

PREFERENCES FOR MANAGING NEW MEXICO WATER

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TECHNICAL COMPLETION REPORT
Project No. 1345647

November 5, 1984

New Mexico Water Resources Research Institute

in cooperation with

Division of Public Administration

University of New Mexico

The research on which this report is based was financed in part by the U.S. Department of the Interior as authorized by the Water Research and Development Act of 1978 (P.L. 95-467), and by the State of New Mexico through state appropriations.

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ABSTRACT

The purpose of this study is to identify public preferences for alternative water management institutions, policies, and programs. Survey procedures were designed to ensure representation of all groups affected by water management in New Mexico. More than 1000 New Mexico citizens with expertise in water resources were sent an extensive questionnaire and nearly one-half responded. A randomly selected sample of 600 New Mexico citizens participated in a telephonic survey and site visits and interviews were conducted in each of the state's hydrologic regions.

The findings both support and refine the research hypotheses. As hypothesized, preferences for water management vary according to one's personal involvement. A second hypothesis, preferences are modified by one's perception of scarcity, is not as strongly supported. Other respondent characteristics including political ideology, socioeconomic status, and knowledge about water resources influence preferences much more strongly than anticipated. Within the water expert sample, two preference groups are clearly identifiable. The first group generally prefers continuation of the status quo in water management. The second preference group generally favors reform of existing policies and practices.

The findings indicate that there is considerable consensus about the need for certain policies. Responses to other policy proposals suggest considerable divergence of opinion. Policy implications and avenues for further research are presented.

Keywords: attitude surveys, public opinion surveys, public participation, public preferences, water resources administration, water resources management

ACKNOWLEDGEMENTS

Special thanks go to a number of individuals who made this project possible. First, we thank the 1130 respondents who took the time to share their views on water management. We also sincerely appreciate the help and advice provided by David M. Reynolds, Pablita Abeyta, F. Lee Brown, Gilbert Bonem, Wade Martin, A. Lee Brown Jr., Nicholas Lovrich, and Jon Souder.

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CHAPTER 1: PREFERENCES FOR MANAGING WATER IN THE WEST

Increasing demand for relatively finite supplies of water suggests that water controversies will become more prevalent throughout the arid West. When water conflicts generate controversy, the demand for a public policy response generally increases. For example, when water supplies are threatened by the action of another state, legislators may respond with statutory revisions, public administrators may impose stricter regulations, or the courts may be asked to review established practices. Anticipating and responding to increased conflict in an efficient and equitable manner is a major challenge for policymakers. While there are a number of institutional alternatives for water conflict resolution, determining the relative influence of judicial, administrative, legislative, or private institutions is essentially a political task.

In New Mexico, the private use of water must meet criteria of beneficial use and the public interest. Defining beneficial use and determining the public interest therefore are extremely important. Fortunately, beneficial use and the public interest are not cast in stone; these concepts evolve in response to social and environmental changes. Characterizing public preferences is one way to help define the public interest in water management. Public preferences serve as a guide to responsive policymakers because they may be indicative of both the desirability and political feasibility of competing policy alternatives.

The purpose of this study is to profile public preferences in New Mexico for alternative water management institutions, policies and programs. "Public" includes the general public of adult New Mexico citizens as well as "attentive publics," that is, individuals directly involved in water resources management. Although considerable research has been conducted on the relative advantages of varying water management institutions, less is known about public preferences in this area. A number of surveys have measured public attitudes on natural resources management including water resources but these surveys are of limited value. Relevant studies are summarized and evaluated in the following section.

Identifying public responses to the following policy questions constitute the focus of this study:

1. What is the proper mix of public and private institutions for the management of water in varying situations?
2. To what extent should the market, or the state, or the courts, etc. determine how water is managed?
3. Should traditional water users be accorded special status even if such protection inhibits more efficient water use?
4. How should the state balance competing demands for water?

5. What is the best institutional response to demands for water from the federal government, Indian tribes, or other states?
6. How satisfied are New Mexico citizens with existing water practices, policies, and programs?

While no study can definitively answer these questions, we hope to identify divergent opinion as well as consensus related to each of these water policy areas.

Public Preferences on Water Policy: A Review of Research

Differing opinions about water management largely depend on how water is valued. Some economists, for example, argue that water should be valued as an economic good or commodity. In more common terms, water should be allowed to "float uphill to money" in voluntary, private market transactions. However, Maass and Anderson note that even where laws permit a free market in water, customs may constrain market transfers. Citing Hudson's study of irrigation in Utah, they conclude:

Attempts to convert (water) to an economic good by selling surplus water to the highest bidder are regarded as 'water profiteering'; Attempts to acquire large additional supplies are regarded as 'water hogging'... (c)ommunity pressure does not allow the market price to reach the level that farmers who are short of water would be willing to pay.¹

¹ Maass and Anderson , p. 5.

The research reported by Maass and Anderson highlights the importance of social values in water management. To the extent that water is valued unlike other commodities, opposition to market transactions can be expected.

In a similar vein, Ingram has argued that in the West water has traditionally been perceived locally, provincially, and selfishly by parochial activists who value water as a source of wealth and a key to growth (Ingram, 1971). Institutional preferences, then, may be influenced by one's investment in water. Stated another way, stakeholders, e.g., owners of water rights, would be expected to favor those institutions that provide the best protection for their investment. In some cases, stakeholders might prefer water markets but in other situations they might prefer administrative control. For example, recipients of project water in an irrigation district may have a much more favorable view of administrative institutions for water management than other water users.

Another implication of Ingram's thesis concerns non-stakeholders, that is, individuals with little or no personal investment in water-dependent activities. Unlike stakeholders, the institutional preferences of these individuals may be guided less by personal interest and more by other factors such as knowledge about water resources or political ideology.

Public Water Surveys: While a considerable amount of public opinion research related to water has been conducted, existing research provides

no clear answers about how the valuation of water translates into policy preference. Few citizen attitude studies have asked the public to directly evaluate solutions to water problems or to make choices between competing policy options. However, a number of studies have estimated public awareness and opinions related to water resources.

A number of states have conducted statewide water surveys. Two notable examples are the Arkansas Public Awareness Survey on Water Resources (1979) and the Texas Water Plan (1982). In both cases the surveys attempted to measure public awareness about water resources, water shortages, reallocation problems, and water management. Preferences for water policy were determined to a limited extent. However, most of the questions are general rather than situation specific and findings are limited to univariate descriptions. Consequently, levels of awareness or consensus are emphasized rather than policy preferences.

In contrast, Rose has used Idaho survey data to construct a general model of public water policy preferences (Rose 1976). Rose found that the outstanding characteristic of the public's policy preferences is the general agreement among the public in ranking priorities of use. Agricultural and domestic water uses were ranked high because they were perceived to serve essential goals for everyone. In contrast, energy and industrial uses were perceived to serve less consensual goals and were therefore ranked lower.

Preferences for lower ranked uses correlated with respondent status. For example, industrial users tended to value industrial uses significantly higher than non-industrial users. This finding suggests that

stakeholders tend to be supportive of others who are perceived to have a common interest in water resources. Rose's work provides important clues about the nature of public water preferences. Considerable consensus is to be expected in response to general, non-threatening questions, e.g. the importance of water. Conversely, one may expect considerably less consensus in response to specific questions that are perceived to threaten one's investment in water resources or water-dependent activities.

Directly relevant to the identification of institutional preferences is the work of Pierce and Lovrich (1979). The relationship between public preferences about water policy and the level of information held was found to be not as strong as originally expected. However, levels of trust in sources of information--as measured by identification with particular institutions including state agencies, the legislature, the judicial system, federal agencies and local governments --does appear to influence policy preferences. Respondents tended to prefer the institutions they trusted. As might be expected, knowledge about water policy was positively correlated with both socioeconomic status and involvement in the water policy arena.

New Mexico Water Surveys: At least four studies that surveyed New Mexicans are directly relevant. Lupsha, et. al. conducted a survey of Albuquerque residents to determine public preferences related to specific water conservation proposals. The authors reached the following conclusions:

Two factors appeared to motivate citizens responses' to specific policy proposals. The first was self-interest. Large users tended to be against conservation or other public policies that would restrict their use or raise the price for heavy users. The second was a generalized attitude towards control, which might be typified as an attitude of individualism as opposed to some form of public good or community collective orientation.²

These conclusions may mean that specific classes of users generally will be opposed to increased governmental management of water resources. The authors found, however, that the opposition to government regulation of water use generally disappeared when water supplies were perceived to be in short supply. While the findings are suggestive, the inquiry has limited external validity. Respondents were urban residents who primarily used water for domestic purposes, and crosstabulations by demographic characteristics and water use were inconclusive.

In an earlier study, "Citizens' Conferences on Water" were conducted at a number of locations throughout New Mexico (Stucky 1971). Two conferences were held in each designated water study area, one to assess the general water situation in each area, and the other to rank the most important water problems of each area. Finally, area delegates gathered for a statewide water conference where the state's most important water problems were prioritized.

This study is significant because regional variations in preference were identified. Second, the ranking of water problems is a step in the right direction. The public's perceptions of water problem severity

² Lupsha, p. 31.

rarely has been tapped. Third, New Mexico citizens were found to be highly interested in water resources. More than 80 percent of the respondents were concerned about the water resources of the state and wanted to see things improved. Moreover, nearly 90 percent of the respondents wanted more information about water resources.³ Finally, the findings of this report provide a useful base for trend analysis. However, the study has some methodological limitations. Samples were relatively small and selection was not random.

Pratt and Martin's study, New Mexico Residents' Attitudes Toward Water Use and Monetary Tradeoffs (1980) also is directly relevant. New Mexico residents were randomly surveyed in order to provide information useful to water resource planners. The emphasis of the survey was on recreation, water pollution, and the willingness to pay for water-related services. Unfortunately, policy preferences were not directly measured. Instead, the authors identified a number of areas where considerable consensus is evident. For example, it was found that "a large percentage of the respondents believed that all forms of recreation should be made available to everyone."⁴

Somewhat more interesting and useful is the finding that very few respondents were willing to pay increased taxes to reduce water pollution. While this finding is policy-relevant, relatively few similar questions were asked. Moreover, the study was limited to univariate analysis and

³ Stucky, pp. 116-117.

⁴ Pratt and Martin, p. 18.

no regional variations were measured. Finally, since the respondents were randomly selected from the general public, no comparison between elite and non-elite groups was possible.

In another study, public and state legislator attitudes related to natural resources management in the four corner states were compared (Ingram et. al. 1980). Variations in water policy preference were found to be related to geographic setting and respondent status. State legislators appeared to be slightly more willing to favor reallocation of water to higher economic uses. However, both the general public and legislators thought that all classes of water use (e.g., domestic, agricultural, industrial, etc.) should be allocated the same amount or more water in the future.⁵

A major limitation of this study is that respondents were not asked to make tradeoff decisions, that is, to choose between competing policy options. Nor were the respondents asked to prioritize preferences for competing uses. Nevertheless, state senators were found to be quite willing to avoid the issues of competing uses and to delegate policy matters in this area to other institutions. In addition, both legislators and the public were found to be supportive of water resources policy innovation as long as existing practices were not significantly altered.

Limitations of Existing Studies: A pervasive limitation of the water surveys discussed above is the tendency to ask general questions with

⁵ Ingram, et. al., pp. 131-132.

limited, indirect policy relevance. Considerable consensus is found when respondents are asked to affirm the importance of water or support the status quo in water management. The absence of specific policy referents in survey questions provides little direction to policy makers who must respond to increasing demands for efficient, equitable water policy.

While the literature does affirm that respondent status including water use characteristics is an important determinant of policy preference, less is known about how preferences are affected by variations in policy context. For example, does a commodity view of water become less important when private market transactions result in negative externalities? Is opposition to increased government regulation of water use influenced more by respondent status than by perceptions of scarcity? Which segments of society tend to favor water policy innovations? Which segments tend to oppose innovation? What changes are needed and what will be the consequences of change? These are the kinds of questions that might be answered by improved survey research.

A second limitation to existing research is that respondents rarely have been asked to choose between alternative water uses, policies, or institutions. Consequently, responsive policymakers are given little direction. Specific policy-relevant questions therefore will provide more useful information to policymakers.

Research Hypotheses

The literature suggests three basic hypotheses which have guided this study:

1. Preferences for water policies, programs, and institutions are primarily influenced by one's personal involvement in water-dependent activities. Based on the research of Maass, Anderson, Ingram, and others, if one is a stakeholder, then one will prefer those institutions perceived to protect personal investment. For example, support for private water rights markets should be directly related personal investment in water rights. A corollary is that the preferences of non-stakeholders will be more influenced by other factors. This hypothesis is hardly earthshattering since it is analogous to commonsense notions such as "one votes his pocketbook." What makes it intriguing is to see to what extent it is applicable to water resources.

2. Institutional preferences are moderated by perceptions about the relative scarcity of water. Based on the research of Ingram and Lupsha, it is hypothesized that if respondents perceive that water is scarce, then they are less likely to oppose increased governmental planning and regulation. Thus, it is expected that respondents in water critical or stressed areas will tend to favor increased governmental regulation even if personal investments are threatened. Conversely, it is expected that respondents who think that water supplies are adequate or relatively inexpensive generally will oppose increased governmental management of water. It should be noted that "govern-

mental" includes administrative, judicial, and legislative public sector institutions.

3. Institutional preferences for water management are also influenced by one's knowledge, political ideology, and other demographic characteristics but these factors are less important than either personal investment or perception of scarcity.

Following from the research of Pierce, Lovrich and Lupsha, support for increased governmental involvement in water management will come from those groups who generally favor increased governmental involvement, e.g., liberals. Conversely, support for a free market in water or a continuation of the status quo in water management will come from those individuals who generally support free markets or preservation of the status quo, e.g., conservatives.

In each of the hypotheses above, it is assumed that respondents possess requisite knowledge of water policies and problems. However, the literature suggests that water awareness varies between groups of respondents such as legislators, water experts, and the general public. In addition, preferences are assumed to vary according to one's status. In consequence, the goal of our sampling procedure is to ensure representation of all groups affected by water management.

CHAPTER 2: RESEARCH PROCEDURES

Survey Instrument Development

Two survey instruments were developed and are included in Appendix 1. First, an extensive questionnaire was developed for water experts and state legislators. This instrument was designed for self-administration and was mailed to each respondent. In order to maximize opportunities for comparative analysis of survey results, a number of the questions from other water surveys were included verbatim. In addition, a number of previously used questions and formats were adapted for use in New Mexico. Finally, a number of original questions were developed. Preliminary drafts were pre-tested and modifications were made prior to survey administration.

A subset of the questions from the water expert/legislator instrument were selected for the public subsample instrument. This instrument is considerably shorter and simpler because it was assumed that the general public generally possesses less knowledge about water resources. Moreover, the shorter format enables telephonic administration. As with the mailed questionnaire, preliminary drafts were pre-tested prior to survey administration.

The water expert/legislator instrument was used as a basis for informal personal interviews with selected water experts and state legislators. Personal interview respondents were asked to comment on the

survey instrument in general as well as to discuss substantive issues covered in the instrument.

Survey Administration

Sample Selection: Sampling procedures were designed to represent three population groups: water experts, state legislators, and the general public. Water experts include public administrators and elected officials from federal, state, local, and special district agencies. In addition, special interest representatives from water intensive industries, e.g. agriculture, mining, etc., and academic water researchers are included in this category. State legislators include current state lawmakers from both the Senate and the House plus New Mexico's U.S. Congressional delegation. The general public subsample is limited to current, adult residents, (18 years of age and older).

Operationally, a list of water experts was generated by combining a number of mailing lists and personal referrals. The mailing lists included the New Mexico WRRRI master mailing list, the New Mexico Municipal League's Directory of New Mexico Municipal Officials, The Official New Mexico Blue Book, The New Mexico Soil and Water Conservation District 1982 Directory, a listing of registered lobbyists, and similar sources. Because the WRRRI list included a disproportionate number of academic researchers, a shorter listing of academics was obtained via a stratified sampling technique: at least one representative from each listed department was included but departments with a large number of water research-

ers, e.g. agricultural economists at NMSU, were limited to no more than five potential respondents. In addition, a special effort was made to include Native American Indian officials because very few Indians appeared to be included on the lists mentioned above. The final list included 1073 individuals.

The state legislator subsample included all members of the Thirty-Sixth State Legislature (First Session 1983), plus the state's U.S. Congressional delegation for a total of 118 individuals.

The public subsample was randomly selected within the eight hydrologic regions of the state (Figure 1). The sampling strategy was designed to balance two criteria, population distribution and water use characteristics. Each region was allocated 75 respondents with the following exceptions:

1. The Northeast and Southwest, Regions 4 and 5, were allocated 50 respondents each due to the relatively small population of each region. These regions comprise about 12 percent of the state's 1980 population.
2. The additional 50 respondents were allocated to the Central Region, Region 3. This region comprises about 40 percent of the state's population.

