WATER CONTAMINATION STUDY

GEORGE M. BLOCKER
WATER CONTAMINATION STUDY
JAL, NEW MEXICO

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

John W. Runyan, Geologist
Oil Conservation Division
in cooperation with the
Water Resources Division
Roswell, New Mexico

July 20, 1978

APPENDIX

Location Plat and U.S.G.S. Topo Map

Results of Study

General Data

Test Well Data

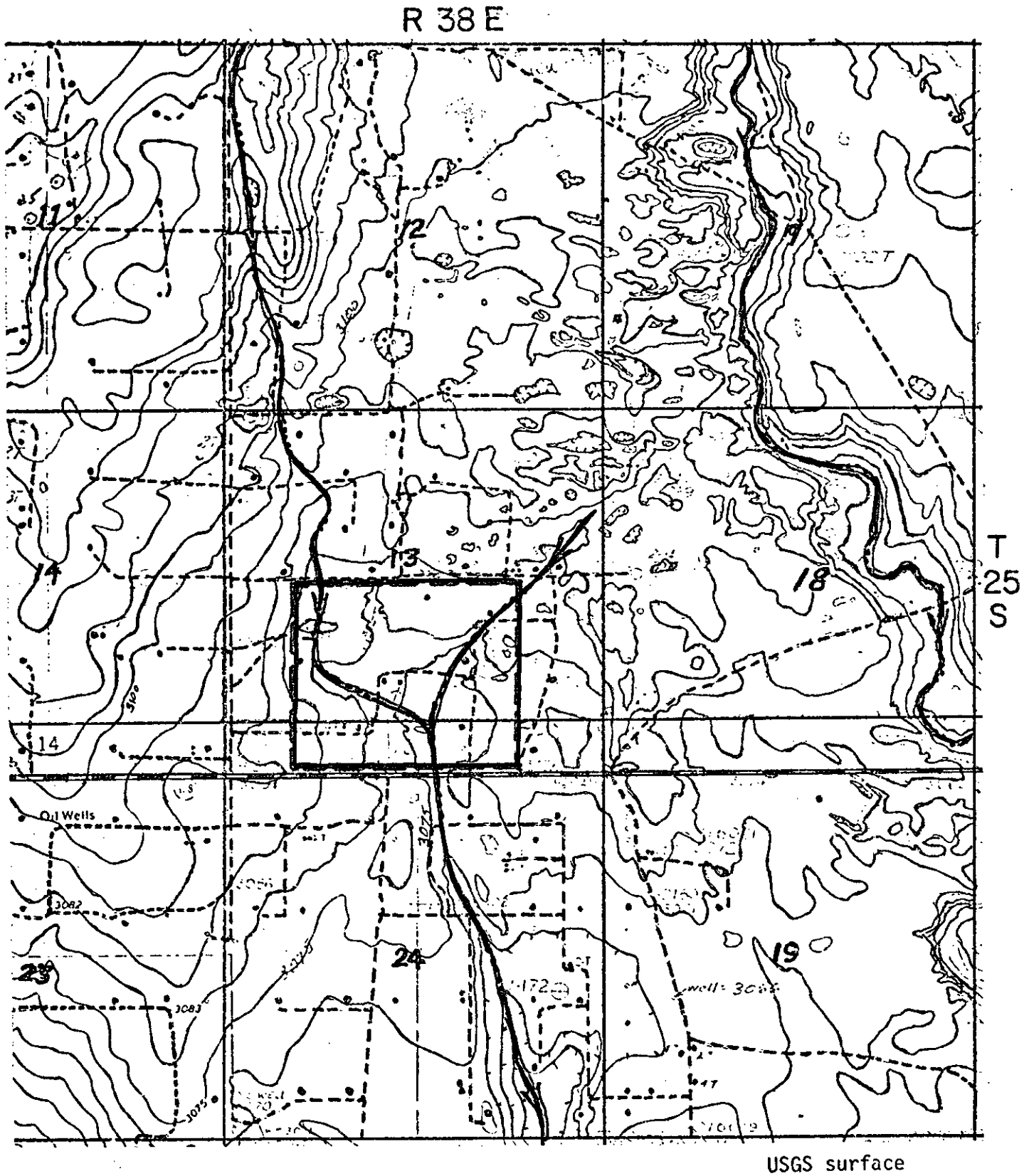
Well Numbering System

Daily Field Reports

Water Analysis

Driller's Logs

Maps -- Water Chloride Map
Water Movement Map
Top Redbed Map
Well Location Map



George Blocker Water Contamination Study,
Area outlined in heavy dashed lines. ——

USGS surface
topo. map.

GEORGE BLOCKER
WATER CONTAMINATION STUDY

RESULTS

The data and maps compiled from the information obtained from 19 test wells and eight water wells indicates that the main source of contamination of Mr. Blocker's water well came from Gulf Oil Company McBuffington old abandoned battery pit located in N-13-25-37.

Even though injection water came up outside on the surface from Gulf Oil Company McBuffington SWD Well #2 there is very little evidence to support the possibility that this salt water disposal well was the cause or contributed to the contaminated area in question.

There were eight test wells drilled downdip, east,west, and south of Gulf's SWD well. The chloride content of these wells range from 28 ppm to 114 ppm chlorides, indicating little if any salt water passed through the pleistocene fill southwestward to the area of contamination.

That the pit is a possible cause is indicated by the chloride content of test well #7 on edge of pit, and that the test well and water well control points cause the chloride contours to focus at the pit.

The contaminated area is mainly confined to a Redbed low, located in the bottom of the local drainage pattern. This low has a closure of + 20 feet and this would more or less cause entrapment of the contaminated water.

Respectfully submitted,

John W. Runyan

John W. Runyan, Geologist
Oil Conservation Division

Results

The water movement in the area is from the northwest to southeast following a Redbed and surface draw. The rate of water movement through the Pleistocene to recent fill is from zero to three feet per day, depending on localized gradients. The Redbed map shows two areas which are actually lows within the drainage pattern. One in the center of the W/2 of Section 13, T25S, R37E, has +30 feet of closure and the other one in the SW/4 of SE/4 of Section 13, T25S, R37E, has +20 feet of closure. Both of these lows would trap and hold water, particularly chlorides which are heavy in relation to water.

The closed low located in the center of the W/2 of Section 13 was reported to have contaminated water in 1965. Since 1965 the apparent contamination has cleared up some in three wells, with one well going from 809 ppm to 187 ppm. The main area of contamination around Mr. Blocker's water well mostly lies in the second closed low in the SW/4 of SE/4 of Section 13.

Test holes Nos. 12, 14, 15 & 16 did not encounter any water. Drilling samples were taken at various depths and chloride analysis were run on the samples at a ratio of one part water to one part sample. Test wells Nos. 4, 5, & 17 also did not encounter any water. These test holes were circulated with fresh water in an attempt to pick up any chlorides from the formation and samples were analyzed by standard titration method.

There is a large covered pit located at Gulf's McBuffington lease battery. This pit was abandoned and covered in 1967 when Commission order R-3221 became effective. Exact size and depth of pit is unknown, but surface scar is 100 ' X 150' in size.

GENERAL DATA

Mr. Blocker first contacted this office in September, 1977, about the possibility of doing a test well chloride study in the area around his contaminated water well located in 25.37.13-43113.

