DRL

Diversified
Resources
Limited

March 17, 1986

Bureau of Land Management
P.O. Box 311
Canon City, Colorado 81212

Attn: District Manager

RE: C-29691
(130) FM
NTL-2B Application

Dear Sir:

In response to your letter dated February 27, 1986, attached please find a copy of our original NTL-2B, Attachment #1, sent to you on December 6, 1985, which answers your most recent questions. I have also spoken about this several times with your office. However, in the interest of attempting to be cooperative, the following is another attempt to answer the questions posed.

1. Depth and areal extent of all surface and subsurface waters in the area which might reasonably be affected by the proposed disposal.

ANSWER: There are no surface waters or drainage in the S/2 of the SE/4 Section 31. The only domestic water well in the near area is the old Harvey Seifried homestead, behind the domicile, located in the NW/4 Section 6 T8N R58W. See Figure 1, attached. Exact well depth is unknown but less than one hundred feet. The limited domestic water production is from Quarternary Alluvial surface sands. See point 5, Attachment 1.

2. Maps or plats showing the location of surface waters, fresh water wells, and existing water disposal facilities within two miles of the proposed disposal facility.

ANSWER: See Figure 2.

3. Reasonable geologic and hydrologic evidence showing that the proposed disposal method will not adversely impact on existing water quality or major uses of such waters; the depth of the shallowest fresh water aquifer in the area and the presence of any impermeable barrier(s).

Hudson's Bay Centre • Suite 1500 • 1600 Stout Street • Denver, Colorado 80202 • 303/595-3957

ANSWER: I wish to reiterate point 3 of the index of Figure 1 attached. The produced water disposal pit, located in the NW/4 Section 6 T7N R58W, has been in constant use since the original Maxey Seifried #1 well was drilled and completed in January, 1956 by Rock Oil Company. There has been no known adverse impact on the quality of surface water or aquifer used by man, cattle, prairie dogs, prairie chickens, waterfowl, sagebrush, native grasses, wheat, cactus, etc. since that date.

4. A copy of any State order or other authorization granted as a result of a public hearing which is pertinent to the District Manager's consideration of the application.

ANSWER: There is no such state order. No public hearing is required since 1) there is only one human resident within a two mile radius of the disposal pit, 2) the nearest town is Raymer, Colorado, located East, roughly 3-1/2 miles, and 3) the well produces less than 5 bbls water per day. Therefore, no water disposal approval or hearing is required by the State (per Ed DiMateo, Colorado Oil and Gas Conservation Commission). The two wells, Federal Wildhorse #15-31 and Federal Wildhorse #10-31, currently produce to the common tank battery shown in Attachment 1, Exhibit B. The Federal Wildhorse #10-31 is a dry gas well producing no water. The Federal Wildhorse #15-31 produces .7 barrel water per day. Note Attachment 1, Point 1. The Federal Wildhorse #16-31 was perforated and tested 100% oil with no water after perforating. It still awaits BLM/NFS approval of flowline and power hookups.

A second complete water analysis was run on produced water off the Federal Wildhorse battery, see Attachment 2. The sample was taken off the treater water leg, going to the pit.

Your approval of our water disposal methods will certainly be appreciated. Operators throughout the area have been disposing of far larger quantities of water through these methods for over 30 years with the full approval of the State of Colorado and the local residents with no known adverse consequences.

Sincerely,

Terry J. Cammon

Terry J. Cammon
Manager of Operations

TJC:ckc

Attachments

Form 3160-5
(November 1983)
(Formerly 9-331)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN TRIPLICATE* (Other instructions on reverse side)

Form approved.
Budget Bureau No. 1004-0135
Expires August 31, 1985

5. LEASE DESIGNATION AND SERIAL NO.: CO-29691

6. IF INDIAN, ALLOTTEE OR TRIBE NAME:

SUNDRY NOTICES AND REPORTS ON WELLS

(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir. Use "APPLICATION FOR PERMIT—" for such proposals.)