Within each region, the proportion of respondents from each county was determined by the county's population size. For example, 40 (53.33 per-

cent) of the 75 Northwest Region respondents are San Juan County residents because approximately 50 percent of the region's residents live in that county. The public sample of 600 randomly selected adults yields a plus or minus 4.5 percent error range at the 95 percent confidence level.

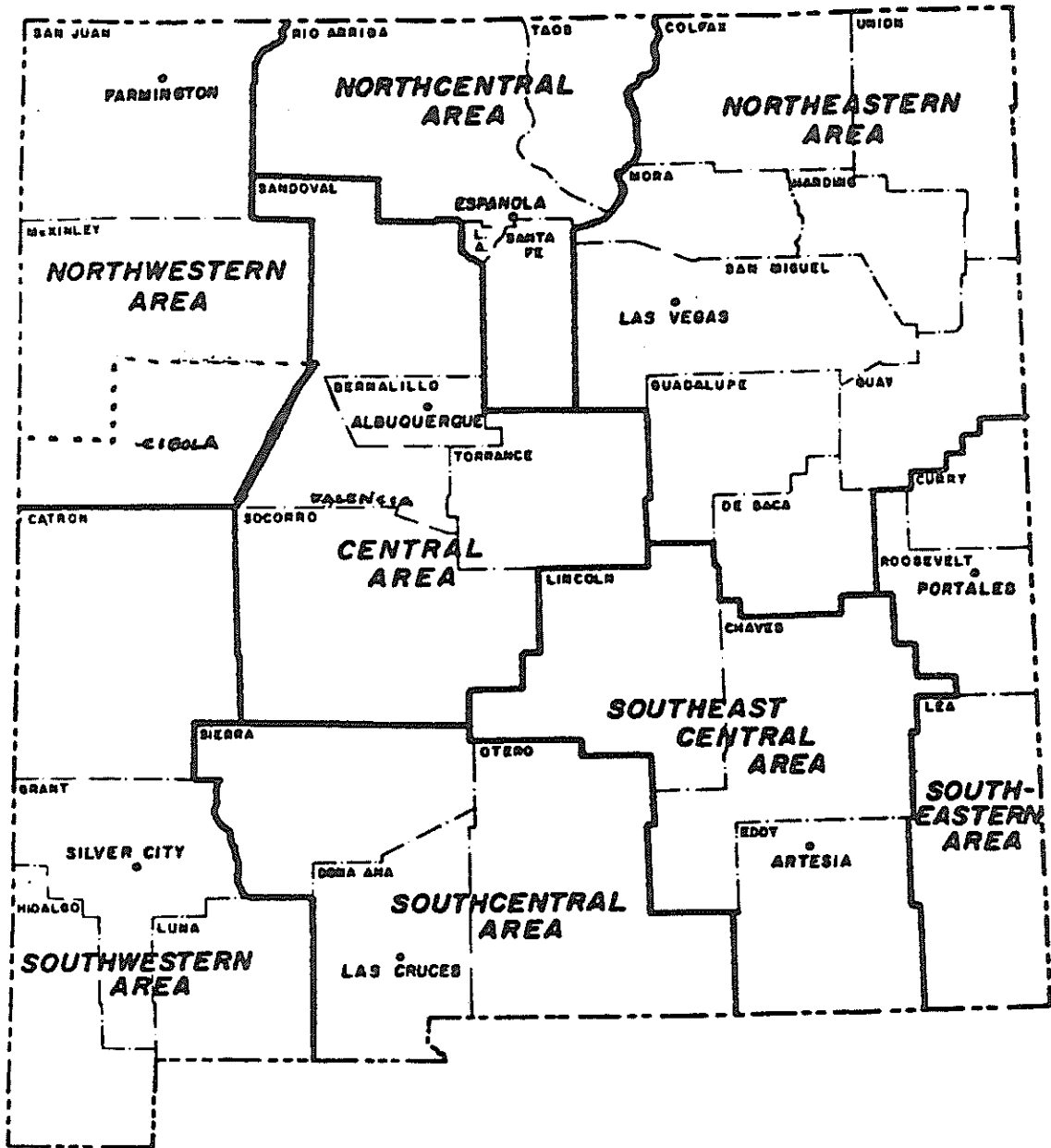


Figure 1. New Mexico's Eight Hydrologic Regions

Mailed Questionnaire Administration: During June, 1983, the water expert/state legislator questionnaires were mailed with a cover letter (Appendix II). If the respondent had been selected for a follow-up interview, a slightly different cover letter was used. Each questionnaire included a business reply stamp so that return postage was guaranteed. Completed questionnaires were to be returned no later than July 15, 1983. Unfortunately, because the questionnaires were mailed bulk rate, some respondents did not receive their questionnaire until just before or, in some cases, just after the return deadline. Shortly after July 15, 1983, a follow-up letter was sent to non-respondents to extend the return deadline as well as provided additional information about the survey. Duplicate questionnaires were sent to anyone who had not received or had misplaced their original.

In early August, 1983, 90 non-respondents--10 from each region and 10 state legislators--were selected as follows. Every twelfth name from our master mailing list was identified. If that individual had returned his or her questionnaire then the next name was selected. Non-respondents were phoned and asked a series of questions relating to their failure to return the questionnaire. Phone interviews were completed with 50 individuals. The questions and their responses are included in Appendix IV. There does not appear to be any regional or occupational bias in the non-responses.

In early September, 1983, all returned questionnaires were edited, open-ended questions were coded and categorized, and the responses were

processed into machine-readable form to allow for computer-assisted analysis.

Telephone Survey Administration: During the period of July 28-31, 1983, approximately 1,500 telephone numbers of residents throughout the state of New Mexico were dialed. Calls were placed during the evening hours on weekdays and all day during the weekends. A quota system was used in order to obtain an equal proportion of male and female respondents. Interviews were completed with 601 adult residents, one per household. The persons interviewed were those adults who had not received the mailed water resources questionnaire.

The responses were recorded on printed questionnaires. Five percent of the completed questionnaires were verified for authenticity and accuracy. All completed questionnaires were edited, open-ended questions were categorized and coded, and the responses were processed into machine-readable form to allow for computer-assisted analysis.

Response Rate

The response rate for the water expert subsample can be summarized as follows. Of the 1073 questionnaires, 529 were completed and returned for a 49.30 percent response rate. Twelve questionnaires were received after computer processing and are not included. The response rates by hydrologic region are:

1. Northwest-----46.36%(N=32)
2. Northcentral-----43.00%(N=67)

3. Central-----50.67%(N=152)
4. Northeast-----38.61%(N=39)
5. Southwest-----44.23%(N=23)
6. Southcentral-----46.43%(N=78)
7. Southeast/Central-----46.51%(N=40)
8. Southeast/East-----50.67%(N=38)

The response rates for each region are quite similar with the exception of the Northeast. It should be noted that we encountered significant problems with the mail to and from this region. For example, it took more than three weeks for some respondents to receive their questionnaire.

More generally, our follow-up survey of non-respondents suggests that since a number of respondents never received a questionnaire, the actual response rate may be slightly higher. In part, this is due to mail problems but a number of respondents also indicated that they never received a questionnaire because their mail is screened by members of their staff. In any event, the response rate is relatively high for a long and complex mailed questionnaire.

In contrast, the response rate for the legislator subsample is significantly lower. Of the 118 legislators, 33 returned their questionnaires in a usable form for a response rate of 27.9 percent. To assure anonymity, no regional breakdowns are presented. The relatively low response rate of this subsample probably is due to a number of factors. First, it is quite likely that only a small proportion of the legislators have a primary interest in water resources in direct contrast to the water

expert subsample. Conversely, we expect that those who did respond are interested in water resources. Second, quite a few legislators indicated that they were literally overwhelmed with questionnaires. Third, others expressed reluctance to register policy preferences in this type of forum.

Due to the size of the legislator sample and, to a lesser extent, the probability that those legislators who did respond are quite knowledgeable about water resources, the legislators' responses are combined with the water expert sample.

Because the public subsample was surveyed by phone, an alternative measure of response, refusal rate, is used. (The refusal rate is the proportion of contacted, eligible respondents who refuse to participate or to complete an interview.) Of the 801 eligible respondents contacted, 200 refused to participate for a refusal rate of 24.97 percent. The refusal rates by hydrologic region are:

1. Northwest-----19.35%(N=18)
2. Northcentral-----18.48%(N=17)
3. Northeast-----25.37%(N=17)
4. Central-----35.23%(N=68)
5. Southwest-----26.47%(N=18)
6. Southcentral-----17.64%(N=15)
7. Southeast/Central-----25.00%(N=25)
8. Southeast/East-----17.58%(N=16)

The refusal rate for the Central region is significantly higher which is probably related to the fact that telephonic surveys are much more common

in populous areas, e.g. Bernalillo County. Overall, the refusal rate is relatively low in comparison to other statewide surveys conducted by the authors.

Demographic Characteristics of Water Experts

In addition to substantive questions, our water expert subsample was asked a number of demographic questions in order to characterize this subsample and to identify significant relationships between demographic status and policy preferences. The percentages presented below do not include missing data and therefore may not be representative of the entire subsample. The demographic characteristics of the water expert subsample (including 33 state legislators) are as follows:

Hydrologic Region of Residence:

1. Northwest-----6.9%
2. Northcentral-----15.2%
3. Central-----33.7%
4. Northeast-----9.5%
5. Southwest-----5.0%
6. Southcentral-----14.7%
7. Southeast/Central-----9.9%
8. Southeast/East-----5.1%

For demographic analysis, the regions were combined into three categories: North (31.7 percent), all northern regions, Central (33.7 percent), Region 3, and South (34.7 percent), all southern regions.

Water Use/Water Rights Ownership: About one-third, (35.5 percent), of the water experts indicated that they use New Mexico water resources for irrigation on a farm or ranch; 25.0 percent used water for a business or industry; 76.4 percent use water for recreation such as fishing or boating.

Slightly less than one-half (44.9 percent) of the respondents indicated that they or their organization currently own or lease New Mexico water rights. In the demographic analyses which follow, only irrigator vs. non-irrigator responses are analyzed.

Age: Mean age = 46.66 years, Median = 45.72, Standard Deviation = 19.04. For demographic analysis, years of residence were categorized into quintiles. The range is from 23 to 80 years. For demographic analysis, ages were categorized as follows:

18-34 Years-----	27.5%
35-49 Years-----	34.4%
50-64 Years-----	30.2%
Over 65 Years-----	7.9%

Years of Residence in New Mexico: Mean = 27.58, Median = 27.89, Standard Deviation = 19.04. For demographic analysis, years of residence were categorized into quartiles.

Education (Last Grade Completed): More than three-fourths, (76.5 percent), of the water experts are college graduates and slightly over

two-thirds of this subgroup also have completed at least some graduate study. For demographic analysis, the respondents were categorized as follows:

Completed Graduate Study-----	52.6%
Completed College-----	23.9%
Completed Some College or Less-----	23.5%

Occupation (Current or Former, If Retired): Thirteen different occupational categories were recorded.

The leading categories are:

Academic Researchers-----	15.6%
Private Lawyers/Other Consultants-----	11.6%
State Government Officials-----	10.6%
Agriculture (Farmers + Ranchers)-----	10.4%
Private Industry (Non-Agricultural)-----	10.4%
Municipal Government Officials-----	10.0%
Federal Government Officials-----	8.5%
Government Officials (Unspecified)-----	7.7%
State Legislators-----	6.9%

For demographic analysis, the occupation categories were combined as follows:

Government (Elected and Other Officials)--	48.4%
Private Sector-----	36.0%
Academic Researchers-----	15.6%

Ethnicity: More than four-fifths (84.3 percent) are Anglos, 13.7 percent are Hispanic, 1.0 percent are Native American Indian, and .09 percent reported some other ethnic status. Due to the small number of minority respondents, demographic analysis by ethnicity has not been included.

Income: The annual, personal income (before taxes) of our respondents can be summarized as follows:

Less than \$20,000-----	17.0%
\$20,001 - \$30,000-----	24.2%
\$30,001 - \$40,000-----	24.8%
More than \$40,000-----	34.0%

Seventy (13.54 percent) of the 517 respondents refused to indicate their income level.

Partisanship: The political party identification of the water experts is:

Strong Democrats-----	6.2%
Democrats-----	36.2%
Independents-----	27.8%
Republicans-----	23.7%
Strong Republicans-----	5.8%

For demographic analysis, the respondents were categorized into three groups: Democrats (42.4 percent), Independents (27.8 percent), and Republicans (29.5 percent).

Political Ideology: The ideology of the water experts is:

Very Liberal-----	2.3%
Liberal-----	17.9%
Middle of the Road-----	38.5%
Conservative-----	36.4%
Very Conservative-----	3.1%
Other-----	1.9%

For demographic analysis, both liberals and conservative subgroups were combined into one group each and the "Other" respondents were dropped from the analysis.

Natural Resource Ideology: Respondents were asked to place themselves on a scale that ranged from "Strong Preservationist" to "Strong Developmentalist". (See Appendix I for the exact wording to this question.)

The responses are:

Strong Preservationist-----	4.4%
Preservationist-----	13.3%
Moderate-----	70.4%
Developmentalist-----	10.1%
Strong Developmentalist-----	1.2%
Undecided/Don't Know-----	0.6%

Interrelationships Among Demographic Groups: Crosstabulations of the water expert demographics indicate a number of significant inter-relationships:

About one-third of the Southern and Northern Region residents use water for irrigation in contrast to only 18.8 percent of the Central Region residents.

Slightly over one-half (51.4 percent) of the academic researchers reside in the Southern part of the state; 31.1 percent live in the Central region; and only 17.6 percent live in the North.

As might be expected, there is a fairly strong correlation between education level and occupation. For example, all of the academics are college graduates in comparison with 76.5 percent of the government officials, and only 67.7 percent of the private industry respondents.

A higher proportion (88.4 percent) of the Central Region residents are college graduates in comparison to 71.3 percent of the South residents and 71.3 percent of the North residents.

Occupation and ideology are also correlated. For example, almost one-half (48.2 percent) of the private industry respondents consider themselves conservative, versus 36.8 percent of the government officials, and only 29.4 percent of the academics.

The South Region has the highest proportion (49.7 percent) of conservatives in comparison to 39.0 percent of the North residents and only 30.5 percent of the Central residents. The Central Region has the highest proportion of moderates (49.0 percent versus 39.0 percent for the South and 34.2 percent for the North). The North Region has the highest proportion of liberals, (26.7 percent versus 20.5 percent for the Central and only 13.9 percent for the South).

Age correlates with a number of the other demographic variables. First, the younger respondents tend to be more highly educated, (84.3 percent of those 18 to 34 years of age were college graduates, versus only 53.6 percent of those over 65 years of age). Second, income level and age are positively correlated. Third, while those over 50 tend to be conservative, a relatively equal proportion of liberals, moderates, and conservatives is found among all other respondents.

Demographic Characteristics of Public Sample

The demographic characteristics of our public subsample, (N=601), are as follows:

Hydrologic Region of Residence:

- 1. Northwest-----12.5%
- 2. Northcentral-----12.5%
- 3. Central-----21.0%
- 4. Northeast-----8.3%
- 5. Southwest-----8.2%
- 6. Southcentral-----12.5%
- 7. Southeast/Central-----12.5%
- 8. Southeast/East-----12.6%

For demographic analysis, the regions were combined into three categories: North (33.3 percent of sample), Central (21.0 percent), and South (45.8 percent). In contrast, 1980 Census estimates for these regions are: North (27.08 percent), Central(38.8 percent), and South (32.4 percent).

Water Use/Water Rights Ownership: In contrast to the water expert subsample, only 22.3 percent of the public subsample use water for irrigation on a farm or ranch. About 8.0 percent use water for business or industry, and 60.9 percent use water for recreation.

About one-fifth, (21.2 percent), reported that they or a member of their immediate family currently own or lease New Mexico water rights.

Age:

18-34 Years-----	30.9%
35-49 Years-----	26.3%
50-65 Years-----	24.9%
More than 65 Years-----	17.9%

Length of Residence in New Mexico: Mean = 30.05, Median = 28.08, Standard Deviation = 19.70. For demographic analysis, the respondents' length of residence was categorized as follows:

Less than 14 Years-----	26.3%
14 - 28 Years-----	24.3%
29 - 44 Years-----	25.1%
More than 44 Years-----	24.3%

Location of Residence (Rural Vs. Urban): About one-third, (34.6 percent), of the respondents live in a rural area whereas the remaining two-thirds live in a town or city.