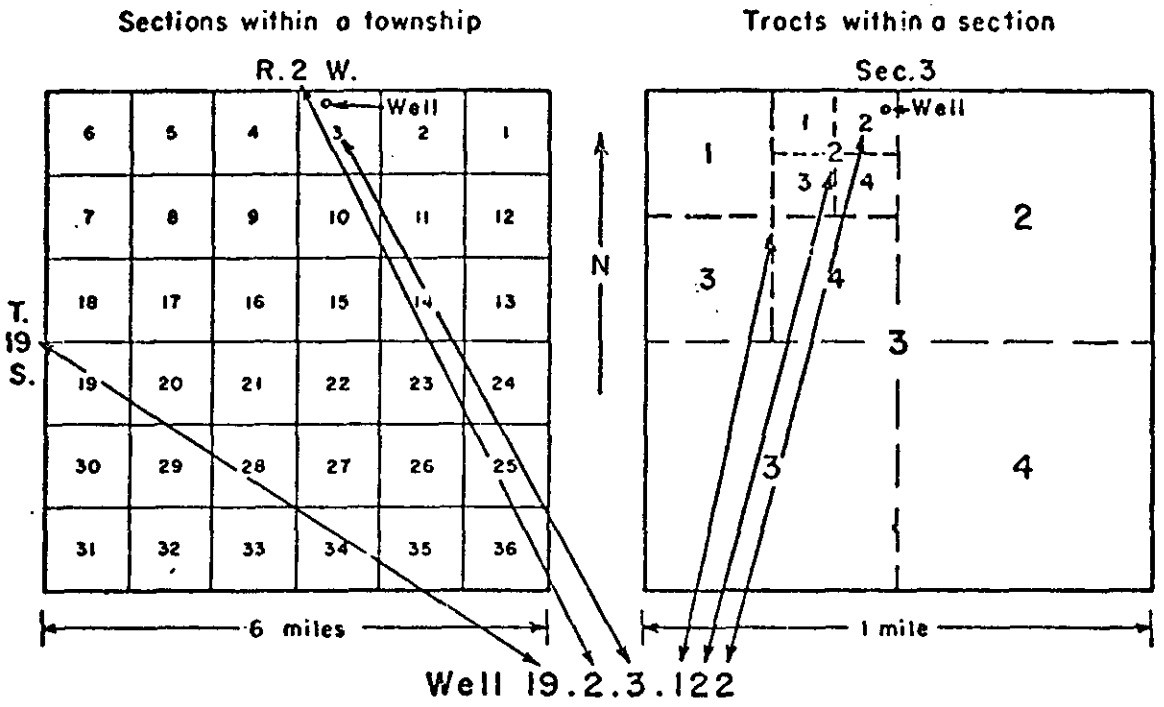
This study was due to Gulf's McBuffington #2 SWD well developing a surface waterflow, geyser, on March 9, 1976. This geyser located 200 feet NE of the SWD well formed a small pond which had a chloride content of 48,422 ppm chlorides. Gulf's McBuffington #2 SWD well is located 1500 feet northeast and updip from the Blocker water well.

In December 1976, Gulf had Reed and Associates, consulting hydrologists, from Midland, Texas, to do a study on the contaminated area in question. Three test wells were drilled in a line between Gulf's McBuffington #2 SWD well and Mr. Blocker's contaminated water well. The Reed Study and report stated that they did not believe that the McBuffington #2 SWD well contaminated the water well.

On January 3, 1978, I met with Mr. Jim Wright and Pinky Gallagher of the Water Resources Division, and Mr. Blocker and his lawyer at the Hobbs Oil Conservation Division Office. Mr. Blocker wanted to expand the Reed Study by drilling several additional water test wells.

Drilling began January 23, 1978, and was completed March 2, 1978, with a total of 16 test wells being drilled, Nos. 4 through 19.

Besides the test wells that were drilled, there are eight water wells in the immediate area which were sampled and used for additional control. The test wells and water well data is listed on the Test Well Data Page as well as on the maps enclosed in this report.



.-- System of numbering wells in New Mexico.

BLOCKER TEST WELL DATA

TW #4 --- 25.37.13--41220

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 - Circulated	0	60'	54'	3084.4'	0

TW #5 --- 25.37.13--41100

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Circulated	284	76'	72'	3081.1'	0
WRD	#1 Circulated	247				

TW #6 --- 25.37.13--41311

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Jetted	284	90'	87'	3078.3'	74.5
WRD	#1 Jetted	217				
WRD	#2 Trip	114				
WRD	#3 Trip	106				

TW #7 -- 25.37.13--34120

BY	SAMPLE NO.	CHLORIDE	TD	TB	ELEVATION	W.L
OCD	#1 Jetted	7526	128'	126'	3077.7'	77.2'
WRD	#1 Jetted	7770				

NOTE: Test well Nos. 4, 5, 6 & 7 drilled with 284 ppm Cl water from Jal Country Club. Test wells 8--19 drilled with 85 ppm Cl water from City of Jal.

TW #8 -- 25.37.13 --34113

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Jetted	78.0	110'	108'	3082.1'	74.1
OCD	#2 Jetted	71.0				
WRD	#1 Jetted	55.0				
WRD	#2 Jetted	60.0				

TW #9 --- 25.37.13--32413

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Jetted	866.2	100'	97'	3078.8'	74.1'
OCD	#2 Jetted	1050.8				
WRD	#1 Jetted	872.0				
WRD	#2 Jetted	1000.0				
WRD	#3 Trip	993.0				

TW #10 --- 25.37.13--34442

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Jetted	56.8	140'	137'	3078.5	76.4'
WRD	#1 Jetted	64.0				
WRD	#2 Trip	63.0				

TW #11---25.37.13--44133

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Circulated	127	55'	44'	3074.5'	0 @ 54'
WRD	#1 Circulated	103				

TW #12---25.37.13--43214

BY	SAMPLE NO.	CHLORIDE	TD	RB	ELEVATION	W.L.
OCD	#1 Circulated	85.2	70'	60'	3072.4'	0 @ 60'
OCD	#2 Sand @ 50'	56.8				
WRD	#1 Circulated	79.0				

TW #13---25.37.13--431443

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Jetted	85.2	140'	---	3071.9'	68.5'
OCD	#2 Jetted	142.0				
OCD	#3 Jetted	170.4				
OCD	#4 Jetted	170.4				
WRD	#1 Jetted	112				

TW #14---25.37.13--41243

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Circ. @ 60'	71.0	61'	60'	3077.4'	0 @ 54'
OCD	#2 Circ. @ 61'	71.0				
OCD	#1 Sand @ 55'	28.4				
OCD	#2 Sand @ 50'	28.4				
OCD	#3 Sand @ 40'	28.4				
OCD	#4 Sand @ 45'	28.4				

TW #15---25.37.13--412332

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Sd. @ 40'	35.5	65'	65'	3076.7'	0 @ 55'
OCD	#2 Sd. @ 50'	35.5				
OCD	#3 Sd. @ 60'	35.5				

TW #16---25.37.13--412333

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Circ. @ 60'	85.2	66'	64'	3077.1'	0 @ 66'
WRD	#2 Circ. @ TD	83.0				

