BEFORE THE ARIZONA WATER COMMISSION

In the Matter of the Petitions of:)
)
MARICOPA, PINAL & PIMA COUNTIES)
TO FORM A MULTI-COUNTY WATER)
CONSERVATION DISTRICT.)
)

Phoenix, Arizona
June 8, 1971
9:00 o'clock a.m.

REPORTER'S TRANSCRIPT OF PROCEEDINGS

ARIZONA WATER COMMISSION

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Sandra W. McFate
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George E. Leonard, Chairman
John S. Hoopes, Vice Chairman
Peter Bianco, Member
Linton Claridge, Member
David R. Gipe, Member
William H. Wheeler, Member
Andrew L. Bettwy, Ex-officio Member
Wesley E. Steiner, Executive Director

Irving A. Jennings, Chief Counsel
Ralph E. Hunsaker, Counsel

ARIZONA INTERSTATE STREAM COMMISSION
34 West Monroe, Suite 707
Phoenix, Arizona 85003

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THE CHAIRMAN: Good morning.

The state legislature passed and the governor signed into law on April 13, 1971 House Bill 333 providing for the formation of tax levying public improvement districts for the purpose of entering into contracts with the Secretary of the Interior for water from the Central Arizona Project, and authorizing the levy of a tax on the property within the boundaries of the district to assist in repayment of costs. Section 45-2605 of this act requires that the Arizona Water Commission, upon receipt of petitions from three or more counties for formation of the district, set a date for hearing on the petitions not less than 30 days nor more than 60 days after the date of filing of the third of such petitions.

Petitions asking for establishment of the multi-county improvement district were received from the Boards of Supervisors of Pinal, Maricopa and Pima Counties on April 26, April 30 and May 4 respectively. These petitions are hereby made part of the record of this hearing.

At its regular Commission meeting on May 7, the Commission selected the date of June 8 for the required public hearing. In accordance with law, notice of this public hearing has been given to the Boards of Supervisors of each county in the State, has been

published for two consecutive weeks in newspapers of general circulation published in each of the counties of the State, and has been posted in three or more conspicuous places in each county of the State for at least two weeks prior to this date. Affidavits attesting to the publication and posting have been received from 12 of the 14 newspapers with assurances that the remaining two are in the mail, and from the sheriffs of each of Arizona's 14 counties. These affidavits are hereby made a part of the record.

At its regular meeting on June 4, the Commission adopted the following rules for conduct of this hearing:

1. The hearing shall be conducted before the Arizona Water Commission or such members thereof as constitute a quorum as set forth in ARS 45-504.

2. The chairman of the Arizona Water Commission shall act as chairman and preside over the hearing. The chairman of the hearing shall have control of the hearing and shall preserve and maintain order and decorum.

3. The chairman shall enforce these rules.

4. The chairman shall conduct the meeting in accordance with the following provisions:

a) Those wishing to testify before the Arizona Water Commission and who have given notice of their desire to so testify shall be

assigned to speak in the order in which the Commission receives notice of their intention to testify. This order shall not be altered.

All persons wishing to be heard who have not given notice prior to the hearing will be heard in the order assigned by the chairman.

b) If, in the decision of the chairman, any person is merely reiterating arguments made by another person, the chairman may order that person to note his concurrence with the arguments made by such other person and, in the interest of time, move to the next witness.

c) The hearing will commence at 9:00 a.m., a noon recess will be taken from 12:00 noon until 1:30 p.m., and the hearing will terminate when everyone has been heard, hopefully by 5:00 p.m.

5. All persons who have submitted matters in writing, or who desire to submit matters in writing, will have their views put in the transcript and may then waive oral presentation of their views. The record of this hearing will remain open and statements will be accepted for inclusion therein until 5:00 p.m. on June 11.

6. Questions may be asked of any person who is speaking at the hearing by any member of the Commission,

the Executive Director of the Commission or legal counsel for the Commission.

Any affected person may appear and be heard on any matter relating to the establishment of the proposed district, which would embrace all taxable property in Maricopa, Pinal and Pima Counties. The only issue before the Commission at this time is whether or not a single state agency should be created to contract with the federal government for Central Arizona Project water or whether individual applicants should be left to contract directly with the Secretary of the Interior. The feasibility of the Central Arizona Project is not an issue here. It is not debatable here. In making your comments, we would, therefore, appreciate it if you would limit yourselves to the issue of a single state contracting agency versus multiple contracts with individual applicants.

A transcript will be made of all proceedings and will be made available for public review in the offices of the Arizona Water Commission.

Section 45-2606 of the act provides, and I quote,

"Upon the hearing, if it appears that the petitions conform to the provisions of this chapter and that the public convenience and welfare will be served by the establishment of the district,

the Commission shall make a final written order to declare its findings, designate the counties to be included, and declare the district organized under a corporate name by which it shall be known in all proceedings.

"Not less than ten days after the date of the final order, the Commission shall cause a certified copy of such final order:

"1. To be filed in the office of the Board Supervisors of each county.

"2. Recorded in the office of the County Recorder in each county included in the district.

"3. Filed in the office of the Secretary of State.

"Any affected person who made an appearance before the Commission may seek a review of such final order within thirty days from the date of the order by filing a Petition for a Special Action Writ in the Supreme Court. The special action shall be given precedence over civil actions."

34 people so far have asked for time to make statements to the Commission today. We would like to conclude by 5:00 p.m. In any event, we must adjourn by 7:15 p.m., as this auditorium has been reserved for

another meeting beginning at 7:30 p.m. It will be appreciated if witnesses limit their testimony to a maximum of 10 minutes. Written statements will be accepted and included in the record as though they had been read in their entirety. Where arguments for or against formation of the district have already been made, we ask that you indicate your concurrence in that position or argument and refrain from making the same arguments over again. Your cooperation in this regard will be appreciated.

I would like to introduce to you members of the Arizona Water Commission and its staff. On my far right, Commissioner Linton Claridge; on my immediate right, Executive Director of the Commission and State Water Engineer, Wesley Steiner. I am George Leonard, the Chairman of the Commission. On my left, Ralph Hunsaker, the Commission's legal counsel; next to him, Vice Chairman John Hoopes; and on the far left, Commissioner Andy Bettwy. Seated at the table in front of me are Commissioner David Gipe, Commissioner Peter Bianco, Commissioner Bill Wheeler and Irving Jennings, chief counsel to the Commission.

The first request to be heard was received from the Governor of our State, the Honorable Jack Williams.

GOVERNOR WILLIAMS: Thank you very much,

Chairman Leonard, members of the Arizona Water Commission, witnesses, guests, as Governor of our State I am acutely aware of its many problems which affect the daily lives and the future of our people. Few of the problems which must be resolved are more significant than that of water supply.

All too often water is thought of as a resource needed for this or that particular segment of our economic structure -- for farms, for mines, for cities. We fail to orient our thinking to people -- all people -- and to their individual dependency upon water availability.

Chemists refer to water as the universal solvent. Sociologically and economically it has that same characteristic. From water we extract our jobs, our food, our pleasures, our wealth, our very life and our dreams for a better tomorrow.

Personally I can't remember when a plan for bringing Colorado River water into our State was not a part of the Arizona dream. So many of us were so sure that it would come about that a very large part of our development for the past two or three decades has been at least subconsciously predicated upon the Central Arizona Project as a source of supplemental water. And indeed more progress has been made with the CAP in the past six years than was made during 30 years before that.

Interstate water rights have been resolved by the Court, our long quarrel with California has been replaced by a fine spirit of cooperation between us, the Central Arizona Project has been authorized, and the Congress of the United States has appropriated money to advance it towards construction. In fact, the Congress last year actually appropriated money to begin construction.

But then the Office of Management and Budget, which exercises a final control over the use of appropriated funds, renewed a condition that was first tentatively imposed in 1948 by the then Secretary of the Interior Julius Krug during the administration of President Harry S. Truman. That condition is that Arizona establish a single agency having authority to contract for water delivered by the Central Arizona Project and to levy a tax on property to assure the federal government that our share of the project's cost will be repaid.

Our State Legislators very wisely and promptly enacted HB 333 which authorized the organization of a water conservation district having the required powers, and I signed it into law on last April 13. Boards of Supervisors of Maricopa, Pima and Pinal Counties proceeded to petition the Arizona Water Commission for organization of the district in time for me to personally advise the

U. S. Senate and House appropriations committess on May 19 that we are far along toward satisfying the conditions imposed upon us.

And I take this occasion to thank the Central Arizona Project Association for the part it played in all this, the Legislature for its timely enactment of HB 333, and the Boards of Supervisors of Maricopa, Pima and Pinal Counties for their prompt and decisive follow through.

The next and final step is for this Commission to consider well the testimony offered at this hearing and to then exercise its responsibility, under law, for bringing into existence the Arizona Water Conservation District.

Personally, and as Governor of Arizona, I recommend that your decision be affirmative, and that you not long delay that decision.

With the district organized, the process of negotiating a contract with the Secretary of the Interior can begin, and the Office of Management and Budget can thereafter be assured that we have done what is necessary.

I do not wish to take more than my share of your time. I know that many others are to be heard in the course of this hearing, and they should be heard. I am sure you will weigh all testimony thoughtfully and come to a conclusion that will serve the best interest

of the majority of Arizona's citizens whose future in so many ways rests upon an assured and adequate supply of water.

THE CHAIRMAN: Thank you very much, Governor.

Mr. Thomas Fannin, Phoenix Chamber of Commerce.

MR. FANNIN: Mr. Chairman and members of the Arizona Water Commission, my name is Tom Fannin. I am a resident of Phoenix and I am the President of the Phoenix Chamber of Commerce.

The Phoenix Chamber of Commerce for many years has actively and aggressively worked for the creation of the Central Arizona Project and for the completion of the construction of this vitally needed resource conservation plan.

As you know, this has been a long campaign and it is essential to our economy that we do not let it be stymied at this point.

The water shortage in Central Arizona exists today. We simply cannot continue to constantly overdraw on our ground water supplies. They are not limitless and we must find ways to bring the withdrawal in line with the replenishment rate.

The way to do this is to get the Central Arizona Project operating. Then, and only then, can we be assured that the many, many jobs that are related

directly or indirectly to irrigated agriculture in Central Arizona will continue to provide employment for our people. It would be unthinkable that we would allow the vital agricultural segment of our economy to wither away. Water is jobs.

In this day of concern about growth, ecology and related matters, we must make clear to all that the Central Arizona Project is not a grandiose growth program but rather is a resource conservation measure that even when completed will not supply sufficient water to bring our ground water situation into balance.

Obviously, water is used for many other phases of our life than agriculture. Industry and commerce require water. People need water for their homes and for recreation. It is an essential part of maintaining a high quality of life for all of our citizens.

The Phoenix Chamber of Commerce strongly urges the Arizona Water Commission to declare that the water conservation district is organized so that we can move ahead with saving the economy of Central Arizona and with providing jobs for the people that live here.

THE CHAIRMAN: Thank you very much, Mr. Fannin. By the way, if you have written statements would you please leave a copy of them with the reporter.

The next person to be heard is Senator Ray

Goetze of the Arizona Senate, Chairman of the Arizona Natural Resources Committee.

SENATOR GOETZE: Thank you, Mr. Chairman. I haven't a written speech. What I had planned on saying I think would be ruled out of order, after hearing your instructions prior to the meeting, but I do want to say a few words at least, and that is I think the majority of the people of the State of Arizona, now their dream has come true in reality with the Central Arizona Project in the passage of House Bill 333, which set up a conservancy district for the State will agree it was a big move forward to confirm with the Congress and their intentions and what we should do.

However I did want to mention one or two words here in regard to certain conservation and bodies in the State that are trying to obstruct the conservancy district. I understand the canals and so forth are to be distributed through the State. This doesn't surprise me.

They objected to the Central Arizona Project when I introduced Senate Bill 204 in the Senate in 1967, which set up the machinery to go it alone in the event Congress did not confirm the Central Arizona Project.

I will let it go at that. I wish I could say more because I had a lot, but I guess I had better close

before I am shut off.

Thank you very much.

THE CHAIRMAN: Thank you very much, Senator Goetze.

Is there someone here representing the Buckeye Irrigation District?

(No response)

THE CHAIRMAN: Virgil McClanahan, representing the Roosevelt Irrigation District.

MR. McCLANAHAN: Good morning. My name is Virgil McClanahan.

Governor Williams, member of the Arizona Water Commission and fellow members of the Central Arizona Project Association, the Roosevelt Water Conservation District is very pleased to have the opportunity to appear at this hearing today in support of the organization of the Arizona Water Conservation District. This, of course, is the next necessary step in coming closer to the desired result of all the work that has been done to bring the Central Arizona Project into reality. The State Legislature is to be commended for its promptness in passing House Bill 333 for forming this district.

The Roosevelt Water Conservation District has filed its request for CAP water. At the present time, we depend heavily on ground water, but this source cannot continue forever. The CAP is very much needed to help

ease the water problems throughout this area and it should proceed as rapidly as possible.

Therefore, we would like to be on record as being 100 percent in favor of the formation of the Arizona Water Conservation District because it is the next step toward the goal of construction of the Central Arizona Project.

Thank you for allowing us to appear here today.

THE CHAIRMAN: Thank you very much, Mr. McClanahan.

Maricopa County Municipal Water Conservation District Number One, Mr. Raymond.

MR. RAYMOND: Mr. Chairman, my name is Hank Raymond. I am District Engineer for the Maricopa County Municipal Water Conservation District Number One. I am a civil engineering graduate of the University of Arizona and a registered professional engineer in the State of Arizona.

My purpose in appearing before your Commission today is to impress upon you the urgent need to establish the Water Conservation District which is authorized by State law, and for which the Maricopa County Board of Supervisors has petitioned, along with two other central Arizona counties.

It is appropriate, however, to back up our position with some of our reasons for taking it.

The Maricopa County Municipal Water Conservation District Number One, covering 35,000 acres on the west side of Salt River Valley, was organized in the 1920's for the purpose of irrigating farmland with surface water from a watershed drainage area of 1,430 square miles along the Agua Fria River including Lynx Creek and the southwestern slopes of Mingus Mountain.

Before the District's storage reservoir and delivery system was built, with private financing, U. S. Geological Survey data indicated a mean annual flow of the river available at Lake Pleasant in the amount of 188,000 acre-feet.

Attached to the copy of my filed statement is a graph which shows that the yield of surface water at Lake Pleasant has in fact shrank to an annual average of only 42,273 acre-feet, which is less than one-fourth of what it was before the storage reservoir was built.

In 1939 43 wells were drilled to supplement surface water with groundwater. The number of District wells was increased to 60 by 1947, and from 1946 through 1970 landowners within the District have drilled an additional 63 wells.

All this was done not to expand irrigated acreage, but to keep in production what had already been developed.

In 1940 the average pump lift for our District wells was 245 feet. In 1970 the average lift was 540 feet -- an increase of 295 feet in 30 years. In that same period of time the average well yield has fallen from 7.38 acre-feet per pumping day to 3.80 acre-feet per day. The pumping power cost has increased from $1.97 an acre-foot in 1940 to $7.50 at present.

These groundwater pumping conditions are shown in a second graph filed with my statement.

The picture I have given you of conditions in our District is about the same for the other districts in the west end of the Valley.

The products of our irrigated farms include such specialty crops as citrus, lettuce, melons and other vegetables. Extensive cattle pen-feeding is also a part of our District's contribution to the area's economy. We could do more, but we have only enough water to irrigate about two-thirds of the 35,000 acres of land in the District.

To make it possible to continue farming in this District we are conserving water by all possible means. We have concrete-lined almost all of our distribution system and farm ditches. We have leveled land to reduce the fall in order to get better water penetration. At the lower ends of fields we have built sumps to catch

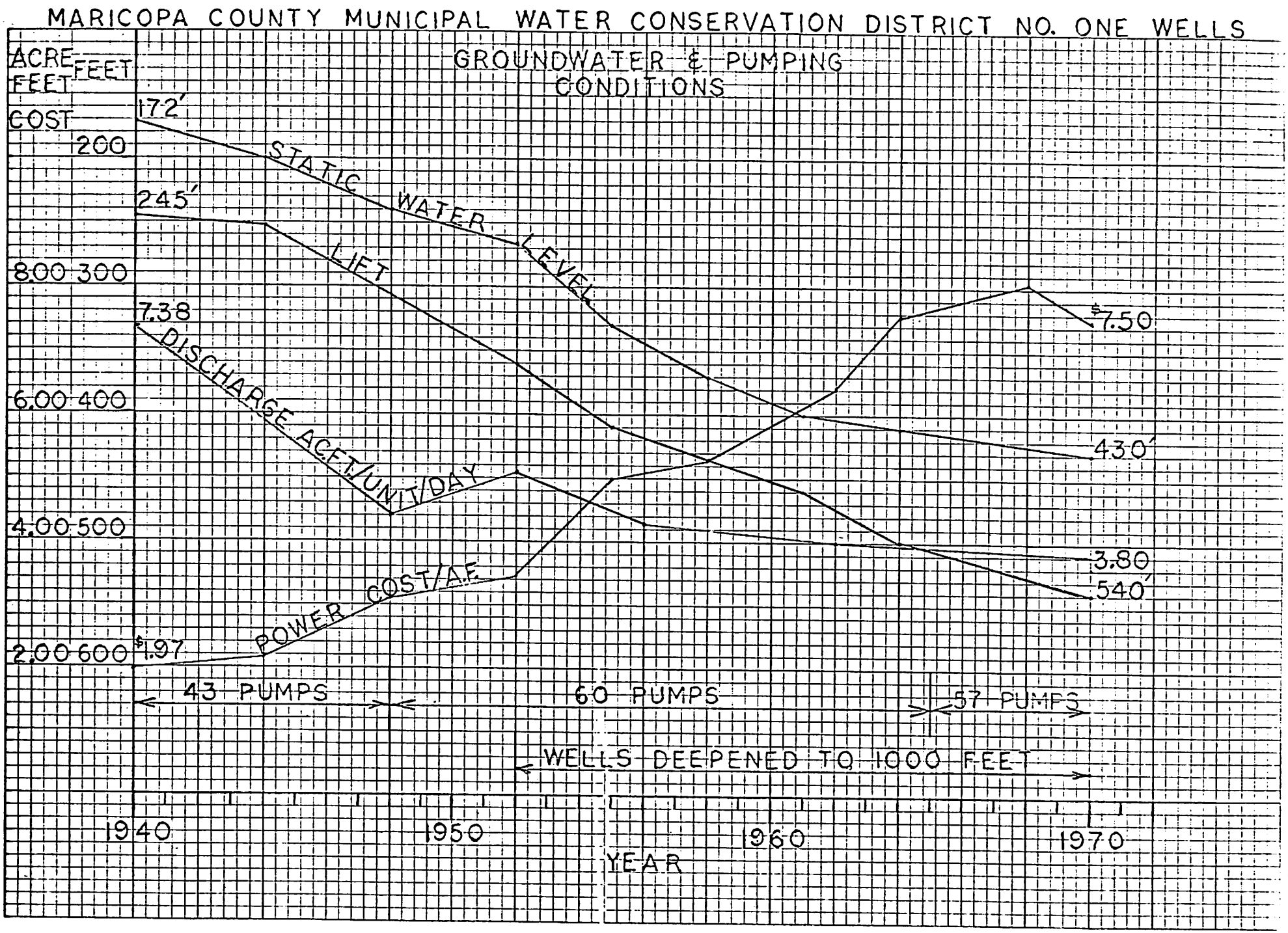
the tailwater which is then pumped through pipelines to the upper end of the fields for reuse. We are experimenting with articicial recharge of groundwater reservoirs. Near the north end of our project we have successfully injected flood water into the groundwater aquifers through existing wells and in pits. Water conservation is as much a part of our operation as is the growing of crops. However, there is no hope of making up our water deficit in this area -- even with the best of conservation practices in effect -- without the supply to be brought in by the Central Arizona Project for which we have planned and waited so long.

