WATER CONTAMINATION STUDY

DOOM, MATHIS & OWENS
WATER CONTAMINATION STUDY

NEW MEXICO OIL CONSERVATION COMMISSION
Box 1980
Hobbs, New Mexico 88240

John W. Runyan, Geologist
NMOCC in cooperation with
The State Engineers
Roswell, New Mexico

November 23, 1977

APPENDIX

Location Plat

Results of Survey

General Statistics of Survey

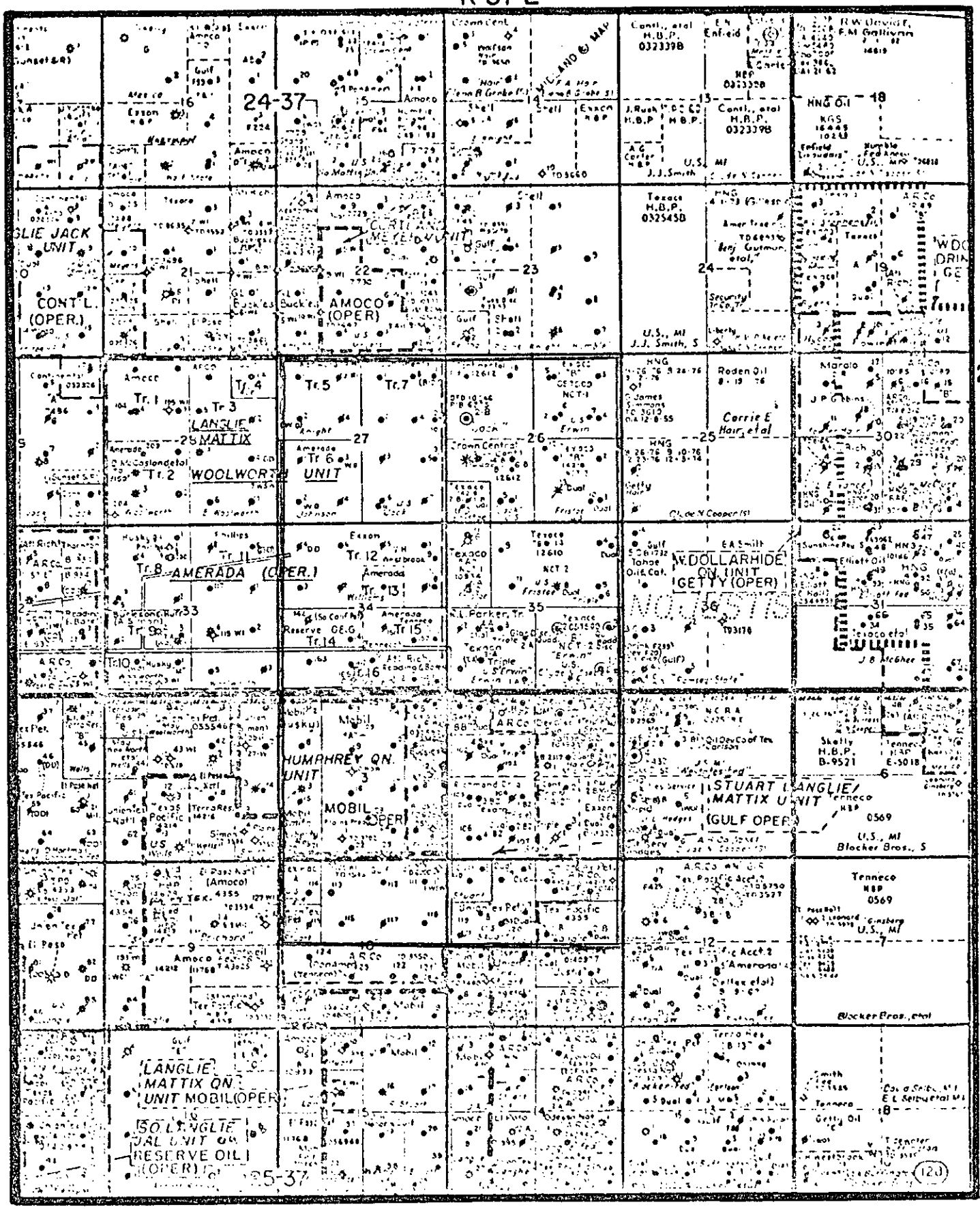
Well Numbering System

Daily Field Reports

Water Analysis

Driller's Logs

Maps ---- Surface Topographical Map
Water Contamination Map
Relationship Map -- between surface and Redbed drainage and water contamination
Triassic Redbed Map
Water Level Map



DOOM-MATHIS WATER CONTAMINATION PROBLEM

AREA OF STUDY OUTLINED IN RED

DOOM, MATHIS AND OWENS
WATER CONTAMINATION STUDY

I first met with Mrs. Doom and Mrs. Mathis on July 1, 1977, about the apparent water contamination which exists on both of their properties. We met at the Mathis Construction Company office north of Jal, New Mexico.

Mrs. Mathis' property consists of about 5 acres and her domestic well was analyzed to be 831 ppm chlorides, and Mrs. Doom has several stock wells contaminated (only one well is presently in use) in the same general area as the Mathis house. At this meeting they decided to drill several water test wells to determine where the source of contamination was coming from and the areal extent of contamination.

Final arrangements were made on October 3, 1977, with the water well driller, Mr. Sumruld of Lovington, to begin drilling the test wells. The drilling of the test wells was begun on October 5, 1977, and completed on October 30, 1977, with a total of 28 test wells drilled. Refer to water contamination map for test well locations.

Test well locations were selected by Mr. Jim Wright of the State Engineer's Office and myself on the basis of the following information: redbed map, surface topo map, direction of water movement in area, chloride analysis of existing water wells in area, and on the chloride analysis (which I ran in the field) of the water test wells as they were drilled. The results of information obtained are shown on the maps in this report as well as my field notes and water analysis which are enclosed with this report.

The results of the test wells indicate that the contamination on Mrs. Doom's property began at or next to Amerada's injection well #604, located in Unit N of Section 27, Township 24 South, Range 37 East, and extends south following both the redbed and surface topography drainage into Section 10,

Township 25 South, Range 37 East, on to Mrs. Owens property, aproximately 2½ miles from the source. (Refer to relationship map)

Mrs. Mathis's source of contamination is definitely a different source of contamination than Mrs. Doom's. The redbed map shows that a low area exists in the immediate area around the house and the surface topo map shows that the area is almost flat, with three sinks in the area around the house. The water contamination map indicates a separate contamination problem which apparently had its source at the Parker battery pit.

The work on this water contamination problem was done as a joint effort between the New Mexico Oil Conservation Commission and The State Engineers Office (Mr. Jim Wright), Roswell, New Mexico. The State Engineers ran water levels, elevations, and furnished the basic redbed map as well as the water level map.

