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REPORTS

DATE:

1/2/1987

DAVE BOYER

ENGINEERING & FEASIBILITY REPORT

Monument Water User's Cooperative

P.O. Box 48

Monument, N.M. 88265

New Water Supply

To Replace

Contaminated Wells

January 2, 1987

DENNIS ENGINEERING COMPANY

(505) 835-2195 • P.O. BOX "Y"
SOCORRO, NEW MEXICO 87801

(505) 356-5523 • P.O. BOX 206
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DENNIS ENGINEERING COMPANY
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January 7, 1987

Mr. W. E. Copeland
Monument Water Users' Cooperative
P.O. Box 48
Monument, New Mexico 88265

Re: Engineering Report

Dear Mr. Copeland:

This letter will review the discussion and comments made relative to the Engineering Report at the membership meeting in Monument last night.

The Engineering Report and the various alternatives were reviewed. Our recommendation of a new well in the SW 1/4 of Section 7, T 19 S, R 37 W was discussed at length. I stated that it may very well be possible to locate a new well in another location and obtain good quality water in sufficient quantity for Monument. After taking all factors into consideration it is still my opinion that the safest location for a new well is that recommended in our report. This site has the following advantages.

1. It is down gradient (Based on the Ogalala formation) from EPNG's south well field that has been in use for many years.

2. It is at least one quarter mile from any existing water well

3. It is at least 1100 feet from an existing oil or gas well.

4. It is located between existing wells that produce good quality water (EPNG wells 1-5 and NORTHERN Gas results are in report).

5. It is approximately 11,000' from the nearest known contaminated area according to the State Engineer's records.

6. It is on State Land

7. It is as far west as we can transfer the Association's water rights (must remain in T 19 S, R 37 W).

8. The saturated thickness of the water bearing strata is shown to be approximately 75' according to the State Engineer's records.

Based on the available test results from EPNG (1 thru 5) and Northern Gas (20) water from this location will probably have the following parameters:

Calcium	Approximately 175 ppm	(limit 100)
Hardness	Approximately 210 ppm	(limit 250)
T.D.S.	Approximately 500 ppm	(limit 500)

Comments made concerning this recommendation include the following:

1. It may be possible to utilize the existing 4" P.E. temporary line that is connected to the 12" EPNG line west of Monument. This will have to be coordinated closely to avoid a long water outage for the users.

2. It may be possible to obtain assistance with trenching from Texas-New Mexico Gas Company or others in the area. Certainly this is one of the largest costs associated with the project in view of the rock in the area.

3. Test holes (6" diameter) can be drilled and samples obtained for approximately $1,000-$1,500 per location,

however, extended pumping would not be feasible without further development and installation of a pump.

4. It should be possible to utilize the pump, piping, electric service head, etc., installed in the Associations new well for a savings of approximately $3,000.00.

5. The need for a well house can be eliminated by the use of a pitless adapter for a savings of approximately $23,000. A meter and control vault would still be required for control and reporting purposes.

6. Volunteer labor might be utilized for water line installation with proper supervision.

Based on the information above the following action are recommended:

1. Obtain Water samples and test results from the following wells:

A. Warren well (150.00 AF) located near the West quarter corner of Section 7, approximately 1,300' north of the proposed well site.

B. Warren well (102.87 AF) approximately 4600' South and 1,000' east of the proposed well site.

C. Snyder Ranch well (17.00 AF) approximately 2,000' South of the proposed well site.

Don Edgington contacted Warren Petroleum regarding the sampling of their wells and their concerns with a new Association well as outlined above. The plant manager indicated that Warren would probably not object to either request however, he is to check with his supervisors in Tulsa and advise Don within a week.

Don also attempted to contact the owner of the Snyder Ranch in Hobbs, however, Mr. Squires was out of town. He was asked to return Don's call relative to sampling of their well.

2. If the results of these samples are acceptable, drill one 6" test hole at the proposed site and obtain samples at various depths in the water bearing strata based on the well log.

3. If the results of these tests are acceptable prepare plans, specifications and contract documents and drill an 8" production well. Conduct a 72 hour or longer pump test using the pump from the Associations contaminated new well. Obtain samples throughout the pumping period. Estimated cost is $10,000 if the Association's pump is used.

The State Engineer's office in Roswell was contacted this morning regarding the procedure for drilling a new well in Section 7. Mr. Nelson advised that the applications must be published in the newspaper to allow for the filing of protests from adjacent owners of water rights if a production well is to be developed. He did indicate that a protest was not probable for the proposed site if the adjacent owners were advised in advance. An exploratory well will not require publication.

4. If the results of these tests are acceptable prepare plans, specifications and contract documents for the installation of the new 4" transmission line and related facilities utilizing all or part of the cost saving procedures discussed above.

By copy of this letter we are transmitting our Engineering Report to the various state agencies involved in the project for their review and comments. Any future action should be approved in advance by the Environmental Improvement Division and the Local Government Division - DFA since their funding is essential for future improvements.

Previous discussions indicate the Association had a balance of approximately $10,000 that could be used for testing and the drilling of a new well. You have confirmed this.

Also reported to be available for approved construction is a balance of approximately $36,000 in the NMCA grant (original amount $125,000), however, Pettigrew and Associates indicated at the meeting that there is an outstanding balance of approximately $20,000 that is to be paid from grant funds. These matters should be resolved between the Association and DFA in Santa Fe to insure that everyone knows what funds are actually available for future construction.

We will also be happy to assist the Association with testing of existing wells, with the drilling of test holes or with the accomplishment of new construction as you direct.

We propose to utilize our hourly fee schedule for miscellaneous items and negotiate a lump sum compensation when the scope of services can be accurately defined.

Thank you for this opportunity to be of service, please call Don Edgington at 356-5523 in Portales or myself at 835-2195 in Socorro if you have any questions on this matter.

Very truly yours,

Raymond Lee Dennis, P.E.

Raymond Lee Dennis, P.E.
Chief Engineer

cc:
Pat Oleachea, NMEID, PO Box 968, Santa Fe,NM 87501
Jacob Block, Local Gov't Div.,206 Lamy Bldg. Santa Fe, NM 87501
Rusty Rodke, Interstate Stream Commission
Battan Memorial Bldg., Santa Fe., NM 87501
Dave Boyer, Oil Conservation Div. P. O. Box 2088, Santa Fe, 87501
Don Edgington, P.O. Box 206, Portales, NM 88130
Bill Webere, NMEID, 200 E. Fifth, Roswell, NM 88201

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ADDENDUM NUMBER ONE
ENGINEERING REPORT
NEW MEXICO SUPPLY TO REPLACE CONTAMINATED WELLS
MONUMENT WATER USERS COOPERATIVE
JANUARY 8, 1987

The following pen and ink changes should be made to the Engineering Report dated January 2, 1987.

1. Table of Contents: Change to read as follows:

2. Page 14, Second Paragraph: Change last sentence to read:

Although EPNG Company has been anxious to assist the community, they have requested that the Association actively seek another source of water in order that they can disconnect from El Paso's system prior to March 31, 1987.

3. Page 14F, Heading under Text #26 and #27: Change to read:

26	27
Windmill	Famariss
	Warren Petrl.

4. Page 16, Paragraph D, line 3: Change slated to read "stated".

5. Page 32, First Paragraph: Delete the last sentence.

Raymond Lee Dennis, P.E.

Raymond Lee Dennis, P.E.
Chief Engineer

ENGINEERING REPORT

MONUMENT WATER USERS' COOPERATIVE
P.O. BOX 48
MONUMENT, NEW MEXICO 88265

New Water Supply
to Replace
Contaminated Wells

The information and recommendations contained in this report were prepared under the supervision and direction of the undersigned whose seal as a Professional Engineer, licensed to practice as such in the State of New Mexico, is affixed below.

Raymond Lee Dennis, PE

Raymond Lee Dennis, P.E. 4115
Chief Engineer
January 2, 1987

ENGINEERING REPORT
TABLE OF CONTENTS

Acknowledgments

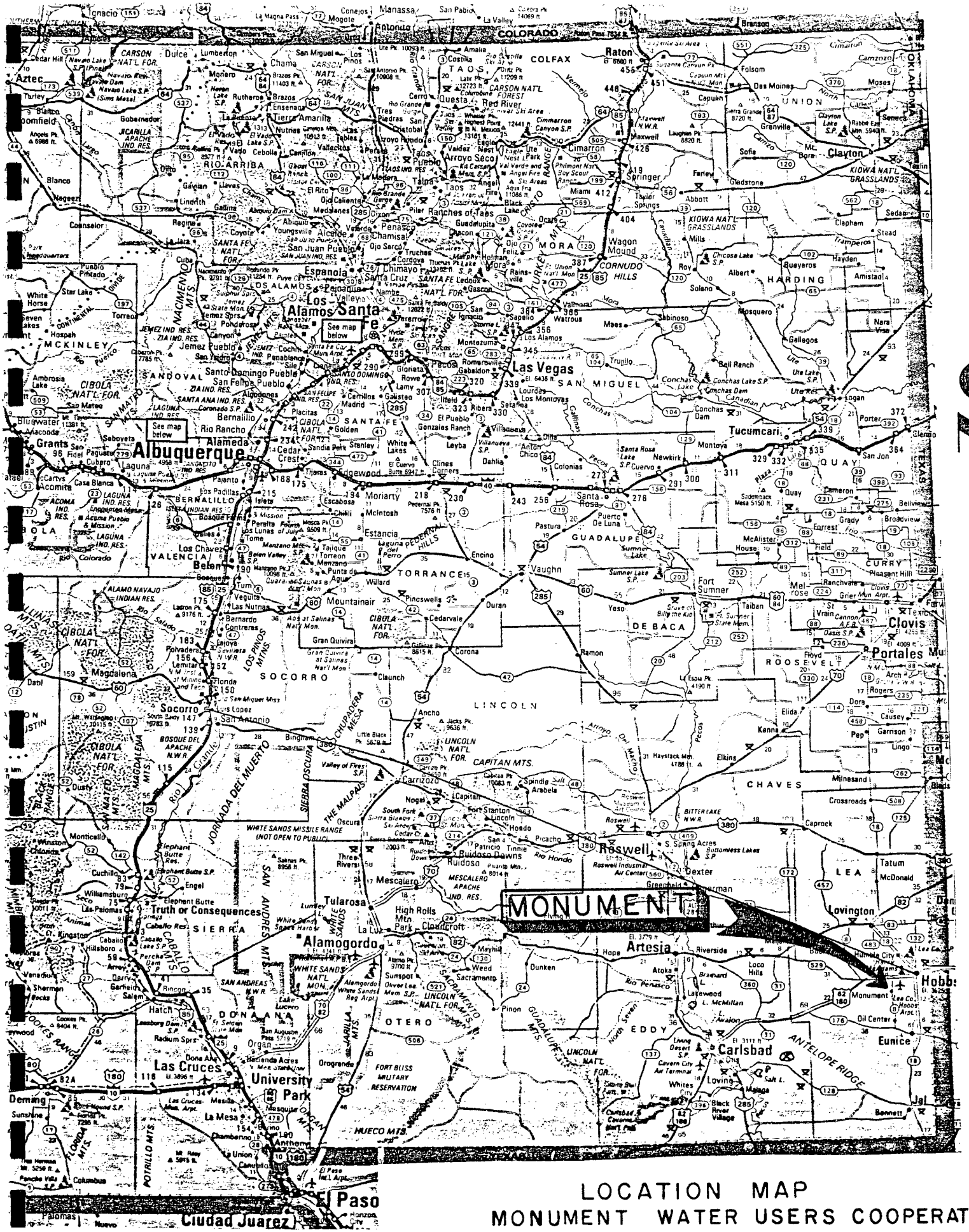
We wish to express our deep appreciation to many individuals in several organizations who were most helpful in providing information and, in fact, without whom, this report would not have been possible. We are grateful that they were willing to take time out of their otherwise busy schedules to assist us in compiling data pertinent to our study.