1. OIL WELL [X] GAS WELL [ ] OTHER

7. UNIT AGREEMENT NAME:

2. NAME OF OPERATOR: Diversified Resources Limited

8. FARM OR LEASE NAME: Federal Wildhorse

3. ADDRESS OF OPERATOR: 1600 Stout Street, Suite 1500, Denver, Colorado 80202

9. WELL NO.: 15-31

4. LOCATION OF WELL (Report location clearly and in accordance with any State requirements.* See also space 17 below.) At surface: 610' FSL & 2030' FEL (SW SE)

10. FIELD AND POOL, OR WILDCAT: Wildhorse

11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA: Sec 31 T8N R58W

14. PERMIT NO.: 85-238

15. ELEVATIONS (Show whether DF, RT, GR, etc.): 4815' KB

12. COUNTY OR PARISH: Weld

13. STATE: Colorado

16. Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF INTENTION TO:				SUBSEQUENT REPORT OF:			
TEST WATER SHUT-OFF	[ ]	PULL OR ALTER CASING	[ ]	WATER SHUT-OFF	[ ]	REPAIRING WELL	[ ]
FRACTURE TREAT	[ ]	MULTIPLE COMPLETE	[ ]	FRACTURE TREATMENT	[ ]	ALTERING CASING	[ ]
SHOOT OR ACIDIZE	[ ]	ABANDON*	[ ]	SHOOTING OR ACIDIZING	[ ]	ABANDONMENT*	[ ]
REPAIR WELL	[ ]	CHANGE PLANS	[ ]	(Other)			[ ]
(Other) NTL-2B		X		(NOTE: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)			

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)*

Attached please find NTL-2B, Application for Disposal of Produced Water for the above referenced well.

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Attachment 1

18. I hereby certify that the foregoing is true and correct

SIGNED T.J. Simmon TITLE Manager of Operations DATE December 6, 1985

(This space for Federal or State office use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

*See Instructions on Reverse Side

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

****
* DENVER DIVISION LAB *
* HALLIBURTON SERVICES *
* BOX 1510 *
* EVANSVILLE, WY 82636 *
****

DATE: MARCH 7, 1986

TO: GENE SPENCER
- HALLIBURTON SERVICES
- STERLING , CO

REPORT NO: W86-0142

COMPANY: DIVERSIFIED RESOURCES

DATE REC'D: 3-6-86

WELL NO: 15-31 FEDERAL WILDHORSE

FORMATION: D-SAND

LOCATION: WELD CO, CO

MARKED "PIT SAMPLE"

****

SPECIFIC GRAVITY	1.08	
PH	7.35	
IRON (FE)	<1	MPL
POTASSIUM (K)	95	"
SODIUM (NA)	2713	"
CALCIUM (CA)	38	"
MAGNESIUM (MG)	3	"
CHLORIDES (CL)	3969	"
SULFATES (SO4)	<10	"
CARBONATES (CO3)	NIL	"
BICARBONATES (HCO3)	641	"
TDS	7470	"
RESISTIVITY	1.09	OHMS/M2/M AT 67 DEGREES F

REMARKS: MARKED"PIT SAMPLE"

CC: FILE

RESPECTFULLY SUBMITTED,

BY: D P KUNDERT

Attachment 2

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NTL-2B
APPLICATION FOR DISPOSAL
OF PRODUCED WATER

Federal Wildhorse #15-31
SE/4 Sec 31 T8N R58W
Weld County, Colorado

1. Federal Wildhorse #15-31, NW/4 SE/4 Sec 31 produces oil, gas, and a minimal amount of water, less than 1 bbl/day, from the Cretaceous "D" Sand.

2. A complete water analysis, Exhibit "A" attached, shows presence of basic elements, pH, chlorides and sulfate concentration. Total solids, which are the sum of the cations and anions present less the CO_2 present, are 10,012 mg/l.

3. Exhibits "B" and "C" show the size and location of the enclosed water disposal pit, with respect to well(s), battery, and county road.