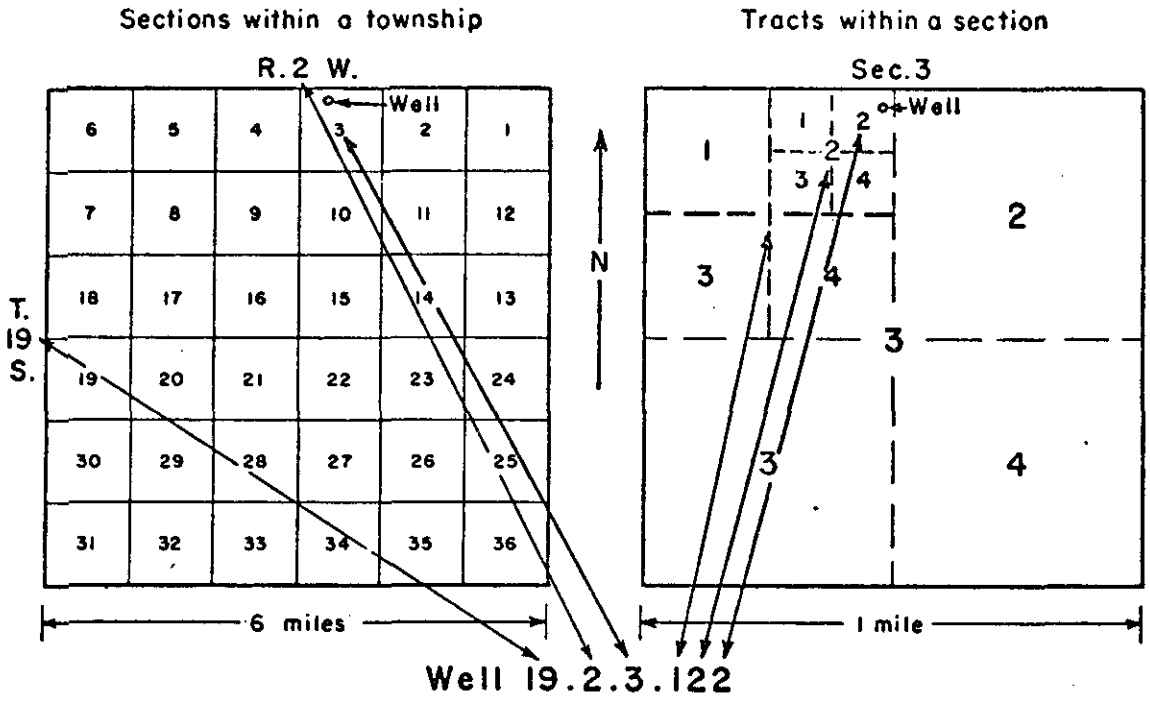
Respectfully submitted,

John W. Runyan

John W. Runyan, Geologist
New Mexico Oil Conservation Commission

GENERAL STATISTICS
DOOM-MATHIS CONTAMINATION STUDY

TEST WELL	LOCATION	ELEVATION	TOP REDBED	WATER LEVEL	CHLORIDES
TW #1	24.37.35.11324	3190'	82'	69.2'	99.4
TW #2	24.37.35.13324	3189'	95'	77.0'	156.2
TW #3	24.37.34.12342	3168'	68'	36.2'	1178.5
TW #4	24.37.34.12121	3172'	86'	39.0'	610.6
TW #5	24.37.27.33411	3193'	108'	55.0'	42.6
TW #6	24.37.27.34411	3175'	85'	41.0'	951.4
TW #7	24.37.27.41333	3198'	97'	62.2'	42.6
TW #8	24.37.27.32111	3188'	89'	45.0'	127.8
TW #9	24.37.27.32322	3184'	87'	44.5'	63.9
TW #10	24.37.27.31411	3193'	105'	55.6'	42.6
TW #11	24.37.27.43140	3206'	115'	71.3'	99.4
TW #12	24.37.27.34213	3177'	84'	40.0'	56.8
TW #13	24.37.34.14400	3162'	67'	40.5'	1704.0
TW #14	24.37.34.41000	3168'	70'	50.5'	1547.8
TW #15	24.37.34.44124	3191'	104'	81.7'	404.7
TW #16	24.37.35.31314	3188'	81'	73.1'	327.0
TW #17	25.37.3.23244	3149'	60'	54.7'	880.4
TW #18	24.37.34.43244	3165'	WM	?52.0'	809.0
TW #19	24.37.34.42413	3191'	108'	82.6'	383.4
TW #20	24.37.34.2343	3189'	102'	70+ '	795.2
TW #21	24.37.34.312322	3178'	66'	54.7'	99.4
TW #22	25.37.3.112421	3162'	49'	51.9'	63.9
TW #23	25.37.3.44444	3128'	102'	94.3'	127.8
TW #24	25.37.3.324131	3138'	62'	65+ '	56.8
TW #25	24.37.35.44442	3187'	106'	78.5'	255.0
TW #26	24.37.35.33132	3185'	105'	74.8'	582.2
TW #27	24.37.35.33332	3185'	105'	82.0'	85.2
TW #28	25.37.10.21411	3119'	96'	76.2'	440.2



.-- System of numbering wells in New Mexico.

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE July 1, 1977

NAME OF EMPLOYEE John W. Runyan

TIME OF DEPARTURE 8:30 a.m. TIME OF RETURN 12: noon

MILES TRAVELLED 85

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

Went to Mathis Construction Company located 3 miles NE of Jal, NM. Discussed with Mrs. Mathis and Mrs. Doom (rancher) about the drilling of water test wells to determine the source of water contamination. Several of their water wells apparently are contaminated. Both said that they would like to drill several test wells in the near future, if the casing leak survey, scheduled for the first part of August, doesn't reveal the source of water contamination.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 5, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:15 a.m. TIME OF RETURN 5:30 p.m.

MILES TRAVELLED 94

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

Met Mrs. Doom and Mr. Sumruld (water well driller) at Mathis Construction office at 8:15 a.m. to begin drilling water test wells to determine source of water contamination of Mrs. Doom's windmills and Mr. Mathis' house.

TEST WELL #1 LOCATED 176° M.N. and 306' from Texaco's SWD well #6; 24.37.35.11324
Top of redbed rock 82', TD 90'
Chlorides = 49.7 ppm -- same as drilling water -- couldn't blow any formation water out. Water level (St. Engr.) 69.2'.

TEST WELL #2 Located 300' and 190°T.N. from Texaco's Fristoe #10 well, 24.37.35. 13324
Top redbed rock at 95', TD 102'.
Chlorides = 49.7 ppm same as drilling water. Couldn't blow out any formation water -- water level (St. Engr.) 77.0'.

Drilling water was taken from Mrs. Doom's well located in Unit N, 22-24-37, chlorides = 49.7 ppm.

We first sampled El Paso's water line which was located 200' due east of TW#1 and found the chlorides to be 149.0 ppm, unusable for drilling water.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 6, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:15 a.m. TIME OF RETURN 6:20 p.m.

MILES TRAVELLED 94

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

Continued drilling water test wells -- Doom--Mathis contamination problem.

Test Well #3 located 24.37.34. 12342, 393' and 186° T.N. from Amerada's well #126 in center of draw. Top redbed rock 68', TD 70', chlorides 1179 ppm. Water level (St. Engr.) 36.2'. Surface elevation 3168.

TEST WELL #4 located 24.37.34.12121, 39' from N. line and 120' from west fence Section 34, just to west side of draw. Top redbeds at 86', TD 88'.
Chlorides 610.6 ppm. Water level 39', surface elevation 3172'.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 7, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:15 a.m. TIME OF RETURN 7:30 p.m.

MILES TRAVELLED 100

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

Continue drilling water test wells. Doom--Mathis contamination problem.

TEST WELL #5 located 24.37.27.33411, 75' and 176° from Amerada's well #602. Top redbeds 108', TD 115'.
Chlorides 46.0 ppm. Blew hole to get sample. Water level 55', surface elevation 3193 (St. Engr.)

TEST WELL #6 located 24.37.27.34411, 81' and 170° from Amerada's well #604.
Top redbed 85', TD 90', chlorides 951.4 ppm, water level 41', surface elevation 3175 (St. Engr.)

TEST WELL #7 located 24.37.27.41333, 250' at 90° T.N. then 0° T.N. at 250' from Amerada #604. Top redbeds 97', TD 100', chlorides 42.6 ppm, water level 62.2', surface elevation 3198 (St. Engr.).

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 8, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7 a.m. TIME OF RETURN 7:30 p.m.

MILES TRAVELLED 105

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

Continue drilling water test wells -- Doom--Mathis contamination problem.

TEST WELL #8 located 24.37.27.32111, 900' and 120° to Amerada's well #502. Top redbeds 89', TD 92', chlorides 127.8 ppm, water level 45', surface elevation 3188' (St. Engr.).

TEST WELL #9 located 24.37.27.32322, 183' and 54° M.N. to Amerada's well #603. Top redbeds 87', TD 90', Chlorides 63.9 ppm, water level 44.5', surface elevation 3184' (St. Engr.)