With the office of State Engineer in Roswell, we wish to thank John Hernandez, Francis Henderson and Art Mason. With EID in Hobbs we wish to thank Roelf Ruffner, Don Lutjens and Johnnie McClintick. With OCD in Hobbs, we wish to thank Evelyn Downs, Eddie Seay, June Goble and Joan Marchbanks. With El Paso Natural Gas Company, our appreciation goes to John Cunningham, Don Trice and Dan Mitchell; with Pettigrew and Associates, Tres Hicks; with Texas-New Mexico Pipeline Company, Bernie Lednicky. Our thanks also go to Bob Martin of Northern Natural Gas Company, now Transwestern Pipeline Company, David Ishmal of Warren Petroleum and Alan Davidson and Doug Blackburn of Southwestern Public Service Company. From the City of Hobbs, Arky Wheeler and Russ Doss were most helpful and from the City of Eunice, Mayor Sisal and Clerk, Harriet Reed.

Finally we wish to thank W.E. Copeland, Sam Small and Anita Tindle of the Monument Water Users Coop for the assistance in the preparation of this report and also the rest of the board members for this opportunity to be of service.

I. Purpose of Report

The purpose of this report is to discuss alternatives for obtaining a new, reliable, permanent water source for the Monument Water User's Cooperative Association. The Associations wells which previously supplied the system have been contaminated with oil and gas products and are no longer suitable for domestic usage. A new well drilled in 1984 approximately two miles north of Monument also became contaminated and was never used although a new transmission line was constructed to the site. This report discusses various alternatives available to the Association and presents cost estimates for the implementation of each. Although a recommendation is presented as to the best alternative, the Association will have to determine, in conjunction with the funding agencies, how to proceed.



LOCATION MAP
MONUMENT WATER USERS COOPERATIVE

SCALE: 1" ≈ 38 miles

II. Community of Monument - Historical Sketch

Monument, a community ten miles southwest of Hobbs, New Mexico, in southeast Lea county, New Mexico, takes its name from Monument Springs, the site of the first white settlement in Lea county and an important watering location for Indians, cowpunchers, soldiers, and hunters. The spring is located roughly three miles northwest of the present townsite of Monument. Monument Springs in turn gets its name from a "monument" or "landmark" which is no longer evident but which used to be located about one mile southwest of the springs. Reports concerning the size and configuration as well as the origin of the "monument" differ widely on the most basic facts.

One report has it that Indians erected the monument by making a huge mound of white caliche rocks over a period of years and its purpose was to mark the location of the spring. Placed upon the highest hill in the vicinity and with a reported original height of forty-five feet, it could supposedly be seen from a distance of thirty-five miles in all directions. Later accounts give its subsequent size as thirty feet square at the base and eighteen to twenty feet high.

A second report has it that in 1875 during Colonel William Shafter's famous Plains campaign to rid the plains of the Indians, he was responsible for its erection to mark the site of the spring. In fact, in his own account of his journeys, Col. Shafter claims to have erected it "on a hill southwest and one and one-fourth mile from the spring". It was composed of nearly white stone, eight feet in diameter at the base, four feet at the top and seven and one-half feet high, visible from several miles.

Whatever the configuration, it was dismantled by hunters and the stones used to construct a "fort" and other structures at the spring.

It was in 1885 that the Monument area was first settled. Monument Springs was headquarter for ranching operations and the spring was reportedly sufficient to provide water for hundreds of cattle. It served as an outpost to buffalo hunters or cowboys from the 1870's until the 1920's. It is the present site for Jim and Betty Cooper's Monument Springs Ranch.

News clippings from various newspapers in the area from the early 1900's such as the Monument Gazette and The Knowles News give accounts of goat roping contests and other festivities. A post office was established prior to 1909. A general store was established in 1900, and church in 1912.

By 1920, however the town became nearly deserted. The buffalo hunters were gone, cattle ranching declined and activity all but ceased. But that was before oil was discovered.

In 1928, a new breed of hunters converged upon the area seeking their fortune in oil. Hobbs became a boom town practically overnight.

Hurriedly, some of the residents of Monument, joined by real estate agents mounted a campaign to draw people to Monument and away from Hobbs. The present townsite, was plotted to facilitate sale of property. A statue of an Indian (supposedly Geronimo) was built primarily as a publicity stunt to attract people. All these efforts were only marginally successful at best and Monument never became the teaming city that was once hoped for.

No population data was readily available. However, the size of the school part of which has now been destroyed and the church indicate a larger population in the past, than at present. At the present time the Monument Water User's Cooperatiave serves 57 residential customers down from 70 in January and February 1986. Local residents have expressed concern that the local population will continue to decline as oil and gas companies merge and change the existing staffing for operation and maintenance of the oil field facilities.

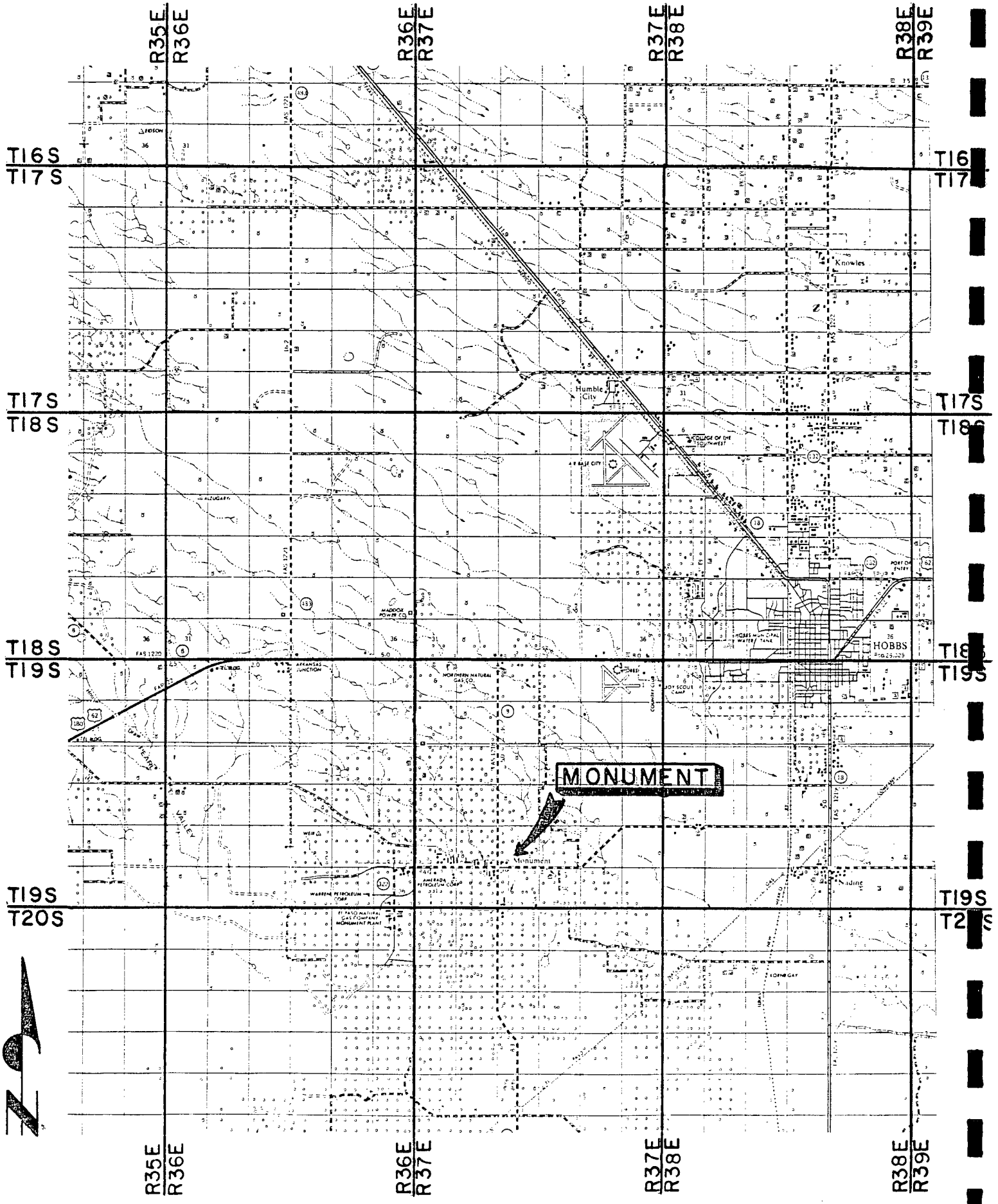
III. Monument Water User's Cooperative-General Information

A. Background - The Monument Water User's Cooperative was formed in 1965 and plans were prepared for the construction of a community water system. At the time construction was completed in 1966, there were 46 individual services. The original system consisted of asbestos-cement and PVC distribution lines ranging in size from 6" down to 1", a 750 barrel (31,500 gallon) storage reservoir, a 2,000 gallon pressure tank and two booster pumps together with other related items. Additional PVC distribution lines ranging in size from 2" down to 3/4" have been installed to provide service to additional customers. The maximum number of customers believed served by the water system is 72. In 1986 the number of customers dropped from 70 to 57.