4. The percolation rates for substrata near surface soils range from 20 minutes to 100 minutes per inch for the area, per Colorado State Government, Soil Conservation Board, Department of Natural Resources. The surface evaporation rate is extreme and calculated to be from 4 bbls/24 hr - pit to 6 bbl/24 hr - pit. From actual surface tests. See Exhibit "D".

5. The only domestic water well in the near area is the old Harvey Seifried homestead, behind the domicile, located in the NW/4 Section 6 T8N R58W. See Exhibit "E". Exact well depth is unknown but less than one hundred feet. The limited water production is from Quaternary alluvial surface sands.

6. The water disposal pit is 15' long X 15' wide X 15' deep. The pit is unlined. The pit is enclosed overhead by 2-3/8" O.D. tbg, 7/8" sucker rods, and 2" opening mesh wire of welded construction. The perimeter of the pit is earth bermed by 12" - 18" of native soil. See Exhibit "C". Surface water and wildlife cannot enter the disposal pit. The entire production facility is fenced per NFS specifications.

7. Frank, in short these wells produce very small amounts of water which can easily and safely be disposed in surface pits, a time proven, acceptable manner in the D-J Basin.

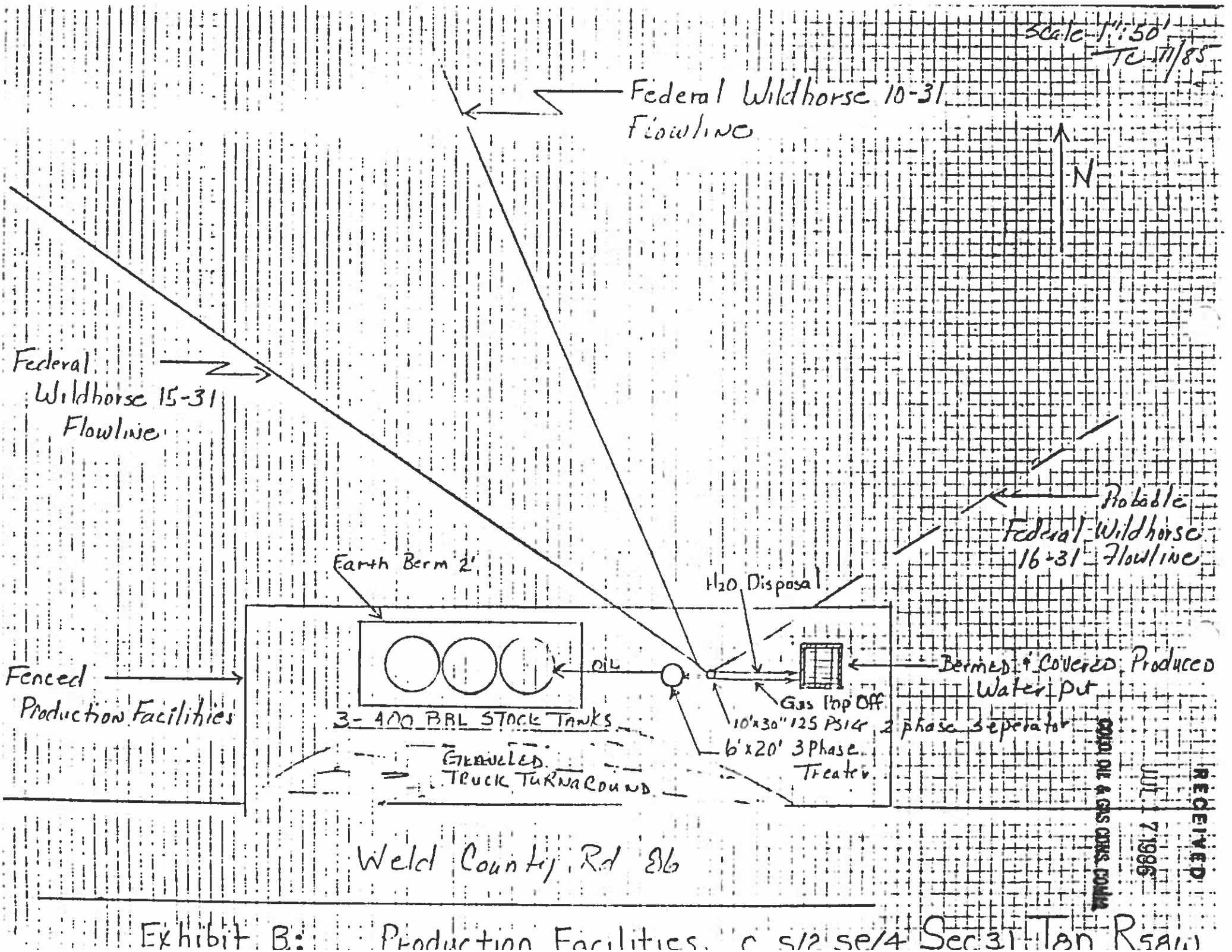

Exhibit B: Production Facilities, c s/2 se/4 Sec 31 T2n R64W

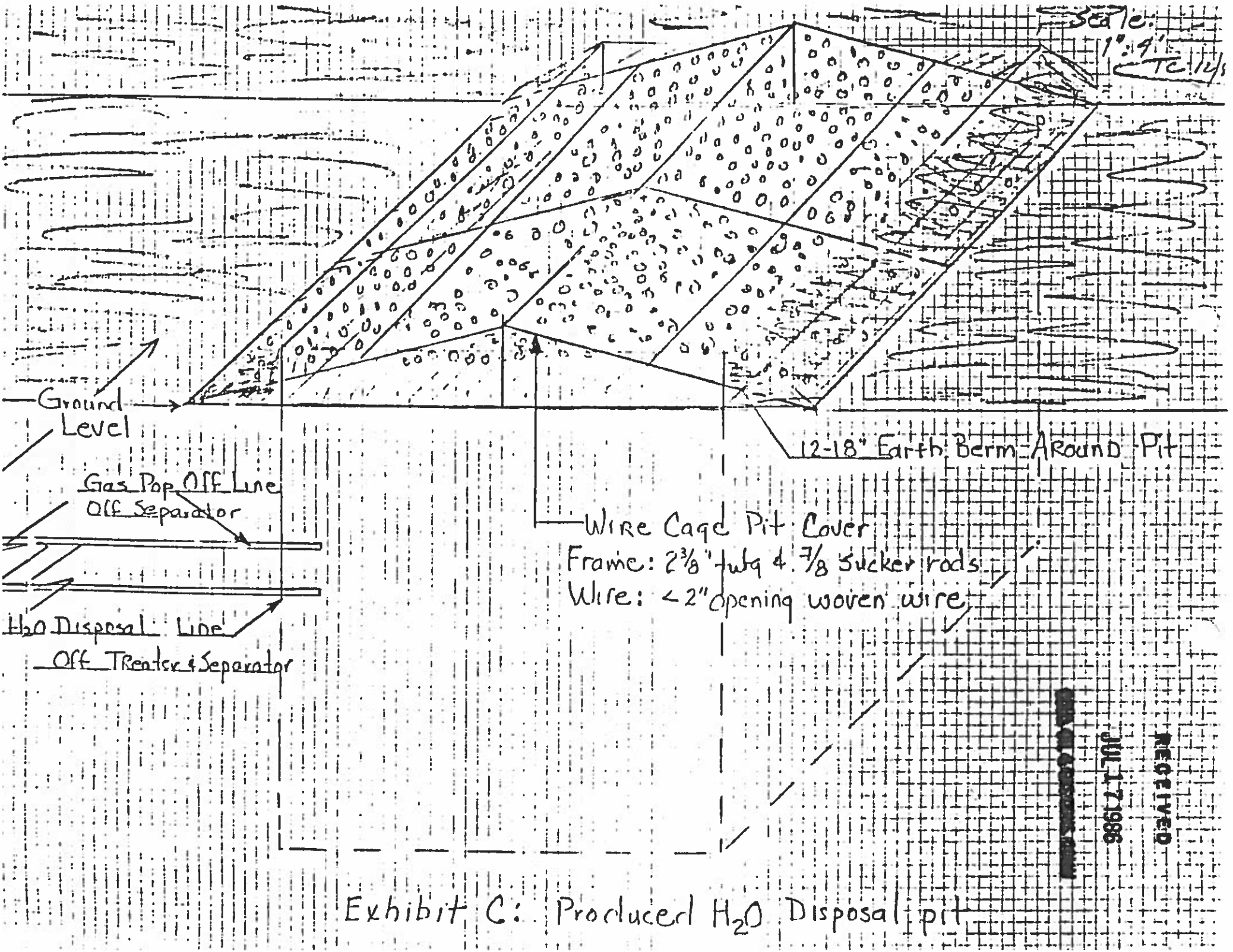

Exhibit C: Produced H_2O Disposal pit