TEST WELL #10 located 24.37.27.31411, 226' and 133° M.N. from Amerada's well #601. Top redbeds 105', T.D. 108', chlorides 42.6 ppm, water level 55.6, surface elevation 3193', (St. Engr.)

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 10, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:10 a.m. TIME OF RETURN 3:30 p.m.

MILES TRAVELLED 92

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

Continue drilling water test wells -- Doom--Mathis water contamination problem.

TEST WELL #11 located 24.37.27.43140, 300' and 318° T.N. from Amerada well #709. Top redbeds 115', TD 118', chlorides 49.7 ppm same as drilling water. Circulated drilling water for 10 minutes couldn't pick up any formation water. State Engineer took water sample 10/13/77, Cl = 99.4 ppm, with trip sampler. Water level 71.3', surface elevation 3206' (St. Engr.)

TEST WELL #12 located 24.37.27.34213, 280' and 10° T.N. from Amerada's well #604. Top redbeds 84', TD 86', chlorides 56.8 ppm , water level 40', surface elevation 3177' (St. Engr.)

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 11, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:30 a.m. TIME OF RETURN 6:10 p.m.

MILES TRAVELLED 107

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

Continue drilling water test well. Doom--Mathis water contamination problem.

TEST WELL #13 located 24.37.34.14400, 410' and 140° T.N. from Amerada's well #122, in bottom of draw.
Top redbeds 67', TD 70', chlorides 1775. ppm. (Re-run cl in lab got 1704.0 ppm)
Water level 40.5', surface elevation 3177' (St. Engr.).
Found old windmill water well 345' and 140° T.N. from TW#13 -- hole plugged with trash to surface.

TEST WELL #14 located 24.37.34.41000, 85' due west, 240° T.N. of Amerada's injection well #151. Top Triassic gravel 63', top Triassic redbed clay 70', TD 70', chlorides 1547.8 ppm, water level 50.5', surface elevation 3168', (St. Engr.)

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 12, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:15 a.m. TIME OF RETURN 4:15 p.m.

MILES TRAVELLED 109

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

Continue drilling water test wells. Doom--Mathis water contamination problem.

TEST WELL #15 located 24.37.34.44124, 750' and 58° T.N. from windmill at 24.37.34.43244 and 180' south of E-W paved road.
Top redbed gravel 93', top redbed clay and gravel 104', TD 105', chlorides 404.7 ppm, water level 81.7', surface elevation 3191' (St. Engr.)

TEST WELL #2 located 24.37.35.13324. Re-entered test hole, found well was not drilled deep enough, previous TD in redbed rock at 102', top Triassic gravel at 103', TD 106', chlorides 156.2 ppm.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 13, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:30 a.m. TIME OF RETURN 5:45 p.m.

MILES TRAVELLED 90

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

Continue drilling water test wells. Doom--Mathis water contamination problem.

TEST WELL #16 located 24.37.35.31314, 270' from Parker #1 well directly toward Mathis house. Top Triassic gravel 81, TD 100', chlorides 327.0 ppm. water level 76.1', (corrected 6' due to well being drilled in sinkhole. Surface elevation 3188' (St. Engr.)

TEST WELL #17 located 25.37.3.23244, 315' and 240° T.N. from Mobil #11 well then 300' due south - 180° T.N.
Top redbed gravel 60', TD 72', chlorides 880 ppm. Water level 54.7', surface elevation 3149' (St. Engr.)

The State Engineers had two crews, this date, running water levels and taking water samples of test holes and all water wells in area. They brought me several samples which I ran in the field as follows:

Windmill, 25.37.3.142231 near Mobil #9 well samples with trip sampler -- St. Engr. Chlorides 249 ppm

Abd. Windmill, 24.37.34.43244, taken with trip sampler (TW#18) Cl = 270 ppm -- could only get top water -- sample no good.

Windmill, 25.37.3.242141 pumping sample State Engr. -- Chlorides 554.0 ppm

Windmill 24.37.34.43443, taken with trip sampler State Engr. -- chlorides 1179 ppm

TW #1, 24.37.35.11322, taken with trip sampler State Engr. Chlorides 99.4 ppm

TW#11, 24.37.27.43140 taken with trip sampler St. Engr. -- chlorides 99.4 ppm

Mathis water well -- pumping. chlorides 795.2 ppm. Sample taken by State Engineer.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 14, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:15 a.m. TIME OF RETURN 3:45 p.m.

MILES TRAVELLED 110

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

Continue drilling water test wells. Mathis--Doom water contamination problem.

TEST WELL #18 Windmill 24.37.34.43244 entered old abandoned windmill hole to determine depth, clean out and get a reliable water sample. Reached TD of 71' and drilled to 73', water level 52' -- well had 30' of heavy alge growth, could not blow out sample. State Engineer took trip sample. Chlorides 809 ppm.

TEST WELL #19 located 24.37.34.42413, 186' and 240° T.N. from Tenneco's well #1 top redbed gravel 91', top redbed clay 110', chlorides 383.4 ppm water level 82.6' (St.Engr)

Suspended drilling test wells until data gathered could be evaluated.

State Engineer took two water samples about one mile south of Mathis house as follows:

Irrigation well 25.37.10.24444, sample taken while pumping -- chlorides 362.1 ppm.

Abandoned water well 25.37.10.43343, sample taken with trip samples -- chlorides 340.8 ppm.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 21, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 9 a.m. TIME OF RETURN 12 am

MILES TRAVELLED 88

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

Went to Mathis construction office north of Jal, New Mexico and met with Mrs. Doom, Mrs. Mathis and Jim Wright (State Engineer). We discussed the data to date and Jim and I believe Mrs. Mathis problem is a separate contamination source than Mrs. Doom's.

It was decided to drill an additional 2 to 5 test wells around Mrs. Mathis house and 4 to 5 test wells to complete needed information on Mrs. Doom's problem.

Will continue drilling the additional test wells when arrangements can be made with Mr. Sumruld (driller).

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 26, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:30 a.m. TIME OF RETURN 4:45 p.m.

MILES TRAVELLED 109

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

To Mrs. Doom's ranch, north of Jal, to witness the drilling of additional water test wells. These wells are needed to fill in gaps in determining the extent of water contamination in Doom--Mathis Contamination Study.

TEST WELL #20
Located 174' due east (90°T.N.) of Amerada's well #131 in (J-34-24-37)
Top Triassic gravel 91', top redbed clay 102'.
Chlorides 795.2 ppm -- T.D 112'

TEST WELL #21
Located 75' and 120° T.N. from Amerada's injection well #142 in (L-34-24-37)
Top Triassic gravel 64', top redbed clay 66'.
Chlorides 99.4 ppm. T.D. 70'.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE October 27, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:10 a.m. TIME OF RETURN 7:35 p.m.

MILES TRAVELLED 101

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

To Doom Ranch, Jal, NM to witness drilling of water test wells.

TEST WELL #22
Located 138' and 110° T.N. from Mobil's injection well #2 in (D-3-25-37).
Top Triassic gravel 43', top redbed clay 49'.
Chlorides 63.9 ppm. T.D. 52'

TEST WELL #23
Located 67' due west of Section 3 south east corner and 6' from south fence (P-3-25-37).
Top Triassic gravel at 79', top redbed clay 102'.
Chlorides 127.8 ppm. T.D. 105'

State Engineer's crew in area taking water levels and water samples.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 28, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 7:15 a.m. TIME OF RETURN 6:20 p.m.

MILES TRAVELLED 92

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

To Doom Ranch, Jal, NM, to witness the drilling of water test wells.

TEST WELL #24
Located 130' due south (180° T.N.) of Mobil's well #16 in (J-3-25-37)
Top triassic gravel 42', top redbed clay 62'.
Chlorides 56.8 ppm (circulation sample) TD 66'.

TEST WELL #25
Located 250' and 123° T.N. from Tenneco's well #1 in (I-34-24-37) in line with Mathis house water well.
Top triassic gravel 87', top redbed clay 108'.
Chlorides 255 ppm* TD 112', drilling of well witnessed by State Engineer's crew.