Education (Last Grade Completed): About one-fourth, (24.0 percent), of the public subsample are college graduates and 83.4 percent are high school graduates. For demographic analysis, the respondents were grouped as follows:

Graduate Study/College Graduate-----	24.0%
Some College-----	25.3%
High School Graduate-----	34.2%
Less than High School-----	16.6%

Ethnicity:

Anglo-----	67.6%
Hispanic-----	26.3%
Native American Indian-----	4.5%
Other-----	1.7%

Income:

Less than \$10,001-----	22.9%
\$10,001 - \$20,000-----	34.9%
\$20,001 - \$30,000-----	21.8%
\$30,001 - \$40,000-----	12.5%
More than \$40,000-----	8.7%

Gender: About one-half (52.1 percent) of the public subsample are females.

Partisanship:

Strong Democrats-----	16.3%
Democrats-----	31.2%
Independents-----	28.4%
Republicans-----	18.8%
Strong Republicans-----	5.3%

For demographic analysis, three categories were created: Democrats (47.5 percent), Independents (28.4 percent), and Republicans (24.1 percent).

Political Ideology:

Very Liberal-----	3.3%
Liberal-----	18.0%
Middle of the Road-----	33.8%
Conservative-----	33.1%
Very Conservative-----	5.7%
Other-----	5.7%
Undecided/DK-----	6.2%

For demographic analysis, three categories were created: Liberals (22.7 percent), Moderates (36.0 percent), and Conservatives (41.3 percent).

Natural Resource Ideology:

Strong Preservationist-----	9.5%
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Preservationist-----	14.6%
Moderate-----	59.6%
Developmentalist-----	7.8%
Strong Developmentalist-----	3.0%
Undecided/ Don't Know-----	5.5%

These responses were categorized into three groups (with "Undecideds" omitted): Preservationists (24.1 percent), Moderates (59.6 percent), and Developmentalists (10.8 percent).

Comparison of Subsample Demographic Characteristics

Table 1 summarizes and compares the demographic characteristics of our two subsamples. As might be expected, the water expert sample tends to be more highly educated, to be older, and have significantly higher income levels. In contrast, the public sample has a higher proportion of Hispanics and a smaller proportion use water for irrigation. The partisanship and ideology of the two samples, however, appears to be quite similar.

TABLE 1

Demographic Characteristics of Subsamples

Characteristic	Subsample	
	Elite (N=517)	Public (N=601)
Average Age (yrs)	46.6	37.8
Average Length of Residence (yrs)	27.6	21.5
Average Annual Income	\$39,000.00	\$15,000.00
<u>Education</u>		
% with grad degrees	52%	11%
% college grads	24%	13%
% with some college	14%	25%
<u>Ethnicity</u>		
Anglo	78%	67%
Hispanic	13%	26%
Other	9%	7%
<u>Region of Residence</u>		
North	32%	33%
Central	34%	21%
South	35%	46%
<u>Partisanship</u>		
Democrat	43%	45%
Republican	30%	23%
Independent	28%	27%
<u>Ideology</u>		
Liberal	21%	21%
Moderate	39%	34%
Conservative	40%	39%
<u>Occupation</u>		
Government	48%	N/A
Private	36%	N/A
Academic	16%	N/A
<u>Water Users</u>		
Irrigators	35%	22%
Non-Irrigators	65%	78%

CHAPTER 3: SURVEY RESULTS

The survey results are presented in the following sections. Results are divided into substantive categories. Within each category, actual questions are presented, followed by the response proportions of our water expert sample and, where applicable, the public sample. Significant bi-variate relationships between the responses and demographic variables are identified for most of the topic areas. Open-ended comments are also characterized with verbatim responses enclosed in quotation marks.

Perception of Water Scarcity

Present Adequacy of Regional Water Supplies: Our water expert and public samples were asked: "How adequate do you feel your region's existing facilities for water supply are today?"

The responses are:

	Water Experts	Public
More than adequate	33.9%	36.3%
Barely adequate	42.3%	44.3%
Not quite adequate	13.5%	13.3%
Not at all adequate	6.7%	6.0%
Undecided/DK	3.7%	6.0%

Demographic analysis of the water expert responses indicates that the perception of scarcity is influenced both by region and water use status. The Central region respondents, for example, tend to view present supplies as adequate. In contrast, a smaller proportion of respondents in the rest of the state view present supplies as adequate or more than adequate. Those respondents who use water for irrigation tend to perceive current supplies as either inadequate or just barely adequate in direct contrast to non-irrigators.

Demographic analysis of the public sample responses indicate similar patterns. More than one-half (57.1 percent) of the Central region residents think present supplies are more than adequate in contrast to only about one-third of the respondents in the South and North regions. Second, rural residents tend to view present supplies as inadequate in contrast to urban residents. The responses to this question, hereinafter termed "perception of scarcity," are included in the demographic analyses presented below.

Future Adequacy of Regional Water Supplies: Our water expert and public samples were asked: "How adequate do you feel the existing facilities for water supply are to meet all of the needs of your area twenty years from now ?"

Their responses are:

	Water Experts	Public
More than adequate	12.9%	10.5%
Barely adequate	24.9%	18.5%
Not quite adequate	21.5%	19.3%
Not at all adequate	32.5%	31.8%
Undecided/DK	8.2%	20.0%

Demographic analysis of water expert responses to this question produce patterns quite similar to the patterns identified in the preceding section. About one-half of the respondents in each region as well as in each demographic group are pessimistic about the adequacy of future supplies. The one notable exception is the Central region where only 19.0 percent think that existing facilities will be "not at all adequate."

The proportion of water experts in each region who think that future supplies will be inadequate is as follows:

Region	"Not At All Adequate"
Southeast/Central	46.7%
Northcentral	44.0%
Southwest	34.7%
Northwest	30.7%
Southcentral	30.7%
Southeast	30.3%
Northeast	26.0%
Central	19.0%

Overall, region of residence appears to be the major determinant influencing perceptions of current and future scarcity. Moreover, public and water expert perceptions appear to be quite similar.

Top New Mexico Water Problems

Table 2 summarizes the top 10 New Mexico water problems or areas of concern as ranked by the water expert sample. Tables 2 through 5 summarize responses by providing item means and standard deviations. Except where noted, mean scores directly estimate priority; the higher the mean, the higher the priority. Standard deviation scores inversely estimate amount of consensus: the lower the standard deviation, the higher the consensus. For a complete breakdown of responses by category, contact the authors. Protecting New Mexico water from other states is clearly the area of highest concern and greatest consensus. This finding probably is attributable to the state's current litigation with El Paso, Texas (see the following section). The preferences for better knowledge about water supplies and improved irrigation efficiency also are ranked quite high and exhibit considerable consensus.

In contrast, importing water, municipal pricing reform, and the need to develop integrated land and water planning were ranked lower. Moreover, the relatively high standard deviation scores suggest considerable

TABLE 2

New Mexico's Top Water Concerns

Areas of Concern	\bar{X}	s.d.
Protect NM water from others (66.5% top priority)	4.45	.91
Need for better knowledge of supplies (45.2% top priority)	4.11	1.01
Need for improved irrigation efficiency (35.8% top priority)	3.95	1.05
Need to reuse, recycle water (35.4% top priority)	3.93	1.04
Need to resolve Indian water disputes (39.3% top priority)	3.83	1.18
Need to improve water quality (29% top priority)	3.71	1.10
Need for integrated land and water planning (30.2% top priority)	3.59	1.25
Need for municipal pricing reform (9.6% top priority)	2.88	1.20
Need to import water (14.0% top priority)	2.86	1.28
Need to reallocate water from agriculture (6.7% top priority)	2.46	1.21

divergence of opinion related to these areas of concern. Many interview respondents noted that reallocation of agricultural water was already occurring in an orderly fashion and hence, was not rated a top priority.

Litigation with El Paso, Texas

Familiarity with Current Litigation: All respondents were first told: "As you may know, the state of New Mexico is currently involved in litigation with the city of El Paso, Texas over groundwater pumping." The respondents were then asked: "First, how familiar are you with this case ?"

The responses are:

	Water Experts	Public
Very familiar	33.9%	9.3%
Somewhat familiar	63.6%	64.8%
Not at all familiar	2.5%	25.9%

Demographic analysis of the water expert responses indicates that familiarity with the El Paso litigation is highest in the Southcentral region, the area adjacent to El Paso. Second, familiarity is positively correlated with income level. There were no other significant correlations among our water expert subgroups. However, the water experts are significantly more familiar with this litigation than the general public.

Public Opposition: Public sample respondents who were either "very" or "somewhat" familiar with this case, (N=444), then were asked: "Do you think El Paso should be allowed to pump groundwater from New Mexico ?"

The responses are:

Yes	9.4%
No	82.4%
Undecided/DK	7.9%

The public sample then was asked: " Why (or Why not) ?" The 403 responses were categorized into 23 categories. The most frequently cited reason for opposing El Paso's attempt is that water is too limited and scarce. Second, many respondents thought that Texas should develop its own water resources. Third, many respondents subscribed to what might be called a public ownership view, that is, they thought that Texas has no right to water "owned by New Mexico." Significantly, very few blatant anti-Texas remarks were made by the public respondents. In fact, many respondents expressed concern for the future of El Paso. However, this concern rarely signifies support for El Paso's attempt to pump New Mexico groundwater.

Water As An Economic Resource: Our water expert sample was asked if they agreed or disagreed with the following statement:

In the words of the judge in a recent federal district court decision on (the El Paso) dispute, 'Outside of fulfilling human survival needs, water is an economic resource...It is to be treated the same as other natural resources.'

The responses are:

	Water Experts
Strongly agree	17.9%

Tend to agree	30.1%
Tend to disagree	21.5%
Strongly disagree	28.9%
Undecided/DK	1.6%

Demographic analysis of responses to this question indicates that agreement is highest among Central region residents (74.2 percent agree or strongly agree), independents (70.3 percent agree), and non-irrigators (65.4 percent).

Less than one-half of all demographic groups disagree with this statement. However, disagreement is strongest among South region residents (46.8 percent disagree or strongly disagree), irrigators (44.4 percent disagree), and academics (44.4 percent).

Consequences of Losing the El Paso Litigation: Our water experts were asked to predict the consequences "if El Paso finally wins this case," by indicating their level of agreement with three statements:

1. Agriculture in the Mesilla Valley will be negatively affected.
2. Economic and population growth in the Mesilla Valley will be negatively affected.
3. The State of New Mexico will be unable to effectively manage its water.

The responses are:

Statement 1 (Mesilla agriculture negatively affected)

Strongly agree	42.4%
Tend to agree	32.0%
Tend to disagree	10.0%
Strongly disagree	8.3%
Undecided/DK	7.3%

Statement 2 (Mesilla growth negatively affected)

Strongly Agree	36.2%
Tend to agree	36.0%
Tend to disagree	15.2%
Strongly disagree	5.9%
Undecided/DK	6.7%

Statement 3 (NM water management negatively affected)

Strongly agree	52.2%
Tend to agree	19.0%
Tend to disagree	17.6%
Strongly disagree	7.9%
Undecided/DK	3.4%

Demographic analyses of responses to these three questions indicates that agreement is strongest among residents of Southern New Mexico. To a lesser extent, agreement correlates positively with age; a larger proportion of older respondents tend to agree or strongly agree. None of the other demographic variables appear to be correlated with responses to these questions.

An Economic Boycott of El Paso ?: Both our water expert and public samples were asked: "In response to this case, some New Mexicans advocate an economic boycott of El Paso's goods and services. Generally speaking, do you favor or oppose this idea ?"

The responses are:

	Water Experts	Public
Favor	27.1%	25.3%
Oppose	68.3%	57.0%
Undecided/DK	4.6%	17.6%

Demographic analysis of the water expert responses indicates that support for an economic boycott is strongest among irrigators (37.3 percent favor), and South region residents (35.3 percent favor).

In contrast, opposition to a boycott is strongest among Central region residents (78.6 percent oppose), liberals (77.2 percent), and non-irrigators (74.6 percent).

A Negotiated Settlement ?: Our water expert and public samples were asked: "Others argue that rather than resolving this dispute in court, New Mexico should try to negotiate some sort of compromise or settlement outside of the courts. Generally speaking, would you favor or oppose this kind of solution ?"

The responses are:

	Water Experts	Public
Favor	44.7%	60.6%
Oppose	47.3%	29.0%
Undecided/DK	5.6%	10.4%

Demographic analysis of water expert responses to this question indicates that support for a negotiated settlement is strongest among liberals (57.0 percent favor) and Central region residents (53.7 percent favor).

In contrast, opposition to a negotiated settlement is strongest among conservatives (58.3 percent oppose), irrigators (58.0 percent), and Republicans (57.8 percent).

Comparison of Public and Water Expert Preferences: The water expert sample is far less supportive of negotiated settlement than the public sample. To a certain extent, this may be attributable to ideological differences; a larger proportion of the water experts are conservative and/or Republican. In addition, during interviews a number of water experts noted that since litigation had already begun in this case, negotiated settlement was inappropriate. Others noted that according to their understanding of New Mexico water law, negotiated settlement was not possible in this case because the state does not have the authority to represent private water rights holders. Be that as it may, the results do seem to indicate that the public is more supportive of negotiated settlement than our sample of water experts. In contrast, about the same

proportion of water experts and and the general public would favor an economic boycott.

Additional Comments on the El Paso Case: The water experts were provided the opportunity to write comments on the El Paso case. A large number of responses (N=195) were received. In addition, personal interview responses are included where appropriate. There are five identifiable groups of responses and except for the first group, the groups are relatively equal in size, if not in intensity.

First, about one-third of the responses strongly oppose El Paso's attempt to obtain New Mexico groundwater. Some respondents view the case as "another case of Texas imperialism." Many advocate the use of "every legal means" to prevent losing the case and some advocate more drastic strategies such as an economic boycott or the imposition of penalties, e.g. taxes, regulations, etc. A few even go so far as to suggest "disbarring any New Mexican who helps the Texans." Common to this group is the perception that Texas has no right to "our" water. This group tends to share the notion that a state's water resources are collectively owned by the State's citizens. Overall, the responses of this first group are relatively emotional.

Somewhat less emotional are the comments of the second group who are distinguished by their attempt to establish responsibility for this dispute. For example, a number of respondents contend this case primarily is the result of "El Paso's poor water management." Many respondents noted that El Paso has had a dismal record of water conservation. In a

similar vein, some contended that Texas water law is "in the Stone Age." A few respondents in this group blame the judge for "legalizing stealing." Finally, a few respondents contend that the New Mexico State Engineer is at least partially responsible for the dispute due to his "failure to regulate this basin."

The third group tends to see this case as a good example of the need for regional and/or state water management and planning. Some respondents, for example, contend that El Paso may not even need the water but since they don't have adequate "growth planning," they "think they need it." Others argue that New Mexico should engage in "active water planning," i.e. make plans for future facilities construction and allocation priorities. They believe that reserving present supplies for future use may strengthen New Mexico's ability to resist further attempts to export New Mexico's water.

In contrast, the fourth group generally supports El Paso's attempts as long as they are "willing to pay." For example, one respondent notes that New Mexico provides for a "free market in water," and argues "it is unfair to prohibit participation just because they are Texans." Others contend that water is an "economic commodity" which should not be halted just because of a state boundary line. Moreover, it is contended that municipal use of this water will provide more benefits to the region than agricultural uses. However, many of the respondents thought that El Paso only should be allowed to have the water if they were willing to pay the price and comply with New Mexico regulations.

The final group of respondents view this case in terms of its consequences. Generally, this group contends that this case will establish important legal precedents that are far more consequential than this particular decision. A subset of this group contends that this case is "a national problem that needs to be resolved (not by the courts but) by Congress." Another notes that "losing this case could result in radical changes in water availability in the state." Finally, many respondents view this case as an important test of a state's right to manage its "most precious resource."

Preferences on Private Water Rights

In New Mexico, water rights often are owned by private individuals or companies and they may be bought and sold within designated basins throughout the state. Our water experts and public sample respondents were asked a number of questions in order to determine their familiarity as well as their preferences related to the New Mexico water rights system.

Familiarity with the Private Water Rights System: After a brief introductory paragraph, our water experts were asked: "First of all, how familiar are you with New Mexico's private water rights system?"

The responses are:

Very familiar	39.1%
Somewhat familiar	53.8%

Not at all familiar 7.0%

Water Rights Preferences: Our samples were asked to indicate their level of agreement/ disagreement with a series of statements related to private water rights. (The public sample only was asked the first two statements.)

1. Market forces, including increased water prices, rather than governmental regulations, are the best way to encourage efficient water use.
2. Water is different from other commodities and natural resources and therefore ought not to be subject to the same competitive pressures of the marketplace.
3. Water rights should not be granted to private individuals or companies in perpetuity, that is, they only should be granted for fixed periods of time. (Currently, New Mexico water rights are granted in perpetuity.)
4. Speculation in private water rights should be prohibited. (Currently, speculation in New Mexico water rights is not prohibited.)