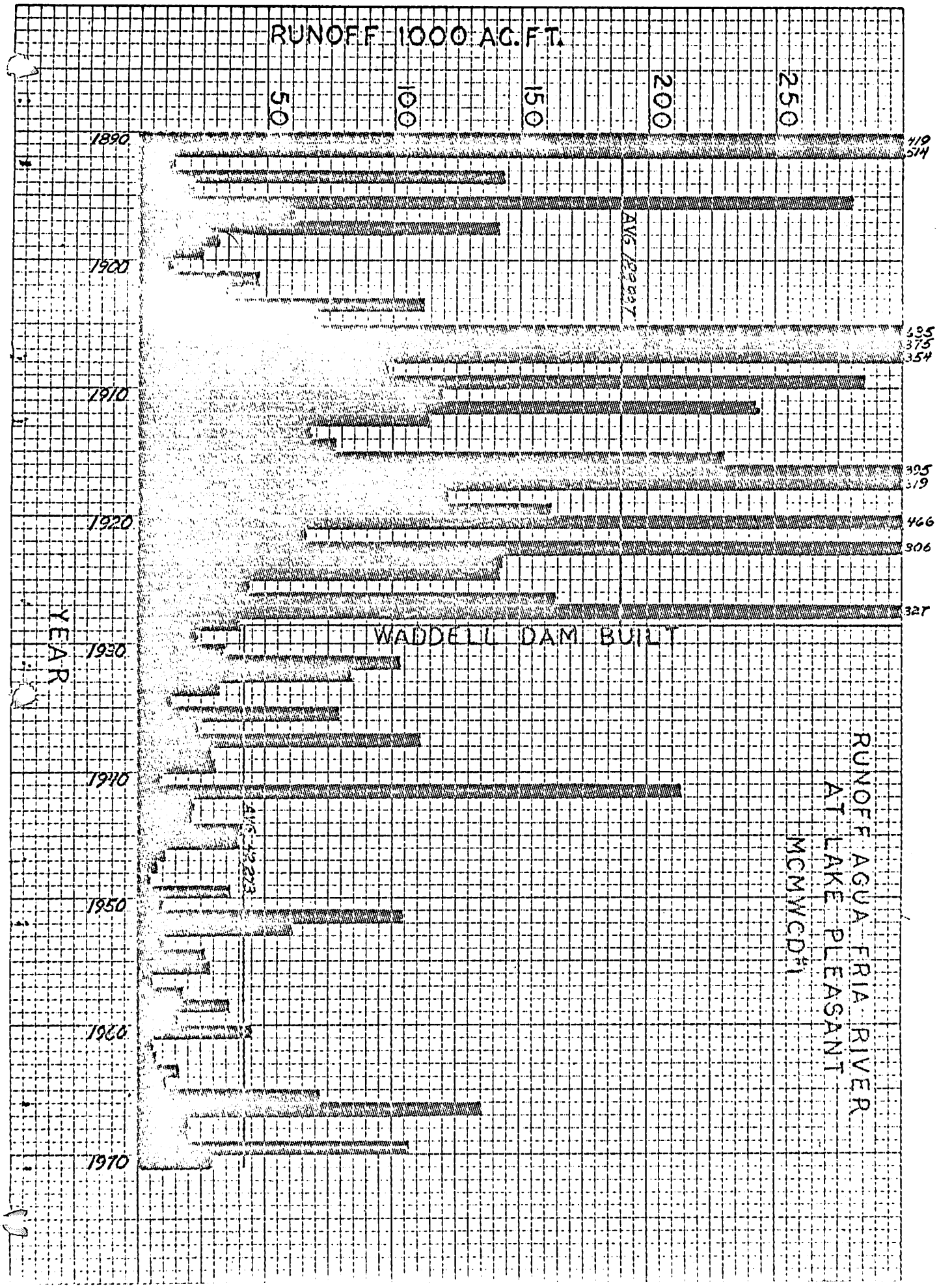
Essential as it is to supply cities with all the water they need, people do not live on household tap water alone. The green fields of irrigated farms are an important part of the urban area environment for all of us. The economic benefits of irrigation are shared by all of us in one way or another, directly or indirectly.

Mr. Chairman, the Maricopa County Municipal Water Conservation District Number One believes the prompt organization of the proposed water conservation district covering at least the three counties of Maricopa, Pima and Pinal is necessary to persuade the federal government to begin construction of the Central Arizona Project quickly, and requests that your

Commission -- without delay -- exercise its authority to declare the district organized.

(The following are Xerox copies of the graphs attached to the statement filed by Mr. Raymond:)


MARICOPA COUNTY MUNICIPAL WATER CONSERVATION DISTRICT NO. ONE WELLS
GROUNDWATER & PUMPING CONDITIONS
ACRE FEET COST
FEET
200
300
400
500
600
172'
245'
STATIC WATER LEVEL
LIFT
7.38
DISCHARGE A.F./UNIT/DAY
$1.97
POWER COST/A.F.
$7.50
430'
3.80
540'
43 PUMPS
60 PUMPS
57 PUMPS
WELLS DEEPENED TO 1000 FEET
1940
1950
1960
1970
YEAR


RUNOFF 1000 AC. FT.
50
100
150
200
250
1890
1900
1910
1920
1930
1940
1950
1960
1970
YEAR
AVG 122227
AVG 42223
WADDELL DAM BUILT
419
514
435
375
354
395
319
466
906
327
RUNOFF AGUA FRIA RIVER AT LAKE PLEASANT MCMWCD#1

THE CHAIRMAN: Thank you very much, Mr. Raymond.

Before we proceed to the next speaker, is there anyone in the room desiring to make a statement who has not previously notified the Commission?

MR. ELLIS: Brock Ellis, R. J. Ellis.

THE CHAIRMAN: The next speaker will be James Green, representing the Harquahala Valley Irrigation District.

MR. GREEN: Mr. Chairman, gentlemen, I am James H. Green, Jr. and represent the Harquahala Valley Irrigation District. Harquahala Valley is an area some 60 miles west of Phoenix which has, up until this point, been not the most successful part of our great state, but it shortly will be due to I-10, Interstate 10, which will go through the area of the Harquahala Valley.

Gentlemen, the most recent material that I have seen concerning the problem that we have in the Harquahala Valley water supply is the report that was given some publicity on May 11, 1971 as a result of the U. S. Geological Survey on the groundwater conditions in the Harquahala plane. I will not elaborate on it, I will simply call it to your attention. Mr. Bettwy, the State Land Commissioner, has those available in his office, I believe.

I will not go into it at great length, it is a

matter of record, of the need for water to continue the growing of crops, agricultural crops, which are so vital to the community not only of this area but to the entire State. We would like the consent of the chairman and the board to present written material to supplement my brief statements, but at this point I would simply urge the adoption and formation of the organization you propose.

THE CHAIRMAN: Thank you very much, Mr. Green.

The next speaker will be Art Bodine, representing McMicken Irrigation District.

MR. BODINE: My name is A. W. Bodine, President of McMicken Irrigation District, and I appreciate the opportunity to appear before this hearing and the Commission.

The McMickin Irrigation District wants to go on record as favoring the formation of a water conservation district to contract for water from the Central Arizona Project.

The State Legislature and the Board of Supervisors of Maricopa, Pima and Pinal Counties are to be highly complimented for their prompt action in the legalizing of this very necessary conservation district.

The McMicken Irrigation District, representing approximately 43,000 acres of the finest producing land in Maricopa County, has requested, with supporting

documentation, 196,000 acre-feet of Central Arizona Project water. This amount of water is needed to properly support the growth of daily needed life-sustaining foods and produce. The United States Geological Services has reported that it is possible that the McMicken Irrigation District could be out of water in 25 years, which certainly is of concern to us and justifies our request.

We will continue in the future, as in the past, to work in cooperation with the Bureau of Reclamation and the Arizona Water Commission to the end that allocation of water may soon be effectuated.

The McMicken Irrigation District supports 100 percent the formation of a conservation district.

Thank you very much.

THE CHAIRMAN: Thank you.

Mr. William P. Reilly, Arizona Public Service.

MR. REILLY: Gentlemen, I appreciate the opportunity to make a short statement. I am William P. Reilly, President of Arizona Public Service Company, and we heartily endorse the formation of the district and wish to commend those who have brought the matter to this advanced stage. We hope that the matter will be fully considered and we pledge to work diligently to bring about the Central Arizona Project, as we have in the past.

Thank you.

THE CHAIRMAN: Thank you very much, Mr. Reilly.

Mr. Dave Brinegar of the Arizona Daily Star.

MR. BRINEGAR: I have a statement that I think other people will cover the same area.

My name is David F. Brinegar. I am a resident and taxpayer of Pima County in the City of Tucson. By occupation I am executive editor of the Arizona Daily Star, a newspaper of general circulation serving the morning field in Tucson and Southern Arizona. My civic associations among many others, include being a member of the City of Tucson Water Advisory Council.

I am here to endorse the formation of the conservancy district. To obtain the Central Arizona Project we must have this district. I ask you to accede to the express wishes of Pima, Maricopa and Pinal Counties that it be formed. The petitions are in your hands, I will ask you to act affirmatively.

I am laying on the table copies of my statement.

You already have it, but I was authorized to bring copies of the statement of Lew Davis, former mayor of Tucson.

I already have and am authorized to present the statement of Evo DeConcini, formerly a member of the Arizona Water Commission. With your permission, all these statements are laid there. These are rather full,

no point in reading them, and with that thank you, gentlemen.

THE CHAIRMAN: Thank you, Mr. Brinegar.

(The following is the statement in full prepared by David F. Brinegar of Tucson, Arizona on behalf of forming a Maricopa-Pinal-Pima Counties Conservation District to guarantee payment for Central Arizona Project water. The statements of Lew Davis and Evo DeConcini will appear later in the transcript.)

"For the Arizona Water Commission,
June 8, 1971, in Phoenix, Arizona

"My name is David F. Brinegar. I am a resident and taxpayer of Pima County and the City of Tucson. By occupation I am executive editor of the Arizona Daily Star, a newspaper of general circulation serving the morning field in Tucson and Southern Arizona. My civic associations among many others, include being a member of the City of Tucson Water Advisory Council. My past connections which give me some basis for understanding water problems are:

"First, I have resided in Arizona most of my lifetime, have owned a small citrus acreage in Maricopa County, and have studied the water and other environmental problems as an editor and a private citizen, in both Pima and Maricopa

Counties.

"Secondly, I was for more than eight years, from July 19, 1948 through November 30, 1956, connected with the Colorado River problem, as assistant secretary of the Arizona Interstate Stream Commission and as an executive of, and from March 1, 1954, through November 30, 1956, executive secretary of, the Central Arizona Project Association.

"Thirdly, I was from August, 1949, through November, 1956, program director for the Arizona Association of Soil and Water Conservation Districts.

"Fourthly, I have been called upon to lecture on Arizona water problems at the Arizona State University at Tempe and at the University of Arizona, these lectures requiring special preparation beyond my normal work.

"Fifthly, starting in 1955 and continuing until I left Phoenix to assume executive duties with the Star in Tucson, I was the secretary -- the first secretary, by the way -- of the Institute for Water Utilization at the University of Arizona. That Institute, presently with Dr. Sol Resnick as secretary, went a considerable distance toward

studying means of sensibly and economically developing water supplies, managing water supplies, managing water properly, and protecting the environment. This was no haphazard operation. It is my recollection that Walter R. Bimson was Institute chairman, and that among the distinguished Arizonans who were part of the Institute were Dr. Phil Eckert, then dean of the University of Arizona College of Agriculture, and Dr. Richard Kassander, then and still today director of the Institute of Atmospheric Physics at the University.

"By the way, I think I need no vouching for my interest in or knowledge of the subject of environment; but if someone should think I do, I would welcome a check with anyone associated with me over the years, including Governor Jack Williams, who as a radio station operator gave Howard Smith and me many hours of free air time to present Arizona's water case to the public, years and years ago; to Wayne M. Akin; to the present executive director of the Central Arizona Project Association, Rich Johnson, a man of the capability and vision needed to professionally handle these matters; and -- well, pick the others yourself.

"I worked, in one capacity or another, on a wide range of water and other environmental problems in

Washington and Arizona. Solely to describe the scope of some of that work, I even went to the Pentagon one day to talk with Dr. Paul A. Siple, now dead but then widely known for his theories of condensation of water out of the atmosphere in places where the dewpoint was favorable, to determine whether anything he knew applied to Arizona. Solely as a piece of sidelight information, Dr. Siple and I concluded that Phoenix was favorable for use of water condensed at dewpoint and collected in a sump, but out of 640 acres, 639 would be needed for wells and sumps.

"I could as well be speaking for formation of the proposed conservation district from Maricopa County's standpoint as Pima's. Since I returned from military service in May of 1946, my interest, due to my occupation, has been statewide, and certainly could not have been otherwise when I succeeded Howard J. Smith as executive secretary of the CAPA after his death in 1954.

"I am here to endorse the formation of the conservation district.

"The idea of a conservation district is by no means new. Those of us who have been in what we call 'the water business,' meaning the endeavors to obtain supplemental water for Arizona, know that the U. S. Bureau of Reclamation, probably nudged by what then was called the Bureau of the Budget, would have liked to see

us go the district route of guaranteeing Central Arizona Project financing with the very first report on the project, in the mid-1940's.

"Certainly by the time a report was well enough put together and commented on so that copies could be presented to the Arizona Legislature's leadership in 1947, a district was considered the ideal, though it was recognized that from a practical standpoint at that time one might have been difficult to form. In the 1940's, not everyone realized, as most people do today, that every part of our economy depends on water, and that agriculture is merely a holding operation for a new supply which soon may be taken over by cities, for homes and industries, and by mines and other users.

"For years ARizona struggled to get legislation enacted to authorize the Central Arizona Project. Part of that struggle was the historic United Supreme Court suit, with which I had the privilege of being connected in a minor way, subordinate to the very great efforts of a Stream Commission then headed by Wayne M. Akin, and a superb battery of vastly underpaid lawyers and engineers who gave Arizona much more than they received in fees.

"Finally Arizona won the Supreme Court suit and at last got legislation from Congress. Now we are at the place where we need to have the project constructed,

and to do so we must give the federal government assurance that the bill for our share of the project cost will be paid.

"What is being proposed here is somewhat like something I saw in my boyhood in Nebraska -- underwriting Chautauqua. I do not know how many of you recall the Chautauquas that came, with their varied programs, to small towns. The merchants were required to underwrite the weeklong events, though I never knew of an instance where ticket sales failed to fulfill the contract and merchants had to pay assessments.

"In the conservation district case, it is likely that the underwriters will have to pay, but the amount will be so small as to be trivial in relation to benefits. I sat in on discussions of the conservation district bill while the ad hoc committee was preparing it for the Arizona Legislature, and so I know that some minimal levy of one cent per hundred dollars of assessed valuation or perhaps less may be necessary to set up the district operations, but that the levy to make up the difference between what is paid directly for Colorado River water or water exchanged for it, and what is needed to meet Uncle Sam's demands, is not likely to be more than an assessment of 4 1/2 cents per hundred dollars of assessed valuation, and that not until 1982.

"True, the law provides for up to 10 cents, but there is no anticipation that that amount will be needed. I consider from such information as has come my way that the assessment is most likely to fall somewhere just above three cents per hundred dollars of assessed valuation, but that is only an educated guess based on how I have seen Arizona grow and what has occurred to property values.

"I appeared before the Pima County Board of Supervisors on behalf of the Pima County resolution asking formation of the district. It would be impossible for me to anticipate, in a direct statement, all of the possible testimony which may be offered today. But there are some wild statements running around about Colorado River water, of which the wildest I have heard include assertions that the state doesn't need it in the first place, that it will be too saline to use, that it will be too costly, and that its introduction will ruin the ecology.

"The state needs Colorado River water, and other water besides. No present method exists of capturing all the rainfall, or precipitating all the moisture over the state, or doing anything else that would be a substitute for Colorado River. I personally hope technological and scientific advances provide, not

alternatives to, but augmentations of, Colorado River water, and the quicker the better. We easily could use, without harming the ecology of Arizona, not one million extra acre-feet of water from some new source, but 10 million or even more. Bring in water from outside the Basin, desalt seawater from the California gulf, do anything else, including cloud-seeding and rainmaking, if science and economics and politics allow us to do it. The fact is we still will need the Central Arizona Project.

"I am not in agreement with one witness who told the Pima County Board of Supervisors that water was not needed because in the last few years the underground water table at Tempe had risen 700 feet! Groundwater tables are dropping, not rising. Heavier and heavier uses demand more and more water. Arizona will grow -- zero growth is not likely unless The Bomb falls. Zero growth would be a tragedy. It would mean eventually a population with few or no children. There is no way under our American form of government whereby Arizona can say to persons now outside of the state: 'You cannot come to Arizona.' There is no way the state can say that families no longer can have children. We must provide for growth.

"Colorado River water is not of the highest quality. But it is being used, and can be used, by mixing

it with better water.

"As to cost, water is like a loaf of bread: it is worth what one must pay for it. The cost at $10 or $12 an acre-foot for agriculture and $50 to $55 an acre-foot for municipal and industrial use is reasonable. Agriculture is the holding operation, as I have said. Before we know it, there will be no $10 water available.

"Think of this: when you pay 20 cents per thousand gallons for water, and most of us in Arizona pay more, you pay just a little more than $65 per acre-foot. From seeing other areas, and from reading reports on water utilization, I can assure you that Arizona cities may someday be glad to get potable water from any source for $100 or more an acre-foot.

"As to the ecology, I consider myself an old-time ecologist. I was involved in the soil and water conservation movement in this state when most of the people who use words like 'ecology' and 'environment' and 'nonbiodegradable' and 'recyclable' and other currently popular terms had not begun to learn of environmental hazards. The advent of any new source of water in Arizona will encourage ecological balance and development. In my own Pima County area, an adequate source of water would prevent what seems already in the making: a bitter internecine struggle over present supplies, pitting every

type of user against every other type of user.

"I have seen farmer vs. miner, farmer vs. city, rancher vs. city, water company vs. water company, and many other such confrontations. I do not predict Utopia with the construction of the Central Arizona Project, but I do see vast improvement.

"To obtain the Project, we must have the conservation district. I ask you to accede to the expressed wishes of Pima, Pinal, and Maricopa Counties that it be formed. The petitions are in your hands and I ask you to act affirmatively."

THE CHAIRMAN: Is Mr. DeConcini or Mr. Davis here?

(No response)

THE CHAIRMAN: Mr. Harold Myers, Dean of the College of Agriculture of the University of Arizona.

MR. MYERS: Mr. Chairman, members of the Commission, I am Harold E. Myers, Dean, College of Agriculture, the University of Arizona, Tucson, Arizona.

Arizona with its low and erratic annual rainfall needs water. Groundwater has made possible a considerable portion of Arizona's development. The City of Tucson and its suburban areas depend entirely on groundwater. The water table in many areas of the State is declining at an alarming rate. For many years attempts have been made to get Colorado River water for

Central Arizona. Since the concept of the Central Arizona Project was developed, Arizona leaders have supported the effort to implement the proposal. The initial efforts before Congress led to the instruction from Congress that the State must establish its claim to Colorado River water legally before Congress would consider further the authorization of the project. The lengthy lawsuit, Arizona vs. California, followed. It resulted in the United States Supreme Court decision giving Arizona the legal right to 2.8 million acre-feet of water annually from the main stem of the Colorado River. Following the court decision, the proposal to authorize the Central Arizona Project was again presented to Congress. Our congressional delegation with the assistance of leaders back home were able to get the project authorized. Planning funds were made available by both Congress and the state legislature. Funds to start construction of the project have been appropriated by Congress, but have not been released by the Bureau of Management and Budget.

The next important step toward eventual realization of the Central Arizona Project is the establishment of an agency to contract with the Department of Interior for delivery of the water from the Colorado River into Central Arizona. The contracting agency must be activated before Congress can be expected to appropriate

large sums for construction purposes.

The 1971 legislature authorized the establishment of a Water Conservation District to act as the contracting agency for Colorado River water which will be delivered through the Central Arizona Project once it is completed.

To me this was a very reasonable action on the part of our legislature, which passed the Act with an overwhelming majority vote. The authorization should be activated so that a legal unit acceptable to both the State of Arizona and the U.S. Department of Interior will be available to contract for the Colorado River water.

