, NEW MEXICO

No. WL-747-63

## LABORATORY REPORT

Date December 2, 1963

TO Marathon Oil Company  
Box 220  
Hobbs, New Mexico

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

Date Received \_\_\_\_\_

Well & Lease Lea Unit SWD #1 Depth 4137' Formation Seven Rivers  
Location \_\_\_\_\_ Field \_\_\_\_\_ Source Produced

Specific gravity 1.015  
60/60 °F  
Color, filtrate Cloudy  
pH 7.6  
Resistivity .286  
• 75 °F ppm (mcl)  
Chlorides, Cl 8.000  
Sulfates, SO<sub>4</sub> 2.500  
Alkalinity, HCO<sub>3</sub> 170  
Calcium, Ca 1.280  
Magnesium, Mg 365  
Iron, Fe Negl.  
Sodium, Na\* 4.278  
Sulfides, H<sub>2</sub>S Negl.

Remarks Approximately same as 1st sample

ppm equals Parts per million uncorrected or milligrams per liter  
\* includes Potassium as Na.

Respectfully submitted,

HALLIBURTON COMPANY

Laboratory Analyst

By Dave Sutton  
Dave Sutton, Division Chemist

Brewer \_\_\_\_\_

## NOTICE

This report is limited to the described sample tested. Any user of this report agrees that Halliburton shall not be liable for any loss or damage, whether due to act or omission, resulting from such report or its use.

## HALLIBURTON DIVISION LABORATORY

HALLIBURTON COMPANY  
LOVINGTON, NEW MEXICO

No. WL-746-63

## LABORATORY REPORT

Date December 2, 1963

TO Marathon Oil Company  
Box 220  
Hobbs, New Mexico

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

Date Received

Well & Lease As Marked Depth Formation Both from  
Location Lea Unit-Bone Springs Field Lea Unit-Devonian Source Heater Treater  
Prod. - Approx. 120 BOPD (Water Prod. - Approx. 1000 BOPD)Specific gravity 1.124  
60/60 °F

1.026

Color filtrate

pH 6.7

7.4

Resistivity

°F  
ppm (impl)

Chlorides, Cl 114,000

18,400

Sulfates, SO<sub>4</sub> (1500)

(2500)

Alkalinity, HCO<sub>3</sub> 232

158

Calcium, Ca 2,000

1,680

Magnesium, Mg 680

730

Iron, Fe Negl.

Negl.

Sodium, Na<sup>+</sup> 21,000

9,900

Sulfides, H<sub>2</sub>S Negl.

Tr. (20)

Remarks Turbidity (Jackson Candle Turbidimeter Method) Sample #1 - Bone Springs  
Sample #2 - Devonian; Sample #3 - Seven Rivers (Waters in mixtures mixed 50:50)ppm equals parts per million uncorrected or milligrams per liter  
\* includes bromine as Na

Respectfully submitted

HALLIBURTON COMPANY

By Dave Sutton, Division Chemist

## NOTICE

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MARATHON OIL COMPANY  
FORMERLY THE OHIO OIL COMPANY

LEGAL DEPARTMENT  
J. O. TERRELL COUCH  
DIVISION ATTORNEY

December 18, 1963

SOUTHERN NATIONAL BANK BUILDING  
P. O. BOX 3128  
HOUSTON 1, TEXAS 77001

Mr. Dan Nutter  
Chief Engineer  
New Mexico Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

Dear Dan:

My well-laid plans to attend the Interstate Oil Compact meeting in Santa Fe came to nothing, and I am very sorry that I was not able to be there. Having seen some of the press releases about the speech you presented at the Compact meeting I would certainly like the opportunity to read it if you have an extra copy available.

Warren Leach relayed to me the substance of your telephone conversation concerning the status of our pending application for the Lea Unit salt water disposal well. Thanks once more for your continuous attitude of reasonable and objective understanding of industry problems. When I suggested that Warren call you I felt sure that if any misunderstanding had arisen concerning our application, we would be much better able to correct it after discussing the matter with you.