TW #17---25.37.13--421331

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Circ. @ 30'	70	98'	0	3075.7'	72.3'
OCD	#2 Circ. @ 40'	70				
OCD	#3 Circ. @ 55'	70				
OCD	#4 Circ. @ 57'	113				
WRD	#1 Circ. @ TD	108				

TW #18---25.37.13--413134

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Circ. 70'	70	98'	0	3075.7'	72.3
OCD	#2 Circ. 80'	70				
OCD	#3 Circ. 98'	84				
WRD	#1 Trip--TD	98				

TW #19---25.37.13--323232

BY	SAMPLE NO.	CHLORIDE	T.D.	R.B.	ELEVATION	W.L.
OCD	#1 Circulated	199	110'	108'	3079.5'	0 @ 76'
OCD	#2 Circulated	341				
OCD	#3 Circulated	639				
OCD	#4 Circulated	710				
OCD	#5 Circulated	753				
OCD	#6 Circulated	781				
OCD	#7 Circulated	781				
WRD	#1 Circulated	798				

REED---BLOCKER REPORTED

TEST WELL	TAKEN BY	CHLORIDE	T.D.	R.B.	W.L.	DATE
#1	Reed	1376	122'	118'	68'	12-18-76
#1	Blocker	1335				12-31-76
#2	Reed	461	100'	77'	70'	12-18-76
#2	Blocker	1761				12-31-76
#3	Reed	0	?	62'	0	12-18-76
#3	Blocker	4175				12-31-76

WATER WELLS IN AREA

LOCATION	OWNER	CHLORIDE	TAKEN BY	DATE
25.37.13-43113	Blocker	1824	WRD	3-30-76
25.37.13-43113	Blocker	3582	WRD	4-20-76
25.37.13-43113	Blocker	3650	WRD	11-23-76
25.37.13-43113	Blocker	4099	Reed	12-2-76
25.37.13-43113	Blocker	3770	WRD	01-18-78
25.37.13-431312	?	2345	WRD	1-17-78
25.37.13-342121	City Jal	11650	Reed	12-31-76
25.37.13-342121	City Jal	19990	WRD	1-18-78
25.37.13-312422	?	52	WRD	1-18-78
25.37.13-312434	?	51	USGS	7-27-54
25.37.13-312434	?	106	WRD	4-20-76
25.37.13-312434	?	108	WRD	3-9-77
25.37.13-312434	?	104	WRD	1977
25.37.13-312434	?	104	WRD	1-18-78
25.37.13-31244	City Jal	317	WRD	10-14-65
25.37.13-321411	City Jal	809	WRD	10-15-65
25.37.13-321411	City Jal	187	WRD	1-18-78
25.37.13-323344	City Jal	113	Reed	12-2-76
25.37.13-323344	City Jal	55	WRD	1-18-78

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE March 11, 1976

Name of Employee LESLIE A. CLEMENTS

Time of Departure 10:00 A.M. Time of Return 5:00 p.m.

Miles Travelled 110

In the space below please indicate purpose of trip and duties performed, listing wells or leases visited.

Mr. Jerry Sexton and myself met Mr. George Blocker of Jal, New Mexico and went to Gulf's Learcy McBuffington SWD Well #2-J, Sec. 13, T25S, R37E. Gulf had a workover unit on the well and were fishing the tubing at inspection time. Approximately 200 feet east of the well water has surfaced in a shallow blown-out area forming three mud-mounds and a small pond of salt water.

The tubing pulled from the well was as follows: 2 whole joints and fragments of another joint. The first joint pulled had a rather large hole approximately 20 feet below the tubing hanger, this is the first hole noticed (check photos taken). I collected water sample and took photographs of pond. (Note -- in checking the well file, it states that tubing is 2 7/8" plastic lined, when tubing is apparently 2 3/8" EUE).

Leslie A. Clements
Employee's Signature
District #1

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 1-23-78 Miles 121 District I

Time of Departure 8 a.m. Time of Return 4 p.m. Car No. OF-49

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	7	0

H-13-25-37 to Mr. George Blocker's property to begin drilling water test wells to determine source of water contamination in Mr. Blocker's water well located 25.37.13.43113.

Test well #4 located 230' at 350° MN from Gulf's P&A SWD well the McBuffington #2 in H-13-25-37.

Top redbed at 54', TD at 60'. Test hole was dry -- no water samples obtain

Those present: Mr. Jim Wright, State Engineer, John W. Runyan, OCC, Charlie Reed, Mr. Blocker and Mr. Sumruld, driller.

Also drilled test well #5, located 465' at 254° MN from Gulf P&A (SWD) well #2..

Top redbed at 72', TD 76'.
Circulated sample = 284.0 ppm Cl -- same as drilling water. Test well #5 dry.

TYPE INSPECTION PERFORMED

H = Housekeeping
W = Water Contamination
D = Drilling Operation
T = Well Test
P = Plugging
C = Plugging Cleanup
M = Mishap or Spill
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

I = Injection
S = SWD
U = Underground Storage
P = Production
O = Other
G = General Operation

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 1-24-78 Miles 113 District I

Time of Departure 7:30 am Time of Return 3:30 pm Car No. OF-40

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	O	O	7	O

J-13-25-37 to Mr. George Blocker property to continue drilling water test wells to determine source of water contamination of Mr. Blocker's water well.

Test well #6 located 720' NW of Gulf McBuffington #5 well located in J-13-25-37.

Top redbed at 87' TD at 90'
Circulated sample = 284 ppm Cl
Trip sample by satte engineer (1-25-78) = 114 ppm Cl.

Test Wells #4, #5, & #6 were drilled with Jal Country Club water which is 284 ppm chlorides. We switched to city of Jal water which is 85 ppm chlorides and will use city water to drill with for rest of test wells.

Those present: Mr. Jim Wright, State Engineer, J.W. Runyan, OCC, Mr. Blocke and Mr. Sumruld, driller.

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NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 1-26-78 Miles 116 District I

Time of Departure 7:30 am Time of Return 7:30 pm Car No. OF-49

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	12	0

N-13-25-37 To Mr. George Blocker's property to continue drilling water test wells.

Test well #7 located 490' north of Gulf's McBuffington (dual) #4 well in N-13-25-37 and 90' SW of Gulf's abandoned battery pit (now covered).

Top redbed at 126', TD at 128', chlorides 7526.0 ppm.

Had to run 2" casing in hole and 1" tubing to get water sample. Blew down tubing for about one hour before good sample could be obtained.

Those present: Mr. Jim Wright, State Engineer, John W. Runyan, OCC, Mr. Blocker and Mr. Sumruld, driller.

Also State Engineer's crew came from Carlsbad and ran elevations on test wells #4 thru 8.
#4 -- 3080.4'
#5 -- 3081.0'
#6 -- 3078.5'
#7 -- 3077.7'
#8 -- 3082.1'

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G = General Operati...

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 1-27-78 Miles 128 District I

Time of Departure 7:30 am Time of Return 5:15 pm Car No. OF-49

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	7	3

N-13-25-37 to Mr. George Blocker's property to continue the drilling of water test wells for water contamination study.