Where water development by the Bureau of Reclamation is for agricultural use only, an irrigation district is organized and serves as the contracting agency. The cities, suburban areas and industries in addition to agriculture have a big stake in the Central Arizona Project. Also many irrigation districts will be served by the project. Thus, an irrigation district is not the most appropriate agency for contracting for Central Arizona Project water. Since most of the water from the project will be used in Maricopa, Pinal and Pima Counties for municipal, industrial and agricultural purposes, it appears that the one organization which would encompass all users in the three counties would be logical. The most logical grouping of units which would include cities,

suburban areas, industries and agriculture would be the counties. I recommend the organization of a Water Conservation District consisting initially of Maricopa, Pima and Pinal Counties.

The important consideration is the need for a legal unit to serve as a contracting agency for Colorado River water. The three-county Water Conservation District will in my opinion fulfill this need.

THE CHAIRMAN: Thank you very much, Dean Myers.

The next speaker will be Charles Wetzler, representing the Central Arizona Project Association.

MR. WETZLER: Mr. Chairman, my name is Charles Wetzler, and I am Chairman of the Board of the Central Arizona Project Association. Since it was organized in 1946 as a private, non-profit association, we have provided the non-government public leadership which was in large measure responsible for authorization of the Central Arizona Project by the Congress of 1968. Our membership and Board of 60 directors represents a broad cross section of Arizona's business, agricultural and municipal water users.

At the request of Congressman John Rhodes and Governor Jack Williams our Association played an important role in the development and enactment of the State legislation authorizing the organization of the Arizona

Water Conservation District which is the subject of this hearing.

For a number of reasons we urge this Commission to act favorably and quickly upon the petitions of the Boards of Supervisors of Maricopa, Pima and Pinal Counties in order that the authorized Water Conservation District may very soon be organized and begin to carry out its important functions related to the Central Arizona Project.

When the District is organized it can begin the complicated process of negotiating a water delivery and cost repayment contract with the Department of the Interior, and that process must be substantially underway before we can expect construction of the Project to be started.

Each year of delay in the start of construction means that completion of the Project will be delayed by another year and a further increase in the cost due to inflation and escalation of the price of materials, supplies and labor.

Delay of construction and delivery of Colorado River water also means we will be unable to reduce our rate of ground water mining. We must not lose sight of the fact that the major purpose of bringing Colorado River water into central and southern Arizona is to conserve our use of precious ground water which now provides more than

half of our total available supply.

We all know that the groundwater table shows a very serious decline throughout central and southern Arizona, that land subsidence due to withdrawal of groundwater is a growing problem, and that the quality of groundwater tends to deteriorate as it is drawn from ever deeper levels.

While agriculture will suffer economically from these conditions, it should be stressed that urban environment in central and southern Arizona can only deteriorate if for lack of water the farm green belt disappears, and the dust from its graveyard will be both ecological as well as financial.

Quite aside from that, however, it is apparent from expressions of interest filed by central and southern Arizona cities and towns that Central Arizona Project water will be needed in increasing amounts in the years ahead.

The Central Arizona Project is a project to serve the needs of Arizona people. Its construction has been authorized. Congress has appropriated money to begin construction. Release of that money depends now -- we are told -- on the negotiation of contracts between the Department of the Interior and the district organization which this Commission has been asked to form under

the Arizona Water Conservation District Act.

We strongly support the speedy organization of this District which we are unanimously convinced that it will serve the best interest of the people of Arizona.

* * *

THE CHAIRMAN: Thank you very much, Mr. Wetzler.

Mr. James Pate, representing the San Carlos Irrigation and Drainage District.

MR. PATE: Mr. Chairman, gentlemen, my name is Jim Pate. I live in Casa Grande. I am appearing to make this statement on behalf of the San Carlos Irrigation and Drainage District. I am a member of the Board of

Directors of the District and farm within the District. The San Carlos Irrigation and Drainage District is a political subdivision of the State of Arizona and includes within its boundaries 50,000 acres of public and private lands situated adjacent to Florence, Coolidge and Casa Grande in Pinal County. The District land, together with an additional 50,000 acres of land situated on the Gila River Indian Reservation, make up the 100,000 acres of the San Carlos Irrigation Project.

The Project was constructed pursuant to legislation enacted by Congress in 1916, 1924 and 1928 with later amendments. Some of the land within the District has a history of continuous irrigation which dates from as early as 1868. By the enactment of the federal legislation which resulted in the creation of the San Carlos Irrigation Project and the construction of Coolidge Dam, it was anticipated that the 100,000 acres of land within the Project would be provided with a full and dependable irrigation water supply. It was anticipated that about 80 percent of the irrigation water would be supplied from the stored and natural flow waters of the Gila River and that about 20 percent would be supplied by pumping water from the ground water basin underlying the Project land. Historically, however, the supply of irrigation water has been consistently inadequate and as a

result thereof the economic development of the Project as well as the communities situated within the Project has been retarded.

The Project records reveal that from 1934 to 1970, inclusive, the annual diversion of stored and natural flow water from the Gila River has been only 190,053 acre-feet instead of the 320,000 acre-feet originally anticipated. Pumping has averaged 90,113 acre-feet instead of the anticipated 60,000 acre-feet which has progressively lowered the ground water table an average of from 43 feet in 1936 to 148 feet in 1970 and increased the number of kilowatt hours required to pump an acre-foot of water from 110 in 1936 to 437 in 1970.

As a result of the continued water shortage, crops have been grown on an average of only 58,119 acres of the Project's 100,000 acres. The most acreage ever irrigated in a single year was 81,270 and prior to this year the lowest has been 40,003. Due to an extreme shortage of water within the Project, it is anticipated that even fewer acres will be cultivated during the year 1971.

The San Carlos Reservoir behind Coolidge Dam on the Gila River has a maximum capacity of nearly 1,300,000 acre-feet. The Reservoir has been essentially dry since March 20th of this year. The small flow of water coming

down the Gila River is allowed to pass through the open gates of the Reservoir to be diverted into the Project's canals and laterals at Ashurst-Hayden Diversion Dam. On May 28, twelve days ago, there was no measurable flow at the Diversion Dam. From now until the summer rains occur in July and August, the farmers within the San Carlos Project will have to depend on irrigation water supplied from Project wells which is available only to a small percentage of the Project area.

The San Carlos Irrigation and Drainage District endorsed the passage of the legislation which resulted in the establishment of the Arizona Water Commission and further endorsed the legislation providing for the authorization for establishing a Multi-County Conservation District pursuant to the provision of Title 45, Chapter 13 of the Arizona Revised Statutes. The District strongly endorses the formation of the Central Arizona Project to bring water from the Colorado River for use within the State of Arizona.

C. L. Skousen, President of the Board of Directors of the District, Norris M. Soma, District Manager, and Robert E. Hurley of Jennings, Strouss & Salmon, counsel for the District, are in attendance at this meeting and will be happy to answer any questions that you may have regarding this matter.

On behalf of the District, I wish to thank you for the opportunity to address you today.

THE CHAIRMAN: Thank you very much, Mr. Pate.

Mr. Charles Pipkin, City of Avondale.

MR. PIPKIN: Mr. Chairman, members of the Commission, I will not try to recount our needs for the water problem. There are many, many that can do it much better, but we in Avondale would like to recommend you hurriedly organize this Conservation District. We feel the quicker it is done the quicker we will begin to get cooperation.

THE CHAIRMAN: Thank you very much, Mr. Pipkin.

Mr. R. W. McMullin, Salt River Project.

MR. McMULLIN: Mr. Chairman, members of the Commission, my initials are R. J. Somehow or other, the R. W. crept into the record.

My name is R. J. McMullin. I am General Manager of the Salt River Project. I have filed with the secretary a detailed statement and with your permission I will summarize it in a short statement.

It is a matter of common knowledge in central Arizona and the State as a whole that the Salt River Valley Water Users Association and the Salt River Project have consistently supported the many efforts to bring Colorado River water to central Arizona since their beginnings.

The Project has supported Arizona's position throughout the extensive lawsuit against California interests, through various legislative efforts, through the appropriations hearings and, more recently, through the efforts to release funds for CAP construction.

When it became evident that although funds for the Central Arizona Project were appropriated by Congress, these dollars would not be put to constructive use until a Conservancy District was organized, we supported this effort wholeheartedly.

It is superfluous to relate to the Commission at this time the history of the need for water in central Arizona. This too is common knowledge.

Legislation has now been enacted allowing for the formation of a Conservancy District. The three counties have petitioned for its formation. As this Commission knows, preliminary meetings have been held with the Department of Interior and the Bureau of Reclamation leading to negotiations for the terms and conditions of a master water contract between the United States and the Conservancy District. We are in support of this effort.

In conclusion, we want to impress upon this Commission and the petitioning Boards of Supervisors that the Salt River Project is completely behind this effort to form a Conservancy District, that its Board of

Governors, by Resolution, endorses the formation of such a District, and that the Commission and the new District when organized will have our complete support and cooperation.

A Resolution of our Board of Governors passed yesterday at its regular meeting is attached to the longer statement which I have filed with your secretary.

THE CHAIRMAN: Thank you.

STATEMENT OF R. J. McMULLIN
BEFORE THE ARIZONA WATER COMMISSION
JUNE 8, 1971

"Gentlemen of the Commission, my name is R. J. McMullin. I am General Manager of the Salt River Project.

"In this statement I am speaking in behalf of a large segment of the water users in Central Arizona representing the 238,000 acres of land within the boundaries of the Salt River Project.

"Generations of Arizonans have grown up under the spectre of a water supply which is at best capricious and often has been inadequate to support all the important accomplishments necessary to a successfully burgeoning economy. 75 years ago alternate periods of flood and drouth in central Arizona generated certain substantial

efforts by the people of this community culminating in the Nation's first multi-purpose reclamation project. This project, harnessing the Salt River, and later the Verde as well, was a major contributing force in the development of an economy which now supports better than a million people in central Arizona. Water has been the necessary ingredient . . . the catalyst to this tremendous growth.

"But for many years now, surface water alone has not been enough to meet growing demands. More and more water has been pumped from the underground to supplement stored surface runoff. The central Arizona area uses roughly 4.5 million acre-feet per year. Surface sources supply about one million acre-feet, leaving 3.5 million to be pumped from the underground bank. The annual recharge amounts to about 1.3 million acre-feet. Thus, the annual deficit is 2.2 million acre-feet . . . a dangerous rate of overdraft. This situation, of course, reflects conditions in Salt River Project area as well.

"The water table under this area now drops at an average rate of 10 feet per year, and has been doing so for a great number of years. Whereas we were pumping from an average depth of 100 feet right after World War II, we are now pumping from depths up to 500 feet below the surface. One environmental problem created by the overdraft of underground waters has been widespread land

subsidence in various parts of Maricopa County. Land values and land conservation have been seriously affected; highways have been damaged; the proposed alignment of the aqueduct has had to be changed; irrigation structures and wells have also been damaged.

"Expressions of interest by various agricultural, municipal and industrial users for CAP water, I understand, total over 5 million acre-feet . . . many times the availability . . . an indication of a high order of need. Over one million of the five is for municipal and industrial water.

"This year Salt River Project expects to be called on to pump some 43 percent more underground water than its 1960-69 average. Precipitation, runoff and storage this past winter in the Salt River Project has been drastically reduced, showing figures of 35 percent of average on the Gila, 50 percent on the Salt and 60 percent on the Verde. Even under normal conditions we are faced with an accelerating overdraft to meet growing requirements now and in the future. But it also appears that the fates are being particularly unkind to us this year as far as surface replenishment is concerned.

"Closely congested urban growth without a balancing rural development is the breeding ground of many of today's environmental and sociological ills. Urban

sprawl, junk yards, air pollution from autos, all are products of this congestion. Lack of widespread water availability prohibits planned rural growth and development, and contributes to urban congestion.

"The Salt River Project has supported the efforts to bring about a Central Arizona Project from the beginnings of these efforts. To achieve a greater conservation benefit from the important commodity of water, we diligently supported Arizona in its lawsuit against the California interests. We supported the many legislative efforts spread over 30 years of growing water need. During the 1965-68 period we contributed manpower and money toward final enactment of P.L. 90-537, the "Colorado River Basin Project Act." We have taken whatever steps were called for to achieve adequate appropriations and are now lending our support to the task of getting appropriated funds released so construction of this critical facility can move forward.

"Now three counties have petitioned for the formation of a Conservancy District to be the contracting agency for dealing with the individual water users and the United States. We not only support the formation of such a district but also are in support of the master water contract negotiations. We should further state that the Salt River Project Board of Governors has passed a

Resolution endorsing the Conservancy District formation.

"It is possible to draw a parallel between the proposed Conservancy District under discussion here and the formation of the Salt River Valley Water Users Association. Both entities were generated as a result of the United States' desire to deal with one agency within the State or area and that this agency should have the ability to levy taxes. We feel that our form of organization has worked out rather well and has proven itself to be suited to our economy.

"It is interesting to note that, in 1970, of Maricopa County's assessed valuation of $1,250,000,000, some 67 percent of it falls within Salt River Project boundaries. In other words, if a levy of 10 cents per $100 of evaluation were made by the Conservancy District, approximately $856,000 would have related to assessed valuation within Project boundaries in 1970. Needless to say, it is anticipated that no smaller a percentage would apply to future years when repayment conditions would exist..

"In conclusion, Salt River Project continues to support the only course of action which can hope to assure an adequate future water supply for central Arizona. We have great faith in the future of Arizona's economy, and feel sure that the Commission will do all within its power

to take a further step toward achieving a producing Central Arizona Project . . . a wise investment in our future.

"Thank you."

"RESOLUTION

"WHEREAS, The Congress of the United States of America has authorized construction of the Central Arizona Project (90-537), and has appropriated funds to commence construction thereof; and

"WHEREAS, Salt River Project has been an active participant in support of CAP legislation since the inception of such efforts in 1947, and is vitally interested in obtaining water from the CAP to supplement its present supply; and

"WHEREAS, The executive department of the government has withheld the use of appropriated CAP funds until organization of a conservancy district has been accomplished in the State of Arizona and meaningful contract negotiations have been begun; and

"WHEREAS, The ARizona legislature has enacted legislation providing for formation of a conservancy district to accomplish such purposes; and

"WHEREAS, Maricopa, Pima and Pinal Counties have petitioned the Arizona Water Commission for the formation of such a district, all pursuant to such

recently-enacted legislation; and

"WHEREAS, It is to the benefit of this Association and the entire State of Arizona that a Central Arizona Water Conservancy District be promptly organized;

"NOW, THEREFORE, BE IT RESOLVED, That the Board of Governors of the Salt River Valley Water Users' Association does hereby endorse and support the formation of a Central Arizona Project water conservancy district in accordance with the Arizona Revised Statutes, as recently passed by the Arizona legislature, and be it

"FURTHER RESOLVED, That the appropriate officers and/or executives of this Association are hereby authorized and directed to appear and testify in support of the organization of such district.

"I, F. E. Smith, the duly appointed, qualified and acting Secretary of the Salt River Valley Water Users' Association, HEREBY CERTIFY that the foregoing is a true and complete copy of a resolution adopted by the Board of Governors of said Association at a meeting thereof duly held on the 7th day of June, 1971, at which meeting a quorum was present and voted.

"WITNESS my hand and seal of the Salt River Valley Water Users' Association, this 7th day of June, 1971.

"(Signed) F. E. Smith, Secretary."

THE CHAIRMAN: Mayor Sigmund Liberman, City of Coolidge.

(No response)

THE CHAIRMAN: Mr. W. S. Gookin.

MR. GOOKIN: Mr. Chairman, members of the committee, my name is W. S. Gookin, I am a consulting engineer. We represent numerous irrigation districts throughout the State. I had intended to present several statements, one on behalf of the Chino Valley Irrigation District. The president of that district is here and with your kind permission I would like to turn the podium over to him at this time and then resume with the rest of the statement, if I may. Mr. Theodore Bates.

MR. BATES: Mr. Chairman, I apologize, I am not president of the Chino Valley Irrigation District. I have been in times past. I am a member now of the board of directors.

I have here a brief statement that approves the conservation district as you are contemplating it. Off the cuff I would like to say I see no reason this unit couldn't also handle implementing of water above and/or beyond the Colorado River.

Thank you.

"STATEMENT FOR THE CHINO VALLEY IRRIGATION DISTRICT

"The Chino Valley Irrigation District is located

north of Prescott, Arizona. Although not located in any of the three counties originally establishing the Arizona Water Conservation District, we wish to go on record as completely favoring the formation of a Conservancy District to negotiate contracts for Central Arizona Project water.

"We have made a request for 10,350 acre-feet of Central Arizona Project water and have a complete documentation for the need for this amount of water.

"The State Legislature and the Boards of Supervisors of Maricopa, Pima and Pinal Counties are to be highly complimented on expediting the formation of a Conservancy District.

"We suggest the construction of the Central Arizona Project should begin as soon as possible. The formation of a Conservancy District should assist in expediting the start of construction. Thus, the Chino Valley Irrigation District is fully behind the formation of a Conservancy District."

MR. GOOKIN: On behalf of the Queen Creek Irrigation District, that district has made application for 75,000 acre-feet of Central Arizona Project water.

We believe the Central Arizona Project is an absolute necessity to bring additional water to the arid area we live in. We also believe the immediate start of

construction of this project is highly warranted.

Through the untiring efforts of the State Legislature and the Boards of Supervisors of Maricopa, Pima and Pinal Counties, a Conservancy District has been authorized to contract for water from the Central Arizona Project. It is only through a Conservancy District that fruition of many years of effort can finally come to pass.

The Queen Creek Irrigation District thus supports the organization of the Arizona Water Conservation District. Time is of the essence and the negotiation of Central Arizona Project water contracts should proceed as rapidly as possible.

I have with me today Mr. Dare Boulter from my organization. He has two statements he would like to present, if he may, with your permission, Mr. Chairman, and this will conclude our presentation.

THE CHAIRMAN: Thank you.

MR. BOULTER: Mr. Chairman, members of the Commission, my name is Dare Boulter. I live in Scottsdale and I work for W. S. Gookin and Associates. As Mr. Gookin has stated, we represent several irrigation districts. I have two statements here I would like to read and then I will give a copy to the ladies. I also have to take my glasses off to read.

The Chandler Heights Citrus Irrigation District,

located in southeast Maricopa County, is faced with ever increasing costs for the pumpage of groundwater. The elevation of the groundwater is decreasing at an alarming rate.

In the interest of water savings, Chandler Heights Citrus Irrigation District have their entire irrigation system in pipelines.

6,000 acre-feet of water has been requested from the Central Arizona Project which is essential to alleviate our water problem.

The State Legislature and the Board of Supervisors of Maricopa, Pima and Pinal Counties are complimented for their prompt handling of the method whereby a Conservancy District can be formed to contract with the United States for Central Arizona Project water.

The Chandler Heights Citrus Irrigation District wants to go on record as favoring the formation of a Conservancy District.

Then I have one here for the San Tan Irrigation District.

THE CHAIRMAN: San Tan?

MR. BOULTER: Yes, it is two words, S-a-n T-a-n. Mr. Dave Moss heads up this district and he is out of town today however, and he would like to state that the formation of the Arizona Water Conservation District is,

we understand, the next step in the procedure for obtaining Central Arizona Project water. The approval of this Conservancy District will then allow negotiations for Central Arizona Project water.

We need the water desperately. We do have a lined system, and are now faced with an ever increasing depth to groundwater. Our request for 15,770 acre-feet of Central Arizona Project water is completely realistic and has been fully documented. It is essential to our District that the construction of the Central Arizona Project commence immediately. For this reason the San Tan Irrigation District fully supports the formation of the Arizona Water Conservation District.

Thank you.

THE CHAIRMAN: Thank you very much, Mr. Boulter.

We will take about a five to ten-minute recess.

(A recess was taken and proceedings were resumed as follows:)

THE CHAIRMAN: The next speaker will be Mr. David Yetman, Committee for a Sane Water Policy.

MR. YETMAN: My name is David Yetman. I live in Tucson. I resided until last week in Mesa.