If a copy of your speech is not readily available I will rely on the press releases, but if it is not an imposition I would certainly like to read the entire text.

Sincerely,



J. O. TERRELL COUCH

JOTC/1



MARATHON OIL COMPANY  
FORMERLY THE OHIO OIL COMPANY

December 23, 1963

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P. O. Box 220  
Hobbs, New Mexico

New Mexico Oil Conservation Commission  
P. O. Box 871  
Santa Fe, New Mexico

Attention: Mr. Daniel S. Nutter

Dear Sir:

Enclosed please find water analyses on the Lea Bone Springs, Lea Devonian and Seven Rivers formations water samples. These analyses have been submitted to Mr. Frank E. Irby of the State Engineer Office, Santa Fe, New Mexico.

In that there is some doubt as to the proper designation of the Lea Devonian and Lea Bone Springs samples, additional samples will be taken under the supervision of Mr. Jim Wright of the Roswell office of the State Engineer. The results of these analyses will also be forwarded to the State Engineer Office as well as to the New Mexico Oil Conservation office in Santa Fe.

Yours very truly,

MARATHON OIL COMPANY  
Engineering Department

John R. Barber  
Area Petroleum Engineer

JRB:bje



## HAI BURTON DIVISION LABORATORY

HALLIBURTON COMPANY  
LOVINGTON, NEW MEXICO

No. W1-746-63

## LABORATORY REPORT

Date December 2, 1963

TO Marathon Oil Company

Box 220

Hobbs, New Mexico

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

Date Received

Well &amp; Lease As Marked

Depth

Formation

Both from

Heater Treater

Location

Field

Source

Lea Unit-Bone Springs

Lea Unit-Devonian

(Water Prod. - 120 BOPD)

(Water Prod. - 1000 BOPD)

Specific gravity  
60/60 °F

1.124

1.026

Color, filtrate

pH

6.7

7.4

Resistivity

°F

ppm (mpl)

Chlorides, Cl

114,000

18,400

Sulfates, SO<sub>4</sub>

(1500)

(2500)

Alkalinity, HCO<sub>3</sub>

232

158

Calcium, Ca

2,000

1,680

Magnesium, Mg

680

730

Iron, Fe

Negl.

Negl.

Sodium, Na\*

71,000

9,900

Sulfides, H<sub>2</sub>S

Negl.

Tr. (20)

Remarks Turbidity (Jackson Candle Turbidimeter Method) Sample #1 - Bone Springs

Sample #2 - Devonian; Sample #3 - Seven Rivers (Waters in mixtures mixed 50:50)

ppm equals Parts per million uncorrected or milligrams per liter  
\* includes Potassium as Na.

Respectfully submitted,

HALLIBURTON COMPANY

By

Dave Sutton, Division Chemist

Laboratory Analyst

Brewer

## NOTICE

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**MARATHON OIL COMPANY**  
FORMERLY THE OHIO OIL COMPANY

December 27, 1963

P. O. Box 220  
Hobbs, New Mexico

State Engineer Office  
The Capitol Building  
Santa Fe, New Mexico

Attention: Mr. Frank E. Irby


Dear Sir:

Enclosed please find complete water analyses on the Lea Bone Springs and Lea Devonian formation water samples. These samples were caught from the respective heater-treaters under the supervision of Mr. Jim Wright of the State Engineer's Office in Roswell, New Mexico.

A copy of these analyses has been forwarded to Mr. Daniel S. Nutter of the New Mexico Oil Conservation Commission. Please advise if any further assistance can be offered in this matter.