5. New Mexico's private water market system currently provides enough protection for instream use of water.

The responses are:

Statement 1 (Pro-market)

	Water Experts	Public
Strongly agree	23.6%	14.6%
Tend to agree	34.8%	40.4%
Tend to disagree	25.7%	21.3%
Strongly disagree	12.6%	10.1%
Undecided/DK	3.3%	13.5%

Demographic analysis of the water expert responses indicates that agreement with this statement, i.e. support for market forces, is strongest among conservatives (72.4 percent agree/strongly agree), Republicans (70.3 percent), respondents who earn more than \$40,000 (69.6 percent), respondents with some college or less (69.2 percent), South region respondents (66.2 percent), and irrigators (65.4 percent).

In contrast, the liberal demographic group was the only group where more than one-half (60.4 percent) of the respondents disagreed or strongly disagreed with this statement. Nearly one-half (48.6 percent) of the academics disagreed and 46.9 percent of the Democrats disagreed.

Statement 2 (Water is different)

	Water Experts	Public
Strongly Agree	23.7%	30.3%
Tend to agree	30.3%	37.3%

Tend to disagree	24.5%	17.7%
Strongly disagree	19.2%	6.5%
Undecided/Dk	2.3%	8.2%

Demographic analysis of responses to this statement indicates patterns similar to the responses to Statement 1. Responses vary according to partisanship, ideology, and income; a larger proportion of Democrats, liberals, and lower income groups agree with this statement in contrast to their counterparts. However, no significant differences were apparent among occupation, region, age, education, or water use groups.

Although demographic analysis of the public sample responses has not been completed, their responses appear to be quite similar to the water experts for this statement as well as for Statement 1. In these statements, however, the public responses exhibit a slightly larger proportion of "undecided/don't know" responses and a generally smaller proportion of "strongly agree" or "strongly disagree" responses.

Statement 3 (Water rights in perpetuity)

Strongly agree	15.1%
Tend to agree	26.2%
Tend to disagree	20.0%
Strongly disagree	33.7%
Undecided/DK	5.1%

Demographic analysis indicates that agreement with this statement is strongest among academics (61.1 percent agree), liberals (58.1 percent), respondents with incomes less than \$20,000 (58.0 percent), and Central region residents (53.2 percent). Disagreement with this statement is

strongest for Republicans (67.4 percent disagree), respondents over 65 (64.9 percent), respondents with some college or less education (64.9 percent), South region residents (64.6 percent), respondents employed in the private sector (61.7 percent), and conservatives (59.9 percent).

Statement 4 (Anti-speculation)

Strongly agree	32.7%
Tend to agree	29.9%
Tend To disagree	19.5%
Strongly disagree	13.8%
Undecided/DK	4.1%

Demographic analysis of responses indicates that agreement is strongest among liberals (77.8 percent agree), respondents with less than \$20,000 income (73.9 percent), independents (70.9 percent), Democrats (70.1 percent), government employees (70.1 percent), and North region residents (69.8 percent).

Less than one-half of every demographic group disagreed with this statement. However, disagreement was strongest among respondents who earn more than \$40,000 income (46.9 percent disagreed), irrigators (46.3 percent), and Republicans (44.8 percent).

Statement 5 (In-stream protection)

Strongly agree	8.9%
Tend to agree	32.0%
Tend to disagree	23.9%
Strongly disagree	15.8%
Undecided/DK	19.5%

Demographic analysis indicates that agreement with this statement is strongest among conservatives (65.3 percent agree), Republicans (63.4 percent), respondents over 65 (62.2 percent), and private sector respondents (57.1 percent).

In contrast, disagreement is strongest among liberals (72.2 percent disagree), academics (60.8 percent), respondents 18-34 years of age (56.7 percent), and Central region respondents (56.7 percent).

The relatively high proportion of undecided/ DK responses for this question recommends a cautious interpretation of these results.

Additional Comments on the Private Water Rights System: Our water experts were provided the opportunity to write in additional comments on New Mexico's private water rights system. A relatively large number of responses, (N=123), was received. In addition, interview data related to the pros and cons of private water rights systems are included in this section. The responses roughly fall into three equal groups.

The first group of responses is distinguished by relatively unqualified support for the existing system. A number of respondents contended that New Mexico's water rights system is "very good," "far superior to other states," "the best in the Nation," etc. Others noted that the system "allows for transfer of water to the highest use." In a similar vein, some respondents acknowledged that while speculation may not be in the public interest, "this is unavoidable in a free market system." A common theme evident in these responses and many interviews is epitomized by the old saw: "Don't fix it till it's broke." Moreover, there is con-

siderable consensus among this group of respondents that the present system is preferable to "government intervention" which tends to be "too bureaucratic."

The second group of respondents also support existing policies and practices but this group is distinguished by their desire for improved enforcement and/or clarification of existing rules and procedures. These respondents acknowledge that governmental regulation of market processes is inevitable but it should be as effective as possible. For example, one respondent argues:

New Mexico should strongly enforce the use it or lose it concept and should attempt to adjudicate each basin and strictly enforce the adjudicated rights.

Other respondents think that while market forces should be used to establish the value of a water right, there needs to be a clearer definition of what constitutes a beneficial use. Another respondent argued that "current records are in a shambles and cannot be accounted for by the State Engineer." Clearly the most poetic example of the need for better enforcement is the comment, "a long-handed shovel upstream is better than a water right downstream."

The third group of respondents are much more critical of present policies and practices. For example, one respondent notes that "the current system is antiquated" while another advocates a "total overhaul." In addition to a number of general complaints, specific deficiencies were cited in a number of areas.

The most frequently cited complaint is that the present system results in considerable inequities. A common theme is that "big money," "big business," "industry," etc. unfairly competes with "poor farmers," "poor communities," etc. For example, one respondent argues "a rich industry should not be able to deprive a poor community." Another argues: "Market forces need to be more sensitive, government control is necessary to protect (water) users from big money." Others note that in certain regions, water rights may cost as much or more than land. These "added" costs make it very difficult to farm. The perception of inequity leads a number of respondents to advocate policies which will provide for increased protection of certain uses, e.g. agriculture. For example, some argue that water rights should be made appurtenant to the land.

This view is directly contradicted by a number of the pro-market respondents. For example, one respondent argues:

The cost of water is a cost of doing business. If farmers can't afford water, it is no different from not being able to afford a tractor. The taxpayer should not subsidize the farmer any more than any other small businessman.

Clearly, a number of the respondents would strongly disagree with this view.

The second most frequent critique comes from respondents who think that the current system does not provide adequate protection for instream use. For example, one respondent suggests "beneficial use needs to be broadened to include environmental uses." Another argues "instream rights should be provided for as in Colorado." A related but slightly different comment is "instream uses won't be adequately protected until

the market or government enforces priority calls effectively." A number of respondents note that instream values cannot be adequately protected without jeopardizing the water rights of downstream users. One respondent counters that this is not a serious problem: "beneficial use only includes human uses which is as it should be." Others, though, argue that something should be done to provide for instream protection while at the same time protect the interests of other users. Unfortunately, there appears to be little consensus on how to accomplish such an objective.

A number of other problems are cited less frequently. A few respondents argue that the current system is "quantity-oriented." Water quality is not adequately protected. Others argue that the current system results in too much waste. Neither water conservation nor agricultural efficiency are encouraged. Finally, a few respondents noted that the system results in too much reliance on litigation. For example, according to one water rights holder:

You are almost constantly involved in litigation to protect that (water) right. It seems municipalities or private corporations are always trying to infringe on rights owned by others. At least, I find this is the rule rather than the exception.

While dissatisfaction with litigation is evident in this response and a number of other responses, there is also a fairly common belief that "every man should have his day in court." In consequence, many respondents conclude that reliance on the courts is a necessary evil when a regulated private water market is used for water management.

Attitudes on Water Management

Our water expert and public samples were asked to agree or disagree with a number of statements related to water management, recreation use, the rights of rural water users and other citizens, and the protection of traditional water practices. (All of the statements except #6 were asked to both samples.) The statements are:

1. The most effective way to manage water is on the local or regional level as opposed to uniform state control.
2. Enough of New Mexico's streams, rivers, and lakes have been set aside for wildlife protection and recreation use.
3. The Office of the State Engineer adequately protects the rights of rural water users throughout the state.
4. It is better to leave water resource planning to those with special training as opposed to involving the public in developing water resource plans.
5. Each New Mexico citizen should have the right to use his/her own water in any way he/she wishes.

6. Traditional water systems such as the acequias should be preserved since they are part of the culture and history of the state.

The responses are:

Statement 1 (Local vs. State Control)

	Water Experts	Public
Strongly agree	18.0%	28.3%
Tend to agree	26.3%	40.1%
Tend to disagree	28.1%	15.3%
Strongly disagree	25.3%	5.7%
Undecided/DK	2.2%	10.6%

Demographic analysis of the water expert responses indicates that agreement with this statement is highest among respondents with some college or less education (61.4 percent agree or strongly agree), North region residents (58.9 percent agree), the less than \$20,000 income group (58.0 percent), and irrigators (57.6 percent).

In contrast, disagreement with this statement is strongest among Central region respondents (65.0 percent), respondents with graduate degrees (64.1 percent), the more than \$40,000 income group (62.8 percent), and non-irrigators (57.9 percent).

Statement 2 (Enough wildlife protection)

	Water Experts	Public
Strongly agree	20.1%	23.7%
Tend to agree	39.0%	35.9%

Tend to disagree	21.5%	16.2%
Strongly disagree	12.0%	8.9%
Undecided/DK	7.5%	15.3%

Demographic analysis of the water expert responses indicates that agreement with this statement is strongest among conservatives (78.5 percent agree or strongly agree), Republicans (78.4 percent), respondents over 50 (75.5 percent), and those respondents with some college or less education (74.8 percent).

In only one demographic subgroup, the liberals, did a majority disagree with with statement (61.8 percent disagreed/strongly disagreed). Disagreement is prevalent among Democrats (45.2 percent disagreed), and Central region residents (42.1 percent).

Statement 3 (State Engineer protects)

	Water Experts	Public
Strongly agree	20.1%	11.2%
Tend to agree	46.5%	27.7%
Tend to disagree	15.4%	12.5%
Strongly disagree	7.1%	10.2%
Undecided/DK	11.0%	38.5%

Demographic analysis of the water expert responses indicates that agreement is strongest among respondents over 50 (83.0 percent agree), respondents with incomes more than \$40,000, conservatives (80.8 percent), and South region residents (80.8 percent). Interestingly, an almost identical proportion of Democrats and Republicans, (77.0 percent and 78.9 percent respectively), agree or strongly agree with this statement.

Moreover, a majority of all demographic groups agree that the Office of the State Engineer adequately protects the rights of rural water users, disagreement is strongest among respondents with incomes less than \$20,000 (40.0 percent disagree), North region residents (32.6 percent), and 18- 34 year olds (31.9 percent).

Statement 4 (Planning by experts)

	Water Experts	Public
Strongly agree	17.6%	21.6%
Tend to agree	25.2%	37.9%
Tend to disagree	34.3%	36.3%
Strongly disagree	20.5%	12.6%
Undecided/DK	2.4%	6.5%

Demographic analysis of the water expert responses indicates that agreement is strongest among respondents with some college or less less education (58.3 percent agree or strongly agree), respondents over 50 (54.0 percent), conservatives (52.7 percent), and South region residents (51.2 percent).

In contrast, disagreement is strongest among liberals (74.7 percent), academics (68.5 percent), 18-34 year olds (63.9 percent), and independents (62.5 percent).

Statement 5 (Individual rights)

	Water Experts	Public
Strongly agree	11.9%	25.1%
Tend to agree	20.6%	30.6%
Tend to disagree	37.8%	29.0%

Strongly disagree	28.1%	9.5%
Undecided/DK	1.6%	5.8%

Demographic analysis of water expert responses to this question indicate that a majority of all demographic groups either disagrees or strongly disagrees. Agreement is strongest among respondents with some college or less education (42.9 percent agree), irrigators (42.1 percent), and North region residents (41.0 percent).

In contrast, disagreement is strongest among liberals (84.4 percent disagree), academics (83.8 percent), Central region residents (72.2 percent), and South region residents (71.2 percent).

Statement 6 (Preserve acequias)

Strongly agree	16.8%
Tend to agree	37.0%
Tend to disagree	28.3%
Strongly disagree	10.9%

Demographic analysis of the water expert responses indicates that agreement is strongest among North region residents (71.5 percent), liberals (71.0 percent), and respondents with incomes less than \$20,000 (71.0 percent).

A majority of respondents in only one group, the Republicans, disagreed with this statement, (51.2 percent disagreed). Disagreement also is prevalent among respondents with incomes more than \$40,000 (47.5 percent), and conservatives (46.9 percent).

Comparison of Public and Water Expert Attitudes: The responses to the first five statements listed above reveal a number of similarities as well as differences between the responses of our two samples. Considerable convergence of opinion is evident in Statement 2 where a majority of each sample agree that there are enough rivers and lakes set aside for wildlife protection and recreation use. Convergence also is suggested in Statement 3 even though very large proportion, (38.5 percent), of the public answered "Undecided/DK." A relatively equal proportion of each sample agree that the Office of State Engineer adequately protects rural water users.

In the remaining three statements, considerable divergence of opinion is evident. Over two-thirds (68.4 percent) of the public sample favor local or regional water management, versus only 44.3 percent of the water experts. Over one-half, (55.7 percent), of the public sample agree that each individual has the right to determine how water is privately used, versus only 32.5 percent of the water expert sample. Third, the responses indicate that public involvement in water planning is favored by over one-half, (54.8 percent), of the water experts, versus only 38.9 percent of the public sample.

Specific Water Policy Preferences

Our water experts were given a list of water policy proposals "that may or may not be adopted in New Mexico." Respondents were first asked to indicate how strongly they would favor or oppose each policy. The policy proposals are:

1. Increase state spending on water resources projects if federal funds are not available.
2. Restrict and in some cases prohibit residential subdivisions in areas where agriculture is traditionally practiced.
3. Increase state financial assistance to acequias and other local water agencies for ditch lining and other system improvements.
4. Reorganize state water agencies and departments to consolidate water management into a single cabinet-level state agency.
5. Improve educational programs on water rights, adjudication procedures, water conservation techniques, etc.
6. Increase state spending on water pollution control.
7. Establish water allocation priorities through review of existing statutes, policies, and programs.

Table 3 summarizes the water expert preferences by ranking the proposals from most strongly to least strongly favored. A clear majority favor each of the proposals but the variation in the mean scores indicate that certain policy preferences, e.g. improving educational programs, are strongly favored. Conversely, although a majority of the respondents

favor restricting subdivisions in agricultural areas, the relatively low mean score of 3.55 suggests that this proposal is weakly favored.

The standard deviation estimates also are useful since they measure levels of consensus. For example, increasing state spending on water pollution control is favored by 85.2 percent of the respondents. However, the relatively high standard deviation estimate of 1.26 may indicate that attempting to implement such a policy will result in more opposition than the "increasing state spending in light of federal cuts" proposal. Along the same lines, improving educational programs on water will probably result in little or no opposition as indicated by the very low standard deviation estimate of .67. In contrast, reorganizing state water agencies to consolidate water management may encounter strong opposition as indicated by the very high standard deviation estimate of 2.02.

TABLE 3
Water Policy Preferences

Policy Preferences	\bar{X}	s.d.
Improve educational programs on water (98.2% favor)	4.55	.67
Increase state spending on water pollution control (85.2% favor)	4.18	1.26
Increase state spending on water resource problems in light of federal cuts (87.2% favor)	4.13	1.12
Increase state spending to assist acequias (79.5% favor)	3.98	1.36
Establish water use priorities through public review (73.2% favor)	3.80	1.54
Reorganize and consolidate state water agencies (60.0% favor)	3.72	2.02
Restrict subdivisions in agricultural areas (64.6% favor)	3.55	1.46

Demographic Analysis of Policy Preferences: Demographic analysis of policy preferences indicates no significant variations among demographic groups for three of the seven policy proposals, (Proposals 1, 4, and 5 from the list above). The overwhelming majority of each group favors these proposals. There are some significant differences in the responses to the other proposals.

In response to Proposal 2, increasing spending on water pollution control, the strongest support comes from respondents who earn less than \$20,000 (79.5 percent favor/strongly favor), and liberals (74.2 percent favor). Opposition to this proposal is strongest among respondents who earn more than \$40,000 (45.0 percent oppose) and conservatives (41.8 percent).

In response to Proposal 3, increasing financial assistance to acequias, the strongest support comes from respondents who earn less than \$20,000 (95.7 percent favor), liberals (90.5 percent), and North region residents (88.9 percent). Opposition is strongest among respondents who earn more than \$40,000 (29.5 percent oppose), conservatives (29.4 percent), and South region residents (25.6 percent).

In response to Proposal 4, reorganizing state water agencies, support is strongest among liberals (70.6 percent favor) and non-irrigators (62.2 percent). Opposition is strongest among conservatives (48.6 percent oppose) and conservatives (47.1 percent).