This hearing has gone too smoothly. A hearing isn't any good unless you get some flack from the other side. I guess I will pour it on.

I have lived in Arizona since 1954. I came to Arizona for my health and moved to the metropolis of Duncan. The fondest memories I have in Arizona, I can remember each year how we would wait for the summer rains to come and you could watch the summer storms build up in the mountains and how the river would come down and it would be welcomed by everyone and this really struck me at the time how unusual it was that water could be such an incredibly valuable commodity in an area.

I moved from there to Prescott and even there water was a very remarkable commodity. In 1959 there was a severe drouth and when the rains came it meant the difference between life and death. Seeing how water figured in our lives at that time, the Central Arizona Project sounded to me as if it were the greatest thing men or engineers had conceived, a plan to turn a barren desert into an oasis, and I wonder if the people know I supported the Central Arizona Project through the years 1966 and 1967 in congress.

After that I made the mistake of looking rather carefully into the project, after following the suggestions of some authorities whom I knew, and I have come to the unfortunate conclusion, and you can see the conclusion in this pamphlet which is my statement and which is also the position of the committee I represent, that the

Central Arizona Project will in no way turn Arizona into a green oasis. It is in no way going to help anyone to water. It is going to turn out to be an agricultural catastrophe and it is not going to do agriculture any good. All it is going to be doing is delivering a tiny bit of water, which is bad.

This is not a very popular thing to say, gentlemen, but I think we need to face the facts. There is only 600,000 acre-feet of water available in the Colorado River. If I can quote Mr. Clifford Pugh from 1968, we are going to have to deliver over 600,000 acre-feet taken from water salvage and I think there are good objections to water salvage and we can't count on it as we would like. If we are going to deliver 600,000 acre-feet of water that is going to be a far cry from the approximate 5,000,000 acre-feet in which there was interest expressed as of June 30, 1970 reported by the Interstate Stream Commission. There is no way we are ever going to get anywhere near the amount of water it would take to satisfy what is called Arizona's water problem. In terms of economics I would refer to some extremely interesting reports of the Central Arizona Project that have been done by three particular economists--

THE CHAIRMAN: This is not to determine whether the Central Arizona Project is feasible or not. It is to

determine whether the conservancy district should be formed.

MR. YETMAN: I would like to relate this.

THE CHAIRMAN: Get to the point, please.

MR. YETMAN: What I would like to point out is that the only justification for the formation of this district would be if we can get enough water at a cost that would be within the realm of possibility. The municipality is going to have to pay the price when this district is formed. We would not have raised an opposition if there were no problems with the Central Arizona Project. It seems unrealistic for the City of Phoenix to pay $80 per acre-foot for what they now pay $2.

I don't think this will help any farmer. There are not many farmers that can afford to pay 17 to 18 dollars a foot for water in Arizona. I think there can only be two grounds justifying formation of this district. First, if we can get a good product, which we can't, the Colorado River is notably saline; and secondly, even if that water were good it would have to be economically justifiable. I have arguments in my statement to show it is not and I have a bibliography in the back.

I would like to suggest to you gentlemen that this is not a good move agriculturally or economically. There are alternatives to the Central Arizona Project

which I have stated in this booklet and I think these should be considered. I think they are good alternatives. I do not think it is in the interest of a taxpayer of Arizona who is really going to have to foot this exhorbitant bill or in the interests of all farmers to import a small amount of Colorado River water which the Central Arizona Project would afford into the State.

I would like to go on the record and my committee would like to go on the record as recommending against the formation of this conservancy district, since there is no way whatsoever in which the Central Arizona Project can solve the purported Arizona water problem.

Thank you, and I apologize for being the devil's advocate, but I did it today.

THE CHAIRMAN: Thank you, Mr. Yetman.

Mr. Yetman, tell me, who is on your committee?

MR. YETMAN: I represent the Committee for Sane Water Policy, and I will be glad to submit to the Commission a membership list.

THE CHAIRMAN: Will you submit that to the Commission?

MR. YETMAN: Yes, I will be glad to send you a copy.

THE CHAIRMAN: Thank you very much.

(The following is the Xeroxed statement of David A. Yetman, Committee for A Sane Water Policy, 450 East Alturas, Tucson, Arizona 85705.)

Introduction

Supporters of the Central Arizona Project have promised almost unlimited benefits for Arizona. Opponents of the CAP have raised serious objections. This booklet presents an analysis of the CAP from a layman's point of view through a discussion of the following questions:

(1) Is there enough water available from the Colorado River to implement the CAP?
(2) What would be the quality of CAP water?
(3) What would be the effect of the CAP structures on the state's environment?
(4) Is the CAP economically sound?
(5) Is water a limiting factor in Arizona's economic development?
(6) Does Arizona suffer a water shortage which the CAP can help?

We suggest that you examine the following arguments carefully. We invite your comments. The future of the CAP concerns you.

Background

The Central Arizona Project is a plan to import Colorado River water into the central Arizona area roughly bordered by Phoenix on the north and Tucson on the south. As authorized by Congress in 1968, it includes the following basic features:

(1) Granite Reef Aqueduct and pumping plant for diverting and carrying water from Lake Havasu in western Arizona to Orme Reservoir.

(2) Orme Dam and Reservoir located below the conjunction of the Salt and Verde Rivers.

(3) Buttes Dam on the Gila River in Pinal County.

(4) Charleston Dam on the San Pedro River near the Mexican border.

(5) Hooker Dam on the Gila River near Silver City, New Mexico.

(6) The Salt-Gila Aqueduct to transport water from Charleston and Orme Dams to Pinal County.

(7) The Tucson Aqueducts to transport water from Charleston and Orme Dams to Pima County.

(8) Pumping plants, distribution works and drainage works essential for the above structures.

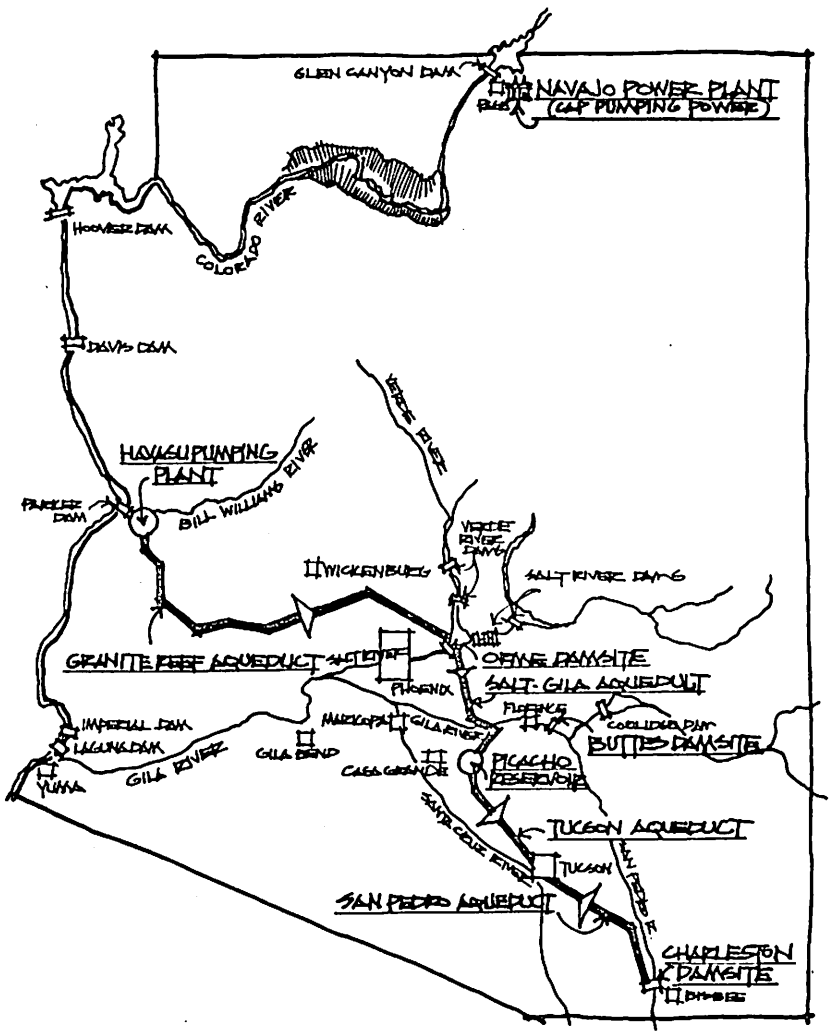
(9) The construction of a thermal power plant to provide, among other things, the power necessary to pump water from Lake Havasu into Granite Reef Aqueduct, up approximately 1,200 feet, and down into Orme Reservoir.

(10) Authorization to pump 1.2 million acre-feet annually from Lake Havasu.

Early in the 20th century, Arizona was already beset by a lack of cheap water to carry out desired water programs. The inability of stream and river waters to meet the demands of agriculture led to heavy dependence on pumping of ground waters. By the 1930's, ground waters had already begun to drop in some areas and pumping costs had already begun to rise. Even with the completion of vast water projects such as the Salt and Verde River Dams and Coolidge Dam on the Gila, demand for water seemed always to exceed cheap supply. With vast increases in irrigated acreages in

the postwar period and increased pumping, unregulated by adequate law, water levels in ground water areas fell alarmingly -- enough to produce fears that the future of agriculture in the state was in jeopardy. By late 1960's, it was claimed that drastic depletion of water sources had forced the abandonment of hundreds of thousands of acres of formerly productive irrigated lands.

As early as the 1940's, Arizonans seriously proposed importation of Colorado River water into central Arizona in order to alleviate the water deficiencies the area was experiencing. In 1949, for instance, representatives of the State argued before Congress that Arizona faced imminent economic decline unless the existing water supply was augmented by Colorado River water. These arguments were repeatedly presented by the Arizona congressional delegation led by the then Senator Carl Hayden.



A 1923 law divided Colorado River waters on the basis of an historical average virgin flow at Lee's Ferry (the dividing point) of 15 million acre-feet annually. Half (7.5 million acre-feet) was allocated to the Upper Basin States and half to the Lower Basin States. Legislation authorizing construction of the CAP was passed in 1968 after some painful concessions, notably guaranteeing to California a 4.4 million acre-feet priority. The Lower Basin share was divided by S.1004, the CAP enabling legislation, as follows: California - 4.4 million acre-feet; Arizona - 2.8 million acre-feet; Nevada - 0.3 million acre-feet. A 1944 treaty with Mexico guaranteed delivery of 1.5 million acre-feet annually.

The CAP enabling legislation authorizes Granite Reef Aqueduct to have a capacity of 2,500 cubic feet per second (cfs) or 1.2 million acre-feet per year. It also specifies that (1) Any water in excess of this amount may be utilized only when Lake Powell is full or releases are made to prevent Lake Powell from rising above the 3,700 foot level. (2) The State must bear all costs for any larger aqueduct. Although discussion of the CAP has invariably been accompanied by talk of the necessity of augmentation of the Colorado by water from the Northwest or Canada, S.1004 specifically forbids any studies for the implementation of water importation prior to November 1978.

In the face of these restrictions, however, planning has continued in Arizona and in the Bureau of Reclamation, the responsible Federal agency, for implementation of the CAP. Years of squabbling among competing water users appeared to have been ended satisfactorily in 1971 with the passage of legislation enabling the formation of a single state water conservancy district to contract with the Bureau of Reclamation for CAP water. State officials appear uniformly confident that the CAP will soon become a reality, in spite of the fact that no funds were appropriated in 1968, nor have any substantial funds been appropriated since.

Over the years, numerous analyses have pointed out deficiencies in the CAP -- deficiencies severe enough to raise doubts about the advisability of implementing the Project. We shall now consider some of the objections that have been raised.

The River

THERE IS NOT NOW, NOR WILL THERE IN THE FUTURE BE, ENOUGH WATER AVAILABLE FROM THE COLORADO RIVER FOR THE CENTRAL ARIZONA PROJECT.

The Lower Basin share of 7.5 million acre-feet does not include 0.75 million acre-feet guaranteed to Mexico by treaty, nor does it take into consideration evaporation and other losses.

California	4.4 million acre-feet (maf)	
Arizona	2.8 maf	
Nevada	0.3 maf	
	7.5 maf	- the Lower Basin share of the total average virgin flow as estimated optimistically in the 1920's.
Mexico (½ its share)	0.75 maf	- also based on an optimistic estimate which envisioned surplus water.
Evaporation and other losses	0.80 maf	
Total	9.05 maf	

This suggests that the river below Lee's Ferry is over-allocated by 1.55 maf. In addition, the actual average annual flow has fallen far short of the estimates. Thus, in spite of the fact that Arizona is not utilizing more than 1 maf of its 2.8 maf share, the river has little or no more water to give.

Yet Congress has estimated that about 1.2 maf will be available for the CAP until some time during the decade 1985-1995 because the Upper Basin, according to estimates, will not be using all of its share of 7.5 maf until that time. The Bureau of Reclamation

estimates that by the year 2030 Upper Basin depletions will have decreased the water available for the CAP to a deliverable quantity of 676,000 acre-feet, or little over half the supply planned for the Project. These estimates are based on a hoped-for annual average flow of at least 13 maf before division at Lee's Ferry.

That even this figure is optimistic is shown by the figures below:

	Flow	Surplus or Deficiency
Last 46 years before 1967 (avg. annual)	13,700,000 af.	700,000+
Last 38 years " " " "	13,000,000 af.	-0-
Last 10 years " " " "	12,100,000 af.	900,000-
1954	7,667,000 af.	5,333,000-
1955	9,188,000 af.	3,812,000-
1959	8,562,000 af.	4,438,000-
1961	8,360,000 af.	4,640,000-

The Colorado River storage facilities have shown quite clearly the effects of the fickle flow of the River. Lake Mead is chronically low. Lake Powell has never even approached capacity and probably will fill only if several extremely wet years occur closely in succession. And Upper Basin depletions will continue to rise, gradually diminishing the quantity of water deliverable to the Lower Basin States.

It has sometimes been suggested that, if the State built a larger Granite Reef Dam to provide for larger quantities of water (should larger quantities eventually become available), then water costs per acre-foot would be reduced sufficiently to overcome objections to projected high unit costs of CAP water. As was noted earlier, however, any increase over 1.2 maf can take place only if Lake Powell is full. Even if it were full, only 1/6 of the additional water would be available to Arizona. Thus, it is extremely doubtful that any significant excesses of water would become available. For the present, it is improbable that anything approaching a million acre-feet per year will be available for the CAP over a period of years.

Arizona consumes 6.5 maf of water per year. 3.0 maf is naturally replenished from stream flow and recharge of the water table for a net deficit of 3.5 maf. This means that, even at best, the CAP would only alleviate about one-third of our water problem, and there is no indication that the best conditions will occur. Since importation plans cannot even be considered until 1978 and are dubious even then, the value of the entire Project is doubtful.

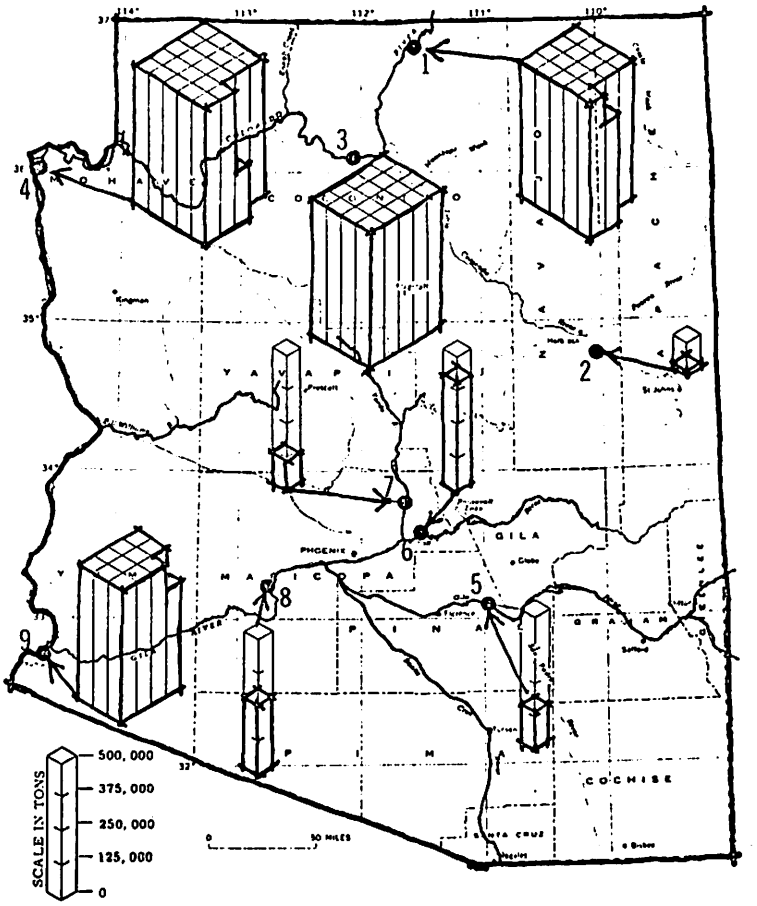
To complicate the CAP's dilemma, there is every indication that the CAP will drastically increase the loss of water through evaporation. Average annual losses in Arizona are eight acre-feet per acre of surface. According to Bureau of Reclamation figures, the water loss from evaporation of a normally functioning CAP would be around 200,000 acre-feet per year -- approximately equal to the amount of water consumed by the Phoenix metropolitan area per year.

THE HIGH SALINITY OF CENTRAL ARIZONA PROJECT WATER MAY CAUSE IT TO BE UNACCEPTABLE FOR EITHER MUNICIPAL OR AGRICULTURAL USE.

It is impossible to consider water programs without giving adequate attention to the quality of the product to be delivered. The concentration of dissolved solids is one of the more important cri-

teria of the quality of water. The greater the quantity of dissolved solids in water, the greater the salinity. In general, the lower the salinity, the better the quality of the water. The amount of dissolved solids in the Colorado River just below Lake Havasu, the proposed intake point for the CAP, ranged from 546 parts per million to 826 ppm over a four-year period in the middle 1960's. Evaporation in transit and during storage at the various dam sites will increase the already high salinity. This will make the water of questionable value for domestic or agricultural uses.

According to U. S. Public Health Service Water Standards (1962), good water for drinking should contain a maximum of 500 ppm and not more than 250 ppm chloride solids. Phoenix water now varies from 410 to 520 ppm. 1000 ppm is the maximum allowable concentration. The added Colorado River water with its high dissolved solids content would raise the level of dissolved solids or salinity of municipal water supplies, conceivably to an intolerable or illegal level. Cities with existing salinity problems, such as Tempe, will face aggravated situations with CAP water. Costs of adequate salts removal could add $20 or more per acre-foot of water to the already high cost of CAP water.



EXPLANATION

1. COLORADO RIVER AT LEES FERRY
2. LITTLE COLORADO RIVER AT WOODRUFF
3. COLORADO RIVER NEAR GRAND CANYON
4. COLORADO RIVER BELOW HOOVER DAM
5. GILA RIVER AT KELVIN
6. SALT RIVER AT STEWART MOUNTAIN DAM
7. VERDE RIVER BELOW BARTLETT DAM
8. GILA RIVER BELOW GILLESPIE DAM
9. YUMA MAIN CANAL BELOW COLORADO SIPHON, AT YUMA

Average loads of dissolved salts in Arizona streams.

Farmers may be justifiably reluctant to use CAP water of such high salinity, since crop yield is lowered when water of inferior quality is used. Colorado River water is already causing trouble in irrigated farming areas in Southern California. Since evaporation increases salinity, evaporation of water in transit to agricultural and municipal users will significantly increase salinity. It is a real possibility that the use of such water for irrigation could increase the salinization of soils to the point where they are unsuitable for agriculture.

The quality of Colorado River water is already an issue with international repercussions. Waters reaching Mexico have a salinity so high that much of it is unfit for any use. And it is this same water, although somewhat reduced in salts content, which is considered for the CAP.

Environment

CONSTRUCTION OF CENTRAL ARIZONA PROJECT DAMS WILL DESTROY LARGE AREAS OF WILDLIFE HABITAT.