B. Water Rights - In 1965, the Association submitted an application to the State Engineer to appropriate water within Township 19 South, Range 37 East. They were granted rights to appropriate up to 80 acre feet under file # L5611. Although these rights may not be transferred outside the township, they may be transferred to other locations within the Township. The Township boundaries lie two miles west, 5 miles north, 4 miles east and 1 mile south as shown on the map on the following page.

According to the State Engineers records, the actual amount of water pumped since 1978 are as follows.

Year	Acre Feet	Year	Acre Feet	Year	Acre Feet
1978	14.69	1981	16.07	1984	25.57
1979	15.58	1982	35.00	1985	Not Avail.
1980	30.01	1983	21.04	1986	Not Avail.



VICINITY MAP

MONUMENT WATER USERS COOPERATIVE

SCALE: 1" ≈ 3 miles

Should the Association obtain a water supply outside their township, water rights would have to be obtained from a current holder or new diversion rights applied for. At the time of this report, the following quantities of water rights are available in the townships north and west of Monument:

Township	Acre Feet
T 18 S, R 36 E	None
T 18 S, R 37 E	163
T 19 S, R 36 E	108
T 19 S, R 37 E	29 (Monument)

Based on past usage, and anticipated future requirements, the Association has adequate rights and has no need to acquire additional water rights at this time.

C. Water Usage Although individual meters were installed in the orginal system none of the present services are metered. The meters have become inoperative through the years and have simply not been repaired or replaced. Since there are no meters, it is difficult to determine actual water used by the individual users.

Water usage could normally be determined by means of a wellhead meter. In this case, problems with meters which required frequent replacement, have resulted in very sketchy data. By reviewing the reports submitted quarterly to the State Engineer for the last three years (13 quarters) there are only nine quarters for which we can obtain meaningful results. Of these, only five quarters produce consistent and realistic values. The meter readings are

shown on the following page with the consistent values marked with by asterisk.

MONUMENT WATER USERS' COOPERATIVE

Period	Number of Members	Meter Reading	Gallons Pumped	Per Member Per Month
		56145300		
07/08/86 to 09/09/86	67	52056800	4088500	29,058
04/02/86 to 07/07/86	66	45760000	6295700	30,870
10/02/85 to 04/01/86	68	4181500	6434000	15822 *
	69	39327100	Erroneous Reading	
08/12/85 to 10/01/85	67	38000000	1327100	12077 *
07/11/85 to 08/11/85	68	7422500	Meter Replaced-Beginning Reading	
04/12/85 to 07/10/85	69	6821900	Meter Inoperative	14365 *
01/02/85 to 04/11/85	68	3608100	3213800	16811 *
10/02/84 to 01/01/85	66	257700	3350800	3935
04/02/84 to 10/01/84	66	7422500	1568800	
	66	8688900	Erroneous Reading	21224
01/04/84 to 04/01/84	66	4640500	4048400	15897 *
10/02/83 to 01/03/84	66	1398400	3242100	
	66			

500 gpday

The average of the 5 consistant values from the table is 14, 994 gallons per member per month. Although this value appears to be high for a rural community such as Monument, it is not too surprising when one remembers that the service are not metered and that the system serves several potentially large commercial users.

Since September 1986, the Association has obtained its water from a transmission line belonging to El Paso Natural Gas Co. The system consumption has been metered and the meter read monthly. The results are shown below.

Date	# of Members	Meter Readings	Consumption	Per Member Per Month
09/20/86		14993300		
	63		1,012.200	16,000
10/20/86		16005500		
	61		752,600	12,337
11/20/86		16758100		
	59		660,600	11,197
12/19/86		17418700		

The average for the three month period is 13,254 gallons per member. This data tends to support the previously obtained values. Hence, for the purposes of this report, we will use 15,000 gallons per month or 500 gallons per day as the average consumption per member. Based on 70 users the annual requirement will be 38.67 acre feet. The associations current water rights appear to be more than adequate.

Winter Values 500gpd

Summer up to double!

D. Water Rates - The association has developed a rate system based upon category of customer rather than quantities of water consumed. The categories and rates are as follows (taxes included).

Residential	$26.00	Presently	51	Customers
Small Commercial	$29.24		4	
Intermediate Comm.	$42.70		1	
Large Commercial	$71.94		1	
		Total	57	Customers

These rates were raised in April 1985 from the following rates:

Residential	$16.64	Increased	56.25%
Small Com.	$18.72		56.20%
Intermediate Com.	$27.33		56.24%
Large Comm.	$46.05		56.22%

E. Expenditures and Receipts - The records for the years 1984 through 1986 were reviewed and are summarized below.

Item	1984	1985	1986
		Amount Expended	
Salaries	$4,533.00	$5,490.50	$6,172.02
FmHA	4,200.00	4,200.00	4,200.00
Utilities	4,036.35	3,527.45	3,535.27
Taxes, Ins, License	616.07	667.75	494.06
Office Supplies	265.19	328.88	1,194.07
Equipment & Repairs	3,769.16	3,276.72	3,297.51
Gasoline	0	528.57	1,168.96
Miscellaneous	25.69	218.43	116.49
Total Expenditures	$17,445.46	$18,238.30	$20,178.38

		Amount Billed	
Water Sales	13,978.69	20,453.43	21,258.94
		Amount Received	
Collections	13,884.57	19,307.55	19,560.00
Delinquent	94.12	1,145.88	1,699.00
Net Gain or (Loss)	(3,557.89)	1,069.25	(618.38)
Cum. Gain or (Loss)	(3,557.89)	(2,488.64)	(3,107.02)

Declining membership has drastically affected the 1986 revenues. In addition, the rate increase has resulted in a substantial number of delinquent accounts. If all these accounts were collected, the cumulative 3-year loss would be considerably smaller. The need for metering and a rate structure based upon water usage is indicated by the figures shown above. Delinquent accounts should be shut off and the meters padlocked.

IV. Water System and Related Problems

A. Water Supply - The Association has experienced a number of problems with its water supply. The original well located in the northeast 1/4, northeast 1/4 southwest 1/4 Section 29, Township 19 South, Range 37 east was used from 1966 until about September 14, 1984. At that time it became contaminated with hydrocarbons, possibly as the result of a leak in a pipeline owned by Texas-New Mexico Pipeline Company. The leak occurred only 100 feet or so from the well. Having abandoned the first well, the Association relied on two other wells south of the first, both of which had been used by the Monument school in the past. The east school well is located in the SW 1/4, SW 1/4 SE 1/4 of Section 29 and had a capacity of between 60 and 80 gpm. The west school well is located in the SE 1/4, SE 1/4, SW 1/4, of Section 29 and has a capacity of about 20 gpm. Monitor wells drilled northwest of the school wells in late 1984 indicated that both of these wells could soon be contaminated.

In 1986, a construction project was funded to drill a new well north of the contaminated area and connect it to the system. The original site chosen for the well was in Section 17, T.19 S, R. 37 E at a point 2600 feet from the west line and 1300 from the north line. For some reason, the well site was changed prior to the start of drilling to the north center of section 20, about 4300 feet south of the original site. When this new well was developed and connected to the system, it was found to be contaminated. The source of the contamination is not known and the 8,000' of new 4" transmission line is unused at this time.

In May 1986, the east school well (60-80 gpm) was found to be contaminated by hydrocarbons. This left the Association with only one small well (20 gpm) in an area which was likely to become contaminated in the near future.

After searching for solutions to their water supply problems, a temporary solution presented itself. The Association signed an agreement to obtain water from El Paso Natural Gas Company"s 12" transmission line running north and south, two miles west of Monument. The 4" polyethelene line that was installed was a community project, completed and placed into operation about September 5, 1986. The Association presently pays $0.40 per 1000 gallons for a dependable supply of good quality water. Although EPNG Company has been anxious to assist the community, they have requested that the Association actively seek an alternate source of water and try to disconnect from their line by ~~June 1987~~. March 31, 1987,

The water now serving the community is a composite of nine wells owned by EPNG Company five of which are in Section 13, T.19 S, R 36 E., and four of which are in Section 36, T. 18 S, R 36 E. See the maps at the end of this report.

B. Water Quality - Water quality results on all the wells listed above as well as various other sources can be found on the following pages. The identities of the samples are as follows and are noted on the key map at the end of this report:

1 thru 9 - El Paso Natural Gas Company Wells.

POST STANDARD LIMITS AS OF 6-79

TESTED PARAMETER		EID - EPA LIMITS IN Mg/l	1 EPNG Well #5 2-5-86	2 EPNG Well #6 2-4-86	3 EPNG Well #7 2-4-86	4 EPNG Well #8 2-6-86	5 EPNG Well #9 1-6-86
Sodium	S	200.0	120	109	110	121	103
Potassium	S	1000.0					
Calcium	S	75-100.0	162*	182*	186*	170*	164*
Magnesium	S	125.0	38	18	38	38	48
Iron	S	0.3	0.02	0.14	0.02	0.02	0.29
Manganese	S	0.05					
Chloride	S	250.0	60	45	55	50	50
Fluoride	P	1.4-2.4					
Nitrate (As N)	P	10					
Bicarbonate	S	700	172	170	180	182	182
Carbonate	S	350	0	0	0	0	0
Sulfate	S	250	88	94	99	99	83
Phosphate		--					
Tot. Hard.	S	250.0	200	200	224	208	212
Alkalinity	S	30-500	172	170	180	180	182
T.D.S.	S	500	485	490	520 *	500	510*
Surfactants	S	0.5					
pH Units	S	6-8.5	7.1	7.2	7.0	7.0	6.8
Odor Units	S	3					
Conductance	S	1000.0					
Color	S	15.0					
Turbidity	S	5.0	1	1	1	1	14*
Arsenic	P	0.05					
Barium	P	1.0					
Cadmium	P	0.01					
Chromium	P	0.05	(0.005	0.005	(0.005	0.005	0.005
Copper	S	1					
Cyanide		--					
Lead	P	0.05					
Mercury	P	0.002					
Selenium	P	0.01					
Silver	P	0.05					
Zinc	S	5					
Corrosivity	S	None					
Hydrogen Sulfide	S	0.05					
Silica			44	45	50	45	37