In response to Proposal 7, establishing allocation priorities through public review, the strongest support comes from respondents who earn less than \$20,000 (85.7 percent favor), liberals (82.6 percent), and

academics (79.2 percent). Opposition is strongest among irrigators (39.7 percent oppose), private sector respondents (36.9 percent), and respondents who earn more than \$40,000 (36.9 percent).

Overall, the demographic analyses indicate that responses to these proposals are strongly influenced by a respondent's income level and political ideology. Water use status and region of residence are also influential but to a lesser extent.

Additional Comments on Policy Proposals: Our water experts were provided an opportunity to write in additional comments on any of the policy proposals. A relatively large number (N=115) of responses were received. Proposal 4, reorganizing state water agencies, generated the largest number of comments, with Proposals 6 (pollution control) a close second. In addition, a number of comments were received which are relevant to both Proposal 5 (education) and 7 (establishing allocation priorities through public review).

The proposal to reorganize state water agencies and departments in order to consolidate water management into a single cabinet-level agency generated a number of strong comments. Opposition to this proposal was evident in a majority of cases. Many respondents argue that changing the status of the state engineer to a cabinet-level position would jeopardize the professionalism and efficacy of state water management. For example, one respondent concludes:

As all cabinet-level agencies are political-and water allocation studies could be the same-I seriously doubt individual water rights could be protected.

In contrast, a number of respondents argue for consolidation as a means to "more directly control the state engineer" who is viewed as too powerful, too arbitrary, or worse.

As might be expected, a number of respondents expressed concern about how things will be after Steve Reynolds, the current state engineer, retires or is replaced. While a number of respondents argue for finding someone "just as strong," others suggest the creation of a multi-person panel or similar reforms are both necessary and advisable. A number of comments and a considerable proportion of time during the personal interviews directly concerns Steve Reynolds. With very few exceptions, Mr. Reynolds is viewed positively by our water expert sample. His proponents often use the words, "trust," "love," and "admiration," when describing him. Even his strong critics generally acknowledge his professionalism. As one respondent quips, "He must be objective, look at how many enemies he has made." However, some respondents criticize the State Engineer for his failure to "change with the times." Some cite his resistance to water planning while others cite his opposition to consolidating state water agencies.

A number of respondents contend that there is no need to consolidate state water management functions since functions such as pollution control and water rights are handled best by assignment to separate state agencies. Moreover, sufficient coordination occurs since the State Engineer is involved with both the Interstate Stream Commission and the Water Quality Commission. Other respondents, though, argue that there is "too much fragmentation and overlap." Some respondents, for example,

contend that "water quality and quantity concerns should be handled by the same agency."

In addition, a number of respondents think that certain water management areas such as long-range planning and conservation are neglected because they "fall through the cracks" created by a multiplicity of water agencies or because existing leadership "doesn't think these things are important." Probably the most ironic comment was received from one local official who noted that fragmentation is fiscally advantageous. "If I can't get funding from one agency," he confided, "I can always go to another one." Finally, there are some respondents who prefer strengthening existing agencies, e.g. the Natural Resources Department, rather than reorganizing or forming a new agency.

The majority of comments related to pollution control stressed the need for better regulations, enforcement and increased spending. A number of respondents argue that water quality has not been given enough attention. Moreover, these respondents predict that pollution of our water resources will be the top water management problem in the near future. In contrast, a few respondents argue that while pollution is a problem, there is too much emphasis on regulation coupled with too little emphasis on enforcement. Another argues: "Pollution control costs should be borne by polluters via taxes or fees rather than by the public."

The water experts roughly fall into two relatively equal camps with reference to the role of the public in water management. For example, one respondent notes:

Public involvement is a must. There's been too much selling off to big industry which-when they are through-will leave us with nothing but depleted resources.

Another respondent argues that the "lay public ...tell the state officials all the things they couldn't find out on their own." In direct contrast, a number of respondents oppose public involvement or question the value of a public review process. One respondent, for example, argues that the general public doesn't care about water management while another concludes that the public is "too ignorant." In addition to apathy and ignorance, one respondent contends: "Public review usually means input only from special interests."

A middle ground is evident in other comments. Some respondents acknowledge that public review is essential but advocate better education as a prerequisite to informed public debate. It is also suggested that a "definite proposal developed by experts" would be the best way to generate public input.

The overwhelming majority of comments on the education proposal strongly advocate improvement of existing public education efforts. Some respondents argue that since the current water management system works well, no major reform is needed. Instead, the general public should be "told the real story," i.e. the advantages of the system should be explained. Others specify areas that need to be emphasized. For example, a few respondents suggest simplification and better explanation of existing laws and policies. Others advocate better dissemination of information on water conservation and water-saving devices.

Water Policy Innovations Our water experts were also asked to specify any other policy proposals that they think should be considered. A large number of provocative proposals were received. The majority of proposals concern the improvement of state water management. For example, one respondent proposed "computerizing the State Engineer's records and increasing funding (to this office) in order to retain quality personnel." A few respondents advocate the development of a "detailed systems model of water supply and demand." Another suggests that the state should begin planning for importation of water since "it will be necessary eventually." "Metering all water use," revising the state's well permit procedures, enforcing stricter conservation, and creating a "statewide water bank" were also suggested.

A number of proposals related to agriculture were also received. While many respondents advocate stronger protection of agriculture, one respondent argues: "Tradition is not a good measure of water management. Each agricultural area should be reviewed according to (its) current value." However, another respondent advocates "stronger regulation of developers in water deficient areas" and this sentiment is also evident in a number of comments about the need to restrict subdivisions, especially in agricultural areas.

Even though many respondents agree that something should be done to restrict subdivisions and/or protect agriculture, there is less agreement about the best course to follow. For example, some respondents think that regulations would not only be ineffective but might also result in unin-

tended outcomes. One respondent notes: "Agricultural preservation statutes usually distort the value of real estate in regulated areas."

Overall, there appears to be considerable disagreement over the need for reform in current policies and programs. Some respondents strongly oppose any change, e.g. "the system works, please don't mess it up." Others acknowledge there are certain problems or unfortunate situations but some of these individuals strongly question whether governmental institutions, either administrative agencies or the legislature, can make things better. In fact, many respondents argue that even well-intentioned policies may make things worse. For example, one respondent noted that the state's attempt to subsidize solar energy development via tax deductions for solar water pumps may make pumping economical in areas where market forces, i.e. the high price of pumping, had helped slow down the depletion of an aquifer.

A vocal minority of the water experts strongly oppose continuation as well as minor modifications in current watermanagement policies.⁶ Some of these individuals acknowledge that the system has worked well in the past but they argue that certain changes, e.g. full allocation, recommend a significantly different policy stance. For example, some argue the state's water management is "too reactive." The state reacts fairly well to problems and challenges but the ability to predict and plan for future possibilities is extremely limited. Others are highly critical of the current policies citing deficiencies in enforcement, planning, and eq-

⁶ We have not tried to quantify the proportion with this minority view.

uity. However, dissatisfaction appears to be quite limited; Most of the water experts are highly supportive of established policies.

Groundwater Depletion in the Ogallala Basin

The High Plains Study Council has identified five basic management strategies for dealing with groundwater depletion and related problems in the Ogallala Basin, part of which includes Eastern New Mexico. Our water experts were asked about their familiarity with this situation and then asked their preferences related to the strategies. In addition, our team made a number of site visits and conducted interviews in parts of Eastern New Mexico.

Familiarity with Eastern New Mexico Groundwater Problems: We first asked our water experts how familiar they are with groundwater problems in Eastern New Mexico.

The responses are:

Very familiar	30.4%
Somewhat familiar	51.2%
Not at all familiar	18.4%

As might be expected, familiarity is highest among respondents who live in Eastern New Mexico, water rights holders, and those who use water for irrigation on a farm or ranch. However, demographic analysis indicates that familiarity is relatively high among all of our demographic groups.

Ogallala Management Preferences: Table 4 ranks the preferences of our water experts for the five basic management strategies. Voluntary conservation through application of proven technology is most strongly favored whereas augmenting existing supplies through importation of water from nearby regions or no change in existing policies and practices are each generally opposed. Within the sample, though, augmentation or no change is most highly favored by irrigator and conservative respondents. In contrast, liberal, highly educated, and Central area respondents oppose augmentation (especially importation) and a higher proportion favor increased regulation.

In personal interviews conducted in Eastern New Mexico, many respondents argued that no change in existing policies was needed since the price of pumping groundwater indirectly had decreased the rate of depletion. These respondents did seem to be generally supportive of any voluntary efforts to increase efficiency through the application of proven technology.

TABLE 4
Ogallala Management Preferences

Preferences	\bar{X}	s.d.
Encourage voluntary conservation (88.1% favor)	4.20	1.01
Require conservation (82.4% favor)	3.95	1.40
Augment supplies through recharge, desalination (68.5% favor)	3.54	1.25
Augment supplies through importation (48% favor)	3.02	1.41
No change (27.1% favor)	2.32	1.20

Demographic Analysis of Ogallala Preferences: In this section, a more detailed summary of the demographic variations is presented. One of the strategies, encouraging voluntary conservation, is strongly supported by all of our demographic groups. Variations in support levels are evident for the remaining strategies.

Even though the "no change in existing policies" was opposed by a majority of all demographic groups, opposition is highest among liberals (87.1% oppose or strongly oppose), academics (81.6 percent oppose), 18-34 year olds (81.6 percent), Central region residents (77.3 percent), and non-irrigators (76.8 percent). In contrast, support for no change is strongest among respondents with some college or less education (41.0 percent favor or strongly favor), respondents over 50 (37.5 percent), and irrigators (35.9 percent).

Roughly 80 percent of the water experts favor requiring conservation through regulations with two exceptions. More than 90 percent, (91.4 percent), of the respondents who earn less than \$20,000 and 90.4 percent of the liberals favor this strategy. In contrast, opposition to this strategy exceeds 20 percent in only two cases. One-fourth (25.0 percent) of the respondents who earn more than \$40,000 and 22.6 percent of the conservatives oppose or strongly oppose requiring conservation.

Support for augmenting existing supplies through artificial recharge, weather modification, etc. is strongest among respondents with some college or less education (84.1 percent favor or strongly favor), respondents over 50 (77.5 percent), and non-Central region (North or South) residents (73.3 percent). In contrast, opposition to this strategy

is strongest among Central region residents (40.0 percent oppose), respondents 35-49 (37.5 percent), and respondents with a graduate degree (37.2 percent). Some of the interview respondents explained that they opposed this particular strategy because these techniques were not particularly cost-effective at this time.

Support for augmentation of existing supplies through importation of water from nearby regions was strongest among respondents with some college or less education (71.7 percent favor or strongly favor), respondents over 50 (60.2 percent), irrigators (57.6 percent), and conservatives (57.3 percent). In contrast, opposition exceeds 50 percent in a number of groups: academics (78.6 percent oppose), liberals (64.9 percent), Central region residents (62.3 percent), respondents under 34 (57.7 percent), and non-irrigators (54.6 percent).

Additional Comments on the Ogallala: Our water experts were provided an opportunity to write in additional comments related to these strategies. A relatively large number of comments (N=89) were received and these comments along with interview comments can be summarized as follows.

Strong opposition to changing existing policies or introducing new policies comes from respondents who see groundwater problems as "unsolvable" and solutions as "too late." Closely related is the perception that "economics will solve the problem." In the Clovis area, for example, respondents noted that many farms and ranches had voluntarily returned to dryland farming not because of regulations but because of the costs of pumping. Other respondents oppose regulations unless similar regu-

lations are imposed upon water users in other Ogallala states, especially Texas. The perception that groundwater depletion is a multi-state problem leads a number of respondents to favor negotiation with neighboring states and/or the creation of a regional regulatory body. However, others specifically oppose any form of regulation either because regulations are hard to implement or result in inequities. A few suggest that incentives, e.g. a "no-till tax deduction," would be relatively more effective.

Support for the management strategies comes from respondents who argue that change must occur. Most of these respondents favor the implementation of a combination of the strategies. For example, one respondent explains:

(Encouraging and requiring conservation) is the immediate way of dealing with the problem. Detailed comparisons are necessary to choose between (the two augmentation strategies) but importation of water is the most likely and cost-effective approach...and it is also most consistent with my personal view.

Support for importation is also evident in a number of comments although most respondents think it will be some time before importation will occur.

Other respondents, though, strongly oppose importing water from nearby regions. For example, many respondents see this strategy as "too costly," "politically impossible," or "robbing Peter to pay Paul." Another perceives a contradiction between this strategy and New Mexico's stance in the El Paso litigation:

I don't see how we can support importation of water from other areas as a solution to our problems yet oppose exportation of New Mexico water.

At the risk of understatement, it is safe to conclude that there is considerable diversity of opinion related to these management strategies.

Indian Water Rights

Throughout New Mexico, many Native American Indian tribes are involved in litigation to determine their water rights. Most observers conclude that these disputes are extremely important and will become even more important in the coming years. Our water experts were asked a number of questions to gauge their familiarity and preferences related to Indian water rights.

Familiarity with Indian Water Rights: After a brief introduction, our water experts were asked to indicate their familiarity with the topic of Indian water rights.

The responses are:

Very familiar	18.1%
Somewhat familiar	56.5%
Not at all familiar	25.4%

As might be expected, familiarity with Indian water rights is highest in those regions where current disputes are occurring, e.g. the Northwest and Northcentral regions. Familiarity is also quite high in the Central region. A larger proportion of the respondents in the South regions are not familiar with this topic. No other significant variations in familiarity are evident among our demographic groups.

Indian Water Rights Attitudes: Our water expert and public samples were asked to indicate their level of agreement/disagreement with four statements related to Indian water rights. The public sample only was asked to respond to the first two statements. The statements are:

1. Most of the Indian claims for water are unrealistic.
2. The New Mexico State government should have complete jurisdiction over all water in the state, including Indian waters.
3. The federal government should encourage negotiated settlement of Indian water rights conflicts rather than relying completely on the courts.
4. More reclamation projects should be constructed on Indian lands within the state.

The responses are:

Statement 1 (Claims unrealistic)

	Water Experts	Public
Strongly agree	19.1%	13.1%
Tend to agree	36.5%	15.6%
Tend to disagree	18.1%	15.9%
Strongly disagree	5.1%	9.5%
Undecided/DK	21.1%	46.1%

Demographic analysis of the water expert responses indicates that agreement with this statement is highest among Republicans (82.6 percent agree), respondents over 50 (82.5 percent), respondents with some college or less (81.9 percent), and private sector respondents (79.6 percent). In contrast, disagreement is strongest among academics (46.8 percent), Democrats (45.0 percent), and respondents 18-34 (41.9 percent).

Statement 2 (Pro-state jurisdiction)

	Water Experts	Public
Strongly agree	33.1%	22.0%
Tend to agree	25.8%	27.8%
Tend to disagree	21.7%	23.8%
Strongly disagree	12.4%	17.3%
Undecided/DK	6.7%	9.2%

Demographic analysis of the water expert responses indicates that agreement with this statement is strongest among Republicans (73.3 percent agree), conservatives (71.3 percent), South region residents (69.7 percent), respondents over 50 (69.5 percent), and government respondents (67.9 percent). In contrast, disagreement is strongest among liberals (55.7 percent disagree), academics (54.5 percent), Central region residents (44.5 percent), and respondents 18-34 (43.1 percent).

Statement 3 (Pro-negotiation)

	Water Experts
Strongly agree	20.0%
Tend to agree	47.0%
Tend to disagree	14.1%

Strongly disagree	8.6%
Undecided/DK	10.2%

Demographic analysis indicates no significant variations among our demographic groups.

Statement 4 (Pro-reclamation)

	Water Experts
Strongly agree	8.1%
Tend to agree	27.8%
Tend to disagree	22.4%
Strongly disagree	17.3%
Undecided/DK	24.4%

Demographic analysis indicates that agreement with this statement is strongest among respondents who earn less than \$20,000 (66.7 percent agree), academics (57.1 percent), liberals (53.0 percent), and Democrats (53.0 percent). In contrast, disagreement is strongest among respondents who earn more than \$40,000 (64.0 percent disagree), Republicans (61.8 percent), private sector respondents (61.3 percent), and conservatives (59.7 percent).

Water Expert Versus Public Preferences: The most significant difference between the water expert and public sample responses to Statements 1 and 2 above appears to be level of awareness. In Statement 1, for example, nearly one-half of the public sample (46.1 percent) were undecided or indicated "don't know," versus only 21.1 percent of the water experts. Considerable convergence of opinion is evident in the remaining response

categories. A majority of each sample think that Indian water claims are unrealistic. Moreover, most think that the New Mexico state government should have complete jurisdiction over all water in the state, including Indian water.

Additional Comments on Indian Water Rights: Our water experts were provided the opportunity to write in any additional comments related to Indian water rights. A moderate number of responses (N=92) were received and these comments along with interview responses can be summarized as follows.