I Chloride sample not accurage, diluted with drilling water -- much water needed to drill this test well.

Doom house supply = 42.6 ppm Chlorides. Sample 10-28-77, sample taken by Mrs. Doom.

El Paso Plant #2 to Owens - pipeline. cl = 156.0 ppm -- sample taken 10-28-77 by Mrs. Doom.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 29, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 8 a.m. TIME OF RETURN 5 p.m.

MILES TRAVELLED 98

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

To Mathis Construction Company house to witness the drilling of water test wells. The two test wells drilled today indicate that the old Parker battery pit is the probably cause of Mrs. Mathis water contamination problem.

TEST WELL #26
Located 450' from Mathis windmill (at house) directly toward Parker Battery Pit (south) in M-35-24-37. Top Triassic gravel 84', top redbed clay 105'.
Chlorides = 582.2 ppm TD 108'.

Test Well #27
Located 200' due south (180° T.N.) of Parker battery pit and 450' south of Parker Well #1 in M-35-24-37.
Top Triassic gravel 87', top redbed clay 105'.
Chlorides = 85.2 ppm. TD 108'.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO
OIL CONSERVATION COMMISSION

FIELD TRIP REPORT

DATE Oct. 31, 1977

NAME OF EMPLOYEE JOHN W. RUNYAN

TIME OF DEPARTURE 8 a.m. TIME OF RETURN 3:45 p.m.

MILES TRAVELLED 110

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

To Owens Ranch to witness drilling of water test wells. The Owens property is south, next to the Doom ranch. The well below was drilled in order to determine the south limit of the water contamination problem in Doom ranch.

TEST WELL #28
Located 84' due east (90° T.N.) from Mobil's well #112 in B-10-25-37.
Top Triassic gravel 84', top redbed clay 96'.
Chlorides 440.2 ppm. TD 100'

The above well concludes the test well drilling in the Doom--Mathis water contamination study. The final report will be completed as soon as possible.

John W. Runyan
Employee's Signature
District #1

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. CP-245

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit N, Section 22, T 24 S - R 37 E Lea County

Water well

Type Well: Pump in well Depth: ____ feet.

Well Use: Stock

Sample Number: _____ Date Taken: 10-3-77 JWR

Specific Conductance: _____ m/ɔ

Total dissolved Solids: _____ PPM.

Chlorides: 49.7 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-5-77 By: _____
N.M.O.C.C.

Remarks: Water to be used as drilling water for test holes.

50 ml sample = 71.0 factor x .7 = 49.7 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #1

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit D, Section 35, T 24 S - R 37 E. 24.37.35-11324

Type Well: Test Well Depth: 90 feet.

~~Well User:~~ Sample taken by circ. water -- could not blow

Sample Number: TW #1 Date Taken: 10-5-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 49.7 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-5-77 By: _____
N.M.O.C.C.

Remarks:

50 ml sample = 71.0 factor x .7 titration - 49.7 ppm. Same as drilling water

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #1

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit D, Section 35, T 24 S - R 37 E 24.37.35. 11324

Re-entry by state engineers for sample

Type Well: test well Depth: ____ feet.

~~Well Use:~~ Took sample with trip sampler

Sample Number: TW #1-A Date Taken: 10-13-77

Specific Conductance: ____ m/

Total dissolved Solids: ____ PPM.

Chlorides: 99.4 PPM.

Sulfates: ____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

____ : ____

Date Analized: 10-13-77 By: ____
N.M.O.C.C.

Remarks: ____

Field -- 25 ml sample = 142.0 factor x 1.4 titration = 99.4 ppm

Enough water had seeped into test well hole for St. Engineer to get water sample and level.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #2

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit E, Section 35, T 24 S - R 37 E 24.37.35.13324

Type Well: Test well Depth: 102 feet.

Well Use: Sample taken by circulation - couldn't blow

Sample Number: TW #2 Date Taken: 10-5-77 JWR

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 49.7 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-5-77 By: _____
N.M.O.C.C.

Remarks:

50 ml sample = 71.0 factor x .7 titration = 49.7

same as drilling water, very little if any formation water

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #2

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit E, Section 35, T 24 S - R 37 E 24.37.35.13324

Re-entry into TW #2 -- drilled 4' deeper

Type Well: Test well Depth: 106 feet.

~~Well Data~~: Took sample by blowing out formation water

Sample Number: TW #2A Date Taken: 10-12-77 JWR

Specific Conductance: _____ m/~

Total dissolved Solids: _____ PPM.

Chlorides: 156.2 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-12-77 By: _____
N.M.O.C.C.

Remarks:

Drilled 4' deeper -- found triassic gravel below triassic hard rock. Also, some water in gravel.

Field: 50 ml sample = 71.0 factor x 2.2 titration = 156.2 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #3

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit F, Section 34, T 24 S - R 37 E 24.37.34.12342

Type Well: test well Depth: 70 feet.

Well Use: XXXXXXXX Sample taken by blowing out formation water

Sample Number: TW #3 Date Taken: 10-6-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 1179 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10/6/77 By: _____
N.M.O.C.C.

Remarks:

Field = 50 ml sample = 71.0 factor x 17.4 titration = 1235.4 ppm

Lab = 50 ml sample = 71.0 factor x 16.6 titration = 1178.5 ppm.

Will use lab figure.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #4

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit C, Section 34, T 24 S - R 37 E 24.37.34.12121

Type Well: Test well Depth: 88 feet.

~~Well Use~~: sample taken by blowing out formation water

Sample Number: TW #4 Date Taken: 10-6-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 611 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-6-77 By: _____
N.M.O.C.C.

Remarks:

Field: 50 ml sample = 71.0 factor x 8.6 ml titration = 610.6 ppm

Lab: 50 ml sample = 71.0 factor x 8.6 ml titration = 610.6 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #5

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit M, Section 27, T 24 S - R 37 E 24.37.27.33411

Type Well: Test well Depth: ____ feet.

Well Water: Sample taken by blowing out formation water

Sample Number: TW #5 Date Taken: 10-7-77

Specific Conductance: ____ m/

Total dissolved Solids: ____ PPM.

Chlorides: 42.6 PPM.

Sulfates: ____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

____ : ____

Date Analized: 10-7-77 By: ____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 factor x .6 titration = 42.6

Better than drilling water

Large volume of water in formation.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #6

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit L, Section 27, T 24 S - R 37 E 24.37.27.34411

Type Well: test well Depth: 90 feet.

~~Well~~ use: Sample taken by blowing out formation water

Sample Number: TW #6 Date Taken: 10-7-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 951.4 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-7-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 titration x 13.2 titration = 937.2 ppm

Lab -- 25 ml sample = 142.0 titration x 6.7 titration = 951.4 ppm

Will use lab figure

Well located 81' south of Amerada injection well #604.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #7

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit J, Section 27, T. 24 S - R 37 E 24.37.27.41333

Type Well: test well Depth: 100 feet.

~~Well Use:~~ Sample taken by blowing out formation water

Sample Number: TW #7 Date Taken: 10-7-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 42.6 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-7-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 factor x .6 titration = 42.6 ppm

Water better than drilling water.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #8

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit E, Section 27, T 24 S - R 37 E 24.37.27.32111

Type Well: test well Depth: 92 feet.

~~Well Use:~~ Sample taken by blowing out formation water

Sample Number: TW #8 Date Taken: 10-8-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 127.8 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-8-77 By: _____
N.M.O.C.C.

Remarks: _____

Field -- 50 ml sample = 71.0 factor x 1.8 titration = 127.8 ppm

Slightly contaminated.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #9

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit K, Section 27, T 24 S - R 37 E 24.37.27.32322

Type Well: test well Depth: 90 feet.