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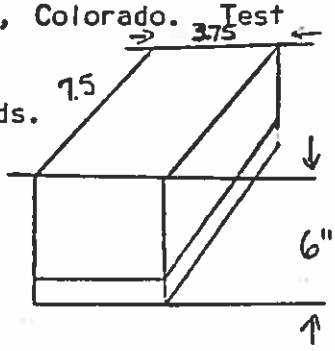
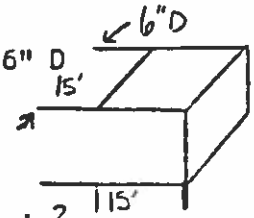
EXHIBIT D
EVAPORATION CALCULATIONS

Actual evaporation test.
Place: Production battery, Sec 31 T8N R58W, Weld County, Colorado. Test
Date: September 26, 1985.
Surface temperature: 64° F
Tested from 0900 hrs - 1700 hrs, no wind, intermittent clouds.



Test Container: 7-1/2' L X 3.75" W X 16" D



Actual Pit: 15' X 15' X 15'

Test Container A: $7.5" \times 3.75" = 28.13\ in^2$

$$\text{Evaporation} = .375\ \frac{in}{8\ hr} == 1.125\ \frac{in}{24\ hr} = 31.6\ \frac{in^3}{24\ hr}$$

$$\frac{31.6\ (in^3)}{28.13\ (in)^2 - 24\ hr} \times \frac{144\ (in^2)}{(ft^2)} = 161.8\ \left(\frac{in^3}{ft^2 - 24\ hr}\right)$$