The Orme, Buttes and Charleston Dams will flood large acreages of land and virtually stop the free-flowing portion of streams and rivers. (Portions of the Salt, Gila, Verde and San Pedro Rivers would be affected.) Free-flowing rivers have a different fauna from that of standing waters of lakes. When the free-flowing portion of a stream is dammed, many species are unable to adapt to the new habitat.

A similar phenomenon is encountered with plant life. Large and graceful stands of cottonwoods occur along the river banks, particularly where the Salt and Verde converge. The cottonwoods, palo verdes, mesquite thickets and a variety of other trees and shrubs provide food, oover and nesting sites for a diversity of animals from small arthropods to birds and large game animals.

The upper Gila River in New Mexico, which will be adversely affected by Hooker Dam, provides rich riparian flora and fauna which are somewhat different from the similar Arizona biota. The New Mexico and Arizona riparian areas which would be affected by the CAP are unique in the United States and should be preserved for this, if for no other reason.

Success of the CAP depends in part upon inordinately destructive "water salvage" programs such as phreatophyte control. Phreatophytes are land plants (such as cottonwoods and salt cedars) which grow along the banks of rivers and require large amounts of water. Phreatophyte control programs eliminate cottonwoods and other plants along CAP-related rivers. With the phreatophytes go all the life which makes them interesting and varied habitats -- home to an incredible variety of plants and animals.

THE CENTRAL ARIZONA PROJECT WILL DESTROY POPULAR RECREATION AREAS IN ARIZONA AND NEW MEXICO.

A detailed look at just one of the projects of the CAP -- the Orme Dam and Reservoir -- will show the impact of the Project. The Orme Dam and Reservoir will be located near the confluence of the Salt and Verde Rivers about 25 miles northeast of Phoenix. The Verde and Salt in this region are the last free-flowing, perennial

streams within convenient reach of the million people of the Phoenix metropolitan area. Besides forming a home for fish and supporting wildlife and riparian vegetation, these streams are heavily used for recreation. They are particularly and justly famous for float trips on inner tubes, being used each year for such trips by tens of thousands of persons. If Orme Dam is built, it would mean the end of the float trips except for a very inaccessible stretch of the Verde a few miles long below Bartlett Dam.

In addition to "tubing" and swimming, this region is heavily used for fishing and hunting. For the fisherman, the Verde has large mouth bass, channel catfish and carp. In addition, up to 20,000 trout a year are planted below Stewart Mountain Dam by the Arizona Game and Fish Department. This is the only trout fishing that can be found reasonably close to Phoenix; it will be destroyed by the Orme Dam. Similarly, hunters now find mule deer, javelina, cottontails, doves and Gambel's quail in this area.

If the Orme Dam and Reservoir are built, an area used by thousands for varied recreation ranging from "tubing" to birdwatching will be converted into a large mud flat created by a shallow, flat-bottomed, fluctuating reservoir whose recreational values would be greatly limited. A significant loss of recreational opportunities would occur instead of the gains claimed by proponents of the Project.

Unfortunately, there are many other projects in the plan for the CAP besides Orme Dam. The necessary aqueducts will tear up miles of desert, including some prime and virgin desert country. Hooker Dam will back waters into the Gila Wilderness in clear violation of the Wilderness Act of 1964. The "water salvage" programs on the Lower Colorado will turn the river into a lifeless, sterile ditch, an effect which can already be observed in the Cibola Division of the River which has been dredged and channelized.

THE CONSTRUCTION OF ORME DAM WILL DISPLACE THE YAVAPAI - APACHE PEOPLE AND DEPRIVE THEM OF THEIR MAIN SOURCE OF EMPLOYMENTT.

The Fort McDowell Indian Reservation is the home of approximately 300 Yavapai-Apache people. These Indians are relatively affluent and in 1969 the average income of a reservation family was about $6,000 per year. In 1969 the available labor force on the reservation was 79. Of these, 50 were permanently employed, 27 were temporarily employed, and only two were unemployed. They are not wards of the State.

If Orme Dam is built, 2/3 to 3/4 of the reservation will be flooded at high water and the City of Phoenix water facilities which provide the tribe with over half its man-hours of employment will be submerged. The residential areas of the reservation would be flooded and the Yavapai-Apache people would be forced to move to the small part of the reservation not flooded by the lake or to 2,500 acres of land which they may pick from Forest Service lands to replace the 16,000 acres lost to Orme Reservoir. Except for a little land along the Verde north of the reservation, the Forest Service lands available for exchange are located on the east side of the Verde River and are isolated and rough. Most of the good land surrounding the reservation is not available for exchange since it is already in the hands of land speculators. The loss of excellent bottom land along the Verde in trade for acreages of rough, isolated land hardly seems to be of benefit to the tribe even if there is a cash settlement as well.

Some members of the tribe have expressed interest in the money they would receive for the lost land and in the houses and new roads that the government would build for them. Commenting on these possibilities, one member of the Tribal Council said that six years ago the idea of new homes and a modern village sounded good to him, but that he had changed his mind. Now he would rather stay near the river and its pleasant life. His position appears to have some merit as the CAP enabling legislation, if its language is correctly interpreted, provides only $500,000 for the relocation and new homes for 53 Indian families. This does not sound like a luxury development. An indication of the desire of the tribe to remain by the Verde and of their distrust of the government's plans is the fact that in spite of the threat of Orme Dam, the tribe has built 10 new houses since 1968 along the river and is constructing 10 more. One member of the tribe wrote an impassioned letter to a conservation group pleading for help in protecting his home and his tribal lands.

Although promoters of the CAP have claimed that Orme Reservoir will provide an excellent source of revenue for the Indians, both Indians and BIA officials have expressed the view that the fluctuations in the shallow reservoir would create huge mud flats which would limit the usefulness of the lake for many types of recreation. The Indians are prohibited by CAP law from charging the public for use of the lake. Without their main source of employment (the City of Phoenix Water Treatment Facilities) the Yavapai-Apache people, isolated from Phoenix on lands they do not want, will be forced to find new means of employment or become wards of the State.

In spite of some interest in government payoffs, all of the Yavapai-Apache people interviewed by a study team expressed opposition to the construction of Orme Dam. Tribal officials, BIA officials and officials of the Bureau of Reclamation have all stated that the Indians of the Fort McDowell Indian Reservation are opposed to Orme Dam. The consequences of resistance are stated clearly, however, in the Colorado River Basin Project Act: "Each community and each affected allottee shall have six months in which to accept or reject the Secretary's offer. If the Secretary's offer is rejected, the United States may proceed to acquire the property interests involved through eminent domain proceedings in the United States District Court."

Economics

ACTUAL CAP WATER COSTS WOULD BE HIGHER THAN FARMERS COULD AFFORD. CITIES AND INDUSTRIAL USERS MUST MAKE UP THE DIFFERENCE.

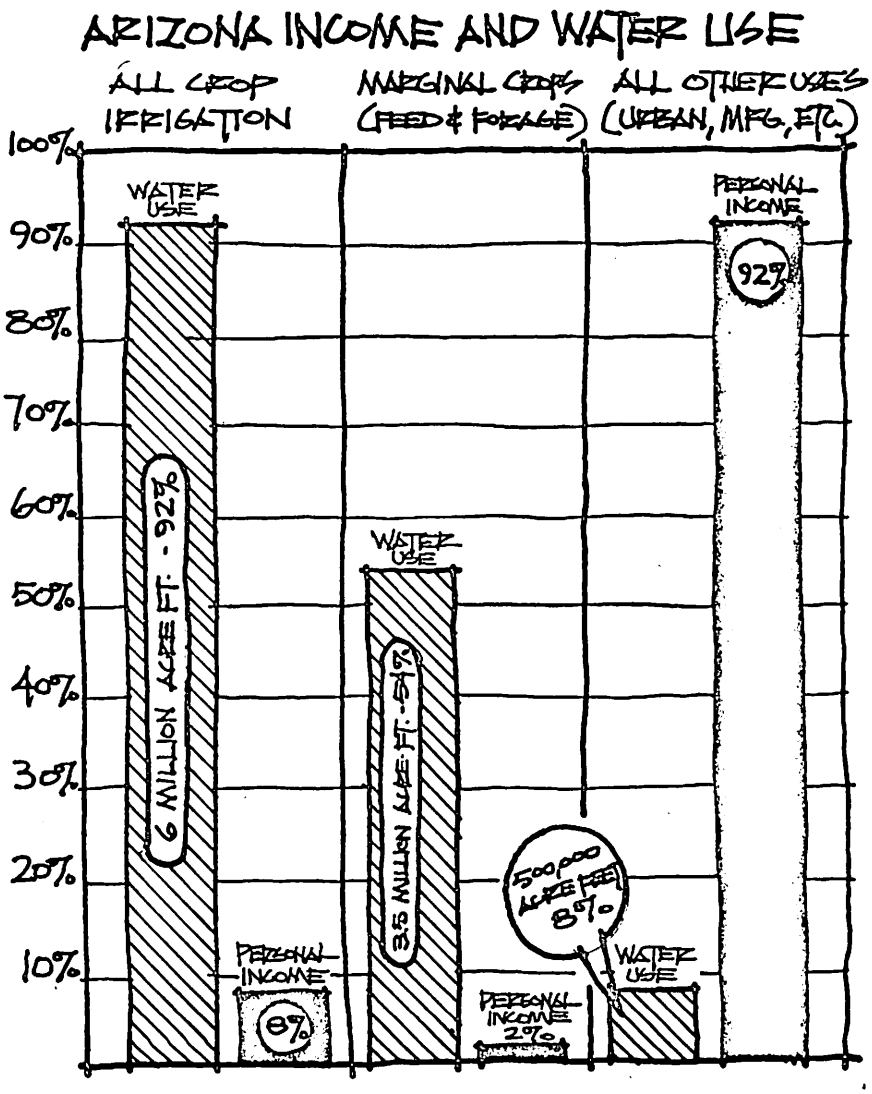
Supporters of the CAP have predicted many benefits. An initial consideration of water prices as required by S.1004, however, suggests that the price may be rather high. The Department of the Interior estimates that, on the basis of CAP legislation, the cost of CAP water will be $10 per acre-foot for agricultural uses and $50 per acre-foot for municipal and industrial uses, a discrepancy necessary because agricultural users would be unable to afford the actual costs of the water. It is probable that the price of irrigation water will remain fixed at $10 per acre-foot at canalside, in line with the usual reclamation practice of subsidizing farmers, a relic of "family farm" days. Delivery from canalside to farm would impose additional costs averaging $7 per acre-foot.

But could farmers afford the $17 per acre-foot cost of delivered CAP water? Many could not. Out-of-pocket costs in the Central Arizona area where ground water is pumped average less than $7.50 and nowhere exceed $12.50 per acre-foot. The following table, from a published article by Drs. Martin and Young, relates the above values to profits:

WATER COSTS AT WHICH CROPS JUST COVER THE VARIABLE COST OF PUMPING

Cotton at 25.06¢ per pound	$ 33.69
(Cotton under 1967 gov't. support)	(54.83)
Barley	19.11
Alfalfa	13.28
Grain Sorghum	18.53

This chart shows the cost per acre-foot (based on 1967 prices) at which the farmer can just break even on certain crops. At $17.00 per acre-foot the farmer would certainly lose money on alfalfa and would have very little margin to offset the other costs of farming with barley and grain sorghum. (It is noteworthy that as of June 1970 only five individuals or corporate farms or ranches had expressed interest in contracting for CAP water, while 25 irrigation and water conservancy districts had expressed interest.)



Feed and food grain and forage crops use about 54% of Arizona's water but directly account for only 1.5% of personal income in the state's economy. Some acreages now producing food and forage crops will probably be phased out or converted into higher-profit crops with or without the CAP. This cannot be construed as being detrimental to the economy of the State.

For crops which yield higher profits such as cotton, sugar beets, pecans and food crops, CAP water is not necessary, since pumping costs are now lower than the cost of CAP water and would remain lower for years to come. Profit margins are such that these crops can withstand gradually increasing pumping costs without any need for imported water.

If water tables continued to fall at eight to ten feet per year, then pumping cost increases (which average 3¢ per foot) would yield increases of 30¢ per acre-foot per year. The difference between $17.00 (CAP water costs per acre-foot) and $7.50 (average costs per acre-foot of pumped water) is $9.50. At this rate, it would take 32 years for the cost of pumped water to rise to the level of CAP water costs.

ANY INCREASE IN THE COST OF THE CAP (ESTIMATED AT $832 MILLION IN 1968, NOW ABOUT $1 BILLION) OR ANY ADDED COST DUE TO ITS FAILURE TO DELIVER 1.2 MAF PER ANNUM, MUST BE BORNE BY THE MUNICIPAL AND INDUSTRIAL INTERESTS.

If we add constant inflation to this picture, it becomes bleak, indeed, for the cities. Officials in Phoenix currently estimate that CAP water will cost between $60 and $80 per acre-foot, compared with current prices of a maximum of $2 per acre-foot. Prices will be even greater in Tucson where delivery canals do not exist and will have to be constructed. The cost of de-salting water, which probably will be necessary, will bring the total water price to a figure approaching $100 per acre-foot. (The actual economic picture is, of course, far more complicated than a simple review would suggest. The interested reader is invited to examine the bibliography for additional analyses.)

As fantastic as these figures sound, even they may be optimistic:

(1) Assume delivery of one million acre-feet of water after evaporation of 200,000 acre-feet (Bureau of Reclamation estimate).
(2) Assume a project cost of $1 billion.
(3) Assume only 4% interest per annum.
(4) Assume a 50 year re-payment schedule ($20 million per year).
(5) Assume half the water is used for agriculture (500,000 a.f.), and the other half for municipal and industrial users.

Yearly re-payment costs: $40 million for interest
$20 million re-payment of principle
$60 million total annual payment

Agriculture's share for 50% of the water at $10 per acre-foot would be $5 million. The remaining $55 million must be paid by the municipal and industrial users. $55 million ÷ 500,000 acre-feet = $110 per acre-foot. And these are fixed costs -- should less water be available, the re-payment could be the same but the cost per acre-foot would rise.

The less water delivered, the greater will be the municipal and industrial cost because the farmers, paying at the lesser rate, will probably get preference for water deliveries when supply is

short, increasing their percentage. Thus, the main function of the municipal and industrial interests and the general taxpayer in the three-county (Maricopa, Pinal, and Pima) conservation district, will be to keep the farmers supplied with water the farmers can not afford.

THE AVAILABILITY OF WATER NEED NOT BE A LIMITING FACTOR IN ARIZONA'S ECONOMIC GROWTH.

In spite of predictions of economic catastrophe and of depletion of ground waters, there is excellent evidence of increased agricultural activity, even in areas totally dependent on ground water supplies such as the Sulphur Springs Valley. (Irrigated crop acreage actually increased 50% between 1945 and 1965.) Claims that 300,000 acres have been removed from production due to lack of water appear to be grossly exaggerated. It is difficult to document even 1/10 that amount removed solely due to lack of water. Citrus acreage, for instance, has declined due to competition from Florida and cotton acreages may decline due to government limitations on acreages. However, such acreage reductions are obviously due to other economic problems which cannot be solved by importing CAP water.

Water tables are falling in many areas and tapping ever-deeper supplies means increased pumping costs. However, price increases are gradual and are typically accompanied by changes to more profitable crops, plant varieties demanding less water, and new methods of applying water. Agricultural acreage is also being bought up by real estate developers and converted to urban uses which require far less water per acre than agricultural uses.

ARIZONA DOES NOT HAVE A WATER SHORTAGE OF THE SORT THAT THE CAP CAN REMEDY.

Arizona possesses neither a physical shortage of water, nor an economic shortage of water in any form that can be helped by the CAP. The State does face continuing surface water shortages due to the lack of rainfall which is an inherent characteristic of an arid land. But the CAP is not a proposal to increase rainfall in an arid land. Surface shortages are accentuated in times of drouth, but drouths are unaffected by water importation projects.

There are vast supplies of ground water still untapped. Some 700 million acre-feet of ground water was known to be economically recoverable as of 1967. The U. S. Geological Survey has stated that Tucson has a 300 year supply of water beneath it, and the Carollo Report, a hydrological study not released to the public, reportedly has attributed to Phoenix a 60-year supply of water without supplementation from outside sources.

Arizona's per capita consumption of water is one of the highest in the nation, due largely to the practice of using large quantities of water to irrigate crops of marginal economic value. This problem will be partly self-correcting as economic considerations force upgrading to more profitable crops and as farmland is converted to urban uses which require less water. The CAP was conceived in an earlier era when agriculture was Arizona's economic base and does not adequately reflect the changing priorities of the State's economy. Arizona's real problem lies not in providing enough water, but in allocating its available water (which is relatively abundant) to maintain its best and most efficient use. And the CAP is not going to help this problem.

Alternatives

(1) BETTER WATER CONSERVATION. At present, much of Arizona's irrigated farming is extravagant with water, even when pumping costs are high. To stop this waste, the first requirement is for adequate laws to control and conserve the use of ground water. (Although some attempt in this direction has been made by the use of lined canals, it has been established that such practices do not conserve water in the long run since leaks are invariably added to the water table.) Covering canals to prevent evaporation can help. Underground irrigation with subsequent water recovery has been tested elsewhere with water savings to 50%. Sprinkler irrigation significantly reduces water consumption. Such practices, if universally followed, could significantly reduce depletion of ground waters.

(2) USE OF ALTERNATE CAP SITES. There are large areas in Western Arizona near the Colorado River which could more cheaply and effectively utilize any portion of Arizona's Colorado River water. Examples are: (a) The Yuma Mesa area west of Gila Bend (b) lands in the Cibola-Ehrenberg District near the river, and (c) several inland valleys in Southwestern Arizona. Such lands, not now being used, could adequately utilize Arizona's remaining share of Colorado River water. This would keep California from pre-empting the water and would be an intelligent expansion of agriculture

(3) AN ALTERNATE CAP. Perhaps some water could be brought to Central Arizona by pipeline and directly delivered to users or stored in the Buttes Dam area. While this project avoids few of the problems noted above, it would be much less expensive and it would require far less power for pumping. It could be a practical means of bringing needed water to affected Indian reservations.

(4) DO NOTHING. Although this is a harsh suggestion, belief in the ultimate effectiveness of supply and demand is a very American doctrine. Perhaps it would be our best practice to let water find its own price level and live accordingly.

Conclusions

(1) There is not enough water in the Colorado River to supply the Central Arizona Project. The river is over-allocated now.

(2) Unless a costly de-salting process is used, evaporation of CAP water during storage and delivery may increase the salinity of already salty Colorado River water to unacceptable levels for either municipal or agricultural use.

(3) CAP dams and water salvage programs will destroy large amounts of valuable wildlife habitat.

(4) Free-flowing rivers used for "tubing" and fishing and riverbanks used for hunting, birdwatching, etc. will be destroyed.

(5) The Yavapai-Apache Indian tribe will be flooded out of their homes, jobs and tribal lands against their wishes.

(6) The cost of CAP water will be higher than present water sources and will exceed the value of many crops.

(7) Municipal and industrial water users will be forced to subsidize agricultural users by paying much higher prices for CAP water. Water costs to cities could reach $100 per acre-foot as compared with present costs of $2 per acre-foot.

(8) The CAP is not needed to solve water shortage problems. There is enough water in central Arizona to support its population and allow for economic growth if it is used more efficiently.

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THE CHAIRMAN: Mrs. Jay Stribling.

MRS. STRIBLING: Mr. Chairman, gentlemen of the Commission, ladies and gentlemen of the audience, my name is Barbara A. Stribling. I am a resident and homeowner of Chandler, Arizona. I have lived in this State approximately five years. I have studied water almost all of that time, or the water problem. I am not speaking on behalf of any organization which any member here might connect me with. I am speaking from the point of view of myself alone, not for my husband. I am not speaking from the point of view of a taxpayer opposed to an increase in taxes. Let me reemphasize not opposed to. I do not envy you your position today. The number of factors to be considered in encouraging a project of the scope of the Central Arizona Project is mind-boggling. There is no question but that the purpose of establishing this conservancy district is to encourage and facilitate the Central Arizona Project.