P - Primary Standard S - Secondary Standard

DENNIS ENGINEERING COMPANY P.O. BOX Y (505) 835-2195 SOCORRO, NEW MEXICO 87801

NMSU Standard Limits As Of 6-79

TESTED PARAMETER		EID - EPA LIMITS IN Mg/l	11 School House West Well 5-22-86	12 School House East Well 5-22-86	13 School House West Well 6-16-86	14 School House East Well 6-16-86	15 Dist System 7-27-86
Sodium	S	200.0	59.8	43.7			
Potassium	S	1000.0	3.57	(0.5			
Calcium	S	75-100.0	132	124.			
Magnesium	S	125.0	17.1	14.2			
Iron	S	0.3	(0.1	(0.1			
Manganese	S	0.05		(0.05			
Chloride	S	250.0	120.5	156.4			
Fluoride	P	1.4-2.4	0.83	0.81			
Nitrate (As N)	P	10					
Bicarbonate	S	700	169	182			
Carbonate	S	350	1.4	0			
Sulfate	S	250	57.5	54.9			
Phosphate		--					
Tot. Hard.	S	250.0	400	370			
Alkalinity	S	30-500	141	149			
T.D.S.	S	500	63	705			
Surfactants	S	0.5					
pH Units	S	6-8.5					
Odor Units	S	3					
Conductance	S	1000.0					
Color	S	15.0					
Turbidity	S	5.0					
Arsenic	P	0.05					
Barium	P	1.0	0.1	0.1			
Cadmium	P	0.01	(0.1	(0.1			
Chromium	P	0.05	(0.1	(0.1			
Copper	S	1	(0.1	(0.1			
Cyanide		--					
Lead	P	0.05	0.1	(0.1			
Mercury	P	0.002					
Selenium	P	0.01					
Silver	P	0.05	(0.1	(0.1			
Zinc	S	5	(0.1	(0.1			
Corrosivity	S	None					
Hydrogen Sulfide	S	0.05					
Organics			NO	YES	Trace	YES	YES

P - Primary Standard S - Secondary Standard

DENNIS ENGINEERING COMPANY P.O. BOX Y (505) 835-2195 SOCORRO, NEW MEXICO 87801

MOST STRINGENT LIMITS AS OF 6-7-

TESTED PARAMETER		ETD - EPA LIMITS IN Mg/l	6 EPNG Well #10 2-4-86	7 EPNG Well #11 2-10-86	8 EPNG Well #12 2-19-86	9 EPNG Well #13 2-20-86	10 Composite Wells 5-13 6-19-86
Sodium	S	200.0	124	104	112	164	
Potassium	S	1000.0					
Calcium	S	75-100.0	150*	160*	158*	188*	
Magnesium	S	125.0	36	28	30	8	
Iron	S	0.3	0.02	0	0	0.08	
Manganese	S	0.05					
Chloride	S	250.0	50	60	50	82	
Fluoride	P	1.4-2.4					0.86
Nitrate (As N)	P	10					2.95
Bicarbonate	S	700	172	159	162	164	
Carbonate	S	350	0	0	0	0	
Sulfate	S	250	88	73	88	114	
Phosphate		--					
Tot. Hard.	S	250.0	186	188	188	196	
Alkalinity	S	30-500	172	159	162	164	
T.D.S.	S	500	445	420	430	540*	
Surfactants	S	0.5					
pH Units	S	6-8.5	7.1	7.3	7.1	6.9	
Odor Units	S	3					
Conductance	S	1000.0					
Color	S	15.0					
Turbidity	S	5.0	1	0	0	1	
Arsenic	P	0.05					0.006
Barium	P	1.0					0.29
Cadmium	P	0.01					(0.003
Chromium	P	0.05	0.005	(0.0025	(0.0025	(0.0025	0.024
Copper	S	1					
Cyanide		--					
Lead	P	0.05					(0.002
Mercury	P	0.002					(0.002
Selenium	P	0.01					(0.001
Silver	P	0.05					(0.003
Zinc	S	5					
Corrosivity	S	None					
Hydrogen Sulfide	S	0.05					
Silica			43	45	44	41	

P - Primary Standard S - Secondary Standard

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			21	22	23	24	25
TESTED PARAMETER	EID - EPA LIMITS IN Mg/l		OCD Monitor Well #1 6-16-86	OCD Monitor Well #2 6-16-86	OCD Monitor Well #3 6-16-86	OCD Monitor Well #4 6-16-86	OCD Monitor Well #6 2-13-85
Sodium	S	200.0	66.7	55.2	43.9	69	59.8
Potassium	S	1000.0	3.12	3.12	15.6	3.12	3.9
Calcium	S	75-100.0	120	128	176	112	142
Magnesium	S	125.0	12.2	8.8	51.2	41.5	19.1
Iron	S	0.3					(0.1
Manganese	S	0.05					(0.05
Chloride	S	250.0	123	98.5	422	105	211.4
Fluoride	P	1.4-2.4					.97
Nitrate (As N)	P	10					2.64
Bicarbonate	S	700	470	440	366	560	258
Carbonate	S	350	0	0	0	0	0
Sulfate	S	250	35.5	41.8	34.5	57.3	45.2
Phosphate		--					
Tot. Hard.	S	250.0					436
Alkalinity	S	30-500					211
T.D.S.	S	500	583	583	1683	608	1048
Surfactants	S	0.5					
pH Units	S	6-8.5					7.03
Odor Units	S	3					
Conductance	S	1000.0	970	920	1550	950	1076
Color	S	15.0					
Turbidity	S	5.0					
Arsenic	P	0.05					0.007
Barium	P	1.0					0.25
Cadmium	P	0.01					(0.001
Chromium	P	0.05					(0.005
Copper	S	1					
Cyanide		--					
Lead	P	0.05					(0.005
Mercury	P	0.002					(0.0005
Selenium	P	0.01					(0.005
Silver	P	0.05					(0.001
Zinc	S	5					
Corrosivity	S	None					
Hydrogen Sulfide	S	0.05					
Organics			YES	NO	NO	NO	NO

P - Primary Standard S - Secondary Standard

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TESTED PARAMETER		EID - EPA LIMITS IN Mg/l	16 Original Well Head 9-11-74	17 R. Evans Kitchen Tap 10-20-78	18 Hall's Grocery Kitchen Sink 7-2-84	19 New Well 6-12-86	20 Northern Nat'l Gas Co. 3-86
Sodium	S	200.0	50.6	55.2		82.8	51
Potassium	S	1000.0	3.12	3.51		6.4	
Calcium	S	75-100.0	69.0	110		229.6*	172 *
Magnesium	S	125.0	31.5	14.8		30.7	28
Iron	S	0.3	(0.75	(0.25		0.3	
Manganese	S	0.05	(0.05	(0.05		(0.05	
Chloride	S	250.0	88.2	123.9		510.4*	40
Fluoride	P	1.4-2.4	1.0	1.05	0.90		
Nitrate (As N)	P	10	7.77	2.73	1.67		
Bicarbonate	S	700	253.8	261.6		223.5	205
Carbonate	S	350	0	0		0	0
Sulfate	S	250	51.2	22.6		41	83
Phosphate		--					
Tot. Hard.	S	250.0	297	336		700	200
Alkalinity	S	30-500	208	212		183	168
T.D.S.	S	500	605	TFR589		1750*	493
Surfactants	S	0.5	(0.05	(0.05.			
pH Units	S	6-8.5	7.54	7.91		7.61	7.73
Odor Units	S	3	0	0			
Conductance	S	1000.0	699	949		1830*	435
Color	S	15.0	0	0			
Turbidity	S	5.0		0.3			
Arsenic	P	0.05		0.007	0.005		
Barium	P	1.0		0.16	0.16	0.3	
Cadmium	P	0.01		(0.001	(0.001	(0.1	
Chromium	P	0.05		(0.005	(0.005	(0.1	
Copper	S	1				(0.1	
Cyanide		--					
Lead	P	0.05		(0.005	(0.005	(0.1	
Mercury	P	0.002		0.0009	(0.0005		
Selenium	P	0.01		(0.005	(0.005		
Silver	P	0.05		(0.005	(0.001	(0.1	
Zinc	S	5				(0.1	
Corrosivity	S	None					
Hydrogen Sulfide	S	0.05					
Organics						YES	

P - Primary Standard S - Secondary Standard

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10 - A composite sample taken at the EPNG Eunice Plant approximately 11 miles south of Monument.

11 thru 14 - School wells utilized by the Association for a time until the east well became contaiminated. As the report shows, a trace of hydrocarbons was noted in the west well in June 1986.

15 thru 18 - Routine samples from distribution system. In July 1986 the system was found to have excessive quantities of hydrocarbons and notifications of members was required.

19 - New well drilled in 1986 and found to be contaminated. Chloride and calcium excessively high. See map for location.

20 - Composite sample of wells in vicinity of Northern Natural Gas Company Plant Section 6, T 19S, R 37 E.

21 - 25 OCD monitor wells in vicinity of Associations original well. See map for locations.

26 thru 30 - Random samples in various locations north of Monument.

MOST STRINGENT LIMITS AS OF 6-79

TESTED PARAMETER		EID - EPA LIMITS IN Mg/l	26 Windmill Famaris's Well Sec 4-19-37 1-7-85	27 Farmer'sWell Warren Retr. 1-7-85	28 Windmill Sec 8-19-37 1-7-85	29 Windmill 20-19-37 1-7-85	30 Windmill 17-19-37 1-7-85
Sodium	S	200.0					
Potassium	S	1000.0					
Calcium	S	75-100.0					
Magnesium	S	125.0					
Iron	S	0.3					
Manganese	S	0.05					
Chloride	S	250.0					
Fluoride	P	1.4-2.4					
Nitrate (As N)	P	10					
Bicarbonate	S	700					
Carbonate	S	350					
Sulfate	S	250					
Phosphate		--					
Tot. Hard.	S	250.0					
Alkalinity	S	30-500					
T.D.S.	S	500	332	262	378	500	470
Surfactants	S	0.5					
pH Units	S	6-8.5					
Odor Units	S	3					
Conductance	S	1000.0	533	469	696	783	703
Color	S	15.0					
Turbidity	S	5.0					
Arsenic	P	0.05					
Barium	P	1.0					
Cadmium	P	0.01					
Chromium	P	0.05					
Copper	S	1					
Cyanide		--					
Lead	P	0.05					
Mercury	P	0.002					
Selenium	P	0.01					
Silver	P	0.05					
Zinc	S	5					
Corrosivity	S	None					
Hydrogen Sulfide	S	0.05					

P - Primary Standard S - Secondary Standard

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a tendency to plug the injectors. Frequent cleaning is required to keep the chlorination system operational. This problem can be solved by moving the solution intake line up on the side of the container and flushing the container on a routine basis. An agitator should be installed to keep more of the mixture in solution. A second means of correcting this problem is to use a solution such as sodium hypochloride which stays in suspension. Most chemical supply companies should have this solution readily available.