Test well #8 located 290' SW of test well #7 in N-13-25-37

Top redbeds at 108' TD -- 110'
1st sample = 78 ppm Cl -- blew through casing 15 minutes
2nd sample - 71.0 ppm Cl -- blew through casing 30 minutes

Those present: Jim Wright, State Engineer, J.W. Runyan, OCC, Mr. George Blocker and Mr. Sumruld, driller.

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NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name EDDIE SEAY Date 1-30-78 Miles 200 District I

Time of Departure 7:30 a.m Time of Return 6:30 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	U	S	11	-

13-25-37 to east Jal for Blocker contamination study to drill test well #9 -- hard rock 75 feet out at 82 feet
Top of redbed 97 feet
TD 100 feet

1st sample -- 866.2 ppm
2nd sample 1050.8 ppm

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NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

File Copy

Name EDDIE SEAY Date 2-1-78 Miles 104 District I

Time of Departure 7 am Time of Return 6:30 pm Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS	
W	U	S	11	2	13-25-37 To East of Jal to drill test well for Blocker contamination study. Test well #10 -- top of redbed--137 feet TD -- 140 feet Well set overnight trip sample used to get water sample. Chloride -- 56.8 ppm

TYPE INSPECTION PERFORMED

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F = Waterflow
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NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name EDDIE SEAY Date 2-2-78 Miles 119 District 1

Time of Departure 7 a.m. Time of Return 6:30 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	U	S	11	2

13-25-37 to east of Jal on Blocker ranch Dollarhide Area to drill water contamination well #11.
Top red bed 44 feet
TD 55 feet
Circulated water sample -- 127 ppm
No water after circulation, redbeds are above water table. Rig down move to test well #12 13-25-37 Blocker Contamination study.
Top red bed -- 60 feet
TD -- 70 feet
Circulated sample 85.2 ppm
No water after circulation, above water table.

Test well #13 13-25-37 130 feet west of Gulf well #3.
Drilled to 147 feet no redbed
circulated sample -- 140 ppm.
Let set over night.

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NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

File Copy

Name JOHN W. RUNYAN Date 2-3-78 Miles 111 District I

Time of Departure 9:00 am Time of Return 7:15 pm Car No. 4972

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	10	1

13-25-37 -- to Jal area to witness the drilling of test well #13, George Blocker water contamination study.

Test Well #13 -- re-entry of old homestead well located 25.37.13.34442
top redbeds at 137 feet.
TD at 140 feet
Chlorides = 56.8 ppm

Those present Mr. George Blocker, Jim Wright, Mr. Sumruld, Eddy Seay and myself.

TYPE INSPECTION PERFORMED

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25.37.13.32413

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. 2550-10887

Location TH # 9 (first sample)

Source (type of well)

Owner George Blocker

Date drld 11/30/78 Cased to ft

Depth 100 Diam 4 1/2

WRP

Water level ft

Sampled after pumping hrs

Yield GPM (meas or est)

Pt of coll jetted

Appearance clear to sl. murky

Temp (°F) — Use Obs.

Collector JI Wright

Chemist Chavez

Date completed 06 Feb 1979

Checked by

Date transmitted

Date of collection 01-30-79

Ignition Loss Color

Dissolved Solids:

Residue at 180°C

Calculated (Sum)

Tons per Acre Foot

Hardness as $CaCO_3$

Non-carbonate Hardness

% Na SAR pH

Specific Conductance (micromhos at 25°C) 3403

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		872
F		
NO_3		

25.37.13.32413

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. 2550-10887

Location TH # 9 (second sample)

Source (type of well) drld

Owner G. Blocker

Date drld Cased to ft

Depth 100 Diam 4 1/2

WRP gal

Water level ft

Sampled after pumping hrs

Yield GPM (meas or est)

Pt of coll Jetted

Appearance Clear

Temp (°F) — Use Obs.

Collector

Chemist Chavez

Date completed 06 Feb 1979

Checked by

Date transmitted

Date of collection Jan 30 1979

Ignition Loss Color

Dissolved Solids:

Residue at 180°C

Calculated (Sum)

Tons per Acre Foot

Hardness as $CaCO_3$

Non-carbonate Hardness

% Na SAR pH

Specific Conductance (micromhos at 25°C) 3931

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		1010
F		
NO_3		

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name EDDIE SEAY Date 2-3-78 Miles 99 District I

Time of Departure 7 a.m. Time of Return 5 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	U	S	10	

3-25-37 Pressured up on test well #13 east of Jal on Blocker contamination study.
Ran water sample every 30 minutes at 147 feet
1st sample -- 85.2 ppm
2nd sample -- 142 ppm
3rd sample -- 170 ppm
4th sample -- 170 ppm
Rig down and moved to drill test well #14

Test Well #14 -- 255 feet south of Gulf SWD well.
Top red bed -- 60 feet
Took sand and soil sample every 5 feet to run chloride in lab.
Circulation sample at TD -- 71 ppm

TYPE INSPECTION PERFORMED

H = Housekeeping
P = Plugging
C = Plugging Cleanup
T = Well Test
F = Waterflow
M = Mishap or Spill
W = Water Contamination
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

D = Drilling
P = Production
I = Injection
S = SWD
U = Underground Storage
G = General Operation
O = Other

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name JOHN W. RUNYAN Date 2-28-78 Miles 116 District I

Time of Departure 8:30 am Time of Return 5:30 p m Car No. 4972

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature John W. Runyan

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	0	0	8	0

13-25-37 To Jal Area to witness the drilling of test wells #15 and 16 on George Blocker Water Contamination Study.

Test well #15 located 27' NE of TW #3 in line with Gulf's P&A SWD well -- McBuffington #2. Caught drilling samples every 5', starting at 35', drilled on air.
TD at 60 feet
Top of redbeds at 60 feet

Test Well #16, located 62' SW of TW #3 (J-13-25-37) caught drilling samples every 5' starting at 40' -- circulation sample = 85.2 ppm chlorides. Drilled with water.

Top redbeds at 64'
TD at 66 feet.

Those present were: Mr. George Blocker, Jim Wright, Mr. Sumruld, Reed Assoc. "chester" and myself.

TYPE INSPECTION PERFORMED

H = Housekeeping
P = Plugging
C = Plugging Cleanup
T = Well Test
F = Waterflow
M = Mishap or Spill
W = Water Contamination
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

D = Drilling
P = Production
I = Injection
S = SWD
U = Underground Storage
G = General Operation
O = Other

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

File copy

Name EDDIE SEAY Date 3-1-78 Miles 98 District I

Time of Departure 7 am Time of Return 6 p.m. Car No. 331

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	U	S	11	

18-25-37 to East of Jal to drill test well #17 in Blocker contamination study. Caught samples
30 feet -- 71 ppm
40 feet -- 71 ppm
55 feet -- 71 ppm
57 feet -- 113 ppm

Top redbed 56 feet
TD 57 feet

18-25-37 drill test well #18 Blocker contamination study 285 feet north of test well #1

TD 98 feet

50 feet sample -- 71 ppm
85 feet sample -- 71 ppm
98 feet sample -- 84 ppm

TYPE INSPECTION PERFORMED

H = Housekeeping
P = Plugging
C = Plugging Cleanup
T = Well Test
F = Waterflow
M = Mishap or Spill
W = Water Contamination
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

D = Drilling
P = Production
I = Injection
S = SWD
U = Underground Storage
G = General Operation
O = Other

NEW MEXICO OIL CONSERVATION COMMISSION
FIELD TRIP REPORT

Name EDDIE SEAY Date 3-2-78 Miles 94 District I

Time of Departure 7 am Time of Return 6 pm Car No.