The question of Indian water rights tends to be seen as an important part of the more general problems related to Indian versus state's rights. The comments fall in three basic groups which range from strong support to strong opposition. The first and smallest group generally supports Indian claims for water. One respondent, for example, notes: "The historical Indian reservations need to be recognized." Another contends: "The state fails to respect Indian needs." One respondent concludes: "Indian development (which depends on acquisition of water) is essential to the future well-being of the of the entire state." A more temperate remark is: "The Indians have first priority to water but their claims must be reasonable." Finally, a related if not sarcastic comment is made by one respondent who suggests: "Since the pueblos and Spanish land grants are entitled to most of the water in the state, it is no wonder the priority system is not enforced."

The second and largest group of responses strike a middle ground; Indian claims are neither supported nor opposed. Instead, the importance of resolving Indian water claims as quickly and fairly as possible is stressed. Most of the comments suggest that jurisdictional problems are at the heart of Indian water disputes. For example, one respondent says: "Indian tribes and pueblos should either be made independent states or be made part of the state before any (lasting) solution will occur." Closely related are the following comments: "Indian claims need to be quantified," "quick resolution on a case-by-case basis is advisable," and "more negotiation is needed. Include Indians in state water planning processes." Finally, a few respondents recommend increasing public education programs both to correct misperceptions and to explain the potential consequences of Indian water disputes.

The second largest group of responses are highly critical of Indian claims for water. One respondent, for example, thinks that: "(Indian) water allocations should be based on proof of prior, beneficial use." Many respondents expressed displeasure with court decisions that "give Indians special rights." One respondent, for example, contends: "Indians should have the same rights as all citizens, no more-no less." Another argues: "Sanctioning tribal rights will destroy New Mexico's water rights adjudication system." Others are upset that Indians are provided financial assistance for litigation which gives them an unfair advantage over non-Indian rural water users. Finally, a number of respondents advocate more state regulation of water quality on Indian lands.

Overall, sincere concern is evident in all responses. Indian water rights disputes are seen as crucial by nearly all respondents. At the same time, there appears to be a widely shared perception that non-judicial policy solutions will be extremely difficult to implement.

Urban Water Conservation

Our water experts were told: "Several ways to get residences and businesses to use less water in cities and towns have been suggested." They were then asked to indicate the relative successfulness of the following strategies:

1. Increasing the price of water to discourage non-essential use.
2. Government regulations limiting the amount of water that can be used.
3. Public information and education to encourage people to use less water.
4. Local government regulations requiring Southwestern landscaping-which uses less water.
5. Government tax incentives for installing water saving devices, (e.g. home drip irrigation systems, restricted flow shower nozzles, etc.).

Table 5 summarizes our water expert's responses by ranking the policy options from most successful to least successful. Increasing the price of water and tax incentives were closely ranked as the most successful options. Government regulations are considered relatively less effective. None of the policy options was rated "very successful" by a majority of the water experts. The relatively low standard deviation scores for all options may suggest considerable consensus among the water experts

for each of the policy options. Alternatively, the low scores that our water experts are uniformly skeptical or even unconcerned about urban water conservation. Personal interviews confirm this latter possibility since most respondents thought that urban water conservation was not as important as conservation in other areas, e.g., agriculture, where water use is significantly higher.

TABLE 5

Water Conservation Policy Options

Policy Options	\bar{X} *	s.d.
Increase price of water (40.1% very successful)	1.75	.70
Tax incentives to conservers (40% very successful)	1.75	.69
Public education to encourage conservation (30.6% very successful)	1.80	.61
Regulations to require S.W. landscaping (20.3% very successful)	2.10	.70
Govt. regulations to limit use (10.2% very successful)	2.40	.67

*The lower the \bar{X} , the more successful the policy option.

Demographic Analysis of Water Conservation Preferences: Demographic analysis of the responses indicates no significant demographic variations for policy option 2, tax incentives to conservers. There appears to be considerable agreement among all groups about the relative success of this option. There are some significant variations for the remaining options.

Increasing the price of water was rated very successful by almost one-half (47.4 percent) of respondents who earn more than \$40,000, versus only 34.7 percent of respondents who earn less than \$20,000. In contrast one-half (50.0 percent) of the respondents who earn less than \$20,000 think that public education would be very successful, versus only 25.0 percent of respondents who earn more than \$40,000. Similarly, while 38.9 percent of the Democrats think public education would be very successful, only 20.9 percent of the Republicans share this view.

Requiring Southwestern landscaping receives strongest support from liberals (32.3 percent very successful), and North region residents (28.5 percent very successful). In contrast, 38.0 percent of the conservatives and 36.3 percent of the South region residents think that this option would be "not too successful."

Finally, government tax incentives receive strongest support from respondents who earn less than \$20,000 (52.0 percent very successful), 18-34 year olds (47.4 percent very successful), and Democrats (42.6 percent very successful). In contrast, this strategy is termed "not too successful" by Republicans (22.3 percent), respondents over 50 (20.0 percent), and respondents who earn more than \$40,000 (18.5 percent).

Additional Comments/Suggestions on Urban Water Conservation Our water experts were provided the opportunity to write-in to the question "What if any, other ways do you think should be considered to get residences or businesses to use less water?" A moderate number of comments and suggestions (N=93) were received and can be summarized as follows.

In the majority of comments, reform of existing governmental policies and programs is advocated. Some think that the assessment of penalties for waste would encourage conservation while others favor regulations which provide for use of non-treated water. Adoption of tax incentives for conservers and better toilet design is also recommended.

In the second largest group of comments, the need for better education is reiterated. Specifically suggested is the introduction of educational programs in primary and secondary schools. Others advocate increasing conservation education for the general public.

In the smallest group, a number of respondents recommend letting economic factors encourage conservation by either "doing nothing," not subsidizing wasteful practices, or rescheduling rates so that large consumers pay proportionately more. Many respondents, however, observe that raising rates may result in inequities especially to those least able to pay. Enforcement is also seen as a problem and a number of respondents strongly advocate metering every service as a prerequisite to successful enforcement.

Finally, a number of respondents point out that domestic and industrial water use only accounts for a small proportion of total water use in the state. More effective water conservation therefore could be re-

alized by concentrating on agricultural users who account for the majority of water use. Moreover, some respondents point out that municipalities generally don't want to be too successful conserving water because decreased use may result in increases in the unit price of delivering water. In consequence, using less may actually cost the consumer more.

CHAPTER 4: SUMMARY

Evaluation of Survey Procedures

As stated, the goal of our research procedures was to "ensure representation of all groups affected by water management."⁷ To a large extent, this goal was accomplished. Almost 1,100 New Mexicans involved in water management were sent an extensive questionnaire and nearly one-half responded. In addition, our modified random sampling technique resulted in the selection of a public subsample that includes a significant number of irrigators, rural residents, and water rights holders. Responses were received from all regions of the state and from a wide variety of ethnic and occupational groups.

A number of procedures were used to increase the response rate which may be of interest to other researchers. First, since a number of potential respondents were quite suspicious of the survey, i.e., how the results would be used, we did our best to assure confidentiality and to explain the purposes of our research. Second, follow-up letters and phone calls did appear to increase response rate significantly.

Unfortunately, certain groups involved with water management appear to be under-represented. The response rate for two groups, state legislators and minorities-- especially Native American Indians--is relatively

⁷ See supra, p. 14.

low. At risk of begging the question, eliciting responses in a survey research format for these two groups is a generic problem, one which is evident in a wide variety of surveys. In reference to our particular survey, the relatively small number of respondents from these groups perhaps is an accurate reflection of their limited influence in water policy decision making. Be that as it may, alternative techniques for reaching these respondents should be considered.

In addition to the formal surveys, a wealth of information was collected through personal interviews. By and large, respondents were cooperative, candid, and informative. It is strongly recommended that future research employ this technique both as a aid to interpreting the data and a way to generate information from under-represented respondent groups.

Support for Research Hypotheses

The literature suggests a number of hypotheses about those factors which influence institutional preferences for water management.⁸ The findings both support and refine our research hypotheses.

As hypothesized, our findings confirm that preferences for water management vary according to one's personal involvement. A stakeholder view is evident throughout the results section. For example, we find that irrigators' preferences were significantly different from the non-irrigators in questions related to the perception of scarcity, the El Paso li-

⁸ See supra, pp. 12-13.

tigation, attitudes on private water rights, and preferences for groundwater management.

The presence of significant regional differences adds further support. Residents of the South region, for example, are relatively unconcerned about Indian water rights disputes probably because they are not personally involved or don't perceive a direct threat to the policies and practices that protect their investment. Their concern (and preferences) change dramatically when the topic is closer to home, e.g., ground water litigation.

Our second hypothesis, preferences are modified by one's perception of scarcity, is not as strongly supported. Specifically, the responses of those who think current or future supplies of water are less than adequate are similar to the responses of those who do not perceive inadequacy. However, it may be that the questions used to measure perception of scarcity are unreliable. Since the responses of respondents who live in regions where water is relatively scarce, i.e. the non-Central regions, are significantly different from Central region responses, the perception of scarcity may in fact influence preferences. However, as measured, preferences do not appear to be strongly related to perception of scarcity but conclusive proof remains a task for future research.

Our third hypothesis, was that other respondent characteristics influence preferences but are less important than personal involvement or perception of scarcity. Other characteristics include awareness, political ideology, and socioeconomic status. The findings suggest that these factors influence preferences much more strongly than anticipated.

Within both samples, most responses are significantly correlated with the respondent's ideology, partisanship, income, education, and length of residence in New Mexico. Occupational status and age are also influential but to a lesser extent.

Comparing water expert responses with public sample responses provides one measure of the relationship between awareness of water issues and preferences. The water experts are considerably more knowledgeable as evidenced by the relatively low proportion of "Undecided/Don't Know" responses and by their open-ended comments. Knowledge does seem to influence preferences in a number of cases. For example, the water experts are found to be far less supportive than general public in regards to negotiated settlement as a solution to the El Paso dispute. The public more strongly supports local as opposed to state water management but the public is less supportive of public involvement in water planning. However, considerable convergence of opinion is evident in responses to other questions. For example, response proportions are similar for both samples in questions about wildlife protection, private water rights, and the performance of the state engineer.

Within the water expert sample, two preference groups are clearly identifiable. The first group generally prefers continuation of the status quo in water management. They are highly supportive of the private water rights system, they place considerable reliance on the courts for conflict resolution, and they tend to oppose both increased regulations and public involvement in water management. Demographic analyses indicate that this group includes a relatively high proportion of irrigators,

South region residents, conservatives, older respondents, Republicans, and respondents with some college or less education. Within this group, however, considerable variation in support for market forces is evident. Irrigators tend to favor non-market solutions to water problems. For example, irrigators tend to support importation of water as a solution to groundwater depletion in the Ogallala Basin. They also tend to support agricultural subsidy and protection policies. Conversely, non-irrigators tend to oppose such policies.

The second preference group generally favors reform of existing policies and practices. They are critical of certain attributes of the private water rights system, they advocate increased regulation of water use as well as centralization of water management, and they favor increases in spending, planning, and negotiation. Demographic analyses indicate that this group includes a relatively high proportion of liberals, Democrats, academics, respondents who live in the Central region, and college graduates. In contrast to the first group, these individuals are not stakeholders; relatively few use water for irrigation on a farm or ranch. Within this group, there appears to be little variation in preferences for water management.

Policy Implications

It is universally recognized that an unmetered service is very conducive to extravagant use, and there is no question but that very material savings in water could be obtained by metering every customer and making the quantity used the basis of payment.

-Office of the State Engineer, 1919

This statement, made more than sixty years ago, concerns a policy issue that is still controversial today. Metering water of course is important but a larger lesson is that many of our best ideas have not been translated into public policy. Throughout this report, a number of creative ideas, specific courses of action, and policy preferences are presented. This information represents the informed opinions of an impressive group of water experts as well as the preferences of the general public. Hopefully, this research will be helpful in the development of efficient and equitable water resources policy.

Overall, our respondents prefer policies and programs that are effective, efficient, and enforced. They are quick to criticize any policies that do not meet these criteria. Little opposition can be expected to policies and programs which educate, encourage or persuade. Conversely, mandatory regulations which affect current practices generally will encounter stiffer opposition. However when regulation is required, implementation should be designed so that all affected parties are treated fairly.

The findings indicate that there is considerable consensus about the need for certain policies. First, nearly all respondents favor improving educational programs on water rights, adjudication procedures, and water conservation. There is also strong support for policies and programs which protect New Mexico water from other states, produce better knowledge about present and future supplies and demands of water, and promote efficient water use management in irrigated agriculture.

Increasing state spending on water resource problems in light of federal cutbacks is supported by a majority of water experts. Resolution of Indian water rights disputes and increased state spending on water pollution control also is favored but some opposition related to techniques and costs can be expected.

Responses to other policy proposals suggest considerable divergence of opinion. For example, restricting subdivisions in agricultural areas, reorganizing and consolidating state water agencies, importing water to augment existing supplies, and integrating land and water planning generate considerable controversy and difference of opinion. There appears to be a growing disenchantment with some of the distributive policies of the past. For example, a number of water experts strongly criticize the subsidization of irrigated agriculture. However, there is still strong support for these policies, especially in the rural parts of the state.

Suggestions for Further Research

This study has produced suggestive rather than conclusive findings. Bivariate analyses do indicate significant demographic variations in preferences for managing New Mexico water. Multivariate analyses can be done in order to identify the relative importance of the demographic variables. A second direction for further analysis is to carefully analyze the public sample responses. Limited demographic analyses indicate patterns similar to the water expert group but much work remains. Third, comparing our results to survey data from other states would clarify further the relationship between policy context and policy preferences.

Since water is relatively scarce throughout New Mexico, comparing New Mexico preferences to preferences in water-rich states is suggested.

A logical extension of this project would be to conduct periodic public and expert opinion polls on water resources. Developing and using standardized questions and research procedures would enable trend analyses and enhance our understanding of the determinants of policy preferences. Securing public input in water policy decision making might also be facilitated by reviving the citizen' conferences on water or a similar forum. However, significant public relations efforts would be needed to assure full participation by all sectors of the public. Although apathy or misperceptions may undermine attempts to secure public participation in other states, we have found New Mexico citizens to be well informed and sincerely interested in how our precious water resources are managed.

SOURCES

- Arkansas public awareness survey on water resources, 1981. Center for Urban and Government Affairs, University of Arkansas at Little Rock.
- Ingram, H. M. 1971. Patterns of politics in water resources development. Natural Resources Journal. 11:102-18.
- Ingram, H. M., Laney, N. K., and McCain, J. R. 1980. A policy approach to political representation: lessons from the four corners states. Baltimore, MA: The Johns Hopkins University Press for Resources for the Future.
- Lupsha, P. A., Schlegel, D. P., and Anderson, R. U., 1975. Raindance doesn't work here anymore, Division of Government Research, University of New Mexico, Albuquerque, New Mexico.
- Maass, A. and Anderson, R. L. 1978. ...and the desert shall rejoice: conflict, growth and justice in arid environments. Cambridge, MA: The MIT Press.
- Pierce, J. C., and Lovrich, N. P., 1980. Belief systems concerning the environment: the general public, attentive publics, and state legislators, Political Behavior. Vol. 2, 3: 259-283.
- Pratt, E. R., and Martin, S., 1980. New Mexico residents' attitudes toward water use and monetary tradeoffs, New Mexico Water Resources Research Institute, Technical Report No. 129, New Mexico State University, Las Cruces, New Mexico.
- Stucky, H. R., Lansford, R. R., and Creel, B. J. 1971. Citizens Conferences on Water, 1971, New Mexico Water Resources Research Institute, Technical Report No. 11, New Mexico State University, Las Cruces, New Mexico.
- Rose, D. D., 1976. Public opinion and water policy, in Pierce, J. C., and Doerksen, H. R., eds., Water Politics and Public Involvement. Ann Arbor, Mi.: Ann Arbor Science Publishers, Inc , 179-200.
- Texas Department of Water Resources, 1982. Public input to amend the Texas water plan, report, Austin, Texas: Intergovernmental Work Group.

APPENDICES

Survey Instruments

NEW MEXICO WATER RESOURCES SURVEY

N#	_____	(1-4)
C#	1	(5)

INTRODUCTION: This questionnaire is part of an extensive statewide survey on preferences for managing New Mexico water. Please answer all of the questions. In most cases, all you have to do is CIRCLE the number of your response. Please feel free to provide comments in the space provided or you may want to attach additional comments. If you have any questions, please call (505) 277-4934, 836-6456, or leave a message at 277-3312 and we'll call you back. **YOUR ANSWERS WILL BE HELD IN THE STRICTEST CONFIDENCE. THANK YOU for your cooperation!!**

1. Listed below are ten New Mexico water problems. For each problem, please indicate whether you think resolution of this problem should be a top priority for New Mexico, a medium priority, or do you think the problem should be given a low priority in comparison to the other listed problems.