C. Distribution System - The approximate location of lines serving current members is shown on the layout map. Most of the lines were installed in 1966. As mentioned previously, all services were metered when installed, however, none of the services are now metered. Some service lines have shut-off valves and some do not. 1" through 3" lines are PVC while 4" and 6" lines are asbestos-cement. No complaints have been voiced about either the condition or capacity of the distribution lines.

D. Storage - The storage tank is a bolted steel tank, 16.5' in diameter and approximately 24 feet high. It's computed capacity is about 38,000 gallons compared to it's slated capacity of 31,500 gallons (750 Barrels).

The tank appears to be in good condition from outside observation. The inside wall condition could not be determined and is of some concern, being 20 years old. The tank water level is controlled by an altitude valve on the inlet line. No complaints were voiced relative to current storage capacity or facilities.

E. Hydropneumatic System - Two booster pumps, each rated for 150 gpm at 127 feet TDH alternate to transfer water from the storage tank to the pressure tank. The water level in the 2000 gallon pressure tank is maintained by probes which operate an air compressor. The booster pumps are set to operate from 38 to 65 psi to provide the necessary system operational pressure. The only maintenance problem noted at the booster pump building involves the method of chlorination. A hypochlorinator injects a chlorine solution into the water line at the discharge of the booster pumps. The solution used is a water - HTH mixture, prepared in a 30- gallon container. The solution is drawn from a point near the bottom of the container. Some of the residue which settles out of the solution is drawn into the chlorination line and has

V. Water Supply Alternatives

In pursuing the alternatives listed in the work order dated December 4, 1986, we obtained data from many sources. Following is a discussion of the data obtained. It is not necessarily presented in the order of importance or in the order obtained; but simply in grouping of related information.

A. New Well Near Monument

As mentioned previously, the Association may divert up to 80 acre feet of water per year from T. 19, S. 37 E, the site of their previously used wells and their newly drilled well. Drilling or buying a well outside this township will necessitate obtaining additional water rights. Therefore, given identical opportunities to drill or purchase a well within or outside this township, it would be preferable to stay within T 19 S. R 37 E.

To establish the most feasible location for a new water well, a search area was established, being three miles wide (east to west) and five miles long (north to south). The limits of the search area are as follows:

On the east - State Road 8

On the South - One mile north of Monument

On the West - One mile west of the range line separating T.36 E and R. 37 E.

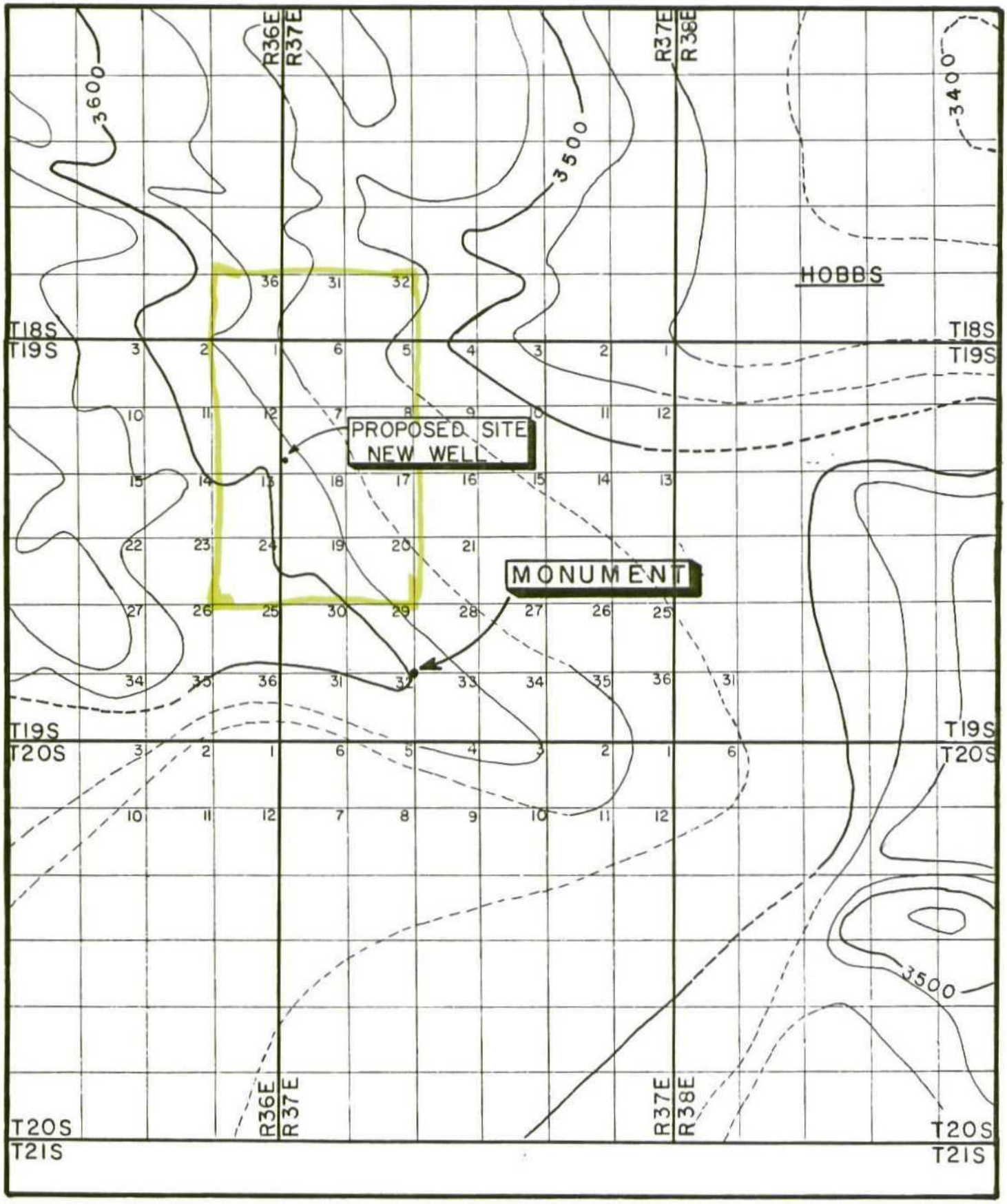
On the North - One mile north of US 62-180

Within this area, all water wells and holders of water rights were located from the records of the State Engineer. All oil and gas wells were located from the records of the Oil Conservation Division. All the petroleum product spill records on file at the OCD were examined and location noted within the search area. All of the Crossings of improved roads by oil and gas lines (as marked on the ground) were noted. This information is shown on the map at the end of this report.

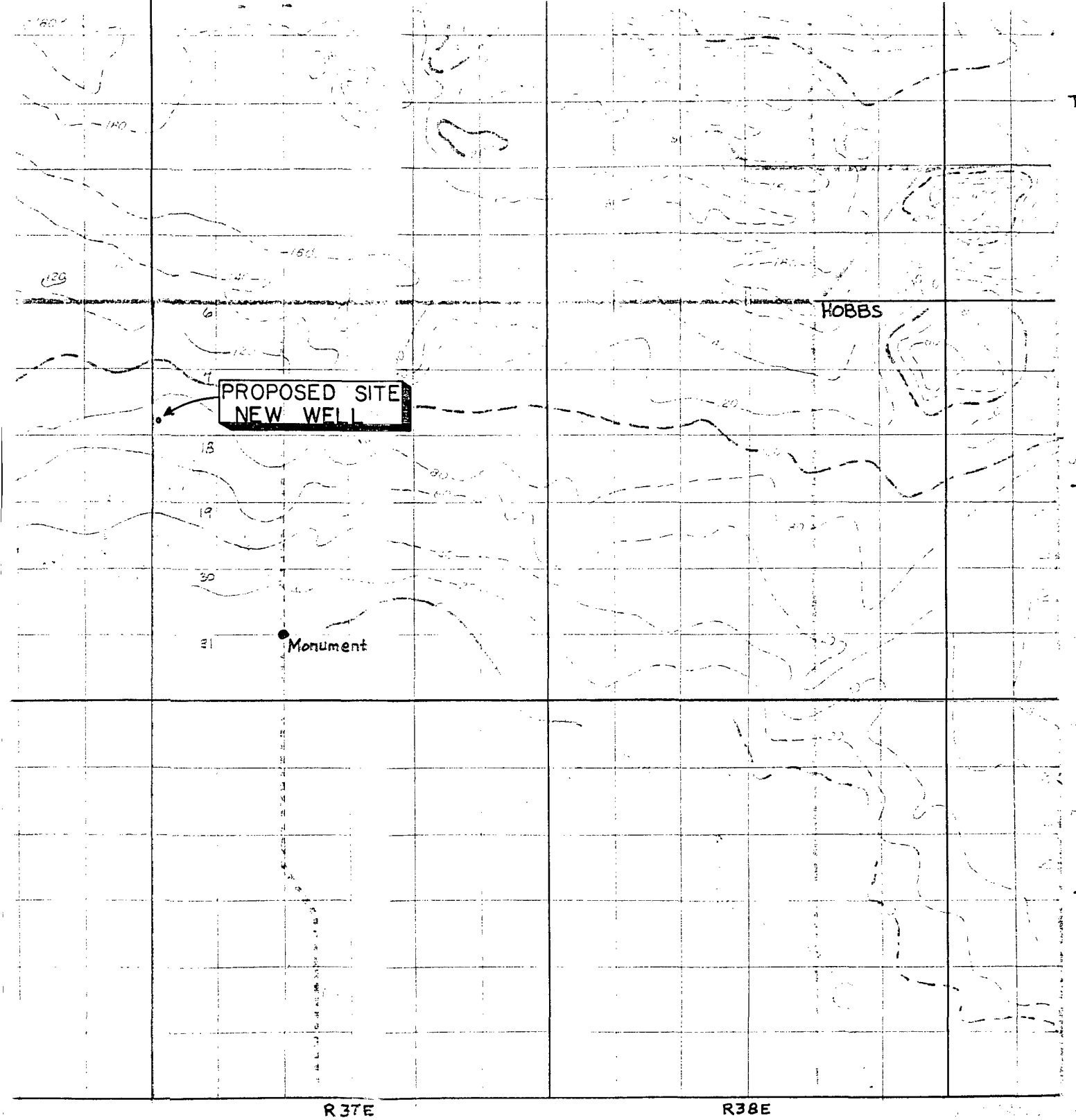
Three maps were obtained from the State Engineer, appropriate portions of which have been reproduced and incorporated on the following pages. The first shows elevation contours and is entitled "Approximate Altitude and Configuration, Base of the Ogallala Formation, vicinity of Monument, New Mexico". The contours shown thereon indicate the direction of flow of sub surface waters, and do not conform to the land surface contours which indicaate the direction of flow of surface waters. Hence this map is of great value in determining well locations as pertaining to possibility of hydrocarbon contaminations. For those areas close to known spills or high production areas, it is preferable to locate a well upgradient from these possible sources of contaminations.