~~Well User:~~ Sample taken by blowing out formation water

Sample Number: TW #9 Date Taken: 10-8-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 63.9 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-8-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 factor x .9 titration = 63.9 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #10

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit L, Section 27, T 24 S - R 37 E 24.37.27.31411

Type Well: test well Depth: 108 feet.

~~Well Use~~: Sample taken by blowing out formation water

Sample Number: TW #10 Date Taken: 10-8-77

Specific Conductance: _____ m/ω

Total dissolved Solids: _____ PPM.

Chlorides: 42.6 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-8-77 By: _____
N.M.O.C.C.

Remarks: _____

Field: 50 ml sample = 71.0 factor x .6 titration = 42.6

Better than drilling water

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #11

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit O, Section 27, T 24 S - R 37 E 24.37.27.43140

Type Well: test well Depth: 118 feet.

Remarks: Sample taken by circulating drilling water -- could not blow

Sample Number: TW #11 Date Taken: 10-10-77 JWR

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 49.7 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-10-77 By: _____
N.M.O.C.C.

Remarks:

Circulate water for 10 minutes and took sample

Filed --- 50 ml sample = 71.0 factor x .7 titration = 49.7

Very little formation water

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #11

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit O, Section 27, T 24 S - R 37 E 24.37.27.43140

Sample taken with trip-sampler

Type Well: test well Depth: 118 feet.

Well Use:

Sample Number: TW #11A Date Taken: 10-13-77 State Engineer

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 99.4 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks:

Enough water had seeped into test well to get sample.

Field -- 25 ml sample = 142.0 x .7 titration = 99.4 ppm

Lab -- 25 ml sample = 142.0 x .7 titration = 99.4 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #12

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 27, T 24 S - R 37 E 24.37.27.34213

Type Well: test well Depth: 86 feet.

Well Water: took sample by blowing formation water out.

Sample Number: TW #12 Date Taken: 10-10-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 56.8 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-10-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 factor x .8 titration = 56.8 ppm

Lab -- 50 ml sample = 71.0 factor x .8 titration = 56.8 ppm

TW #12 located 280' north of Amerada's well #604.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #13

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit F, Section 34, T 24 S - R 37 E 24.37.34.14400

Type Well: Test well Depth: 70 feet.

~~Well Use:~~ sample taken by blowing out formation water

Sample Number: TW #13 Date Taken: 10-11-77 JWR

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 1704.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-11-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 25 ml sample = 142.0 factor x 12.5 titration = 1775.0 ppm

Lab -- 25 ml sample = 142.0 factor x 12.0 titration = 1704.0 ppm

Will use lab figure.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #14

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit O, Section 34, T 24 S - R 37 E 24.37.34.41000

Type Well: test well Depth: 74 feet.

~~Well User~~: took sample by blowing out formation water

Sample Number: TW #14 Date Taken: 10-11-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 1549.8 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-11-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 25 ml sample = 142.0 factor x 10.7 titration = 1519.4 ppm

Lab -- 25 ml sample = 142.0 factor x 10.9 titration = 1547.8

Will use lab figure

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #15

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit P, Section 34, T 24 S - R 37 E 24.37.34.44124

Type Well: test well Depth: 105 feet.

Well Water Sample taken by blowing out formation water

Sample Number: TW #15 Date Taken: 10-12-77 JWR

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 404.7 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-12-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 factor x 5.7 titration = 404.7 ppm

Lab -- 50 ml sample = 71.0 factor x 5.7 titration = 404.7 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: MATHIS (DOOM) Well No. TW #16

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit L, Section 35, T 24 S - R 37 E 24.37.35.31314

Type Well: test well Depth: 100 feet.

~~Well Use:~~ took sample by blowing out formation water

Sample Number: TW #16 Date Taken: 10-13-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 327 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks:

Drilled test well #16 in sink behind Mathis house -- sink surface 6' lower than normal ground level shown on topo map.

Field -- 25 ml sample = 142.0 factor x 2.3 titration = 326.6 ppm

Lab -- 50 ml sample = 71.0 factor x 4.7 titration = 333.7 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #17

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit P, Section 3, T 25 S - R 37 E 25.37.3.23244

Type Well: test well Depth: ____ feet.

~~Well~~ Took sample by blowing out formation water

Sample Number: TW#17 Date Taken: 10-13-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 880 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks:

Field -- 25 ml sample = 142.0 factor x 6.2 titration = 880.4 ppm

Lab -- 25 ml sample - 142.0 factor x 6.2 titration = 880.4 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #18

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E 24.37.34.43244

Entered old windmill to drill deeper

Type Well: abd windmill Depth: 73 feet.

Well Use: sample taken by trip sampler *

Sample Number: TW #18 Date Taken: 10-14-77 State Engineer

Specific Conductance: _____ m/ℓ

Total dissolved Solids: _____ PPM.

Chlorides: 809 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-14-77 By: _____
N.M.O.C.C.

Remarks: _____

From 57' to 73' was very heavy with dead alge -- could not blow out sample --

had to use trip sampler -- water well stirred with with drilling rig.

Field -- 25 ml sample = 142.0 factor x 5.7 titration = 809.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. TW #19

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit I, Section 34, T 24 S - R 37 E 24.37.34.42413

Type Well: test well Depth: ____ feet.

~~WXXXXXXXX~~ Took sample by blowing out formation water

Sample Number: TW #19 Date Taken: 10-14-77 JWR

Specific Conductance: ____ m/

Total dissolved Solids: ____ PPM.

Chlorides: 383.4 PPM.

Sulfates: ____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

____ : ____

Date Analized: 10-14-77 By: ____
N.M.O.C.C.

Remarks:

Field -- 50 ml sample = 71.0 factor x 5.4 titration = 383.4 ppm

Lab -- 50 ml sample = 71.0 factor x 5.4 titration = 383.4 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM SURVEY Well No. TW #20

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit J, Section 34, T 24 S - R 37 E

located 174' due east, 90° TN of Amerada well #131

Type Well: test well Depth: 112 feet.

Well Use: water contamination study

Sample Number: TW #20 Date Taken: 10-26-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 795.2 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-26-77 By: _____
N.M.O.C.C.

Remarks:

Well located 174' due east of Amerada well #131

50 ml sample = 71.0 factor x 11.2 titration = 795.2 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM SURVEY Well No. TW #21

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit L, Section 34, T 24 S - R 37 E 24.37.34.312322

Type Well: Test well Depth: 70 feet.

Well Use: Water contamination study

Sample Number: TW #21 Date Taken: 10-26-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 99.4 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-26-77 By: _____
N.M.O.C.C.

Remarks:
25 ml sample = 142.0 factor x .7 titration = 99.4 ppm
Very little water in formation.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM SURVEY Well No. TW #22

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit D, Section 3, T 25 S - R 37 E

located 138' and 110° TN from Mobil's injection well #2

Type Well: Water test well Depth: 52 feet.

Well Use: Water contamination study

Sample Number: TW #22 Date Taken: 10-27-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 63.9 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-27-77 By: _____
N.M.O.C.C.

Remarks:

50 ml sample = 71.0 factor x .9 titration - 63.9 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM SURVEY Well No. TW #23

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit P, Section 3, T 25 S - R 37 E 25.37.3.44444

Type Well: Water test well Depth: 105 feet.

Well Use: water contamination study

Sample Number: TW #23 Date Taken: 10-27-77 JWR

Specific Conductance: _____ m/ɔ

Total dissolved Solids: _____ PPM.

Chlorides: 127.8 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-27-77 By: _____
N.M.O.C.C.

Remarks: _____

25 ml sample = 142.0 factor x .9 titration = 127.8 ppm

Very little water in test well.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM SURVEY Well No. TW-#24

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit J, Section 3, T 25 S - R 37 E located
130' due south of Mobil's well #16

Type Well: water test well Depth: 66' feet.

Well Use: Water contamination study

Sample Number: TW #24 Date Taken: 10-28-77 JWR

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 56.8 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-28-77 By: _____
N.M.O.C.C.