Grave reservations have been expressed by Mr. Yetman and others today. My arguments will not be of the same context. I wish to consider a subject which I do not think in my research has been considered at all in this situation, and that is the balance of agriculture and urbanization.

Before I begin I want to make one exception.

I do not oppose the Twin Buttes Dam on the Gila River Indian Reservation. Mr. Pate's statement obviously would give you that it alone can be built. I do oppose the importation of water. There are several hundreds of acres of agricultural land for sale around the Valley and the metropolitan area of Tucson. Why? Remember we are speaking of Maricopa and Pima Counties which are already mostly urban.

Why, particularly in Maricopa County, in land receiving the cheapest and possibly the most and best water in the entire State, if agriculture is a profitable business, yes, even a necessary business, is this land being sold?

And for what is it being sold?

It is, ladies and gentlemen, being sold for urban expansion; not because it is being taxed out of existence by the cities, for indeed, most of it is not within the city limits; not because water is not available in cheap and adequate supply -- it is at $2 per acre-foot for surface water from the Salt River Project in Maricopa County and at about $8 per acre foot for pumped ground-water in both counties. Not because the soils are exhausted, they are not; not because there is no longer a market for the produce, there is; not because no one is willing to farm or ranch, there are many willing; not

for all these reasons put together or separately, but because there is more profit in growing houses and industry than in growing produce or livestock!

Accordingly it is difficult to see how the Central Arizona Project, whose rates to agriculture would be $10 per acre-foot and up, is going to reduce this trend. It is very easy to see how it might increase the propensity of the agriculturalist to subdivide. Agriculture, we know, uses more water per acre than municipalities and at far less return in dollars per acre-foot -- including secondary agricultural industries. Agriculture uses 90 percent of the state's water supply; municipalities and all other interests use the remaining 10 percent.

Let's look at some figures here.

I am going to briefly summarize, one person uses about one-quarter an acre-foot, according to the figures in the World Almanac. The Salt River Project, according to their data, has an inflow to the Salt and Verde Rivers over the 10-year period from 1961 to 1970 of an average of 996.3 million acre-feet per pear. This is enough, ladies and gentlemen of the audience, to support a population of 3,985,200,000 people. Ye gods, that is 16,000 Phoenix metropolitan areas. Now this is my arithmetical calculation and I agree and you will probably

say it is drastically oversimplified, yet people more competent than I have figured out that the Central Arizona Project alone, including its declining surface water supply, would be able to support a city of seven million people and this is as large as the City of New York City. This is without agriculture, but the projections of Maricopa County are that it will be the largest inland city in the entire world by the year 2000.

The maps of this county will show that the urban area is spreading and spreading. It is not inconceivable it might spread to include the entire county exclusive of federal and state lands. Nor does there seem to be apparently, neither Tucson nor Phoenix need the additional water. I refer you to the geographical survey of the Tucson Basin. Nor does there seem to be a desire on the municipalities to conserve water.

(The following is the section of Mrs. Stribling's statement that she did not read verbatim into the record that has been submitted for inclusion in this transcript:)

"If one uses the figures of the 1970 World Almanac, 1600 gallons are required per day per person, exclusive of hydroelectric power. This includes agriculture, industry, and residential use. At 1600 gallons per day per person that figure's out to a little less than 1 1/2 acre feet

per person per year to sustain life.

"The average per capita use for the City of Phoenix for 1970 was 232 gallons per day. The thirty year average according to the John Carollo Engineers 1968 report is 211 gallons per capita per day. Either way you figure it that comes out to about 1/4 of a acre foot per year. Since these figures include industrial as well as residential use, that means the remaining 1 1/4 acre feet go for agriculture, power, and non-urban industry, with by far the largest share going to agriculture.

"The 1961-1970 ten year simple arithmetic average of inflow of water to the Salt-Tonto and Verde Rivers (based on Salt River Project data) is 996.3 million acre feet per year (later corrected to 996.3 thousand acre feet per year). Enough water to support a city of 3,985,200,000 people (later corrected to 3,985,200 people) at a demand of 1/4 acre foot per person per year. Put more simply that's 16,000 Phoenix metropolitan areas (later corrected to eight Phoenix metropolitan areas) without touching ground water reserves!!!

"Simply than the cities in Maricopa County do not need more water, especially since the agricultural lands which are most rapidly being

subdivided are those within the Salt River Project boundaries.

"Even though my figures are perhaps drastically over-simplified, it has been stated by others more competent than myself, that the Salt River Project could support a city of seven million people or one about the size of New York and fourteen times the present population of the metro area. Clearly these municipalities do not have a water problem. And, if the U. S. Geological Survey is correct in its analysis of the Tucson Basin, they have a water supply at hand for 300 years. Also if the Bureau of Reclamation statistics are accurate for the Santa Cruz, rainfall on its watershed has increased the ten year average yield over the fifty year average by a few thousand acre feet. Not much you say, but enough for several thousand people.

"Apparently neither Tucson nor Phoenix need additional water at this time!!!

"Nor does there seem to be great concern on the part of the municipalities to conserve water. As witness:"

MRS. STRIBLING (CONTINUING): One. The construction of lakes, which, while they allow less evaporation per

acre-foot than irrigation and raise property values and thus taxes, is very obviously a luxury use of water in a water-scarce area. The lakes could have been prevented by zoning, if not under present water laws.

Two. A lack of a public education campaign to encourage desert landscaping or to tell the public of the best time to water lawns in order to conserve water and benefit the plants.

Three. The low water rates in the cities -- mind you, I'm not complaining -- who complains about a bargain? But the rates are certainly not designed to make one water conscious or discourage urban sprawl.

Before continuing with water rates, I want to emphasize that my conclusions about the need for water in the metropolitan areas have been my own. But what has been the analysis of the cities themselves?

Nothing has been made public to my knowledge of any reports filed by water departments to city councils in Maricopa County, advising them of their needs regarding the CAP. Admittedly the 1968 Carollo reports made an analysis of the present situation and drew up tentative plans for the future -- but Carollo here assumed the addition of some CAP water.

Nothing has been recommended with regard to need and yet the city councils have supported -- from a

purely emotional and political basis it seems -- the creation of the CAP! A few years ago Phoenix joined with Tempe, Mesa, Scottsdale and Glendale to form the Arizona Municipal Water Users' Association. This association was to negotiate the rate at which the cities would buy the CAP water -- nothing has been done by them with regard to their need for it.

When citizens protested the formation of an 80-acre lake on the old McCormick Ranch in Scottsdale, Mayor Bud Tims told them that the city's latest report by John Carollo Engineers showed adequate underground water until the year 2030. But when asked for acopy of the report, the mayor replied that it was not available to the public, and it is not today. Why? What does this report show?

Is the report from this highly reputable firm of such dubious quality that they are embarrassed to have it read? This seems very unlikely and the question remains: Why is it being kept under wraps?

Could it be, perhaps, that the report shows no need for the CAP?

Now back to water rates. The cities are being asked to spend from $60 to $80 per acre-foot for Central Arizona Project water, whereas they pay less than $2 per acre-foot for Salt River Project water and about $9 to $10

per acre-foot for pumped groundwater. The CAP water is admittedly of a quality far less than that of the Salt River or the majority of the groundwater wells. Thus, the only way this price can be viewed is as a subsidy to agriculture.

I am going to skip over a lot of this, the data is here. Agriculture is marginal profit to the owner. There are only three things that I wish to draw your attention to. Large agricultural corporation, according to the reports and figures that we have seen not only from Drs. Martin and Young but other economists throughout this nation, show only large corporations will remain in the business of agriculture.

The decline of cotton production will increase the available water for other crops and corporations use less water because of their better techniques than small farmers. Also as small farmers go there will be expanding urban areas and they use less water, thus we are going to save water. Cotton is going out. The Central Arizona Project is not going to stop this, therefore, the conservancy district is ill advised.

(The following is the section of Mrs. Stribling's statement that she did not read verbatim into the record that has been submitted for inclusion in this transcript:)

"But is it enough of an agricultural subsidy,

by itself and with other present subsidies, to maintain agriculture at its present rate in Arizona? (Which we shall assume the nation and the state wish to do and are instituting the CAP to accomplish this purpose.)

"The high cost of CAP water is apt to raise water rates in the Valley but certainly not enough to discourage population growth and thus, alone, stop the continued expansion or sprawl of the cities.

"According to Dr. William Martin and Dr. Robert Young of the University of Arizona Agriculture Department, more and more farms will sell out either to larger agricultural corporations or to cities as the cost of water and other factors, plus the greater profit from subdivisions make farming uneconomic for the smaller farmer and the farmer near urban areas.

"Their reports say that farming area doubled between 1948 and 1967 without imported water. Water cost does not seem to be the limiting factor, nor does supply. An article in the Arizona Republic 'Arizona' magazine this spring stated that ranching and farming in Arizona were more hobbies than businesses. Small operations, it said,

barely break even. Corporations, especially those which do not depend solely on agriculture, do better and are growing. These large corporations, the doctors say, make better use of the water available and thus for the same acreage as the corporation and the small farm are able to decrease the amount of water used: Thus increasing the available future supply.

"Let us look at another factor.

"Cotton and its federal subsidy have for the last couple of decades supported most large and small farmers in these counties. But as federal subsidy is phased out, so will the production of this high water using crop be phased out. It will be replaced with economic low water using crops, leaving still more water available.

"Surely as agriculture is replaced by urbanization or converts to low water using crops for most of its yearly production, groundwater tables will rise as they have in the Mesa-Tempe-Chandler area. According to the 1970 agricultural extension report the water table rose from one to twenty feet in this area during the last seven years. (Parenthetically, Bermuda grass according to the Flushing Meadows experiment is the best

cover for groundwater recharge basins, so cities are one big recharge basin if they don't pump water.)

"These three things, large agricultural corporations, decline of cotton production, and expansion of the urban area, point to less not more water being needed per acre in the future. They result in a water savings which decreases the need for immediate importation of water."

MRS. STRIBLING (CONTINUING): But I predict that this last factor of urban expansion will be increased by the Central Arizona Project, thus hastening the development of another Los Angeles in Central Arizona, which we all say we don't want. This makes the idea of an agricultural subsidy in the form of the CAP of very questionable advisability and the water derived therefrom unnecessary.

The CAP is supported on the grounds that it will reduce the groundwater overdraft. Unless it is made mandatory that for every acre-foot of CAP water bought the contracting agency must reduce groundwater pumping an equal amount, I do not see that the CAP will aid in solving the problem. My understanding is that a regulation of this nature has not firmly been included in the proposed regulations. It has also been stated and should be enforced that CAP water cannot be used for the

expansion of agriculture beyond its present boundaries.

Most Arizonans realize that the CAP is a partial solution to the water problem. Non-Arizonans may believe that it is, if built, the solution, completely solving all water problems, and thus, if they consider water a factor at all, be encouraged to migrate to Arizona. Not so with the job producers for these new people. Industry notably makes a thorough investigation before moving. Water rates high enough to prevent continued urban sprawl and restrictions on the sale of agricultural land in order to maintain the present balance might discourage industry by raising relocation and operating costs.

According to the Department of Economic Planning and Development (DEPAD), Arizona will need to provide 313,000 permanent new jobs in the next 10 years and more after that. Where are new people settling and where does industry locate? Again according to DEPAD the greatest growth rate has been in Central Arizona and will continue to be there unless something is done to encourage it elsewhere.

The 11 rural counties have maintained a fairly constant percent of the State's population, 21 percent over the last 40 years, but their share of the State's personal income has been progressively declining. Last year it was 18 percent.

The Arizona Academy at its 1970 Town Hall -- and many other groups and individuals -- have called for a low growth profile in Arizona.

President Richard M. Nixon has in several speeches repeatedly pleaded for a national policy of population dispersion.

We have seen and heard of the success of new towns both here and abroad.

Why not use the Central Arizona Project allotment closer to its source, in a rural county, by creating new towns?

The suppressed Carollo report, according to Mayor Tims, states that there is adequate water until the year 2030. Dr. Martin and Dr. Young say that the year 2000 would be about the right time to consider water importation as economically feasible. To import water now (the argument of further inflation not withstanding) is to divert tax dollars from pressing higher priority items such as the problems of crime and overcrowded court schedules and penal institutions, the need for more schools, hospitals, streets and highways, and public transportation systems.

What I am leading up to is this: One, if the CAP goes through as it is hoped it will by creating this conservancy district, then the CAP will encourage urban

expansion despite increased urban water rates, unless some sort of restriction is placed on the sale of land for subdivision purposes. If restriction is not imposed we may end up with an overabundance of water.

Two, unless it is demanded and enforce that for every acre-foot received from the CAP, groundwater pumping be reduced on a one-to-one ration, it will not alleviate the groundwater overdraft.

Three, unless a public campaign is undertaken to prevent the urban sprawl of population growth in Central Arizona, the demand for land will decrease agriculture faster than a lack of water or more expensive water.

Instead of 80 percent of the State's agriculture gracing and cooling the central corridor, we would have a massive, congested, black, smoky metal and asphalt urban sprawl. In the hot temperatures of Arizona this effect would be compounded to produce a crime rate and social problems beyond our comprehension.

THE CHAIRMAN: Are you about through?

MRS. STRIBLING: I am about through.

Better than the CAP at this point in time would be to wait until adequate investigation has been done on the environmental effects of the present proposition (and this published and publicly discussed) until adequate

study of the need for Arizona agriculture has been undertaken on a national scope (there is no study to date which evaluates Arizona agriculture's importance to the nation, tells us what crops would be most beneficially grown here according to national priorities, and which of those might best be grown near urban areas,) until adequate safeguards are made to insure that needed agriculture is properly supported and situated and a balance maintained between urban and agricultural usage of land, until means have been found to disperse population and rectify the low income percentage of the rural counties (new towns being one suggestion);

Until geo-thermal power and its by-product of distilled water has been proven or disproven as an economic possibility along the San Adreas fault. Engineers say they should have the technology within 10 or 15 years to combat the special problems of this geo-thermal source. Accordingly the by-product of distilled water in large amounts would be available for municipal supply, a much better quality of water to import than CAP water. Also according to the reports on this subject, large quantities of water would be needed to recharge into the fault in order to prevent slippage. Why not exchange the CAP allotment for the distilled water and build an importation system from the geo-thermal plant if this idea is worked

out? It would apparently come at a much better time for Arizona economically.

Why not wait? And in the meantime enlarge the boundaries of the Salt River Project (I know it will take congressional action) to take care of all of the municipalities and agriculture in Maricopa County. Treated effluent, much better than raw water, could then be furnished to those agricultural areas in a position to receive it.

Why in short encourage a project of such doubtful quality and such huge magnitude that it could make the teapot dome scandal look like a tempest in a teapot?

Why not wait? And improve rather than destroy our quality of life, and use our public moneys for high priority social problems.

I conclude why at this time are the cities supporting the Central Arizona Project? Where is their report of need for this water? Our elected officials both city and state are morally obligated to give the public the data on which they have based their decision.

THE CHAIRMAN: Thank you very much.

MR. STEINER: You indicated a water supply from the Salt and Verde Rivers which would flood out all of the State of Arizona. Will you repeat that figure and

tell me what your source of information is.

MRS. STRIBLING: The figure was 996.3 million acre-feet per year and I repeat, this is the inflow into the streams, not the outlet, not the used water. We have dams to restrict this. The figures were given to me by the Salt River Project. They gave me figures of inflow from 1910 to 1970 on the Salt and Tonto Rivers, from 1913 to 1970 on the Verde River, and I did my own calculations and I will be glad to have you check my arithmetic.

MR. STEINER: I am afraid someone needs to. The figures on water supply that I have available from the Salt River Project and the United States Geological Survey for those streams is a dependable supply from them of about 760 thousand acre-feet, not 996 million acre-feet. Now what happens to all the water if we had that kind of water in Arizona? I would agree with you we would have problems of too much water.

MRS. STRIBLING: I checked and I rechecked and that is what I came up with. I may have made the figure too large by a thousand, but I still don't see even that is going to allow water for 1,600 times the Arizona population.

THE CHAIRMAN: Thank you.

Mrs. Carolina Butler.

MRS. BUTLER: I came here to speak, certainly not

as a water expert, but as an informed citizen who has a few questions which need answering.

For about 50 years, Arizonans have been conditioned that Colorado River water was needed if Arizona was to survive. Now, 50 years and one and a half million people later we are still repeating those same words. This credibility gap widened for me after pausing to learn something about water in Arizona and it didn't take me long to get a good shock.

The CAP does not begin to solve the long-range problem of balancing development with the available water supply. I have learned that for all those 50 years Arizona still has no means of managing and/or regulating its water resources. Arizona's greatest water need is a means of controlling the exploitation of its groundwater basins.

And now to top even that, we are being asked to finance the continuation of this mismanagement of our water supplies. Now if our public officials have -- for almost two generations -- failed to face up to the settlement of the most basic questions of controlling the exploitation of our groundwater supply, what confidence do you think I have in them to make the proper decisions when it comes to the CAP? Not only of the whole project, but of the allocation of the water.

In connection with this, I would like to ask the Bureau of Reclamation, the United States Geological Survey and the other federal agencies involved, how they can explain their support of the CAP when the state has failed to take action to control its groundwater depletion problem.

I have observed another example of improper management of our water. Now you don't need to be a water expert to know that the acquisition of correct basic data over a sufficient time period is of paramount importance in preparing development projects. Well, I challenge any of you in this room to tell me the total number of wells drilled in Arizona and how deep each one is and how much water each one is drawing. And remember, you have had 50 years to assemble this data.

Another thing, can you explain to me how you can have the responsibility for the management of water when permits to drill wells are issued by another office? There are many credibility gaps on the subject of water.

There is a credibility gap when on the one hand we have our public officials rushing to Washington, making their urgent pleas for federal funds to solve our serious water shortage and, on the other hand, I can see for myself approval which has been given to the land speculators to create lakes with my water. Just in Maricopa

County there are: two lakes in Sun City, one measures 33 acres, and the other 38 acres; Litchfield Park has a five-acre lake; McCulloch's Fountain Hills will have or has a 30-acre lake; a development in Tempe has a 50-acre lake; Kaiser-Aetna developers will have two in Scottsdale, one 30 acres, the other 80 acres. We all know Arizona also has the highest evaporation rate in the United States.

There is a credibility gap, too, when our public officials appeal for all haste and speed for funds to solve our serious water shortage, even at the expense of clean air at the power plant's location, when it should be clear that their job should be to contain the population until we solved our water problems. Yet, just last year the metropolitan Phoenix area acquired 100,000 new residents and this past session a bill was passed into law granting a tax benefit to giant corporations to encourage them to move their headquarters here.

Would you believe that the state values water so highly and its interest is so great that a course in hydrology is offered at only one of our universities; that in 1967 there were only three persons to graduate with a Bachelor's degree in Hydrology, only three in 1968, six in 1970, and I think the number is four for this year. In comparison with another big interest in this state, you will find that in 1970 along the state had issued a

license to more than 15,000 real estate brokers and salesmen. Is that a clue to the absence of Arizona's public policy, planning and controls on population growth and water managemen?

And in the face of all this, the United States Geological Survey has repeatedly warned both the state and the municipalities down through the years that they were seriously depleting their water supply, yet were making few attempts to ascertain the size of that supply. Here again, in light of these abuses of public confidence, how can the Bureau of Reclamation or any other federal agency recommend the CAP?

Let's take another credibility gap. From the testimony given at the Four Corners power plant's hearings, I learned that the expected life span of the Kaiparowitz plant, which will be the biggest, is only 35 years. We also learn that it will take 50 years to pay for the CAP. There seems to be a discrepancy. But in the meantime, one thing is certain. There still would remain transmission lines strung across the land.

Which brings up another big reason why I'm opposed to paying for the CAP. I don't like the way Arizona has been developing. I don't even like the CAP already. Look at the damage it's already done at the Four Corners area. Instead of progress taking us forward,

we're going backwards! We should take care of Arizona. Within its borders, our state has natural scenic beauty which is unrivaled in the entire world. We are blessed with sunshine and a clean sky. As if that wasn't enough, Arizona has untold wealth in it historical and archeological treasures.