Thus for the pit

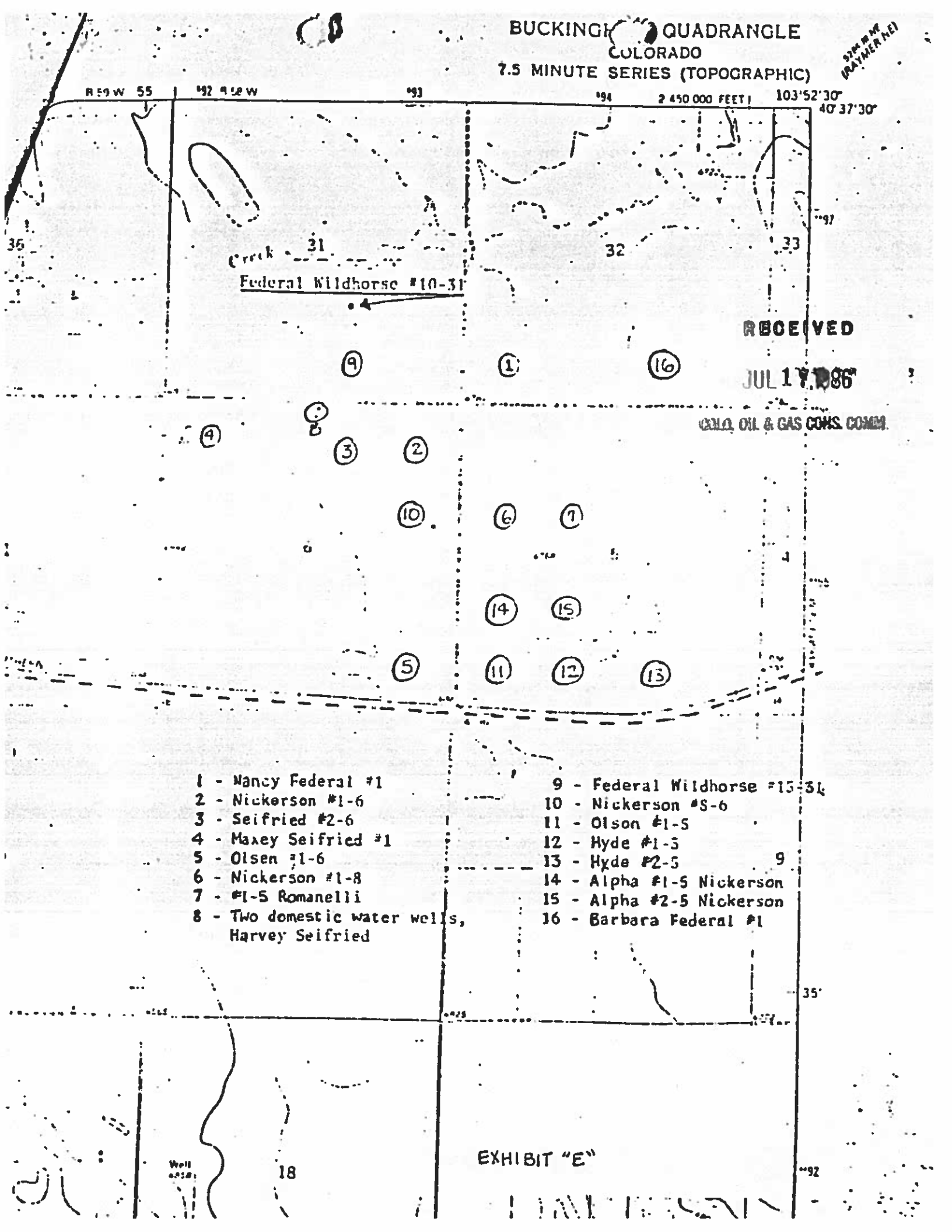
$$161.8\ \left(\frac{in^3}{ft^2 - 24\ hr}\right) \times 225\ \left(\frac{ft^2}{pit}\right) = 36,225\ \left(\frac{in^3}{pit - 24\ hr}\right)$$

or

$$36,225\ \left(\frac{in^3}{pit - 24\ hr}\right) \times \frac{1}{1728}\ \left(\frac{ft^3}{in^3}\right) \times \frac{1}{56,146}\ \left(\frac{bbl}{ft^3}\right) = \frac{4\ bbl}{pit - 24\ hr}$$

or annually = 1,344 bbl/yr

OR far more water than wells will ever produce.


BUCKINGHORN QUADRANGLE
COLORADO
7.5 MINUTE SERIES (TOPOGRAPHIC)
103°52'30"
40°37'30"
Creek
31
32
33
35
Federal Wildhorse #10-31
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1 - Nancy Federal #1
2 - Nickerson #1-6
3 - Seifried #2-6
4 - Maxey Seifried #1
5 - Olsen #1-6
6 - Nickerson #1-8
7 - #1-5 Romanelli
8 - Two domestic water wells, Harvey Seifried
9 - Federal Wildhorse #15-31
10 - Nickerson #5-6
11 - Olson #1-5
12 - Hyde #1-5
13 - Hyde #2-5
14 - Alpha #1-5 Nickerson
15 - Alpha #2-5 Nickerson
16 - Barbara Federal #1
EXHIBIT "E"
18

FIGURE #1
INDEX

1 - Harvey Seifried Residence

2 - Diversified Resources Limited produced water disposal pit, SE/4 Section 31, T8N R58W, Lease #C-29691, NTL-2B request.