Remarks: _____
50 ml sample = 71.0 factor x .8 titration = 56.8 ppm
Sample was taken by circulation -- could not blow drilling water out of test hole.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: MATHIS (Doom Survey) Well No. TW #25

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit I, Section 34, T 24 S - R 37 E Located 250' and 123° TN from Tenneco's well #1

Type Well: Water test well Depth: 112 feet.

Well Use: Water contamination study

Sample Number: TW #25 Date Taken: 10-28-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 225.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-28-77 By: _____
N.M.O.C.C.

Remarks:

50 ml sample = 71.0 factor x 3.6 titration = 225.0

* much drilling water was used to drill this test hole. Sample diluted with drilling water -- not correct.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: MATHIS (Doom Survey) Well No. TW #26

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit M, Section 35, T 24 S - R 37 E Located 450' from Mathis water well directly toward Parker battery pit.

Type Well: Water test well Depth: 108 feet.

Well Use: Water contamination study

Sample Number: TW #26 Date Taken: 10-29-77 JWR

Specific Conductance: _____ m/ℓ

Total dissolved Solids: _____ PPM.

Chlorides: 582.2 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-29-77 By: _____
N.M.O.C.C.

Remarks:
50 ml sample = 71.0 factor x 8.2 titration = 582.2

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: MATHIS (Doom Survey) Well No. TW #27

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit M, Section 35, T 24 S - R 37 E located 200' due south of Parker battery pit.

Type Well: Water test well Depth: 108 feet.

Well Use: Water contamination study

Sample Number: TW #27 Date Taken: 10-29-77

Specific Conductance: _____ m/ɾ

Total dissolved Solids: _____ PPM.

Chlorides: 85.2 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-29-77 By: _____
N.M.O.C.C.

Remarks: _____

50 ml sample = 71.0 factor x 1.2 titration = 85.2

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: OWENS (Doom Survey) Well No. TW #28

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit A, Section 10, T 25 S - R 37 E Located 84' due east of Mobil's well #112

Type Well: Water test well Depth: 100 feet.

Well Use: Water contamination study

Sample Number: TW #28 Date Taken: 10-31-77 JWR

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 440.2 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-31-77 By: _____
N.M.O.C.C.

Remarks:
50 ml sample = 71.0 factor x 6.2 titration - 440 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. _____

Land Status: ☐ State ☐ Federal ☐ Fee

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

Water supply for Doom house

Type Well: Water well - pump Depth: ? feet.

Well Use: Domestic

Sample Number: - Date Taken: 10-28-77 Doom

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 42.6 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-28-77 By: _____
N.M.O.C.C.

Remarks: _____

50 ml sample = 71.0 factor x .6 = 42.6 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: MATHIS Well No. --

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit L, Section 35, T 24 S - R 37 E

Type Well: Water well - pump Depth: ? feet.

Well Use: Domestic

Sample Number: --- Date Taken: 10-13-77

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 795.2 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks:

Field: 50 ml sample = 71.0 factor x 11.2 titration = 795.2 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. --

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit P, Section 34, T 24 S - R 37 E 24.37.34.43443

Sample taken by trip sampler

Type Well: abandoned water well Depth: ____ feet.

Well Use: originally for stock

Sample Number: _____ Date Taken: 10-12-77 State Engineer

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 1179 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks: _____

Field -- 25 ml sample = 142.0 factor x 8.3 titration = 1179 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit F, Section 3, T 25 S - R 37 E 25.37.3.142231

Sample taken by trip sampler

Type Well: water well - pump Depth: _____ feet.

Well Use: stock

Sample Number: _____ Date Taken: 10-13-77 State Engineer

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 249 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks: Pump had been removed from hole. Much algae in well.

Field -- 50 ml sample = 71.0 factor x 3.5 titration = 248.5 ppm.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. --

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit 0, Section 34, T 24 S - R 37 E 24.37.34.43244

(This water well designated as TW #18 10-14-77)

Type Well: abandoned wooden windmill Depth: ? feet.

Took trip sample at 47' -- State Engineer

Sample Number: Date Taken: 10-13-77

Specific Conductance: m/

Total dissolved Solids: PPM.

Chlorides: 270 PPM.

Sulfates: PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

:

Date Analized: 10-13-77 By:
N.M.O.C.C.

Remarks: Water level at 56' -- very static

Sample no good -- refer to TW #18

Field -- 25 ml sample = 142.0 x 1.9 titration = 269.8 ppm

Lab -- 25 ml sample = 142.0 x 1.9 titration = 269.8 ppm

Much alge in well.

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: DOOM Well No. --

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit H, Section 3, T 25 S - R 37 E 25.37.3.242141

Sample taken while windmill was pumping

Type Well: windmill - active Depth: ? feet.

Well Use: stock

Sample Number: -- Date Taken: 10-12-77 State Engineer

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 554.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-13-77 By: _____
N.M.O.C.C.

Remarks: _____

Field -- 25 ml sample = 142.0 x 3.9 titration = 553.8 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: OWENS Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 10, T 25 S - R 37 E 25.37.10.24444

Type Well: Irrigation Depth: ____ feet.

Well Use: Farming - taken while pumping

Sample Number: -- Date Taken: 10-14-77 State Engineer

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 362 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-18-77 By: _____
N.M.O.C.C.

Remarks: _____

Lab -- 50 ml sample = 71.0 factor x 5.1 titration = 362.1 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: EL PASO NATURAL GAS Well No. _____

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 35, T 24 S - R 37 E Lea County

Type Well: Water pipeline Depth: _____ feet.

Well Use: Plant #3 supply water

Sample Number: _____ Date Taken: 10-5-77 JWR

Specific Conductance: _____ m/ℓ

Total dissolved Solids: _____ PPM.

Chlorides: 149.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-5-77 By: _____
N.M.O.C.C.

Remarks: Looking for drilling water for test holes -- chloride too high.

50 ml sample = 71.0 x 2.1 = 149.1 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: OWENS Well No. _____

Land Status: ☐ State ☐ Federal ☒ Fee

Well Location: Unit ___, Section 10, T 25 S - R 37 E 25.37.10.43343

Type Well: Abandoned water well Depth: ? feet.

Well Use: Taken with trip sampler - static

Sample Number: _____ Date Taken: 10-14-77 State Engineer

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 341 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 10-18-77 By: _____
N.M.O.C.C.

Remarks: _____

Lab = 50 ml sample = 71.0 factor x 4.8 titration = 340.8 ppm

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: EL PASO NATURAL GAS COMPANY Well No. --

Land Status: ☐ State ☐ Federal ☐ Fee

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

Water pipeline from Owens to El Paso Plant #3

Type ~~Water~~ Water pipeline Depth: ___ feet.

Well Use: Plant water source

Sample Number: Date Taken: 10-28-77 Doom

Specific Conductance: ___ m/ohm

Total dissolved Solids: ___ PPM.

Chlorides: 156.2 PPM.

Sulfates: ___ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

___ : ___

Date Analized: 10-28-77 By: ___
N.M.O.C.C.

Remarks:

50 ml sample = 71.0 factor x 2.2 titration = 156.2 ppm

1.

0	1	surface
1	5	caliche
5	30	sand & caliche
30	70	sand
70	82	soft sandstone
82	85	hard sandstone
85	87½	red sand
87½	90	sandstone with clay & sand

2.

0	12	caliche
12	46	sand & caliche
46	73	sand
73	90	soft sandstone
90	102	hard sandstone
102	105	red clay & gravel

3.

0	17	sand & caliche
17	38	sand
38	60	sandstone W/sand stringers
60	61	gravel
61	70	red clay

4.

0	2	surface sand
2	16	caliche
16	23	sand & caliche
23	49	sandstone
49	82	sandstone & sand
82	86	sandy clay & gravel
86	88	red clay

5.

0	5	surface sand
5	37	sand & caliche
37	58	sandstone
58	92	sand & sandstone
92	108	sand & gravel
108-	112	red clay

6.

0	4	sand
4	12	caliche
12	42	sandstone
42	78	sandstone & sand
78	85	sand & gravel
85	88	red clay

7.