We marvel at the speed with which Arizona is growing but some of us wonder about the direction. Back in the fifties some people in California wistfully commented that perhaps it would be wise to control population growth by keeping water in short supply. But that state in 1960 pushed through a 1.8 billion dollar bond issue to bring water from their plentiful supply in the north to Southern California. Well, California didn't keep water in short supply, as we well know, and now they are the example which held up to all of the result of population impact on limited natural resources in the absence of adequate public policy, planning and controls.

Arizona also has no guidelines for growth. And when I mention growth, water management goes along with that.

Where is the direction when we have concentrated here in the metropolitan Phoenix area 60 percent of the state's population. Our public officials have achieved for us what we long sought to avoid, an urban sprawl

which imitates Los Angeles. Doesn't it seem logical to divert some of this congestion to our communities which are totally dependent on farming and see if we could encourage them to transfer some of the irrigated acreage into urban development which uses less water? Doesn't it sound logical to you that if agriculture uses 90 percent of our water, is the lowest major source of Arizona's income, employs the fewest number of people, that if we balanced our growth and our water properly, that we would not have to spend millions of dollars nor pollute our air nor scar our landscape by building the CAP?

Even President Nixon said it: The answer is not to abandon growth, but to redirect it.

My last question which I would like answered, I would like to know the qualifications of the Water Commissioner and his staff. Mr. Steiner, all I have heard, for example, is a civil engineer who came to us from California. I thought a civil engineer was just someone who likes to build things. I want assurance that the CAP is just not a personal dream. I have no reason to offend, that is not why I bring this up. Arizona is my first consideration. Water commissioners, just like other public officials, come and go.

Like I said, Arizona is my first consideration and water is Arizona's most precious commodity. I want to

be assured that the people who are handling our water problems are the best we can get, the most qualified.

I would like to say that I came here to speak also for the majority of Arizonans who have not the faintest idea of what is going on here today. As ignorant and apathetic as they may be, they still deserve to have their interests represented, and it is my observation that in too many projects involving our natural resources the ordinary citizen is caught in the middle between industry and government.

The CAP involves many powerful industries: the power industry, housing, banking, cement and construction, farming and many others. Now I do not expect to be represented by industry, but I have every right to expect to be properly represented by government.

THE CHAIRMAN: Thank you very much.

We probably have the finest water engineer representing the State of Arizona that can be located in the United States.

MRS. BUTLER: I am glad to hear that.

THE CHAIRMAN: Your interests by him are well protected.

Frank Brooks of Tucson.

MR. BROOKS: My name is Frank Brooks, I am Director of Water and Sewers for the City of Tucson. I have a

short letter I would like to read from the Mayor, James N. Corbett, Jr.

"Gentlemen:

"The City of Tucson is one of the largest cities in the world which obtains its entire water supply from an underground source. There are no surface water supplies available in the Tucson area, and the underground water table is declining at the rate of 2 to 5 feet per year. In addition, therehas been a large additional drain placed on the area's available water supplies in the past 5 years due to the growth and development of the mining industry to the south of the City. Current usage for mining purposes is about 50 MGD. The City of Tucson provides approximately 55 MGD to its domestic water users.

"While construction in the country as a whole is off 8.7 percent, construction in the Tucson areas is up 8.8 percent. The Tucson area's population is currently in excess of 350,000, and it is estimated that it will reach 1,000,000 by the year 2000. Water usage in the Tucson area is rising tremendously due to this growth, and it is estimated that usage in the Tucson area by domestic, industrial, and agricultural users will be approximately 360 MGD by the year 2000. The area's tremendous growth will place large additional burdens on our lowering groundwater table.

"The Tucson area is vitally interested in the establishment of the Conservancy District and urges your approval of its formation.

"Sincerely yours,

"James N. Corbett, Jr., Mayor."

I will leave the letter here.

THE CHAIRMAN: Thank you very much, Mr. Brooks.

Miss Diane Edes.

MISS EDES: Mr. Chairman, ladies and gentlemen, my name is Diane Edes. I am a resident of Phoenix for the past eight years and a citizen of Arizona and registered voter.

I have done some reading of material that has been available to me about the Central Arizona Project, both pro and con, and this has raised some doubts in my mind.

While I had a prepared statement regarding the Central Arizona Project, I will restrict my comments to the matter at hand. I would like to see the Bureau of Reclamation present a clear and unequivocal statement guaranteeing the quality of the Central Arizona Project water and stating exactly the cost to every user of water, and I urge you not to form a Conservancy District until such a guarantee can be made.

That is all, thank you.

THE CHAIRMAN: Are you representing anybody besides yourself?

MISS EDES: No, I am here merely as an individual.

THE CHAIRMAN: Thank you very much.

Mrs. J. D. Garcia, Chairman of the Sierra Club.

MRS. GARCIA: I would first like to introduce into the record a statement on behalf of the Arizona Consumers Council, submitted by Dr. J. D. Garcia of Tucson, who was unable to be here, and I would like to see it printed in its entirety in the record, please.

I would also like to make a statement for Miss Caroline Carr. Under doctor's orders, she was asked not to come here today. She would like to state for the record that the Arizonans for Quality of Environment is opposed to the formation of the water district for purpose of the Central Arizona Project water.

I am Margot Garcia. I live at 5141 East Hawthorne Place in Tucson. I am State Chairman of the Grand Canyon Chapter of the Sierra Club.

We, of the Grand Canyon Chapter of the Sierra Club are opposed to the CAP for a variety of reasons.

First, there is the question of economics.

The creation of this combined water district will have the power to levy taxes, to supplement other income. At the present, according to Richard Johnson, in

information stated on May 4, 1971, in Tucson, the limit is set by law at ten cents per $100 assessed valuation. This would be, however, subject to change.

The cost of the water to municipalities will start at a minimum of $55 per acre-foot. During transport in the canals, such things as dead cats and paper bags will contaminate the water and they will have to be removed. This adds a purification factor not present in the sealed deep well water presently pumped for use. The higher salinity of CAP water will add another purification problem also not present in well water. All these processes add to the cost of the municipal user. In addition, the water, to begin with, will be 10 to 20 times more costly per acre-foot then pumped water. Do you want to pay all these extra costs to support agriculture?

If the CAP water is so costly to use that municipalities don't purchase it, I suggest that the city dweller will still pay for the CAP project with increased taxes.

To set up the cost benefit ratio for the municipalities, the alternate chosen for cost comparison, according to Cliff Pugh, project manager of the United States Bureau of Reclamation, in Tucson on May 4, 1971, is a canal to carry municipal water alone. Of course, a

combined agricultural-municipal canal comes out cheaper. What about comparisons to water conservation methods, recycling, exchange of purified city sewage water with agricultural water allotments from wells?

Let's ask about the cost to us as federal taxpayers and state taxpayers. For instance, we already pay agricultural price supports for cotton. Now we will be subsidizing water costs as well. With increasing use of synthetics, demand for cotton fabrics is decreasing. Cotton is only one crop that will use CAP water.

I have only touched the surface regarding the economics of the CAP project. There is a great deal more.

Secondly, there is the question of environmental impact. Do we have any idea what kind of impact the canals and dams are going to have on climate, on wildlife, on present recreational uses of the area, on the environment as a whole? The Aswan Dam in Egypt was proclaimed to be the salvation of the area. It has brought many problems in the area of field fertility, public health and so forth. Will the CAP, mentioned oftentimes as the salvation of Arizona, bring similar problems? Has an ecological impact study been made for the CAP project?

Can I ask you that question, has an environmental impact study been made for the Central Arizona

Project?

MR. STEINER: It is in the process of being prepared right now.

MRS. GARCIA: Will it fulfill all the requirements of the environment protection action?

MR. STEINER: It will be prepared to do that.

MRS. GARCIA: Well, when will it do that?

MR. STEINER: It is being prepared by the Department of Interior and they are not sitting here at the table. I don't know the answer.

MRS. GARCIA: Will there be a hearing presented after that report is prepared?

MR. STEINER: I think, Mrs. Garcia, you will have to address your questions to the Bureau of Reclamation. I assume the answer is yes, but I don't know.

MRS. GARCIA: These questions have been raised, and many more could be raised, because we feel that the proponents have not answered them satisfactorily in their statements. We suspect the answers will demonstrate that the Central Arizona Project is uneconomical and that it will be a detriment to our environment. For this reason we ask you not to form this Water Conservancy District.

THE CHAIRMAN: Thank you very much, Mrs. Garcia.

Charles Coston, Tucson Audubon Society.

MR. COSTON: I am Charles Coston. I live at

301 East Portland, Tucson. I would like to take this moment just to back up and look at some way of philosophy.

I don't deny that Arizona could use more water. It is quite obvious we could use it in a large variety of ways. On the other hand, I think that we need to be very careful about the Central Arizona Project. If we could have gotten Central Arizona Project 30 years ago, before the Colorado River was oversubscribed, when construction costs were still large but some hope of eventually paying them off, then I would have said that they who are able, let's go and get the water, because then we would be guaranteed to get some water. Now I am not convinced, since the Colorado River now is oversubscribed, that we will be building anything but a dry ditch.

Now if we form a Conservation District, then it really ought to do what its name says, it ought to work towards water conservation. I do not foresee this district, it appears to me to be something quite different, simply a disbursing medium for water that Arizona can't afford to buy at $110 per acre-foot for a municipality. It is simply not going to satisfy the philosophy of a Conservation District.

To be a useful entity, it should begin by saying you must make more efficient use of water that is available and it should have power to enforce, to oversee,

to regulate, to withhold if necessary water from the present users; whatever it needs to do to really control the use of water in Arizona.

It won't have that kind of authority, it simply will be a disbursing medium for Central Arizona Project water, at least as I understand it. I may be wrong on that point.

Second, if it were to be an effective district, it ought to be able and empowered to make long-range plans for use of water to 100 years, 200 years, 500 to 1,000 years from now. If you look to 1,000 years into the future, you suddenly discover that all around you in every portion of the United States resources such as water are going to be used at their maximum available level in other areas. I do not see if you look 500 to 1,000 years in the future there would be anywhere we could possibly import water.

If Arizona is going to operate on water at some population level we are going to have to look at our own resources and get maximum use from our own reservoir. I do not see that this district will have any effect on that.

Thirdly, I think the value of agriculture to Arizona has been overrated, at least in terms of the area's present economic structure. Thirty years ago, this wasn't true. Presently, it is eight percent of its total economy.

I will come back to this in a moment or two.

Pima County, which is the area of which I am best informed since I come from that county, would receive the poorest quality of the water available from the Central Arizona Project since it is at the end of the pipe and all the water deterioration and processes that go on in transporting water like 250 miles from the water source, pumping it a few times, letting it set around in dams, will have gone on until the time Pima County gets the water.

Rephrasing some of the numbers Mr. Frank Brooks gave you, the City of Tucson uses about 65,000 acre-feet, the mines use 60,000, more or less. Agriculture in Pima County and in the area that could be affected by the Central Arizona Project water runs about 70,000 or 80,000, even as much as 100,000, depending upon the year. All this water is mined from the ground at this point.

According to the U.S. Geological Survey 74,500 acre-feet per year is recharged in the ground from rain. This leaves you with a water deficit of about 150,000 acre-feet per year in the Tucson basin. Now if you bring in the Central Arizona Project water, the Tucson area is projected to get maybe 100,000 acre-feet of that. This will, admittedly, help, but it will not prevent the Tucson basin's present water use rates from running out

of water. It will slow the process from 150 years to maybe four or five hundred years, but by 1,000 years the Tucson basin will have mined every last ounce of water down in that basin, even given Central Arizona Project.

Now let us take a good look at Central Arizona Project. Who will be subsidizing the water that will be coming out of the end of the pipe in Pima County? Will it it look like about one or two thousand parts per million of solids? It starts out in Lake Havasu from 800 up probably closer to 900, in fact, at the annual incremental rate on the Colorado of 10 parts per million per year it would be about 900 parts per million removed from Colorado River. The various storage problems are going to leave us with 1,000 parts per million of solids. The National Department of Health and Welfare has stated that municipal water of 1,000 parts per million is no longer safe municipal water. It is dangerous for people, particularly the old who have cardiac problems, it is dangerous for a large variety of other users who are ill. Consequently, by the time water is delivered it will no longer be usable in municipal Tucson. This is when you begin the project. If, and there seems no reason not to expect this, the Colorado River water quality continues to deteriorate, then that 1,000 parts per million per year in about 50 years you will be removing water that is fourteen

to fifteen hundred parts per million. I have a projection from the California Colorado River Board which is higher than that, 2,000 to 3,000. We will be removing water at 1300, 1400, 1500 parts per million total of solids. No municipality can use that.

Who can use it? The mines can use it. Pima County could indeed send this water off to the mines and alleviate the overdraw that the mines are contributing to.

Agriculture can use this water but it cannot grow high value crops. Lettuce does not do well in this type water. It does not grow profitably. The price of your lettuce per acre is simply not good enough to be a commercially competitive crop. With this quality there are lots of other high value crops that will not grow. In other words, we will be subsidizing water to bring in low value crops by Central Arizona Project.

There is another problem. That is, the Colorado River is already oversubscribed. This is well known I am sure to you gentlemen here. The detail I wish to point out is that in the last, as I remember, 20 years the available water has amounted to about six and a half million acre-feet. If the upper basin were using their share delivered at these various spreads, the 13 million acre-feet that has flowed in the river, that is according

to our national agreements, with six and a half million acre-feet in the river, there is not water, any water at all, to put into the Central Arizona Project. Even if you salvage all the water you have got, you don't have enough water to put in your Central Arizona Project. If you give the Yuma area its uses which already exist and if you give Nevada that 1.3 million acre-feet and California and you include such losses as the 200,000 acre-feet --

THE CHAIRMAN: Mr. Coston, we are not here to determine whether or not this project is feasible, we are here to determine whether a Conservancy District should be formed.

MR. COSTON: That is precisely the reason why I am going through these numbers.

THE CHAIRMAN: How much additional time?

MR. COSTON: I am just about finished.

Now, the Conservancy District may very well find itself in the unfortunate position of having to say to the growers along the lower Gila and the Yuma area, "Hi, fellows, we need part of your allotment of Colorado River water to put into the Central Arizona Project." Who is going to have the political contact? Obviously the Conservancy District which represents the Central Arizona Project. This is, of course, contrary to established water use law. Consequently, I do not foresee establishing

this district can accomplish anything except further building of what looks to me to be a very expensive project.

Thank you.

THE CHAIRMAN: Thank you very much, Mr. Coston.

We will now take about a 10-minute break.

(A recess is taken and proceedings were resumed as follows.)

THE CHAIRMAN: Mr. J. E. Phillips, Manager of the Town of Paradise Valley.

(No response.)

THE CHAIRMAN: Mr. Thomas Gerczynski, Student Activists for a Vital Environment, Phoenix Community College.

(No response.)

THE CHAIRMAN: Mrs. S. O. Schultz.

MRS. SHULTZ: I am Alice Schultz. I was going to speak for myself but I decided I would speak for the Arizona Wildlife Research Council and also Maricopa County Audubon Society. My statement is brief. I won't go into repeating the details of what we support.

I would like to say in view of the fact that the Central Arizona Project was conceived and planned many years ago and technology and land use have changed somewhat in this intervening time, we recommend there be

no contracting for construction of the Central Arizona Project until a thorough review and updating of the project be made.

If this Water Conservancy District does not consider some of these requests made by other groups here and suggested alternatives to the present Central Arizona Project plans, that this Conservancy District should not be created.

If this review and updating of the Central Arizona Project is not done the state and federal money will be committed to a project that will not fit our overall water needs because the Colorado River is incapable of doing this. Long before the payout period other water will be essential. It is better to explore this before, before irrevocable changes are made that future citizens will have to live with.

The limited amount of saline agricultural water with its higher water costs through the series of dams and recreation lakes would be exchanged for the destruction of Arizona's last free-flowing rivers and the associated areas. Some of the values that would be destroyed are wildlife habitats, river recreation areas and some fertile farming land that is now being used.

This present plan should not be considered before more economical and further plans are explored.

These other values are becoming more and more valuable yearly.

I could go into some detail about the value of eagles, our salmon in the confluence of the Salt and Gila River. These are some of the basic reasons that this needs to be reconsidered. There is a feeling or an awareness of the natural areas and natural values. These should be considered certainly in conjunction with economic values and the more shortsighted plans such as the Central Arizona Project plan would be.

Thank you.

THE CHAIRMAN: Thank you very much, Mrs. Schultz.

Dave Carter.

(No response.)

THE CHAIRMAN: Darlene Clark.

MISS CLARK: My name is Darlene Clark. I reside at 1517 East Willetta Street, Phoenix, Arizona.

THE CHAIRMAN: Miss Clark, are you representing anybody?

MISS CLARK: No. I represent myself.

THE CHAIRMAN: Thank you.

MISS CLARK: I would like to appeal to you to think about the recreational aspect of our society. After a hard day and everything, you go home and relax and usually there is no appropriate recreation. The kids of this

valley like to tube down the Salt and Verde Rivers. That is a good way to get your suntan and a way to have good clean fun. If more dams were built it will flood these areas used for tubing. I am asking you to think about it for the kids of this valley and the state who go down and float down in these areas, possibly your kids, how they might feel about this.

Also I would like to say that I support Dave Yetman's talk. I won't go into any details concerning this, but I do ask you to think a little bit about the tax aspect and the water costs.

Thank you.

THE CHAIRMAN: Do I understand that you are opposed to the formation of the Conservancy?

MISS CLARK: That is true.

THE CHAIRMAN: Thank you.

Mrs. Elizabeth Hilliard.

MR. STEINER: I understand she will submit a written statement.

THE CHAIRMAN: Thank you.

Mr. Wilson Barret, Vice President of the Valley National Bank.

MR. BARRET: Mr. Chairman and members of the Commission. My name is Wilson Barret. I am executive vice president of the Valley National Bank. I live in

Phoenix, Arizona, and I have been a resident of the State of Arizona for 47 years.

As you know, we operate statewide in our organization and we have a large amount of activities in Pima, Pinal and Maricopa Counties. We are not only interested in the vital industry of agriculture in our state which is a 600 million dollar industry but we feel its future is important and that it has very little opportunity to expand without water. We in our organization are interested in the municipal areas of our state, we are interested in recreational areas, we are interested in industrial areas, we are interested in environmental areas and all things that make our state a fine place to live.

We feel in our type of work that planning is one of the things we simply have to do in the State of Arizona. We look forward and our planning factors call for two and a half million people in the State of Arizona by 1980. We feel manufacturing output will be four billion dollars. Our mining industry will be bringing in two billion dollars and tourism one billion dollars. We must plan for part of this, plan for utilization of our resources, whether it is energy, wildlife, recreational or whether it be water.

For this reason I would like to recommend for

the good of the state as a whole this Water Conservation District be formed as passed by law, House Bill 333.

THE CHAIRMAN: Thank you very much.

Is there anyone in the auditorium who previously has submitted their intention to appear who has not been heard as yet? Who has not submitted one of these slips?

Mr. Donald E. Weaver.

MR. WEAVER: My name is Donald Weaver. I live in Phoenix, Arizona. I am speaking for myself as an individual citizen and Arizona taxpayer and taxpayer of the United States Government.

First I would like to ask a question which I think has been ignored, and that is: I wonder what is the purpose of the formation of the Conservation District? I would ask further, is it to incorporate the Central Arizona Project by contracting for Central Arizona Project water; is this correct?

THE CHAIRMAN: The formation of the Conservation District is to ease the contracting with the Secretary of Interior for Central Arizona Project water. Rather than dealing with a group of individuals you deal with one agent.

MR. WEAVER: Thank you.

I would like to submit on the basis of the answer just given, if indeed this is the case, then I

think the question of the Central Arizona Project's feasibility is relevant and should be a topic for the consideration of this hearing and of this board. However, because there is some disagreement on this topic, I will not go into it any further.