In the space below indicate the purpose of the trip and the duties performed, listing wells or leases visited and any action taken.

Signature Eddie Seay

INSPECTION	CLASSIFICATION	FACILITY	HOURS	QUARTER HOURS
W	U	S	11	

13-25-37 to East of Jal, Blocker contamination study to drill test well #19 200 feet NW of Gulf well #9

Top red bed -- 108 feet
TD -- 110 feet

Sample #1 -- 198.8 ppm
Sample #2 -- 340 ppm
sample #3 -- 639 ppm
Sample #4 -- 710 ppm
Sample #5 -- 752 ppm
Sample #6 -- 781 ppm
Sample #7 -- 781 ppm

TYPE INSPECTION PERFORMED

H = Housekeeping
P = Plugging
C = Plugging Cleanup
T = Well Test
F = Waterflow
M = Mishap or Spill
W = Water Contamination
O = Other

INSPECTION CLASSIFICATION

U = Underground Injection Control - Any inspection of or related to injection project, facility, or well or resulting from injection into any well. (SWD, 2ndry injection and production wells, water flows or pressure tests, surface injection equipment, plugging, etc.)

O = Other - Inspections not related to injection

NATURE OF SPECIFIC WELL OR FACILITY INSPECTED

D = Drilling
P = Production
I = Injection
S = SWD
U = Underground Storage
G = General Operation
O = Other

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER WATER STUDY Well No. TW #12

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E 43214

Type Well: Water test well Depth: 70 feet.

Well Use: ___

Sample Number: #2 @ 40-50' Date Taken: 2-2-78 Eddie Seay

Specific Conductance: ___ m/ɔ

Total dissolved Solids: ___ PPM.

Chlorides: 56.8 PPM.

Sulfates: ___ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

___ : ___

Date Analized: ___ By: John W. Runyan
N.M.O.C.C.

Remarks: Test hole dry -- sample from 40--50', mixed with distilled water. Ratio 2:1 (4 oz sample + 8 oz water)

25 ml sample = 142.0 x .2 titration x 2 = 56.8 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER WATER STUDY Well No. TW #14

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E 41243

sample -- sand from 55'

Type Well: water test well Depth: 61 feet.

Well Use: ___

Sample Number: #1 @ 55'+ Date Taken: 2-2-78 Eddie Seay

Specific Conductance: ___ m/ɔ

Total dissolved Solids: ___ PPM.

Chlorides: 28.4 PPM.

Sulfates: ___ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

___ : ___

Date Analized: 2-10-78 By: John W. Runyan
N.M.O.C.C.

Remarks: NOTE: Test hole dry -- sand sample taken at 55' --- mixed as follows: 4 oz sand + 8 oz water. Ratio 2:1 (Ratio 1:1 proper combination).

25 ml sample = 142 factor x .1 titration x 2 = 28.4 ppm

No indication of chlorides left in this sample.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER WATER STUDY Well No. TW #14

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E 41243

Sand sample from 50'

Type Well: water test well Depth: 61 feet.

Well Use:

Sample Number: #2 @ 50' Date Taken: 2-2-78 Eddie Seay

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 28.4 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 2-13-78 By: John W. Runyan
N.M.O.C.C.

Remarks: Dry hole -- no water

sane from 50' mixed with distilled water. Ratio 2:1 (4 oz sample + 8 oz water)

25 ml sample = 142.0 factor x .1 titration x 2 = 28.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER WATER STUDY Well No. TW #14

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E 41243

Sample - sand from 55'

Type Well: _____ Depth: ____ feet.

Well Use: _____

Sample Number: #3 @ 40' Date Taken: 2-2-78 Eddie Seay

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 28.4 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: _____ By: John W. Runyan
N.M.O.C.C.

Remarks: Dry hole - no water

sand from 40' mixed with distilled water. Ratio 2:1 (4 oz sample + 8 oz water)

25 ml sample = 142.0 factor x .1 titration x 2 = 28.4 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER WATER STUDY Well No. TW #14

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E 41243

Sample - sand from 45'

Type Well: Water test well Depth: 61 feet.

Well Use: ___

Sample Number: #4 @ 45' Date Taken: 2-2-78 Eddie Seay

Specific Conductance: ___ m/ℓ

Total dissolved Solids: ___ PPM.

Chlorides: 28.4 PPM.

Sulfates: ___ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

___ : ___

Date Analized: ___ By: John W. Runyan
N.M.O.C.C.

Remarks: Test Hole Dry - sample from 45' mixed 2:1 distilled water
(4 oz sample + 8 oz water)

25 ml sample ÷ 142 factor x .1 titration x 2 = 28.4 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER WATER STUDY Well No. TW #15

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit J, Section 13, T 25 S - R 37 E

Sand sample from 50' -- mixed ratio 2:1

Type Well: water test well Depth: 60 feet.

Well Use: chloride analysis of ground water

Sample Number: #2 @ 50' Date Taken: 2-28-78 John Runyan

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 735.5 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 3-6-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

One oz sample + 2 oz water (÷ 2 results)

Reddish tan sand - fine grain

5 ml sample 710.0 x .05 ÷ 2 = 17.5 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: BLOCKER STUDY Well No. TW #15

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit J, Section 13, T 25 S - R 37 E

Sand sample at 60' - mixed ratio 2:1

Type Well: water test well Depth: 60 feet.

Well Use: chloride analysis of ground water

Sample Number: #3 at 60' Date Taken: 2-28-78

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 735.5 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 3-6-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

One oz. sample + 2 oz. water (÷ 2 results)

Light tan sandstone and sand - some fine gravel

5 ml sample = 710.0 x 0.05 ÷ 2 = 17.5 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: GEORGE BLOCKER Well No. TH-1

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E Lea County

Location on Gulf McBuffington lease (all three wells)

Type Well: water well Depth: 122 feet.

Well Use:

Sample Number: #1 Date Taken: 12-31-76 Geo. Blocker

Specific Conductance: ___ m/

Total dissolved Solids: ___ PPM.

Chlorides: 1335 PPM.

Sulfates: ___ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☒ None ☐ Low ☐ Med. ☐ High

___ : ___

Date Analized: 1-10-77 By: John W. Runyan
N.M.O.C.C.

Remarks:

Water definitely contaminated.

25 ml sample = 142.0 factor x 9.4 titration = 1334.8 ppm Cl

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: GEORGE BLOCKER Well No. TH-2

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E Lea County

Location on Gulf McBuffington lease (all three wells)

Type Well: water well Depth: 100 feet.

Well Use:

Sample Number: #2 Date Taken: 12-13-76 George Blocker

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 1761 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☒ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 1-10-77 By: John W. Runyan
N.M.O.C.C.

Remarks:

Water definitely contaminated

25 ml sample = 142.0 factor x 12.4 titration = 1760.8 ppm Cl.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: GEORGE BLOCKER Well No. TH-3

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 13, T 25 S - R 37 E Lea County

Location on Gulf McBuffington Lease (all three wells)

Type Well: water well Depth: ____ feet.