No! Direction of flow is determined by changes in potentiometric surface of ground water!

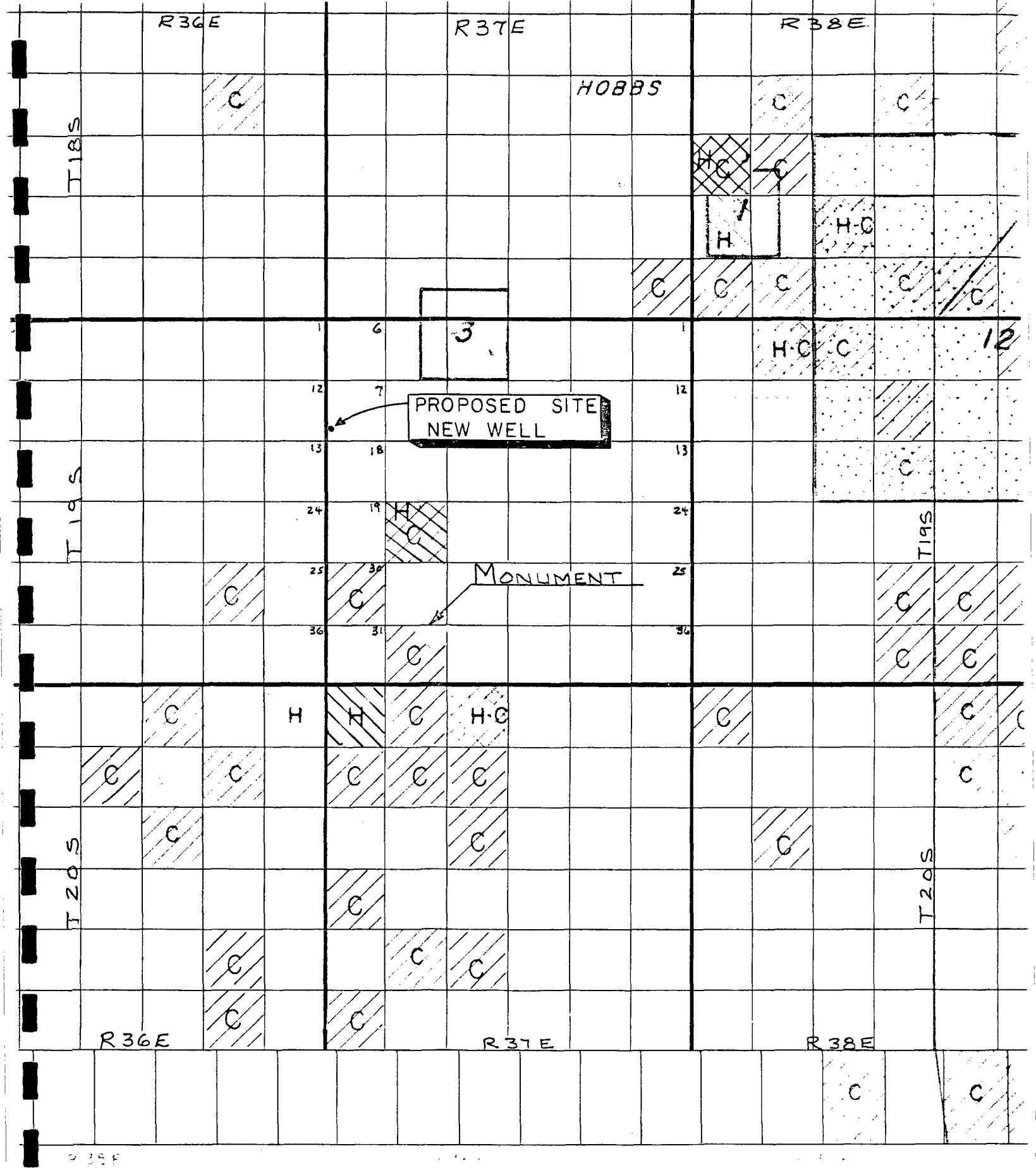
The second map indicates by contour lines the thickness of the aquifer and is entitled "Saturated Thickness, Post-Mesozoic Deposits, Monument. New Mexico vicinity and is dated 1971. This map indicates that there is very little saturated thickness at Monument and that the aquifer enlarges toward the north. Based upon this map, any well in the north half to two-thirds of the search area should have sufficient water availability.



APPROXIMATE ALTITUDE & CONFIGURATION
BASE OF THE OGALLALA FORMATION
VICINITY OF MONUMENT, NEW MEXICO
TRACED FROM STATE ENGINEER MAP
JANUARY 1987



SATURATED THICKNESS
POST-MESOZOIC DEPOSITS
MONUMENT, N.M. VICINITY
SCALE: 1" = 2 MILES



AREAS OF KNOWN GROUNDWATER CONTAMINATION
STATE ENGINEERS OFFICE
NOV. 7, 1985
C = CHLORIDES H = HYDROCARBONS
SCALE: 1" = 2 MI.

A third map was prepared by the State Engineer as a part of a report made on the areas of known groundwater contamination in the area. This includes both hydrocarbon and chloride contamination. Within the search area, only one section is shown to be affected, and that is Section 20 T.19 S., R.37 E., the site of the Association's well drilled in 1986. The test results on samples taken from the new well substantiate the report.

Records of the Hobbs office of the Environmetal Improvement Division was searched for information relating to history of the Monument system and possibilities for new sources. Water Quality analysis found in EID's records and considered important to our study are included and have previously been discussed in Section IV. In particular, samples were collected at points in Section 4, 8, 17 and 20, all in T. 19 S., R. 37 E., and tested for conductance and total filterable residue. The test results indicate water free of chloride contamination. In all correspondence available in the EID files, the only recommendations made as to new well locations were general and indicated that north of Monument a few miles seemed advisable.

Other water quality test results were obtained from El Paso Natural Gas Company for their wells in Section 13, T. 19 S., R 36E., and also in Sections 36, T. 18 S., R. 36 E; and from the Northern Natural Gas Company on their wells in Section 6, T. 19S., R. 37E. These wells are all in the west and north portions of the search area. The results indicate water of good quality.

Based upon all the data obtained, we have tried to pick a suitable location for a new well, outside of the major oil and gas production area and

upgradient from it, keeping the distance from the newly drilled well as small as possible and staying within the Township. The choice location is Section 7, T. 19 S., R. 37 E. Locations to the west, north and northeast and possibly east of Section 7 appear to be good possibilities, however, none are as favorable in all respects as Section 7. Furthermore, the best site appears to be along the west line in the south half of Section 7. If the alternative chosen is to drill a new well, this is our recommended location.

Regarding the purchase of existing wells, El Paso Natural Gas Company, Warren Petroleum and Northern Natural Gas Company were contacted and are unwilling to sell. These decisions were relayed verbally by Misters' John Cunningham, David Ishmal and Bob Martin of the three companies respectively. The matter was pursued further in writing to El Paso Natural Gas Company. A copy of this correspondence is included on the following pages

B. Purchase of Water from Municipality:

Regarding purchase of water from a municipality, we found that the City of Hobbs would probably look favorably upon a request from the Association and that Eunice is unable to make any commitment at this time. The nearest Hobb's line is a 12" line along US 62-180, five miles east of State Road 8. The nearest Eunice line is a 14" line four miles east of Monument. A written request will be made to Eunice regarding the purchase of water and or the use of their line to transmit Hobbs water for Monument's use upon instruction by the Association. The matter could be discussed at Eunice's January 13 th. meeting if we notify them soon enough.

Based upon the City of Hobbs' commercial rate for a 4" meter, the Association would pay about $420 per month or about $0.49 per 1000 gallons based on current usage. The actual rate may vary depending on meter size, maximum demand, etc. This matter should be confirmed with City Officials.

C. Treatment of Existing Wells:

Removal of hydrocarbons from drinking water may be accomplished by either of two methods, aeration or adsorption by use of activated carbon, or by a combination of both. From the original well and school wells, aromatic hydrocarbons are the contaminates, the removal of which is fairly routine. From the new well, the contaminates are natural gas components, removal of which is not as routine but is not expected to be a problem.

N180, Cl, H2S

Discussions with Dr. Tom Love of EPA in Dallas revealed that treatment would be acceptable and the operational cost may be in the range of $0.20 - $0.30 per 1000 gallons for aeraiton and twice as much for activated carbon methods.

Discussions with a aerator manufacturer indicate that operation of an air-stripper type of aeration facility is fairly simple and the initial cost is reasonable.

The drawback of this option, from our point of view is the potential of malfunction. While the maintenance functions are relatively simple, they cannot be neglected. Periodic cleaning of the packing requires a shut-down of the plant. Replacement of the packing may be necessary every few years

(3-5) requiring shut-down of the plant. None of the components can be supplied or repaired locally.

It is our opinion that the operation of such a sophisticated plant which is so critical to the operation of the system is not feasible for a system such as Monument's.

D. Summary and Recommendations

In summary, the alternatives are listed below in order from most desirable to least desirable (in this writers opinion):

1. Drill new well in Section 7 and connect to existing system with 16,000' of new 4" transmission line.

2. Connect to Town of Eunice transmission line and obtain water from town of Eunice.

3. Connect to City of Hobbs system using Eunice transmission line to transport water 5 miles. Requires 5 1/2 miles of new line. (4.5 miles to Monument and 1.0 miles from Hobbs system to Eunice transmission line.