Yours very truly,

MARATHON OIL COMPANY  
Engineering Department

  
John R. Barber  
Area Petroleum Engineer

JRB:bje

cc: L. H. Shearer  
J. A. Grimes  
T. A. Steele  
D. V. Kitley  
A. A. Peters  
W. B. Leach  
Den. Research Lab

Mr. D.S. Nutter  
NMOCC-Santa Fe

USGS-Roswell  
USGS-Hobbs

# HALLIBURTON DIVISION LABORATORY

HALLIBURTON COMPANY  
LOVINGTON, NEW MEXICO

No. W1-801-63

## LABORATORY REPORT

Date December 26, 1963

TO Marathon Oil Company  
Box 220  
Hobbs, New Mexico

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

Date Received .....

Well & Lease Marathon Lea Unit Lease Depth ..... Formation As Listed

Location ..... Field Pearl Source Heater Treater

	<u>Bone Springs</u> (Wtr. Prod. 120 BOPD)	<u>Devonian</u> (Wtr. Prod. 1000 BOPD)
Specific gravity 60/60 °F	<u>1.125</u>	<u>1.027</u>
Color, filtrate	<u>Slt. Cloudy</u>	<u>Lt. Gray</u>
pH	<u>7.1</u>	<u>7.2</u>
Resistivity ° 84 °F	<u>.042</u>	<u>.156</u>
	ppm (mpl)	
Chlorides, Cl	<u>117,000</u>	<u>18,200</u>
Sulfates, SO <sup>4</sup>	<u>700</u>	<u>950</u>
Alkalinity, HCO <sup>3</sup>	<u>232</u>	<u>183</u>
Calcium, Ca	<u>2,880</u>	<u>1,520</u>
Magnesium, Mg	<u>437</u>	<u>292</u>
Iron, Fe	<u>Negl.</u>	<u>Negl.</u>
Sodium, Na*	<u>72,162</u>	<u>10,023</u>
Sulfides, H <sup>2</sup> S	<u>Negl.</u>	<u>26</u>
Total Dissolved Solids -	<u>195,000</u>	<u>39,600</u>

Remarks .....

ppm equals Parts per million uncorrected or milligrams per liter  
\* includes Potassium as Na.

Respectfully submitted,

HALLIBURTON COMPANY

By W.L. Brewer, Laboratory Technician

Laboratory Analyst

Brewer

## NOTICE

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**STATE OF NEW MEXICO**

**STATE ENGINEER OFFICE**

**SANTA FE**

**S. E. REYNOLDS  
STATE ENGINEER**

December 31, 1963

ADDRESS CORRESPONDENCE TO:  
STATE CAPITOL  
SANTA FE, N. M.

Mr. A. L. Porter, Jr.  
Secretary-Director  
Oil Conservation Commission  
Santa Fe, New Mexico

Dear Mr. Porter:

Reference is made to the application of Marathon Oil Company which seeks to dispose of salt water by injection into a porous formation not productive of oil and gas. Marathon has designated the well as their Lea Unit Salt Water Disposal No. 1 located in Section 12, Township 20 South, Range 34 East. Reference is also made to my letter of December 10, 1963 which was an objection to the granting of the application until additional information could be obtained.

The additional information required has been supplied to me and it now appears that no economically feasible use of the water can be made for municipal, domestic, stock or agricultural purposes.

There is no doubt, from the information obtained, that the quality of water in the disposal zone (Seven Rivers formation) will be deteriorated by this injection. Therefore, the statement that the Seven Rivers water cannot be economically used at this date shall not be considered a precedent which would mean that henceforth the State Engineer would agree to future proposals which would result in the deterioration of quality of water.

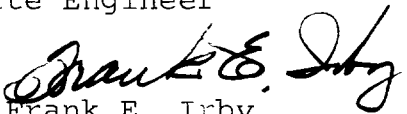
The objection of the State Engineer to the granting of the

application is hereby withdrawn provided injection is made  
through tubing under a packer set at approximately 3875 feet.

Yours truly,

S. E. Reynolds  
State Engineer

FEI/ma  
cc-Marathon Oil Co.  
F. H. Hennighausen

By:   
Frank E. Irby  
Chief  
Water Rights Division