Well Use: _____

Sample Number: #3 Date Taken: 12-31-76 George Blocker

Specific Conductance: _____ m/_

Total dissolved Solids: _____ PPM.

Chlorides: 4175 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☒ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 1-10-77 By: John W. Runyan
N.M.O.C.C.

Remarks: _____

Water definitely contaminated

50 ml sample = 71.0 x 58.8 titration = 4174.8 ppm Cl.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: GULF--McBuffington **Well No.** SWD #2

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit J, Section 13, T 25 S - R 37 E Lea County

Sample taken from blow-out in sand from hole

Type Well: SWD **Depth:** ____ feet.

Well Use:

Sample Number: #1 **Date Taken:** 3-11-76 Les Clements

Specific Conductance: ____ m/

Total dissolved Solids: ____ PPM.

Chlorides: 48,422 PPM.

Sulfates: ____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

____ : ____

Date Analized: 3-12-76 **By:** John W. Runyan
N.M.O.C.C.

Remarks:

Very strong hydrocarbon odor.

Sample was taken from hole where water was coming up.

5 ml sample - titration x factor

68.2 x 710.0 = 48,422 ppm Cl.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: City of Jal Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section ___, T ___ S - R ___ E #2--OC-1-285-2

well east of old McBuffington pit on Blocker

Type Well: abandoned water well Depth: 111 feet.

Well Use: _____

Sample Number: #1 Date Taken: 4-14-78 State Engineers

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 12,496 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 4-17-78 By: JOHN W. RUNYAN
N.M.O.C.C.

Remarks: _____

5 ml sample = 710.0 factor x 17.6 titration = 12,496 ppm Cl.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: GEORGE BLOCKER Well No. _____

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section ___, T ___ S - R ___ E _____

JAL WATER WELL

Type Well: Water well Depth: ___ feet.

Well Use: _____

Sample Number: #1 Date Taken: 12-2-76 By: George Blocker

Specific Conductance: 560 m/ohm

Total dissolved Solids: 515 PPM.

Chlorides: 106.5 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☒ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-6-76 By: John W. Runyan
N.M.O.C.C.

Remarks: Water O.K. as for as chlorides concerned

100 ml sample = 35.5 factor x 3.0 titration - 106.5 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: George Blocker Well No. _____

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section ___, T ___ S - R ___ E _____

"Gulf water well"

Type Well: water well Depth: 89 feet.

Well Use: _____

Sample Number: #2 Date Taken: 12-2-76
By: George Blocker

Specific Conductance: 3200 m/ohm

Total dissolved Solids: 2994 PPM.

Chlorides: 2669.5 PPM.

Sulfates: _____ PPM.

Ortho-phosphates: ☐ V. low ☐ Low ☐ Med. ☐ High

Sulfides: ☒ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 12-6-76 By: John W. Runyan
N.M.O.C.C.

Remarks: Water contaminated

100 ml sample = 35.5 factor x 75.2 titration = 2669.5 ppm Cl

25.37.13.~~432~~ .41311

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. RSED – 10876

Location TH #6

Date of collection 1-21-76

Source (type of well) drld

Owner G. Blocker

Date drld 11/24/75 Cased to ____ ft

Depth ~~74~~ 90 Diam 4½

WRF QAL

Water level 74.5 ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coll Fr. o/b @ 74' >15

Appearance Clear

Temp (°F) — Use Obs.

Collector Atkins & Vandewart

Chemist Chavez

Date completed 01-30-76

Checked by ____

Date transmitted ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1017

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		106
F		
NO_3		

~~25.38.13.411~~

25.37.13.41100

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. RSED – 10871

Location TH #5

Date of collection 01-24-76

Source (type of well) drld

Owner G. Blocker

Date drld 11/23/75 Cased to ____ ft

Depth 75 Diam 4½

WRF None

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coll Circulated sample

Appearance Reddish muddy

Temp (°F) — Use Obs.

Collector JT Wright

Chemist EA Chavez

Date completed 01-30-76

Checked by ____

Date transmitted ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1994

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		241
F		
NO_3		

~~25.38.13.3424~~
25.37.13.34120

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. ~~RGEO~~ – 10873

Location TH # 7

Date of collection 01-26-78

Source (type of well) drld

Owner Blocker

Date drld 11/26/78 Cased to ____ ft

Depth 128 Diam 4½

WRP QAL

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Pt of coll jetted

Appearance clear

Temp (°F) ____ Use obs.

Collector J I Wright

Chemist Chavez

Date completed 01-30-78

Checked by ____

Date transmitted ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 21734

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		7770
F		
NO_3		

~~25.38.13.4132~~
25.37.13.41311

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. ~~RGEO~~ – 10872

Location TH #6

Date of collection 01-25-78

Source (type of well) drld

Owner C. Blocker

Date drld 11/24/78 Cased to ____ ft

Depth 90 Diam 4½

WRP QAL

Water level 74.5 ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Pt of coll jetted

Appearance Reddish muddy

Temp (°F) ____ Use obs.

Collector J I Wright

Chemist Chavez

Date completed 01-30-78

Checked by ____

Date transmitted ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1732

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		217
F		
NO_3		

25.37.13.34113

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. RSEO – 10286

Location TH #8

Date of collection 01 Feb. 1978

Source (type of well) drlr

Owner G. Blocker

Date drld 11/27/78 Cased to ____ ft

Depth 91/110 Diam 4½

WRF QAL

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coll trip splr @ 91'

Appearance v. v. muddy

Temp (°F) — Use Obs

Collector Atkins & Teel

Chemist Chavez

Date completed 06 Feb. 1978

Checked by ____

Date transmitted ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1017

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		60
F		
NO_3		

~~25.30.13.34~~

25.37.13.34113

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. RSEO – 10574

Location TH #8

Date of collection 1-27-78

Source (type of well) drld

Owner Blocker

Date drld 11/27/78 Cased to ____ ft

Depth 110 Diam 4½

WRF QAL

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coll Jetted

Appearance Sl. murky

Temp (°F) — Use Obs

Collector Wright

Chemist Chavez

Date completed 01-30-78

Checked by ____

Date transmitted ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 961

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		55
F		
NO_3		

25.37.13.34442

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. 2580-10890

Location TH #10

Date of collection 2-2-78

Source (type of well) drld

Owner G. Blocker

Date drld _____ Cased to _____ ft

Depth 137 Diam _____

WBF QAL

Water level 74.35 ft

Sampled after pumping _____ hrs

Yield _____ GPM (meas or est)

Pt of coll trip spls @ 137' > LS

Appearance turbidity

Temp (°F) — Use Obs.

Collector JI Wright

Chemist Chavez

Date completed 06 Feb 1978

Checked by _____

Date transmitted _____

Ignition Loss _____ Color _____

Dissolved Solids:

Residue at 180°C _____

Calculated (Sum) _____

Tons per Acre Foot _____

Hardness as $CaCO_3$ _____

Non-carbonate Hardness _____

% Na _____ SAR _____ pH _____

Specific Conductance (micromhos at 25°C) 941

OCC : 57 gpm CT

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na + K		
HCO_3		
CO_3		
SO_4		
Cl		63
F		
NO_3		

25.37.13.32413

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. 2580-10889

Location TH #9

Date of collection 01 Feb. 1978

Source (type of well) drld

Owner G. Blocker

Date drld 1/30/78 Cased to _____ ft

Depth ~~84~~ Diam 4½

WBF QAL

Water level 74.1 ft

Sampled after pumping _____ hrs

Yield _____ GPM (meas or est)

Pt of coll Clear to sl. murky

Appearance ↳ trip spls. @ 84' > LS

Temp (°F) — Use Obs.