(CIRCLE THE NUMBER)

	<u>Top Priority</u> (a very serious problem)			<u>Low Priority</u> (not a current problem)		
1. Need for improved irrigation systems and water use management in irrigated agriculture.	5	4	3	2	1	(6)
2. Protection of New Mexico water from other states.	5	4	3	2	1	(7)
3. Resolution of Indian Water Rights disputes.	5	4	3	2	1	(8)
4. Need to reallocate water from agricultural to industrial, recreational and municipal uses.	5	4	3	2	1	(9)
5. Need for municipal water pricing reform.	5	4	3	2	1	(10)
6. Need for water quality improvement and protection, (including desalinization and wastewater treatment).	5	4	3	2	1	(11)
7. Need for better knowledge of present and future supplies and demands of water.	5	4	3	2	1	(12)
8. Need to import water to augment declining groundwater table and diminishing surface-water supply.	5	4	3	2	1	(13)
9. Re-use of water, where practical, by recycling.	5	4	3	2	1	(14)
10. Need for integrated land and water planning and zoning.	5	4	3	2	1	(15)

If there are any other problems NOT listed that you think should be, please write them in here and circle their priority.

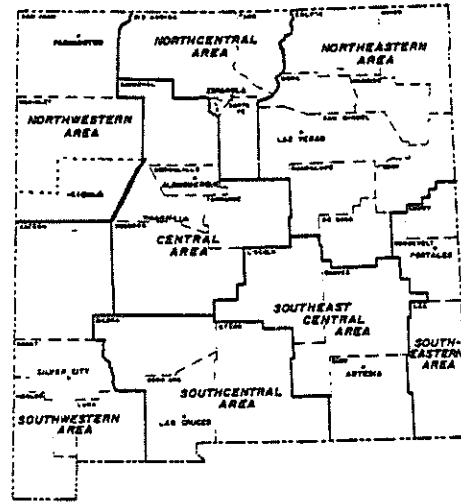
11. _____	5	4	3	2	1	(16-7)
12. _____	5	4	3	2	1	(18-9)

Now, please IDENTIFY the top three problems from those listed above and write the number of each one below, ranking them in order of importance.

Rank	Problem	
The number 1 most important problem	-----#	(20-1)
The number 2 most important problem	-----#	(21-2)
The number 3 most important problem	-----#	(22-3)

2. In which of New Mexico's eight hydrologic areas do you live? (Please refer to the map, then circle the appropriate number.)

- a. Northwestern 1
- b. Northcentral 2
- c. Central 3
- d. Northeastern 4
- e. Southwestern 5
- f. Southcentral 6
- g. Southeast central 7
- h. Southeastern 8



(24)

2a. How adequate do you feel your region's existing facilities for water supply are today? Would you say present facilities are more than adequate, just barely adequate, not quite adequate, or not at all adequate? (Circle the number.)

- 1. More than adequate
 - 2. Just barely adequate
 - 3. Not quite adequate
 - 4. Not at all adequate
 - 8. Don't know
- (25)

2b. And how adequate do you feel the existing facilities for water supply are to meet all of the needs of your area 20 years from now?

- 1. More than adequate
 - 2. Just barely adequate
 - 3. Not quite adequate
 - 4. Not at all adequate
 - 8. Don't know
- (26)

3. As you may know, the state of New Mexico is currently involved in litigation with the city of El Paso, Texas over groundwater pumping. Please answer the following questions about this dispute.

3a. First, how familiar are you with this case? Would you say you are very familiar, somewhat familiar, or not at all familiar with this case? (Circle the number.)

- 1. Very familiar
 - 2. Somewhat familiar
 - 3. Not at all familiar
- (27)

[NOTE: Even if you are not familiar with this case, please answer all the questions below.]

3b. In the words of the judge in a recent federal district court decision on this dispute, "Outside of fulfilling human survival needs, water is an economic resource . . . It is to be treated the same as other natural resources." Do you strongly agree, tend to agree, tend to disagree, or strongly disagree with this statement?

- 1. Strongly agree
 - 2. Tend to agree
 - 3. Tend to disagree
 - 4. Strongly disagree
 - 8. Undecided/Don't know
- (28)

3c. If El Paso finally wins this case (allowing the city to pump groundwater from New Mexico), would you strongly agree, tend to agree, tend to disagree, or strongly disagree with these statements:

(Circle the number)	Strongly Agree	Tend to Agree	Tend to Disagree	Strongly Disagree	Undecided/Don't Know	
1. Agriculture in the Mesilla Valley will be negatively effected.	5	4	2	1	8	(29)
2. Economic and population growth in the Mesilla Valley will be negatively effected.	5	4	2	1	8	(30)
3. The State of New Mexico will be unable to effectively manage her water.	5	4	2	1	8	(31)

3d. In response to this case, some New Mexicans advocate an economic boycott of El Paso's goods and services. Generally speaking, do you favor or oppose this idea?

1. Favor 2. Oppose (32)

3e. Others argue that rather than resolving this dispute in court, New Mexico should try to negotiate some sort of compromise or settlement outside of the courts. Generally speaking, would you favor or oppose this kind of solution?

1. Favor 2. Oppose (33)

3f. Please write in any comments you have on the El Paso case: _____ (34-5)

(Attach additional sheet if necessary) (36-7)

4. As you may know, New Mexico has a private water market for water rights, that is, water rights are owned by private individuals or companies and they may be bought and sold within designated basins throughout the state.

4a. First of all, how familiar are you with New Mexico's private water rights system -- are you very familiar, somewhat familiar, or not at all familiar?

1. Very familiar 2. Somewhat familiar 3. Not at all familiar (38)

Would you strongly agree, tend to agree, tend to disagree, or strongly disagree with the following statements about the private water market system in New Mexico:

	<u>Strongly Agree</u>	<u>Tend to Agree</u>	<u>Tend to Disagree</u>	<u>Strongly Disagree</u>	<u>Undecided/Don't Know</u>	
4b. Market forces, including increased water prices, rather than governmental regulations, are the best way to encourage efficient water use. (Circle the number.)	5	4	2	1	8	(39)
4c. Water rights should <u>not</u> be granted to private individuals or companies in perpetuity, that is, they only should be granted for fixed periods of time.	5	4	2	1	8	(40)
4d. Water is different from other commodities and natural resources and therefore ought not to be subject to the same competitive pressures of the market place.	5	4	2	1	8	(41)
4e. Speculation in private water rights should be prohibited.	5	4	2	1	8	(42)
4f. The state government should help small farmers and ranchers maintain and purchase water rights in order to preserve agriculture and ranching.	5	4	2	1	8	(43)
4g. New Mexico's private water market system currently provides enough protection for instream uses of water.	5	4	2	1	8	(44)

4h. Additional comments on the private water rights system? _____ (45-6)

_____ (47-8)

5a. Many Indian tribes in New Mexico are involved in litigation to determine their water rights. How familiar are you with the topic of Indian water rights? Very familiar, somewhat familiar, or not at all familiar? (Circle the number.)

1. Very familiar 2. Somewhat familiar 3. Not at all familiar (49)

5b. For the following statements, please indicate whether you strongly agree, tend to agree, tend to disagree, or strongly disagree with the statement.

	<u>Strongly Agree</u>	<u>Tend to Agree</u>	<u>Tend to Disagree</u>	<u>Strongly Disagree</u>	<u>Undecided/Don't Know</u>	
1. Most of the Indian claims for water are unrealistic.	5	4	2	1	8	(50)
2. The Federal government should encourage negotiated settlement of Indian water rights conflicts rather than relying completely on the courts.	5	4	2	1	8	(51)
3. The New Mexico State Government should have complete jurisdiction over all water in the state, including Indian waters.	5	4	2	1	8	(52)
4. More reclamation projects should be constructed on Indian lands within the state.	5	4	2	1	8	(53)

5c. Please write in any comments you have about this subject: _____ (54-5)

(56-7)

Q#	_____	(1-4)
C#	2	(5)

6. As you may know, some parts of Eastern New Mexico are within the Ogalalia Basin. A study group called the High Plains Council has been studying groundwater depletion and related problems in this area.

6a. First of all, how familiar are you with groundwater problems in Eastern New Mexico -- would you say you are very familiar, somewhat familiar, or not at all familiar with this area?

1. Very familiar 2. Somewhat familiar 3. Not at all familiar (6)

6b. The High Plains Council has identified five basic management strategies for dealing with groundwater depletion and related problems in the Ogalalla Basin. The strategies are briefly described below. Next to each strategy please indicate whether you would strongly favor, tend to favor, tend to oppose, or strongly oppose implementation of each strategy: (Circle the number.)

<u>Management Strategy</u>	<u>Strongly Favor</u>	<u>Tend to Favor</u>	<u>Tend to Oppose</u>	<u>Strongly Oppose</u>	
1. NO CHANGE in existing policies and practices.	5	4	2	1	(7)
2. ENCOURAGE VOLUNTARY CONSERVATION through application of proven technology.	5	4	2	1	(8)
3. REQUIRE CONSERVATION through regulations such as limits on new irrigation, new well limits, well spacing requirements, and seasonal timing.	5	4	2	1	(9)
4. AUGMENT EXISTING SUPPLIES through artificial recharge, weather modification, desalinization, etc.	5	4	2	1	(10)
5. AUGMENT EXISTING SUPPLIES through importation of water from nearby regions.	5	4	2	1	(11)

6c. Please write in any comments or suggestions you have related to these strategies. _____ (12-3)

(13-4)

7. For each of the following statements indicate your responses by circling the most appropriate number:

<u>Statement</u>	<u>Strongly Agree</u>	<u>Tend to Agree</u>	<u>Tend to Disagree</u>	<u>Strongly Disagree</u>	<u>Undecided/ Don't Know</u>	
7a. The most effective way to manage water is on the local or regional level as opposed to uniform state control.	1	2	4	5	8	(15)
7b. New Mexico's water policies and institutions should be devised to encourage reallocation of water from agriculture to high-value industries such as energy.	1	2	4	5	8	(16)
7c. Enough of New Mexico's streams, rivers, and lakes have been set aside for wildlife protection and recreation use.	1	2	4	5	8	(17)
7d. The Office of the State Engineer adequately protects the rights of rural water users throughout the state.	1	2	4	5	8	(18)
7e. It is better to leave water resource planning to those with special training as opposed to involving the public in developing water resource plans.	1	2	4	5	8	(19)
7f. Traditional water systems such as the acequias should be preserved since they are part of the culture and history of the state.	1	2	4	5	8	(20)
7g. Each New Mexico citizen should have the right to use his/her own water in any way he/she wishes.	1	2	4	5	8	(21)

8. Listed below are some water policy proposals that may or may not be adopted in New Mexico. For each proposal, please indicate whether you would strongly favor, tend to favor, tend to oppose, or strongly oppose the adoption of each policy by circling the appropriate number to the right of the proposal.

<u>Policy Proposal</u>	<u>Strongly Favor</u>	<u>Tend to Favor</u>	<u>Tend to Oppose</u>	<u>Strongly Oppose</u>	<u>Undecided/ Don't Know</u>	
8a. Increase STATE spending on water resource projects if federal funds are not available.	5	4	2	1	8	(22)
8b. Restrict and in some cases prohibit residential subdivisions in areas where agriculture is traditionally practiced.	5	4	2	1	8	(23)
8c. Increase STATE financial assistance to acequias and other local water agencies for ditch lining and other system improvements.	5	4	2	1	8	(24)
8d. Reorganize state water agencies and departments to consolidate water management into a single cabinet-level state agency.	5	4	2	1	8	(25)

<u>Policy Proposal</u>	<u>Strongly Favor</u>	<u>Tend to Favor</u>	<u>Tend to Oppose</u>	<u>Strongly Oppose</u>	<u>Undecided/Don't Know</u>	
8e. Improve educational programs on water rights, adjudication procedures, water conservation techniques, etc.	5	4	2	1	8	(26)
8f. Increase STATE spending on water pollution control.	5	4	2	1	8	(27)
8g. Establish water allocation priorities through public review of existing statutes, policies and programs.	5	4	2	1	8	(28)
8h. Please make comments on any of these proposals here: _____						(29-30)

_____						(31-2)
8i. Are there any other policy proposals that you think should be considered? _____						(33-4)

_____						(35-6)

9. Several ways to get residences and businesses to use less water in cities and towns have been suggested. Do you think each of the following would be very successful, somewhat successful, or not too successful in getting people to use less water? What about . . . ?

This would probably be:

	<u>Very Successful</u>	<u>Somewhat Successful</u> (Circle one)	<u>Not Too Successful</u>	
9a. Increasing the <u>price</u> of water to discourage non-essential use.	1	2	3	(37)
9b. Government <u>regulations limiting the amount</u> of water that can be used.	1	2	3	(38)
9c. <u>Public information</u> and education to encourage people to use less water.	1	2	3	(39)
9d. Local government <u>regulations requiring</u> South-western landscaping - which uses little water.	1	2	3	(40)
9e. Government <u>tax incentives</u> for installing water saving devices (eg. home drip irrigation systems, restricted flow shower nozzles, etc.)	1	2	3	(41)
9f. What if any, other ways do you think should be considered to get residences and businesses to use less water? _____				(42-3)

_____				(44-5)

10. Finally, just a few questions about you in order to help us understand our results.

10a. There are many different opinions about the preservation and development of New Mexico's natural resources. We would like to know how you feel. If a PRESERVATIONIST is one who favors preservation of New Mexico's environment and natural resources more strongly than development of these resources, a DEVELOPMENTALIST is one who favors development of New Mexico's natural resources more strongly than preservation, and a MODERATE is one who thinks that preservation and development of New Mexico's resources should be given equal consideration, what would you call yourself? (Circle the number.)

- | | | | |
|-----------------------------|-------------------------|------------------------------|------|
| 1. A STRONG PRESERVATIONIST | 3. A MODERATE | 4. A DEVELOPMENTALIST | (46) |
| 2. A PRESERVATIONIST | | 5. A STRONG DEVELOPMENTALIST | |
| | 8. Undecided/Don't Know | | |

- 10b. Generally speaking, which of the following do you consider yourself to be when it comes to political parties?
- | | | | |
|----------------------|---------------------------|------------------------|------|
| 1. A Strong Democrat | 3. An Independent | 4. A Republican | (47) |
| 2. A Democrat | | 5. A Strong Republican | |
| | 6. Other (Specify: _____) | | |

- 10c. Generally speaking, which of the following do you think of yourself when it comes to politics:
- | | | | |
|-----------------|---------------------------|----------------------|------|
| 1. Very Liberal | 3. Middle of the Road | 4. Conservative | (48) |
| 2. Liberal | | 5. Very Conservative | |
| | 6. Other (Specify: _____) | | |

- 10d. Do you use any of New Mexico's water resources for the following purposes?
(Circle the number.)

	<u>Yes</u>	<u>No</u>	
Irrigation (on a farm or ranch)	1	2	(49)
Business or Industry (non-irrigation)	1	2	(50)
Recreation (fishing, boating, etc.)	1	2	(51)

- 10e. Do you or your organization currently own or lease water rights in New Mexico?
- | | | |
|--------|-------|------|
| 1. Yes | 2. No | (52) |
|--------|-------|------|

- 10f. What is your present occupation? (If you are retired, check here ___ and indicate your former occupation.)

Title: _____ (53-4) Kind of Work: _____ (55-6)

Kind of Business: _____ (57-8)

- 10g. How long have you lived in New Mexico: _____ years h. What is your age? _____ years
(59-60) (61-2)

- 10i. What was the last grade of school you completed? (Circle the number.) (63)

- | | |
|---------------------|-------------------------|
| 1. Graduate Study | 4. High School Graduate |
| 2. College Graduate | 5. Some High School |
| 3. Some College | 6. 8th Grade or Less |

- 10j. In which of the following categories of ancestry or national heritage would you classify yourself? (64)

- | | |
|--------------------------------|------------------------------|
| 1. Caucasian or Anglo-American | 3. Indian or Native-American |
| 2. Spanish or Mexican-American | 4. Black or Afro-American |
| 5. Other (Specify: _____) | |

- 10k. Finally, would you mind indicating your approximate personal income category, before taxes, for 1982? Was it: (65)

- | | |
|-----------------------|-----------------------|
| 1. Less than \$10,000 | 4. \$30,001 to 40,000 |
| 2. \$10,001 to 20,000 | 5. \$40,001 to 50,000 |
| 3. \$20,001 to 30,000 | 6. Over 50,001 |

THANK YOU for your assistance and opinions! If you have any further comments, please write them in here:

(66-7)

PUBLIC QUESTIONNAIRE

N.M. Water Survey
July, 1983

Zia Project No.: 8310 (c1-4)
Interviewer Code No.: _____ (c5-6)
County Code No.: _____ (c7-8)

INTRODUCTION: Hello...this is _____ with Zia Research. We are not selling anything. We are conducting a public opinion survey on water resources in New Mexico. Your number was selected at random...All answers are strictly confidential.

Q.1. Have you or has someone in your family recently received a questionnaire in the mail regarding water resources in New Mexico?