4. Treat water from existing wells

5. Connect directly to City of Hobbs system through approximately 10.5 miles of new transmission line.

VI. Proposed Facilities

A. Water Supply - The recommended alternative is to drill a new well in Section 7, approximately 1 1/2 miles west and 1 1/4 miles north of the well in section 20 which was drilled in 1986. It is further recommended that the length of 4" PVC pipe installed in 1986 be utilized and extended to the recommended location once a well has been drilled, tested and proven adequate.

B. Distribution System - No changes are recommended to the distrubtion lines at this time. The one component we recommend be added to the distribution system is a meter at each service. The meters can serve several important purposes in addition to customer billing. For example, each time the meters are read, the total of water sold can be compared to the amount pumped. If the difference is significant, it serves as a warning device that there are problems to be resolved. These problems may be line leaks, unmetered taps, excess usage from fire hydrants, etc. Meters also provide a convenient opportunity to shut off water (and padlock the valve) to delinquent accounts. By their very nature, meters limit water usage by requiring individuals to pay on the basis of usage rather than a flat rate. Flat rates tend to encourage waste. The net result of installing meters is a more efficient system operating a more business-like manner.

Some concern has been expressed over the possibility of members by-passing the meter once they are installed. If this happens, the Board must be willing to take appropriate action against the offender as provided for by the Association's organizational documents and state laws. Your attorney can advise you of the protection you have against such illicit usage.

C. Storage - Based upon the current usage of about 30,000 gallons per day, the associations storage facilities are undersized. Approximately two days storage or 60,000 gallons is recommended. The present storage capacity is 38,000 gallons maximum. That means that approximately 60% more storage is currently needed.

However, when meters are installed, it is believed that usage will drop significantly. In fact, it may drop sufficiently that the storage capacity ceases to be a problem. At any rate, the priority to add more storage is not high and not recommended at this time.

One recommended action is to drain the tank and have the interior inspected by an individual with expertise in water storage system.

D. Hydropneumatic System - The water pressure system is operating adequately for the association. Maintenance has been performed and will continue to be required. No new or replacement facilities are recommended at this time.

As mentioned previously, the hypochlorination system require some modification and it is recommended that the associaiton try one or both courses of action recommended in Section IV, paragraph E.

VII. Cost Estimates

The estimated cost of improvements for the various alternatives is shown below:

A. Drill New Well in SW 1/4 Sec 7, T 19 S, R 37 E

1.	Drill 14" Hole	140	FT	25.00	$ 3,500.00
2.	8" Blank Casing	80	FT	15.00	1,200.00
3.	8" Well Screen	60	FT	60.00	3,600.00
4.	Gravel Pack	3	CY	100.00	300.00
5.	Test Pumping	72	HR	100.00	7,200.00
6.	Pump in Place	1	LS	3,000.00	3,000.00
7.	Well House Complete	1	LS	25,000.00	25,000.00
8.	4" Transmission Line	16,0000	FT	10.00	160,000.00*
9.	Storage Tank	1	LS	15,000.00	15,000.00
	Construction Sub-Total				218,800.00
	Design @ 6.0 %				13,128.00
	Inspection of Construction @ 4%				8,752.00
	Right-of-way				5,000.00
	TOTAL PROJECT COST				$ 245,680.00

Pumping costs are estimated to be $0.20 per 1,000 gallons.

* The cost of the transmission line can be greatly reduced if assistance can be obtained for trenching which is estimated to cost approximately $5.50 per foot.

A 10,000 gallon storage tank is recommened at the well site to provide automatic control of the well. Water will gravity flow from well site to the existing storage tank.

B. Connect to Town of Eunice Transmission Line

1. 4" Transmission Line	24,000	FT	10.00	$ 240,000.00
2. Connections Complete	1	LS	3,000.00	3,000.00
3. Metering Facility	1	LS	3,000.00	3,000.00
Construction Sub-Total				$ 246,000.00
Design @ 6.0%				14,760.00
Inspection of Construction @ 4.0%				9,840.00
Right-of-Way				5,000.00
TOTAL PROJECT COST				$ 275,600.00

Operating costs will include the purchase price of water from the Town of Eunice (Estimated to be $0.75 per 1,000 gallons) and the cost of booster pumps if required (not included at this time).

C. Connect to City of Hobbs via Eunice Transmission Line

1. 4" Line Monument to Eunice Line (Above)				$246,000.00
2. 4" Transmission Line	5,300	FT	10.00	53,000.00
3. Metering Facility	1	LS	3,000.00	3,000.00
4. Connections	1	LS	3,000.00	3,000.00
Construction Sub-Total				$305,000.00
Design @ 6.0%				18,300.00
Inspection @ 4.0%				12,200.00
Right-of-way				6,000.00
Total Project Cost				$341,500.00

Operating costs will include the purchase price of water from the City of Hobbs (estimated to be $0.50 per 1,000 gallons) as well as a charge for use of 5 miles of Eunice's transmission line (estimated to be $0.30 per 1,000 gallons). A booster pump may be required but is not included at this time.

D. Treatment from Existing Wells

1. Install 2 new 4' Diameter skid mounted air stripper, foundation, electrical, and piping complete	1 LS	$ 80,000.00	$ 80,000.00
Construction sub-total			80,000.00
Design @ 10.0%			8,000.00
Inspection of Construction @ 5.0%			4,000.00
Total Project Cost			$ 92,000.00

This estimate does not include work involved to put the wells back into service, if any. Operation costs for this size system, including the salary for an operator to perform routine maintenance is estimated to be $0.50 to $0.80 per 1000 gallons. Additional information must be obtained before serious consideration should be given this alternative. Continuing operation and maintenance problems must be given serious consideration.

E. Install Meters on Each Service

1.	Meter with Box Complete	60	Ea	$350.00	$21,000.00

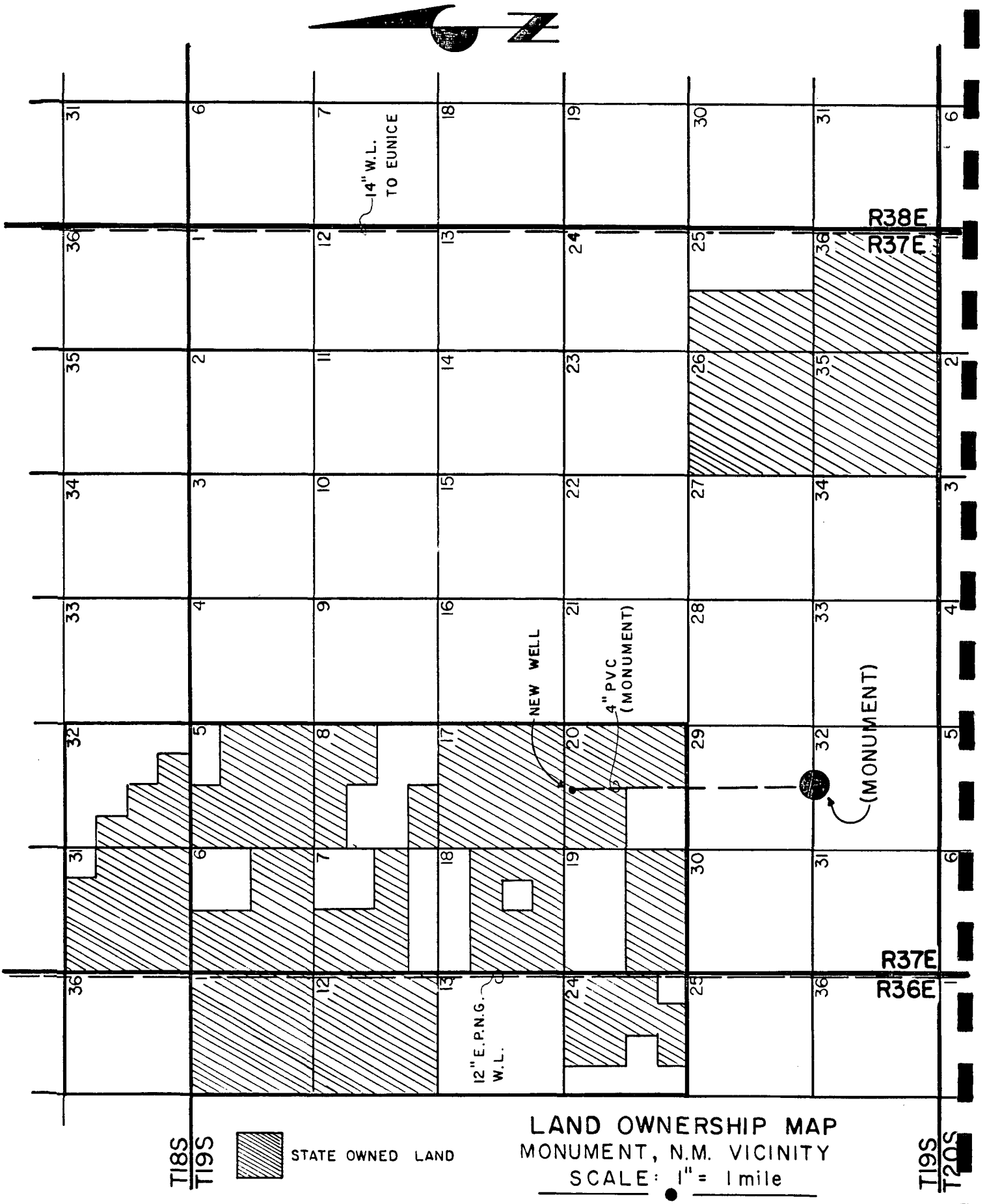
Construction Sub-total	21,000.00
Design @ 10.0%	2,100.00
Inspection of Construction @ 5.0%	1,050.00
Total Project Cost	$24,150.00

The installation of meters will serve little purpose unless they are used for billing purposes which will require routine reading and computations of usage. The added cost of these items should be considered since the Association's membership has expressed displeasure over the possible use of meters and since the original meters were not repaired or replaced as they became inoperative.

VIII. Anticipated Problems

The major problem associated with any of the alternatives is the trenching. The entire area is expected to contain very consolidated caliche (rock), requiring specialized equipment and clean padding material. The added cost for this included in the previously submitted cost estimates.

Water line routes for any of the alternatives as well as the site for a new well can be accomodated on county or state roadways and state-owned land. Rights-of-way are not expected to be a problem.