Collector Atkins & Teel

Chemist Chavez

Date completed 06 Feb 1978

Checked by _____

Date transmitted _____

Ignition Loss _____ Color _____

Dissolved Solids:

Residue at 180°C _____

Calculated (Sum) _____

Tons per Acre Foot _____

Hardness as $CaCO_3$ _____

Non-carbonate Hardness _____

% Na _____ SAR _____ pH _____

Specific Conductance (micromhos at 25°C) 3766

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na + K		
HCO_3		
CO_3		
SO_4		99.3
Cl	→	
F		
NO_3		

25.37.13.44133

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. [illegible] 10891

Location TH # 11

Source (type of well) drld

Owner Geo. Blocker

Date drld 2/2/78 Cased to ____ ft

Depth 55 Diam 4 1/2

WBF None

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Pt of coll ditch – circulated sample

Appearance Sl. muddy – near clear

Temp (°F) – Use Obs.

Collector

Chemist Chavez

Date completed 06 Feb 1978

Checked by

Date transmitted

Date of collection 2-2-78

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1167

OCC - 122 ppm

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na + K		
HCO_3		
CO_3		
SO_4		
Cl		103
F		
NO_3		

25.37.13.34442

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. PSC9 – 10894

Location TH #10

Source (type of well) drld

Owner George Blocker

Date drld ____ Cased to ____ ft

Depth 157 Diam 4 1/2

WBF GAL

Water level 76 ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Pt of coll Jetted

Appearance Murky – 1/3 silt or clay – reddish. putrid smelling

Temp (°F) – Use Obs.

Collector

Chemist Chavez

Date completed 06 Feb 078

Checked by

Date transmitted

Date of collection ____

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1203

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na + K		
HCO_3		
CO_3		
SO_4		
Cl		64
F		
NO_3		

Plotted

25.37.13.431443

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. RSEO-10893

Location TH #13
first sample

Source (type of well) drld

Owner G. Blocker

Date drld 2/2/78 Cased to ____ ft

Depth 147 Diam 4½

WRP QAL

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coil jetted – ditch sample

Appearance clear to sl. murky

Temp (°F) – Use Obs.

Collector ____

Chemist Chavez

Date completed 06 Feb 1978

Checked by ____

Date transmitted ____

Date of collection 2-2-78

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1195

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		112
F		
NO_3		

25.37.13.43214

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. RSEO-10892

Location TH #12

Source (type of well) drld

Owner Geo. Blocker

Date drld 2/2/78 Cased to ____ ft

Depth 60 Diam 4½

WRP None

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coil circulated sample – ditch

Appearance Sl. muddy

Temp (°F) – Use Obs.

Collector ____

Chemist Chavez

Date completed 06 Feb 1978

Checked by ____

Date transmitted ____

Date of collection 2-2-78

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1095

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		79
F		
NO_3		

25.31.13.441231 (?)

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. BSEO – 10904

Location TH #17 Blocker Comm.

Source (type of well) drld

Owner

Date drld ____ Cased to ____ ft

Depth ____ Diam ____

WBF QAL

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Pt of coll circulated spl.

Appearance Reddish murky

Temp (°F) — Use Obs.

Collector Wright

Chemist Chavez

Date completed 06 Mar 78

Checked by

Date transmitted

Date of collection 01 Mar. 1978

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1103

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		108
F		
NO_3		

25.37.13.412333

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. BSEO – 10903

Location TH #16

Source (type of well) drld

Owner

Date drld ____ Cased to ____ ft

Depth ____ Diam ____

WBF QAL

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Pt of coll circulated sample

Appearance Reddish clay murkiness

Temp (°F) — Use Obs.

Collector NJ Wright

Chemist Chavez

Date completed 06 Mar 78

Checked by

Date transmitted

Date of collection 02-28-78

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C ____

Calculated (Sum) ____

Tons per Acre Foot ____

Hardness as $CaCO_3$ ____

Non-carbonate Hardness ____

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1025

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		75
F		
NO_3		

5.37.13.413134

ANALYTICAL STATEMENT – GW

COUNTY Lea

LAB NO. BSPO- 10905

Location TH #18

Source (type of well) drld

Owner

Date drld ______ Cased to ______ ft

Depth ______ Diam ______

WBF Ogl

Water level ______ ft

Sampled after pumping ______ hrs

Yield ______ GPM (meas or est)

Pt of coll ditch after jetted for 1 hr.

Appearance Clear

Temp (°F) — Use Obs.

Collector J.L. Wright

Chemist Chavez

Date completed 06 Mar 78

Checked by

Date transmitted

Date of collection 01 Mar. 1978

Ignition Loss ______ Color ______

Dissolved Solids:

Residue at 180°C ______

Calculated (Sum) ______

Tons per Acre Foot ______

Hardness as $CaCO_3$ ______

Non-carbonate Hardness ______

% Na ______ SAR ______ pH ______

Specific Conductance (micromhos at 25°C) 836

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		83
F		
NO_3		

John

25.37.13. 413134

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. RSEM – 10907

Location TH # 18
Blocker Continm.

Source (type of well) dwld

Owner

Date drld ____ Cased to ____ ft

Depth 76 365 Diam ____

WBF Qal

Water level 72.14 ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coll Tr sple @ 75'

Appearance Clear to slt turb-f

Temp (°F) ____ Use Obs

Collector Bradley & Teel

Chemist Chavez

Date completed 21 Mar 78

Checked by

Date transmitted

Date of collection 7-3-77

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C

Calculated (Sum)

Tons per Acre Foot

Hardness as $CaCO_3$

Non-carbonate Hardness

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 1045

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl		98
F		
NO_3		

25.37.13. 323232

ANALYTICAL STATEMENT – GW COUNTY Lea

LAB NO. RSEM 11906

Location TH #19
Blocker Continuation

Source (type of well) dwld

Owner

Date drld ____ Cased to ____ ft

Depth ____ Diam ____

WBF Qal

Water level ____ ft

Sampled after pumping ____ hrs

Yield ____ GPM (meas or est)

Ft of coll

Appearance Clear

Temp (°F) — Use Obs

Collector TLW

Chemist Chavez

Date completed 21 Mar 78

Checked by

Date transmitted

Date of collection 02 Mar 1977

Ignition Loss ____ Color ____

Dissolved Solids:

Residue at 180°C

Calculated (Sum)

Tons per Acre Foot

Hardness as $CaCO_3$

Non-carbonate Hardness

% Na ____ SAR ____ pH ____

Specific Conductance (micromhos at 25°C) 2997

	epm	ppm
SiO_2		
Fe		
Ca		
Mg		
Na		
K		
Na+K		
HCO_3		
CO_3		
SO_4		
Cl	[illegible]	798
F	[illegible]	7.1
NO_3		

George Blocker Water Contamination study

Hole # 4

0	2½	sandy clay
2½	27	caliche
27	29	sand
29	35	sandy clay
35	54	sand w/sandy clay
54	56	sandy clay & gravel
56	60	red clay