0	11	caliche
11	18	sandstone
18	30	sand
30	75	sandstobe & sand
75	84	sand & sandy clay
84	90	grey sandy clay
90	97	sand w/small amount gravel
97	100	red clay

8.

0	3	surface soil
3	14	caliche & sandstone
14	24	sand
24	80	sandstone & sand
80	90	sand & gravel
90	92	red clay

9.

0	3	surface soil
3	12	caliche
12	72	sandstone & sand
72	87	sand with stringers of sandstone & gravel
87	90	red clay

10.

0	3	surface soil
3	23	caliche
23	35	sand & sandstone
35	46	hard sandstone
46	75	sand & sandstone layers
75	101	sand
101-	105	sand & gravel
105-	108	red clay

11.

0	12	caliche
12	20	sand
20	79	sandstone with sand layers
79	93	grey sand
93	105	sandy clay
105-	112	sand
112-	115	sandy clay
115-	118	red clay with gravel

12.

0	4	surface sand
4	21	caliche
21	60	sandstone & sand layers
60	78	sand
78	84	sand & gravel
84	86	red clay

13.

0	5	surface soil
5	16	caliche & sandstone
16	27	sandstone
27	48	sand
48	62	sandstone & sand
62	67	sandstone
67	70	red clay with gravel

14.

0	19	caliche
19	47	sand
47	56	sandstone & sand layers
56	63	sandstone
63	70	gravel & sand
70	74	red clay & gravel

15.

0	18	caliche
18	25	sand
25	89	sandstone & sand layers
89	91	hard sandstone
91	102	sand & gravel
102-105		red clay

16.

0	4	surface soil
4	16	caliche
16	66	sand
66	79	sandy clay & sandstone
79	81	hard sandstone
81	94	sand & gravel
94	98	red clay & gravel
98	100	red clay

17.

0	3	surface soil
3	12	caliche
12	25	sand
25	45	sandstone
45	55	red sandstone (hard)
55	60	sandy clay & gravel
60	65	sand & gravel
65	72	red clay with gravel

18.

0	56	(open hole) (abandoned water well)
56	69	fill-debris,sand,gravel.
69	71	gravel

19.

0	16	caliche
16	36	sand
36	91	sandstone & sand layers
91	100	sand & gravel
100	104	sandstone
104-108		gravel
108	110	red clay

STATE ENGINEER OFFICE
ROSWELL, N.M.
'77 OCT 18 AM 8 18

Hole # 20
0 16 caliche
16 -63 sand & sandstone layers
63 -91 sandstone with stringers of sand
91 -98 sandy clay & gravel
98 -102 sandstone & gravel
102 -112 red clay

Hole # 21
0 - 23 caliche
23 - 39 sand & caliche
39 - 52 sand & sandstone
52 - 64 sandstone (hard)
64 - 66 sandy clay & gravel
66 - 70 red clay

Hole # 22
0 - 2 surface soil
2 - 17 caliche
17 - 24 sandy clay
24 - 43 sand
43 - 46 sand,gravel,sandstone
46 - 49 sand & gravel
49 - 52 red clay

Hole # 23
0 - 1 surface
1 - 15 caliche
15 - 64 sand & sandstone
64 - 79 sandstone (hard, red)
79 - 87 sand & gravel
87 - 102 gravel with clay & sandstone stringers
102 - 105 red clay

Hole # 24
0 - 1 surface
1 - 24 caliche
24 - 34 sand
34 - 42 sandstone
42 - 56 gravel with sandstone layers
56 - 62 vari-colored clay
62 - 66 red clay

Hole # 25
0 - 22 caliche
22 - 85 sand & sandstone
85 - 87 sandstone
87 - 98 sand & gravel
98 - 108 clay & gravel with sandstone stringers
108 -112 red clay

Hole # 26
0 - 15 caliche
15 - 82 sand & sandstone
82 - 84 sandstone
84 - 94 sand & gravel
94 - 98 gravel & sandstone stringers
98 - 105 clay & gravel
105 - 108 red clay

Hole # 27
0 - 21 sand & caliche
21 - 84 sand & sandstone
84 - 87 sandy clay
87 - 91 sand & gravel
91 - 105 clay & gravel
105 - 108 red clay

Hole # 28
0 - 4 surface soil
4 - 23 caliche & sand
23 - 61 sand, sandy clay,sandstone
61 - 72 sandstone W/ sandy clay
72 - 90 sand & gravel with layers of sandstone
90 - 96 clay & gravel
96 - 100 red clay

DOOM, MATHIS & OWENS

WATER CONTAMINATION STUDY

ADDITION

N. M. ENERGY & MINERALS DEPARTMENT

OIL CONSERVATION DIVISION

BOX 1980

HOBBS, NEW MEXICO 88240

John W. Runyan
Geologist
June 23, 1978

APPENDIX

FORWARD

DATA SHEET

WATER ANALYSIS

FIELD REPORTS

DRILLING SAMPLES

DOOM, MATHIS AND OWENS
WATER CONTAMINATION STUDY

ADDITION

On March 27, 1978, Amerada Hess, Inc. began drilling an additional seven test wells, mostly in Section 34, T24S, R37E, in the area southwest of the old El Paso Plant #2 pits. Refer to revised chloride map which is attached.

The seven additional test wells did not change the results of the original report, and they did strengthen the conclusion that apparently the contamination began at Amerada's injection well #604. Amerada's test well #1, located NW of the old El Paso pits and slightly up-dip from the pits, toward injection well #604, had the highest chloride content (2016 ppm) encountered to date, in the contaminated area.

The seven test wells did cause a contour shift on the chloride map, giving more detail to map, but the overall direction and extent of the contaminated area did not change from the original map.

Respectfully submitted,

John W. Runyan

John W. Runyan
Geologist

DOOM-MATHIS WATER STUDY
GENERAL DATA

Amerada Test Well	Location T24S, R37E	Elevation	Top Redbed	T.D.	Chlorides PPM
#1	2039/W-29.6'/S Section 27	3158'	81'	82'	2016
#2	530/N-1744/W Section 34	3156'	81'	82'	1235
#3	2301/N-1313/E, Section 3	3156	81'	82'	738
#4	1981/W-695/N, Section 27	3158'	82'	84'	1278
#5	1024/N-2201/W, Section 34		72'	80'	909 @ 60' 312 @ 70'
#6	1026/N-2501/W, Section 34	3182	75'	80'	426 @ 60' 170.4 @ 74'
#7	1073/N-2456/E, Section 34		86'	88'	625 @ 60' 284 @ 78'

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: DOOM - TANK Well No. _____

Land Status: ☐ State ☐ Federal ☐ Fee

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

Type ~~Well~~: Stock tank Depth: ___ feet.

~~Well~~ Use: to drill test holes with water

Sample Number: #1 Date Taken: 3-27-78 Eddie Seay

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 43 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks: _____

25 ml sample = 142.0 factor x .3 titration = 42.6

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

DOOM WATER STUDY

WATER ANALYSIS

Well Ownership: AMERADA HESS Well No. TW #1

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 27, T 24 S - R 37 E

2039'/W - 29.6'/S

Type Well: water test well Depth: 84 feet.

Well Use: water analysis

Sample Number: #1 Date Taken: 3-27-78 Eddie Seay

Specific Conductance: _____ m/ɔ

Total dissolved Solids: _____ PPM.

Chlorides: 2016 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top Redbeds 81'

T.D. 82'

Elevation 3157.9'

25 ml sample = 142.0 factor x 14.2 = 2016.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

DOOM WATER STUDY

WATER ANALYSIS

Well Ownership: AMERADA HESS Well No. TW #2

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E

530'/N - 1744/W

Type Well: water test well Depth: 82 feet.

Well Use:

Sample Number: #1 Date Taken: 3-27-78 Eddie Seay

Specific Conductance: ___ m/

Total dissolved Solids: ___ PPM.