LAND OWNERSHIP MAP
MONUMENT, N.M. VICINITY
SCALE: 1" = 1 mile

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IX. Operational Recommendation

As noted in Section III, even though water rates were raised in April 1985, it appears that it will soon be necessary to raise them again. It should be noted that 1986 expenditures exceeded the 1985 expenditures by almost $2,000.00 most of which is attributable to drilling of a new well and associated problems. If the expenditures in 1987 decline as they should and if the Assocation is successful in collecting delinquent accounts, it may be possible to postpone a rate increase for one to two years. This is obviously the best producer.

Failing those accomplishments, it appears that an immediate increase of about 10% is needed. It should be recognized that this is little more than 1986 estimated delinquent accounts of 8.7%.

Further recommendations concerning water rates must wait decisions by the Association concerning the direction to take relative to a new water supply and whether or not to install meters.

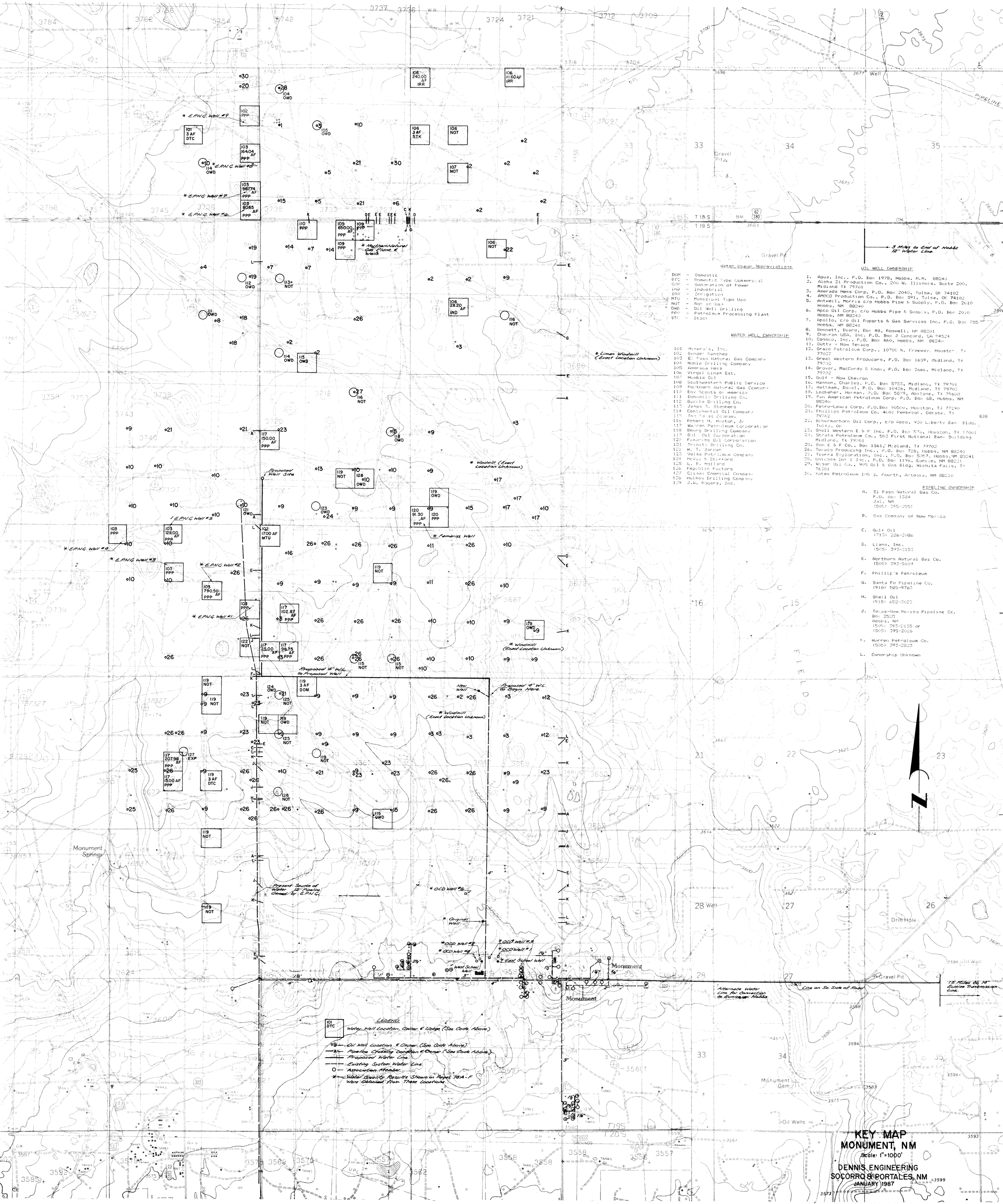
X. Funding Sources

The Association has funds available from operation reserves in the amount of $10,000.00. Also available is the balance of CDBG grant funds of $36,000. These funds are in addition to the Interstate Streams Commission funds available for this report.

It is recommended, and indications are that the state will require, that the Association utilize the $10,000 in Associational funds for drilling of test wells and testing of the water prior to use of the CDBG funds. Once a site is provided by acceptable test results, the CDBG funds are available for well development and other construction.

Other possible funding sources are the Water Supply Construction fund administered by the State from which the Association may obtain up to 75% grant funds; the CDBG program and the Community Assistance Council from which it may be possible to obtain 100% grant funds and Farmers Home Administration. It also may be possible to get a direct grant from Lea County.

In light of the present financial situation of the Association, it seems prudent to avoid any further indebtedness if at all possible.



KEY MAP
MONUMENT, NM

Scale: 1"=1000'

DENNIS ENGINEERING
SOCORRO & PORTALES, NM
JANUARY 1987

Water Usage Abbreviations

DOM	–	Domestic
DTC	–	Domestic Type Commercial
GOP	–	Generation of Power
IND	–	Industrial
IRR	–	Irrigation
MTU	–	Municipal Type Use
NOT	–	Not in Use
OWD	–	Oil Well Drilling
PPP	–	Petroleum Processing Plant
STK	–	Stock

WATER WELL OWNERSHIP

101	Minerals, Inc.
102	Synder Ranches
103	El Paso Natural Gas Company
104	Noble Drilling Company
105	Amerada Hess
106	Virgil Linam Est.
107	Humble Oil
108	Southwestern Public Service
109	Northern Natural Gas Company
110	Boy Scouts of America
111	Donnelly Drilling Co.
112	Gackle Drilling Co.
113	James R. Stephens
114	Continental Oil Company
115	The Texas Company
116	Robert H. Huston, Jr
117	Warren Petroleum Corporation
118	Bourg Drilling Company
119	Gulf Oil Corporation
120	Famariss Oil Corporation
121	Trinity Drilling Co.
122	W. T. Jordan
123	Velma Petroleum Company
124	McVay & Stafford
125	L. B. Holland
126	Republic Factors
127	Climax Chemical Company
128	Holmes Drilling Company
129	J.W. Rogers, Inc.

OIL WELL OWNERSHIP

1. Agua, Inc., P.O. Box 1978, Hobbs, N.M. 88240
2. Alpha 21 Production Co., 200 W. Illinois, Suite 200, Midland TX 79701
3. Amerada Hess Corp. P.O. Box 2040, Tulsa, OK 74102
4. AMOCO Production Co., P.O. Box 591, Tulsa, OK 74102
5. Antweil, Morris c/o Hobbs Pipe & Supply, P.O. Box 2010 Hobbs, NM 88240
6. Apco Oil Corp. c/o Hobbs Pipe & Supply, P.O. Box 2010 Hobbs, NM 88240
7. Apollo, c/o Oil Reports & Gas Services Inc. P.O. Box 755 Hobbs, NM 88241
8. Bennett, Byard, Box 48, Roswell, NM 88201
9. Chevron USA, Inc. P.O. Box J Concord, CA 94524
10. Conoco, Inc., P.O. Box 460, Hobbs, NM 88240
11. Getty – Now Texaco
12. Grace Petroleum Corp., 10700 N. Freeway, Houston, TX 77037
13. Great Western Producers, P.O. Box 1659, Midland, TX 79702
14. Grover, MacCurdy & Knox, P.O. Box 3666, Midland, TX 79702
15. Gulf – Now Chevron
16. Hannon, Charles, P.O. Box 5753, Midland, TX 79701
17. Hattman, Doyal, P.O. Box 10426, Midland, TX 79702
18. Ledbeher, Herman, P.O. Box 5879, Abilene, TX 79608
19. Pan American Petroleum Corp. P.O. Box 68, Hobbs, NM 88240
20. Petro-Lewis Corp. P.O.Box 90500, Houston, TX 77290
21. Phillips Petroleum Co. 4001 Penbrook, Odessa, TX 79762
22. Schermerhorn Oil Corp., c/o Apco, 930 Liberty Bank Bldg. Tulsa, OK
23. Shell Western E & P Inc. P.O. Box 576, Houston, TX 77001
24. Strata Petroleum Co., 503 First National Bank Building Midland, TX 79701
25. Sun E & P Co., Box 1861, Midland, TX 79702
26. Texaco Producing Inc., P.O. Box 728, Hobbs, NM 88240
27. Tierra Exploration, Inc., P.O. Box 5057, Hobbs, NM 88241
28. Unichem Int'l Inc., P.O. Box 1196, Eunice, NM 88231
29. Wiser Oil Co., 905 Oil & Gas Bldg. Wichita Falls, TX 76301
30. Yates Petroleum 105 S. Fourth, Artesia, NM 88210

PIPELINE OWNERSHIP

A. El Paso Natural Gas Co.
P.O. Box 1384
Jal, NM
(505) 395-2551

B. Gas Company of New Mexico

C. Gulf Oil
(713) 226-2086

D. Llano, Inc.
(505) 393-2153

E. Northern Natural Gas Co.
(505) 393-5109

F. Phillip's Petroleum

G. Santa Fe Pipeline Co.
(918) 585-9763

H. Shell Oil
(915) 652-3023

J. Texas-New Mexico Pipeline Co.
Box 2528
Hobbs, NM
(505) 393-2135 or
(505) 395-2026

K. Warren Petroleum Co.
(505) 393-2823

L. Ownership Unknown

LEGEND

101 DTC	Water Well Location, Owner & Usage (See Code Above.)
∘9	Oil Well Location & Owner (See Code Above).
A	Pipeline Crossing Location & Owner (See Code Above.)
———	Proposed Water Line.
– – –	Existing System Water Line.
○	Association Member.
*	Water Quality Results Shown on Pages 14A–F Were Obtained from These Locations.