Hole # 5

0	3	sand, sandy clay
3	16	caliche
16	42	caliche & sand layers
42	61	red shale
61	72	sand & gravel
72	75	red clay

Hole # 6

0	4½	sand & sandy clay
4½	34	caliche,sand,sandy clay
34	62	sand & sandstone
62	87	sand & gravel
87	90	red clay

Hole # 7

0	3	surface sand
3	26	caliche & sand layers
26	62	sand & sandstone
62	80	sand with gravel
80	90	quartzite
90	97	sandy clay & gravel
97	100	sand & gravel
100	117	red clay & gravel layers
117	126	clay & sandstone layers
126	128	red clay

Hole # 8

0	2	surface soil
2	27	caliche & sand
27	72	sand & sandstone
72	76	sandy clay
76	83	quartzite
83	90	sandy clay
90	99	sand & gravel
99	108	sandy clay & gravel
108	110	red clay

Hole # 9

0	4	surface soil
4	30	caliche & sand
30	75	sand & sandstone
75	82	quartzite
82	90	gravel
90	97	sandy clay & gravel
97	100	red clay

Hole # 10

0	20	open (abandoned well)
20	68	organic & inorganic debris
68	71	sandy clay
71	74	gravel
74	96	sandy clay & gravel
96	98½	red clay
98½	137	sandy clay & sandstone layers
137	140	red clay

Hole # 11

0	1	surface
1	28	caliche
28	39	sand with gravel
~~39~~	~~45~~	~~sand & gravel~~
45	55	red clay

Hole # 12

0	2	sand
2	26	caliche
26	49	sand & sandstone
49	60	sand & gravel
60	70	red clay

Hole # 13

0	7	sand, sandy clay
7	34	caliche & sand layers
34	51	sand & sandstone
51	61	red shale
61	120	sand & gravel
120	145	sandy clay & gravel
145	147	red sandstone

Hole # 14

0	2	sandy clay
2	23	caliche & sand
23	44	sand & sandstone
44	60	sand & gravel with sandy clay stringers
60	61	red clay

Copy to Oil Conservation Comm.
Copy to State Engineers office.

George Bleeker water study Feb.28, Mar.2,1978

Hole # 15

0	2½	surface
2½	23	caliche
23	32	sand & sandstone
32	38	sand
38	44	red sandy clay
44	61	sand & gravel
61	64	sandy clay
64	65	red clay

Hole #16

0	2	surface
2	24	caliche
24	38	sand & sandstone
38	44	red sandy clay
44	64	sand & gravel
64	66	red clay

Hole # 17

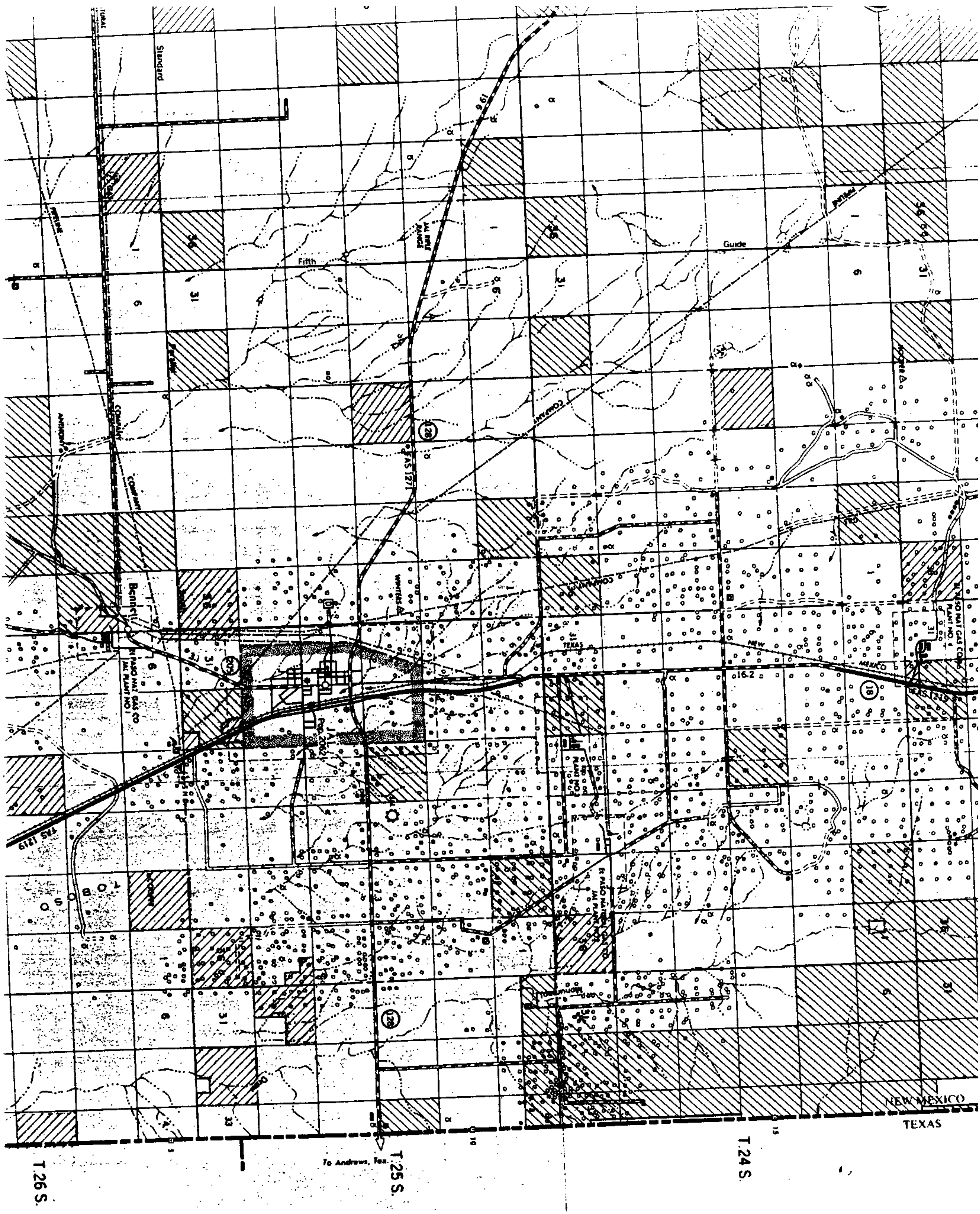
0	4	sand
4	21	caliche
21	31	sand & sandstone
31	41	sand,gravel,sandy clay
41	43	quartzite
43	50	sand & gravel
50	56	red sandy clay
56	57	red clay

Hole # 18

0	8	sand & sandy clay
8	22	caliche
22	46	sand & sandstone
46	90	sand & gravel
90	95	red clay & gravel
95	98	quartzite

Hole # 19

0	4	surface
4	24	caliche
24	61	sand & sandstone
61	78	sand & gravel,sandy clay layers
78	92	sand & gravel
92	95	sandy clay
95	104	quartzite
104	108	red sandy clay
108	110	red clay


Standard
Fifth
Guide
Bennett
JAL
NEW MEXICO
TEXAS
16.2
FAS 1219
To Andrews, Tex.
T.26 S.
T.25 S.
T.24 S.