Chlorides: 1235 PPM.

Sulfates: ___ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

___ : ___

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed 81'

T.D. 82'

Elevation 3156'

25 ml sample = 142.0 factor x 8.7 = 1235.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: AMERADA HESS Well No. TW #3

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 3, T 24 S - R 37 E

2301/N - 1313/E

Type Well: water test well Depth: 93 feet.

Well Use: water analysis

Sample Number: #1 Date Taken: 3-27-78 Eddie Seay

Specific Conductance: _____ m/ohms

Total dissolved Solids: _____ PPM.

Chlorides: 738 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed = 81'

T.D. = 82'

Elevation = 3156'

25 ml sample = 142.0 factor x 5.2 titration = 738.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: AMERADA HESS Well No. TW #4

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 27, T 24 S - R 37 E

1981/W - 695/N

Type Well: water test well Depth: 84 feet.

Well Use: water analysis

Sample Number: #1 Date Taken: 3-27-78

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 1278.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbeds = 81.5 feet

T.D. = 84'

Elevation = 3157.9'

25 ml sample = 142.0 factor x 9.0 = 1278

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: AMERADA HESS Well No. TW #5

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E

1024'/N - 2201/W

Type Well: water test well Depth: 80 feet.

Well Use: water analysis

Sample Number: #1 at 60' Date Taken: 5-1-78 M.G. Crossland

Specific Conductance: _____ m/ɔ

Total dissolved Solids: _____ PPM.

Chlorides: 909 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed 72'

T.D. 80'

Elevation

25 ml sample = 142.0 factor x 6.4 = 908.8

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

Well Ownership: AMERADA HESS Well No. TW #5

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E
1024'/N - 2201'/W

Type Well: water test well Depth: 80 feet.

Well Use: water analysis

Sample Number: #2 at 70' Date Taken: 5-1-78, M.G. Crossland

Specific Conductance: _____ m/ɾ

Total dissolved Solids: _____ PPM.

Chlorides: 312 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed = 72 feet

T.D. = 80 feet

25 ml sample = 142.0 factor x 2.2 titration = 312.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: AMERADA HESS Well No. TW #6

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E

1026'/N - 2501/W Sec. 34

Type Well: water test well Depth: 80 feet.

Well Use: water analysis

Sample Number: #1 at 60' Date Taken: 5-2-78 M.G. Crossland

Specific Conductance: _____ m/ℳ

Total dissolved Solids: _____ PPM.

Chlorides: 426.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed = 75 feet

T.D. = 80 feet

Elevation = 3182.3

25 ml sample = 142.0 factor x 3.0 titration = 426.0

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

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DOOM WATER STUDY

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Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E

1026'/N - 2501'/W, Sec. 34

Type Well: water test well Depth: 80 feet.

Well Use: water analysis

Sample Number: #2 at 74 feet Date Taken: 5-2-78 M.G.Crossland

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 170.4 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed = 75 feet

T.D. = 80 feet

Elevation = 3182.3

25 ml sample = 142.0 factor x 1.2 titration = 170.4

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: AMERADA HESS Well No. TW #7

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T 24 S - R 37 E

1073'/N - 2456'/E

Type Well: Water test well Depth: 78 feet.

Well Use: Water analysis

Sample Number: #1 at 60' Date Taken: 5-2-78 M.G. Crossland

Specific Conductance: _____ m/ohm

Total dissolved Solids: _____ PPM.

Chlorides: 625 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed = 86 feet

T.D. - 88 feet

25 ml sample = 142.0 factor x 4.4 titration = 624.8

NEW MEXICO OIL CONSERVATION COMMISSION
Hobbs, New Mexico

WATER ANALYSIS

DOOM WATER STUDY

Well Ownership: AMERADA HESS Well No. TW #7

Land Status: ☐ State ☐ Federal ☐ Fee

Well Location: Unit ___, Section 34, T. 24 S - R. 37 E

1073'/N - 2456'/E

Type Well: Water test well Depth: 88 feet.

Well Use: water analysis

Sample Number: #2 at 78' Date Taken: 5-2-78 M.G. Crossland

Specific Conductance: _____ m/

Total dissolved Solids: _____ PPM.

Chlorides: 284.0 PPM.

Sulfates: _____ PPM.

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

Sulfides: ☐ None ☐ Low ☐ Med. ☐ High

_____ : _____

Date Analized: 5-26-78 By: John W. Runyan
N.M.O.C.C.

Remarks:

Top redbed = 86 feet

T.D. - 88 feet

25 ml sample = 142.0 factor x 2.0 titration = 284.0

Amarada Water Study (Doom property-s/e Jal.)

Hole # 1 (north of Elpaso Gas co. pit.)

0	2	sand
2	23	caliche & sand
23	45	sand
45	62	sand with sandstone layers
62	81	water sand with sandstone stringers
81	83	gravel with sandy clay
83	84	red clay

Hole # 2 (west of old pit)

0	3	sand
3	24	sand & caliche
24	58	sand
58	70	sand with layers of sandstone
70	78	sandy clay & sand
78	81	red sandy clay & gravel
81	82	red clay

Hole # 3 (south pasture, s/w of south windmill)

0	4	surface soil
4	23	caliche & sand
23	42	sand with sandstone stringers
42	49	sandstone (quartzite)
49	53	conglomerate
53	68	gravel & sand
68	70	quartzite
70	75	sand & gravel
75	91	sandy clay (yellow)
91	93	red clay

Hole # 4 (south of old pit, by oil well)

0	3	subface sand
3	14	caliche
14	56	sand & sandstone layers
56	64	sand
64	68	red sandy clay
68	70	red clay

Amarada-Hess Corp. Water Study. (Doom Ranch)

May 1,2,3,1978

Hole #5

0	1	surface
1	19	caliche & sand
19	62	sand & sand stone layers
62	68	red sandy clay
68	69½	quartzite
69½	71	sandy clay
71	80	red clay

Hole # 6

0	22	caliche & sand layers
22	57	sand & sandstone layers
57	60	limestone
60	74	sand & sandstone
74	75	quartzite
75	80	red clay

Hole # 7

0	17	caliche & sand
17	30	sand
30	75	sand & sandstone layers
75	78	sandy clay
78	82½	quartzite
82½	86	sandy clay
86	87	red clay

Amarada Water Study (Doom property-s/e Jal.)

Hole # 1 (north of Elpaso Gas co. pit.)

0	2	sand
2	23	caliche & sand
23	45	sand
45	62	sand with sandstone layers
62	81	water sand with sandstone stringers
81	83	gravel with sandy clay
83	84	red clay

Hole # 2 (west of old pit)

0	3	sand
3	24	sand & caliche
24	58	sand
58	70	sand with layers of sandstone
70	78	sandy clay & sand
78	81	red sandy clay & gravel
81	82	red clay

Hole # 3 (south pasture, s/w of south windmill)

0	4	surface soil
4	23	caliche & sand
23	42	sand with sandstone stringers
42	49	sandstone (quartzite)
49	53	conglomerate
53	68	gravel & sand
68	70	quartzite
70	75	sand & gravel
75	91	sandy clay (yellow)
91	93	red clay

Hole # 4 (south of old pit, by oil well)

0	3	surface sand
3	14	caliche
14	56	sand & sandstone layers
56	64	sand
64	68	red sandy clay
68	70	red clay

Amarada-Hess Corp. Water Study. (Doom Ranch)

May 1,2,3,1978

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0	1	surface
1	19	caliche & sand
19	62	sand & sand stone layers
62	68	red sandy clay
68	69½	quartzite
69½	71	sandy clay
71	80	red clay

Hole # 6

0	22	caliche & sand layers
22	57	sand & sandstone layers
57	60	limestone
60	74	sand & sandstone
74	75	quartzite
75	80	red clay

Hole # 7

0	17	caliche & sand
17	30	sand
30	75	sand & sandstone layers
75	78	sandy clay
78	82½	quartzite
82½	86	sandy clay
86	87	red clay