3 - Diversified Operating Corporation produced water disposal pit, located in the NW/4 Section 6, T7N, R58W, west of the Seifried domicile. This pit has been in constant use since the original Maxey Seifried #1 well was drilled and completed in January, 1956 by Rock Oil Company.

4 - 6 - Other Diversified Resources Limited and Diversified Operating Corporation produced water disposal pits.

7 - 16 - Known disposal pits of the following operators: Petroleum Energy, Sunset Hill, Sundance Oil, Weeks Energy Minerals, Pavonka.

A - F_1 - Well locations as follows:

A - Federal Wildhorse #10-31
A' - Proposed Federal
B - Federal Wildhorse #15-31
C - Federal Wildhorse #16-31
D - Seifried #11-31
E - Seifried #14-31
F - Federal Nancy #1
G - Federal Barbara #1
H - Seifried #4-6
I - Seifried #3-6
J - Seifried #2-6
K - Nickerson #1-6
L - #3-5 Alpha Nickerson
M - #3-5 Able Romanelli
N - #4-5 Able Romanelli
O - Seifried #6-6
P - Nickerson #8-6
Q - #1-5 Nickerson
R - #1-5 Romanelli
S - #2-5 Able Romanelli
T - Redmond
U - #2-5 Alpha Nickerson
V - #1-5 Alpha Nickerson
W - #1-5 Able Romanelli
X - Olson #2-6
Y - Olson #1-6
Z - Olson #1-5
A_1 - Hyde #1-5
B_1 - Hyde #2-5
C_1 - Adcock #1
D_1 - Dorothy #1
E_1 - Dorothy #2
F_1 - Nickerson #1-8

EXHIBIT "A"

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Western Wellchems, Inc.

4746 Franklin St. • Denver, Colorado 80216 • (303) 296-3513 or 296-3514

WELL FLUID ANALYSIS

Customer: DIVERSIFIED OPERATING CORP.
Customer Rep.: Terry Camon
Lease: Federal Wildhorse #15-31
Formation:
Depth:
Sample Source: Treater

Date: 9/18/85
Bottom Hole Temp.:
Perf. Data:
Daily Production:
Oil/Water Ratio:
Existing Treatments:

FORMATION WATER ANALYSIS:

Cations:		Anions:	
Calcium	72 mg/L	Sulfate	50 mg/L
Magnesium	228 mg/L	Chloride	5,400 mg/L
Barium	0 mg/L	Carbonate	0 mg/L
Strontium	0 mg/L	Bicarbonate	909 mg/L
Total Iron, as Fe	0 mg/L	Carbon Dioxide, CO_2	62 mg/L
Potassium	0 mg/L	Oxygen, O_2	- mg/L
Sodium (estimated)	3,253 mg/L	Hydrogen sulfide, H_2S	0 mg/L

pH: 7.6 @ 60°F
Specific Gravity: 1.005 @ 60°F
Stability Index:
(+) Scaling: (-) Corrosion

Total Hardness, $CaCO_3$: 1,120 mg/L
Total Alkalinity, $CaCO_3$: 745 mg/L
Free Acidity, $CaCO_3$: 0 mg/L

Combinations Tendencies (mg/L):

$CaCO_3$	$MgCl_2$
$CaSO_4$	$FeCl_2$
$CaCl_2$	NaCl

FORMATION OIL ANALYSIS:

API Gravity	Paraffin Index
Pour Point	Primary Paraffin
Emulsion	Deposition rating

Lab Results

Recommendation

Analyst: R. Huston
District: Denver

Exhibit A: Complete water analysis

Diversified Lease Pit Permit 8/7/86
Sec. 31, T. 8N., R. 58W.

I called Frank Moore with BLM to advise that I had given approval for a period of six (6) months for use of the pit. I attempted to find the permit which I approved last week but could not do so. I advised Terry Cannon (Diversified) 595-3957 that I had approved it. Please check & see if permit has been sent back. Keep this note with file.

Bill