YES [THANK RESPONDENT AND TERMINATE INTERVIEW]

NO [CONTINUE WITH Q.2]

Q.2a. How adequate do you feel your region's existing facilities for water supply are today? Would you say present facilities are more than adequate, just barely adequate, not quite adequate, or not at all adequate? [CIRCLE ONE NUMBER]

- MORE THAN ADEQUATE - - - - - 1 (c9)
- JUST BARELY ADEQUATE - - - - - 2
- NOT QUITE ADEQUATE - - - - - 3
- NOT AT ALL ADEQUATE - - - - - 4
- DON'T KNOW - - - - - 8

Q.2b. And how adequate do you feel the existing facilities for water supply are to meet all of the needs of your area 20 years from now?

- MORE THAN ADEQUATE - - - - - 1 (c10)
- JUST BARELY ADEQUATE - - - - - 2
- NOT QUITE ADEQUATE - - - - - 3
- NOT AT ALL ADEQUATE - - - - - 4
- DON'T KNOW - - - - - 8

As you may know, the state of New Mexico is currently involved in a court case with the city of El Paso, Texas, over groundwater pumping. Please answer the following questions about this dispute.

Q.3a. First, how familiar are you with this case? Would you say that you are very familiar, somewhat familiar, or not at all familiar with this case? [CIRCLE ONE NUMBER]

- VERY FAMILIAR [ASK Q.3b] - - - - - 1 (c11)
- SOMEWHAT FAMILIAR [ASK Q.3b] - - - - - 2
- NOT AT ALL FAMILIAR [SKIP to Q.4] - - - - - 3

Q.3b. Do you think El Paso should be allowed to pump groundwater from New Mexico?

- YES [ASK "WHY" ON Q.3c] - - - - - 1 (c12)
- NO [ASK "WHY NOT" ON Q.3c] - - - - - 2
- UNDECIDED/DON'T KNOW [SKIP TO Q.3d] - - - - - 8

Q.3c. Why? (or) Why not? [WRITE IN ANSWER]: _____ (c13-14)

Q.3d. In response to this case, some New Mexicans advocate an economic boycott of El Paso's goods and services. Generally speaking, do you favor or oppose this idea?

- FAVOR - - - - - 1 (c15)
- OPPOSE - - - - - 2
- UNDECIDED/DON'T KNOW - - - - - 8

Q.3e. Others argue that rather than resolving this dispute in court, New Mexico should try to negotiate some sort of compromise or settlement outside of the courts. Generally speaking, would you favor or oppose this kind of solution?

- FAVOR - - - - - 1 (c16)
- OPPOSE - - - - - 2
- UNDECIDED/DON'T KNOW - - - - - 8

I'm going to read you some statements about New Mexico's water resources. For each one, please tell me if you strongly agree, tend to agree, tend to disagree, or strongly disagree with each statement. [READ EACH STATEMENT AND CIRCLE ONE ANSWER FOR EACH ONE.]

	Strongly Agree	Tend to Agree	Tend to Disagree	Strongly Disagree	Undecided/Don't know	
Okay. Let's begin.						
Q.4. Market forces, including increased water prices, rather than governmental regulations, are the best way to encourage efficient water use. (Do you strongly agree, tend to agree, etc.)	5	4	2	1	8	(c17)
Q.5. Water is different from other commodities and natural resources and therefore ought not to be subject to the same competitive pressures of the market place.	5	4	2	1	8	(c18)
Q.6. The state government should help small farmers and ranchers maintain and purchase water rights in order to preserve agriculture and ranching.	5	4	2	1	8	(c19)
Q.7. Most of the New Mexico Indian claims for water are unrealistic	5	4	2	1	8	(c20)
Q.8. The New Mexico State Government should have complete jurisdiction over all water in the state, including Indian waters.	5	4	2	1	8	(c21)
Q.9. The most effective way to manage water is on the local or regional level as opposed to uniform state control	5	4	2	1	8	(c22)
Q.10. Enough of New Mexico's streams, rivers, and lakes have been set aside for wildlife protection and recreation use.	5	4	2	1	8	(c23)
Q.11. The Office of the State Engineer adequately protects the rights of rural water users throughout the state.	5	4	2	1	8	(c24)
Q.12. It is better to leave water resource planning to those with special training as opposed to involving the public in developing water resource plans.	5	4	2	1	8	(c25)
Q.13. Each New Mexico citizen should have the right to use his or her own water in any way he or she wishes.	5	4	2	1	8	(c26)

Finally, just a few questions about you in order to help us understand our results.

Q.14. There are many different opinions about the preservation and development of New Mexico's natural resources. We would like to know how you feel. If a preservationist is one who favors preservation of New Mexico's environment and natural resources more strongly than development of these resources, a developmentalist is one who favors development of New Mexico's natural resources more strongly than preservation, and a moderate is one who thinks that preservation and development of New Mexico's resources should be given equal consideration, what would you call yourself--a strong preservationist, a preservationist, a moderate, a developmentalist, or a strong developmentalist? [CIRCLE ONE ANSWER]

- A STRONG PRESERVATIONIST - - - - - 1 (c27)
- A PRESERVATIONIST - - - - - 2
- A MODERATE - - - - - 3
- A DEVELOPMENTALIST - - - - - 4
- A STRONG DEVELOPMENTALIST - - - - - 5
- UNDECIDED/DON'T KNOW - - - - - 8

Q.15. Generally speaking, which of the following do you consider yourself to be when it comes to political parties--a strong Democrat, a Democrat, an Independent, a Republican, or a strong Republican?

- A STRONG DEMOCRAT - - - - - 1 (c28)
- A DEMOCRAT - - - - - 2
- AN INDEPENDENT - - - - - 3
- A REPUBLICAN - - - - - 4
- A STRONG REPUBLICAN - - - - - 5
- OTHER [SPECIFY]: _____ - 6

Q.16. Generally speaking, which of the following do you think of yourself when it comes to politics--that you are very liberal, liberal, middle of the road, conservative, or very conservative?

VERY LIBERAL - - - - - 1 (c29)
 LIBERAL - - - - - 2
 MIDDLE OF THE ROAD - - - - - 3
 CONSERVATIVE - - - - - 4
 VERY CONSERVATIVE - - - - - 5
 OTHER [SPECIFY]: _____ - - 6

Q.17. Do you use any of New Mexico's water resources for the following purposes? [READ THE FOLLOWING LIST AND CIRCLE THE NUMBER FOR EACH ANSWER]

	YES	NO	
(a) For irrigation on a farm or ranch? - - - - -	1	2	(c30)
(b) For business or industry (other than farming or ranching)? - -	1	2	(c31)
(c) For recreation, such as fishing, boating, etc.? - - - - -	1	2	(c32)

Q.18. Do you or someone in your immediate family currently own or lease water rights in New Mexico?

YES - - - - - 1 (c33)
 NO - - - - - 2
 UNDECIDED/DON'T KNOW - - 8

Q.19. Do you live in a rural area or in a town or city?

RURAL AREA (less than 1000 pop.)- - 1 (c34)
 TOWN OR CITY (more than 1000 pop.)- 2

Q.20. How many years have you lived in New Mexico?

YEARS: _____ (c35-36)
 [WRITE 2-digit, e.g., 03]

Q.21. In which of the following groups is your age? [READ ANSWERS]

18-34 years old - - - - - 1 (c37)
 35-49 years old - - - - - 2
 50-64 years old - - - - - 3
 65 and over - - - - - 4

Q.22. What was the last grade of school you completed? [CIRCLE ONE NUMBER]

GRADUATE STUDY - - - - - 1	HIGH SCHOOL GRADUATE - - - - - 4	(c38)
COLLEGE GRADUATE - - - - - 2	SOME HIGH SCHOOL - - - - - 5	
SOME COLLEGE - - - - - 3	8TH GRADE OR LESS - - - - - 6	

Q.23. In which of the following categories of ancestry or national heritage would you classify yourself? [READ ANSWERS]

Caucasian or Anglo American - - - - 1 (c39)
 Spanish or Mexican American - - - - 2
 Indian or Native American - - - - 3
 Black or Afro American - - - - - 4
 Other [SPECIFY]: _____ - - 5

Q.24. Finally, would you indicate your approximate income category, before taxes, for 1982? Was it . . . [READ ANSWERS]

Less than \$10,000 - - - - - 1 (c40)
 \$10,001 to \$20,000 - - - - - 2
 \$20,001 to \$30,000 - - - - - 3
 \$30,001 to \$40,000 - - - - - 4
 \$40,001 to \$50,000 - - - - - 5
 Over \$50,001 - - - - - 6

Thank you for your time and opinions.

CIRCLE WHETHER:

MALE - - - - - 1 (c41)
 FEMALE - - - - - 2

FILL IN:

Consecutive number of completed questionnaire: _____
Telephone number of respondent interviewed: _____
"I affirm that this interview was conducted and completed by me on _____ (date)."
Signed: _____

SPECIFIC INTERVIEWER INSTRUCTIONS FOR PROJ. #8310

(Please study these and also review the General Instructions before calling.)

NAME: _____ YOUR ZIA INTERVIEWER NUMBER IS: _____

		<u>Quota</u>
YOUR QUOTA IS: _____	IN COUNTY CODES: _____	_____
	_____	_____
	_____	_____
	_____	_____

In each county you should get one-half male and one-half female respondents.

INTERVIEWING TIME PERIOD: Thursday, July 28, through Sunday, July 31. On weekdays, only call between 5:00 p.m. and 9:30 p.m.; on Saturday from 10:00 a.m. to 9:30 p.m.; Sunday from noon to 9:30 p.m.

RETURN COMPLETED SURVEYS: Monday, August 1, between 11:00 a.m. and 1:00 p.m.
TO: the Zia office, 1825 San Mateo N.E. #3

FOR QUESTIONS OR PROBLEMS CALL: Polly Scoutaris, 296-8024

SEND TELEPHONE BILL TO: Zia Research, 1409 Snowdrop N.E., Albuquerque, N.M. 87112

This is a statewide survey of adult (18 yrs. or older) residents of N.M. This survey is designed to identify the perceptions and preferences of New Mexicans in regard to water resources. Please read the questions in order and exactly as worded.

Q.1. The mailed questionnaire was sent out the first two weeks in July from the University of New Mexico's Division of Public Administration. If the respondent wants to know who is conducting the survey or why the survey is being conducted, you may tell them that the survey is being conducted by the University of New Mexico in order to find out what people think about New Mexico water resources management.

Q.2a. and Q.2b. If the respondent asks what we mean by "region" or "area," tell them we are referring to their county. If the respondent asks if we are referring to surface water, ground water, or both, tell them we are referring to both surface and ground water supplies.

Q.3a. If the respondent is not familiar with the El Paso case, then skip to Q.4. However, if the respondent has heard about El Paso's attempt to import New Mexico's groundwater, but is not familiar with the court case, circle "2" (Somewhat familiar) and ask Q.3b.
If the respondent is unsure or wants you to tell them what the case is about, repeat "This case is about El Paso's attempt to pump groundwater from New Mexico," then ask Q.3b.

Q.3b. If the respondent is undecided, disinterested, or doesn't know, then circle "8," and skip to Q.3d.

Q.3c. If the respondent answers Q.3b "YES" (they think El Paso should be allowed to pump New Mexico's groundwater), ask "Why" or "What is the main reason you feel this way?" Try to record the first reason they give verbatim. Also record any additional reasons cited by summarizing their comments--use the back of the page if necessary.
If respondent answers "No" to Q.3b, ask "Why not?" or "What is the main reason you feel this way?" Record their answer as instructed above.

Q.3d. If the respondent does not know what an "economic boycott" is, then explain as follows: "An economic boycott is where New Mexicans would refuse to buy any goods or services produced in El Paso."

Q.3e. If the respondent wants to know who would negotiate or how negotiation would be accomplished, tell them: "Representatives of the State of New Mexico would meet with representatives from the city of El Paso."

Q.4 through Q.13. Please read each of these questions slowly and carefully. Circle one answer for each question. After reading Q.4, say "Do you strongly agree, tend to agree, tend to disagree or strongly disagree?"

(Continued on other side)

Interviewer Instructions, Proj. #8310, Continued

Q.14. Read this question slowly, You may have to repeat it to the respondent a second time, since it is a long one. Circle only one answer. If the respondent gives you two answers, try to pin him/her down to just one answer if possible.

Q.17. Read each statement and circle the number for yes or no.

Q.19. If the respondent lives in a very small town, of less than 1,000 people, then circle "1" for RURAL area.

Q.20. If one year or less, write "01." If two years, write "02," etc.

Q.21, Q.23, Q.24. Read the responses.

Thank the respondent, circle whether male or female, and fill in the verification box. Check over your questionnaire.

If it looks like you may not be able to complete your quota for some reason, be sure to call Polly (296-8024) right away, so your quota can be completed by someone else. However, we are really counting on you to complete accurately and fully the quota given to you and to return it at the time it is due. Several of each interviewer's completed surveys are picked out and the respondents are called back to see if they were called and a few of the questions are repeated to them at random to see if their answers were recorded accurately.

Thank you very much for your work on this survey!

Cover Letters



THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

Respondent's Name
and Address

Dear Sir or Madam:

The University of New Mexico's Division of Public Administration is conducting an extensive statewide survey on water. As you know, the way we manage our precious water resources is of special importance to New Mexico's future. Over 1000 questionnaires have been sent to water experts, interest group representatives, and elected officials throughout the state. In addition, over 100 personal interviews are being conducted and a randomly selected public sample will be surveyed this summer. Because of your crucial policymaking position, we would also like your views on water management.

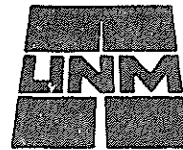
WILL YOU HELP ? Enclosed is a questionnaire that we would like you to fill-out. It may seem long and involved but I think you will find that it can be completed in a relatively short time. Please answer all of the questions and feel free to add any comments. Be assured that your answers will be held in the strictest confidence.

When you complete the questionnaire, just fold, staple, and drop it in the mail; return postage is affixed. Please return your completed questionnaire as soon as possible but no later than July 25, 1983. I will be happy to send you a summary of our report and would be more than willing to discuss the project with you at your convenience.

THANK YOU for your cooperation.

Sincerely,

Tim De Young, Ph.D.
Project Director



THE UNIVERSITY OF NEW MEXICO
ALBUQUERQUE, NEW MEXICO 87131

Dear Legislator:

The University of New Mexico's Division of Public Administration is conducting an extensive statewide survey on water. As you know, the way we manage our precious water resources is of special importance to New Mexico's future. Because of your crucial policymaking position, you have been selected to help us identify preferences for water management in New Mexico.

WILL YOU HELP ? Enclosed is a questionnaire that we would like you to fill-out. It may seem long and involved but I think you will find that it can be completed in a relatively short time. Please answer all of the questions and feel free to add any comments. Be assured that your answers will be held in the strictest confidence.

YOUR ANSWERS ARE IMPORTANT. When you complete the questionnaire, just fold, staple, and drop it in the mail; return postage is affixed. Please return your completed questionnaire as soon as possible but no later than July 15, 1983.

THANK YOU for your cooperation.

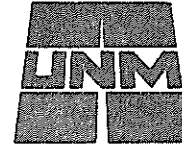
Sincerely,

A handwritten signature in black ink, appearing to read 'Tim De Young', with a stylized flourish at the end.

Tim De Young, Ph.D.
Project Director

P.S. If you have any questions, call me at 277-4934/836-6456 or you may leave a message at 277-3312.

FOLLOW-UP LETTER



THE UNIVERSITY OF NEW MEXICO

ALBUQUERQUE, NEW MEXICO 87131

Dear Sir or Madam:

A short time ago, we sent you a questionnaire on New Mexico water. If you have completed and returned the questionnaire, we would like to sincerely thank you for your cooperation. If you have not returned your questionnaire, please do so as soon as possible.

Perhaps you did not return your questionnaire because you were not sure why the survey is being conducted, who is funding it, or how the results will be used. Let me briefly explain.

This project has been funded in part by a grant from the New Mexico Water Resources Research Institute at New Mexico State University. The purpose of the survey is to identify and compare the perceptions and water policy preferences of three groups: water experts, elected officials, and the general public. It is an academic research study designed to test a number of hypotheses related to environmental management. By identifying levels of support for existing policies as well as preferences for future policy, we also hope that our findings will be useful to New Mexico policy makers. Please call me if you would like more details about the project.

The survey results will be published in a technical completion report for the NMWRRRI. The report will be available to anyone for a nominal fee. Of course, we will be happy to send you a summary of this report. HOWEVER, the quality of our study depends on your willingness to help. A healthy response rate is the best way to insure that our sample is truly representative. So please send your questionnaire in today.

Sincerely,

A handwritten signature in black ink, appearing to read 'Tim De Young', written over a light-colored background.

Tim De Young, Ph.D.
Project Director

P.S. If you have lost or misplaced your questionnaire, please give us a call or drop us a line and we will send you another one.