I would like to note in the final analysis of the pros, those who favor the formation of the Conservation District, have based their decisions on essentially economic motives. I have heard nothing from that side that has any substance which has talked about esthetics, which has talked about quality of life, which has talked about degradation of our environmental situation in the state, which has talked about elements of recreational facilities in the central Arizona area, which has mentioned in fact any of these things. I would submit these things are important and should be considered.

In addition, I would like to reiterate or to state that I feel that a Conservation District by its very nature should be more than just an agency to contract for Central Arizona Project water. I believe there is a definite need in the State of Arizona for water planning and I think there is a definite lack of this planning evidenced to date. Perhaps the formation of a Water Conservation District or of some such body, if it facilitated the investigation, the planning and the

control and regulation of the water resources of the State of Arizona, this would be a good thing. However, as it is presently constituted, I do not think that the Conservation District would do any of these things. It would be merely as you have stated, a purchasing agency for Central Arizona Project water. I submit this is not what the State of Arizona needs and I do not favor it. I am against it 100 percent.

Thank you.

THE CHAIRMAN: Thank you very much, Mr. Weaver.

Mayor Robert J. Lee.

MR. R. J. ELLIS: Mr. Lee had to go to another meeting and he asked me to inform you he had filed a written statement and would like to submit that for your consideration. He stated he was in favor of the formation of the district.

THE CHAIRMAN: Thank you very much, Mr. Ellis.

Mr. R. J. Ellis.

MR. ELLIS: Mr. Chairman, members of the Commission and friends. I am R. J. Ellis, commonly called Brock. Some of the people are talking about how long they have been here in the state and when they came. It seems like the shorter time they have been here the more vehement they were about what we are trying to do here.

Well, I came to Arizona in 1913. I came in a

covered wagon and I called myself the first of the Okies and the last of the pioneers. When we got into Florence, the river had been up. I think it was the last flood on the Gila. It washed out the bridge. We had to camp over there on the other side of the river before we went into Florence and a few days later we had a heck of a time getting across the river without a bridge. After that, we have had a lot of water shortage in Arizona and we still have it.

I practice law in Phoenix. I am with the firm of Rawlins, Burrus, Ellis and Kiewit, and have an apartment here but I live down in Pinal County and have my residence and am registered to vote there. I think they just cancelled me out, but I will reregister again but, anyway, I represent a bunch of farmers in Pinal County.

I represent Maricopa-Stanfield Irrigation District, Central Arizona Irrigation District, Electrical District No. 4, Electrical District No. 3, and many farmers that are in that area. During the time I was practicing in Eloy I was city attorney down there. We of these districts are very much in favor of the formation of this multi-county Conservation District.

I am vice president of the Central Arizona Project Association and have worked on this bill that was passed and presented. We feel that the future growth of

the State of Arizona without the bringing of additional water in here is going to be limited by the permanent water supply that we have here. With the bringing of Central Arizona Project water into Arizona we feel that there will be unprecedented growth and progress in the state. We feel that the State of Arizona, as result of the bringing of this water into Arizona, will realize its ultimate destiny. It is our feeling that the bringing of this initial water into Arizona is just the first step, that that will be followed by river augmentation and subsequent water being brought in, and we would like to urge very strongly that you do form this multi-county Water Conservation District.

There are several representatives of these districts that I have mentioned here as well as others that are present, and I think they would also like to be heard, but I believe you have their names there.

Thank you.

THE CHAIRMAN: Thank you, Mr. Ellis.

Do you mind stating for the record those districts you are representing?

MR. ELLIS: The Maricopa-Stanfield Irrigation District that is located in the Maricopa-Stanfield area. The Central Arizona Irrigation District which is a district located in the Eloy area. Then the Electrical

District No. 4, which is not an irrigation district but is in the Eloy area. Electrical District No. 3 is in the Maricopa-Stanfield area. Those are the districts that I speak for.

THE CHAIRMAN: Thank you very much, Mr. Ellis.

Mrs. Barbara Stribling will read a statement for Mr. Coshland of Tucson.

MRS. STRIBLING: Mr. Coshland is unable to be here today and asked that this statement be read. Before I do, I want to thank Mr. Steiner for making me go back and look at my figures. The statistics that were given to me by the Salt River Project were stated in thousand acre-feet instead of a hundred thousand. The difference would be, instead of 996.3 billion, it would be 996.3 thousands of acre-feet, a little more realistically. Thank you for not laughing when I said it.

Let me point even at these figures that would make eight times the population of your metropolitan area that could be supported here with the use of only surface water. We are now using groundwater. According to the World Book we could sustain industrially and residentially between 779,000 and 2,680,000 people in this area.

I will now read Mr. Coshland's statement.

"Today you are considering adoption of a resolution which would commit Pima County to join

with Maricopa and Pinal Counties in the formation of a Water District which, in turn, would be committed to reimburse the United States Department of Interior over a 50-year period for the cost of construction of the Central Arizona Project.

"According to published reports, the Water District would have authority, by law, to levy taxes against all taxable property in the three counties for the purpose of meeting that commitment to the Federal Government.

"Gentlemen, this power of taxation is obviously inequitable. It imposes upon all taxpayers, without any opportunity for redress whatsoever, the responsibility for subsidizing the users of CAP water. I refer specifically to the agricultural interests which have for decades been mining fossil water, which is an irreplaceable natural resource, consistently lowering the precious water table upon which non-agricultural purposes depend as well as themselves.

"In all likelihood, agriculture will be the principal user of CAP water, but will receive it at a cost of approximately one-fourth or less of the cost of delivering it. Most of the crops produced will not even be for consumption within

our State, which is in the unenviable position of having to import from other states most of the products, agricultural and otherwise, which we consume.

"Gentlemen, bluntly stated, this is a travesty on the unsuspecting taxpayers of our State, and specifically of this county. There is no justifiable reason whatever for non-users of CAP water to be taxed to subsidize the relative handful who will stand to benefit handsomely.

"If the full cost of CAP were to be paid by those who use it, you would find far less opposition on the part of the non-users. But under the present circumstances, as the elected representatives of many more non-using taxpayers than users, you have little choice other than to reject the proposal. You are therefore respectfully urged to do so.

"Sincerely yours, (signed) Robert T. Coshland."

In my research the 1970 Agriculture Extension Yearbook showed in the Maricopa-Stanfield area the water table had risen between one and twenty feet in the last seven years.

THE CHAIRMAN: Mrs. Stribling, would you mind saying for the record who Mr. Coshland represents?

MRS. STRIBLING: He represents himself, sir.

THE CHAIRMAN: Mr. J. O. Burns, Electrical District Number Four, Eloy.

MR. BURNS: I am James O. Burns and I represent Electrical District Number Four, one of the few districts Brock Ellis represents also. We heartily approve the formation of the water conservation district for the reason we are in a critical water area. We have already submitted a written statement and we wish to thank you for this opportunity.

THE CHAIRMAN: Thank you very much.

(The following is the statement submitted by Electrical District Number Four, Eloy, Arizona:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Electrical District No. 4 is an electrical district located within the boundaries of The Central Arizona Irrigation & Drainage District and is familiar with the critical water condition in this area.

"The Board of Directors of Electrical District No. 4 believes the public convenience and welfare of the State of Arizona will be served by the establishment of this proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

This District does not contemplate testifying at the hearing, but will have representatives present for the purpose of answering any questions that you may have.

"Very truly yours,

"Electrical District No. 4

"By James O. Burns, Chairman."

THE CHAIRMAN: Mr. Richard E. Polenske.

MR. POLENSKE: My name is Richard E. Polenske, living and residing in Phoenix. I represent the Arizona Water Company, which operates in 28 communities in eight counties. With reference to tenure of residency, I can speak with authority. I have lived here 28 years, if that has any bearing on opinions.

The Arizona Water Company has supported the Central Arizona Project from the beginning and it continues to support it. It does wish to be counted in favor of that formation of the conservation district. We

do hope that adequate provision for other areas outside the perimeter of the district be undertaken with respect to exchange-basis water because we do operate in eight counties.

I think much has been said prior to this meeting, as well as in this meeting, about agriculture being a large overbearing part of our economic picture. I think what the people do not recognize -- or if they do they don't own up to it -- is that the fact that urban dwellers will not be urban dwellers without the support of agriculture and the support of mines. I think the realistic viewpoint you have to take is to recognize that a realistic sharing of water resources between Central Arizona Project and other surface sources, as well as underground sources, needs to be effectively incorporated into the overall consumption of water. I feel that this is the only effective way the problem will be solved. We urge your immediate endorsement of such conservancy district for the benefit of the State in general.

THE CHAIRMAN: Thank you very much, Mr. Polenske.

Mr. James Kortsen, Jr., Supervisor from Pinal County.

MR. KORTSEN: Mr. Chairman, members of the Commission, we had a hearing in Pinal County on the 26th day of April, consisting of all the electrical districts and

our planning and zoning, our recreation department and all the mayors from Coolidge, Florence, Miami and the communities of Stanfield, also Maricopa, Picacho, Superior and every community in Pinal County at that meeting. I have been on the Board for years. At that meeting we had on this hearing we did not have one in opposition against the formation of this district and now I urge you to go ahead and form the multi-county water conservation district.

I have a copy of the resolution and the petition that we and the County Board of Supervisors have okayed. I will present this to your clerk. Thank you.

THE CHAIRMAN: Thank you very much, Mr. Kortsen.

Mr. Jim Savage, Central Arizona Irrigation and Drainage District.

MR. SAVAGE: Mr. Chairman, I am James L. Savage, the president of Central Arizona Drainage and Electric District. This district is one of the most critical groundwater areas of the State of Arizona. We are pumping at the present time between six and 400 feet. The pumping exceeds the annual recharging and is increasing every year.

I am a farmer from Eloy, Arizona in what is one of the most critical areas in need of supplemental water. As I hear people say we have no right to be there or that we are economically a drag I wonder what economic

contributions they have made. Eloy and our district have been there for many years and contributed to the economy of this State and I feel we have a right to remain there.

I have personally observed farms that have been taken from production through lack of water and drouth. I have seen them fill up with tumbleweeds and I am sure even the purest of economists would not say this is the most beautiful thing to see. The fact remains we have been there a long time and we deserve to continue.

We have observed the subsidence of our groundwater and we do need more water. I would like to say in answer to a few of the witnesses when I put this ground in from desert that there weren't very many birds out there before we started planting grain. With the water we now put on the land we support the wildlife and the birds.

The roads and the possibility of people coming in there today with their pickup trucks and campers have facilitated entertainment and part of the good life to the people of this State. These roads were not there until our farm built these roads.

I do not want to debate and I do not believe this is a proper forum for us to debate the value of agriculture. These people should come, if they truly are against the value of agriculture and the rights of

farmers to make a living, let them argue that in the proper place.

I have a tendency to agree with Mrs. Butler that immigration in the State of Arizona should be stopped, but in taking a more realistic view I must hold to the contrary because if we would restrict population to when I first started using water, I feel the State would lose the services of Mr. Yetman, Mrs. Stribling, Mrs. Butler, Miss Edes and perhaps almost 100 percent of these detractors. I am happy they are here with us and I don't think that we should restrict further increases in population. Thank you.

THE CHAIRMAN: Mr. William D. Baker.

MR. BAKER: Mr. Chairman, members of the Commission, my name is William D. Baker. I am a resident of Phoenix and also assistant secretary of the Silver Bell Irrigation District. This district is located approximately 44 miles northwest of Tucson in both Pima and Pinal Counties. There are approximately 56,000 acres with district boundaries, of which 2500 acres have an irrigation history. This district has filed an application for Central Arizona Project water in the amount of approximately 18,000 acre-feet per year. It is being pumped from approximately 200 to 400 feet and the pumping level is increasing every year.

I would like on behalf of the Silver Bell Irrigation and Drainage District to go on record to support the formation of a conservation district. I feel it is beneficial to the people of the State of Arizona and it will aid perhaps in some of the arguments you have here today to disperse the population to the rural areas of the State.

I represent the New Magma Irrigation and Drainage District and with the Chairman's permission, would like to call on the chairman of that district, Mr. J. O. Combs.

THE CHAIRMAN: Thank you, Mr. Baker, you may.

MR. COMBS: I am representing the New Magma Irrigation and Drainage District. I am president of the board. I have two of my other board members present. I would like at this time to introduce them, Mr. Joe Cooper and Mr. Bill Combs. That makes 60 percent of the board. We have submitted a written report to you people. We are highly for this.

I don't want to take any more time in talking other than to come back to Brock Ellis. He came into this State in 1913, I came into this State in 1902. I come overland with horses and wagon from the southeast part of the State in 1913 over the same road he did and seen the bridge at Florence was out, but we highly recommend

this, we need this water.

R. W. Beck and Associates will give you information through Mr. Baker, our attorney for the board, but all this information is at your disposal.

THE CHAIRMAN: Thank you very much, Mr. Combs. Mr. H. L. Anderson, Maricopa County Farm Bureau.

MR. ANDERSON: My name is H. L. Anderson, I am a resident of Peoria, Arizona and farm in western Maricopa County. I appear before you today, gentlemen, as president of the Maricopa County Farm Bureau. We have actively supported throughout its entire activity the formation of the Central Arizona Project. Maricopa County Farm Bureau regards the creation of a conservation district as one more vital part in the genesis of the Central Arizona Project that is utterly essential to the very existence of the State of Arizona.

This is to register in the record of the hearing before you our unequivocal and enthusiastic support of the district's immediate creation. Thank you very much.

THE CHAIRMAN: Thank you very much.

Is there anyone else in the auditorium who wishes to be heard at this time?

John Smith, of the Arizona Power Authority.

MR. SMITH: No, I am speaking today as president

of Maricopa-Stanfield Irrigation and Drainage District.

After hearing some of the opposition I was a little bit hesitant in getting up here, since I am a farmer, a cotton farmer. I will say they have a lot going for them, they are a lot better looking than we are.

Mr. Chairman, members of the district and I would also like, as chairman of that irrigation and drainage district, I would like to get together with the lady who has our table rising. It is in conflict with my information. This district is one of the most critical groundwater levels in the State of Arizona. At the present time it is being pumped from a depth of 400 to 600 feet. The pumping exceeds the annual recharge and the pumping lift is increasing.

We have about 108,000 patented deeded acres in our district. It is vital to the economy of this district and the State of Arizona that supplemental water be obtained. To those who, in the name of ecology or whatever, would oppose the Central Arizona Project, I would say that when there is no smoke and dust from the farms and the factories and when there is no smell from the feed yards then there will be no paychecks to clothe and feed your children, and that is a fact.

On behalf of the Maricopa-Stanfield Irrigation and Drainage District I respectfully urge the formation

of the multi-county water conservation district, and the sooner the better. I wish to thank you for the opportunity to appear before you.

THE CHAIRMAN: Thank you, Mr. Smith.

Did I see somebody else's hand?

Mr. Thomas L. Gerczynski, Student Activists for a Vital Environment. You weren't here when I called you.

MR. GERCZYNSKI: No, I was at work.

THE CHAIRMAN: How long is your talk going to take?

MR. GERCZYNSKI: Just a couple of minutes.

THE CHAIRMAN: All right.

MR. GERCZYNSKI: My name is Thomas Gerczynski, I live at 4015 North 61st Avenue in Phoenix, Arizona. I am a student at Phoenix College and a member of the Student Activists for a Vital Environment, whom I represent today.

Studies have shown me that the Central Arizona Project will cost the taxpayers an estimated one to two billion dollars and jump the land speculation prices. I do not believe this type of progress should be allowed in this State or any state, for that matter. Some will tell you we need the water. I believe this project spells economic disaster for the taxpayer.

THE CHAIRMAN: May I interrupt for a minute. This is not a hearing to determine the feasibility of the Central Arizona Project. It is a hearing to determine

whether or not a conservation district should be formed.

MR. GERCZYNSKI: Thank you, sir.

THE CHAIRMAN: So will you please limit your statement to that point.

MR. GERCZYNSKI: A couple of questions should be asked. Who uses the water presently? I have been told that agriculture uses 92 percent of the water but only accounts for eight percent of the annual income, where the city uses eight percent of the water and accounts for 92 percent of the income.

I believe if I went any further I would probably be reiterating on most of the facts or things other people have brought up, so I will conclude. Central Arizona Project has been for 25 plus years somewhat of a drain. I believe that a hearing of this nature is very beneficial, that some people should get the facts and have a real look at the reality. Again I would like to say that I believe it is an economic disaster and I believe and Phoenix College, the Sane organization there believes the project should be scrapped. Thank you.

THE CHAIRMAN: Thank you very much.

MRS. BUTLER: I want to ask a question. I think the cotton farmer misunderstood me. First of all, I would like to say I will take a cotton farmer any day over a bunch of people like the Greyhound Corporation. The

reason I am against the Central Arizona Project, we do not have the controls right now over the water we do have and they are the perfect example. The farmers haven't controlled themselves. I grew up in Pinal County, I used to live in Picacho. If I was living there who would I sue today? This morning I heard over the radio the Picacho table has lowered its water because of that heavy withdrawal from underground basins. I would be looking today to find out who I would sue because my water had been cut short. Would it be you or the irrigation districts? Someone has not represented me properly, if I still lived in Picacho today.

MR. JOHN SMITH: I am not trying to be facetious. Frankly, I don't know who you would sue. I agree with you, there has been some lack of water in the past.

MRS. BUTLER: I know for a fact that there are a lot of wells drilled in Pinal County without a permit and they know it themselves. This is why we have to have laws. People don't control themselves. If I was a cotton farmer I would be out there drilling as many wells as I could. That is why you people are here to set up controls. There are no controls in Arizona. This would be for their own benefit to have this water control, then we wouldn't have to spend so much money to bring in additional water which is not going to solve their

problems. We have got a bigger problem to solve right now. If we put in more water we are not doing anything about the problem we have now. I would rather fill up the State with farmers than city people, they cause a lot more crowding, and I hate that.

THE CHAIRMAN: Thank you very much. The meeting will adjourn until 1:30.

(The noon recess was taken.)

* * *

Phoenix, Arizona
June 8, 1971
1:30 o'clock p.m.

THE CHAIRMAN: This hearing will now reconvene. Is there anyone in the auditorium who wishes to speak on the matter at hand?

(No response)

MR. STEINER: I need to place in the record some statements that are left, Mr. A. B. Campbell of the First National Bank has filed a statement in support. Electrical District Number Three and Number Six and Mr. J. E. Phillips, Mayor of the Town of Paradise Valley, Electrical District Number Five and Robert Lee, Mayor of the City of Eloy.

The First Federal Savings and Loan has indicated their desire to file a statement before the end of the week.

Mr. Avery has indicated he also wishes to file a statement at that time. I don't know whether Mr. Avery's statement will be for or against.

We have received two statements that the individuals have expressed a desire they be filed in opposition to the formation, Mr. Richard F. Rowe and Mrs. Una E. Miller.

THE CHAIRMAN: Thank you very much.

Is there anyone else who cares to be heard?

(No response)

THE CHAIRMAN: If not, on behalf of the Commission I wish to thank you for the interest you have shown and the Arizona Water Commission will, during the next several weeks, study the record of this hearing before reaching its decision on whether or not to establish the water conservation district.

This public hearing now stands adjourned.

* * *

"P E T I T I O N

"Comes now the County of Pinal, State of Arizona, and pursuant to Resolution adopted by the Board of Supervisors of said County on the 26th day of April, 1971, a certified copy of which is filed herewith, and petitions the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a district pursuant to Title 45, Chapter 13 of the Arizona Revised Statutes.

"1. It is proposed that the district be named 'Central Arizona Water Conservation District.'

"2. The Board has found that the public

convenience and welfare will be promoted by the establishment of the Central Arizona Water Conservation District.

"3. It is proposed that the Counties of Maricopa, Pima and Pinal, State of Arizona, and such other or additional counties as may petition to be included, be included in the Central Arizona Water Conservation District.

"Request is hereby made that this petition be considered and acted upon in accordance with the provisions of Title 45, Chapter 13, Arizona Revised Statutes.

"Dated this 26th day of April, 1971.

"BOARD OF SUPERVISORS OF PINAL COUNTY

"By James Kortsen, Jr., Chairman

"Attest: Mercy W. Tucker, Clerk."

"P E T I T I O N

"Comes now the County of Maricopa, State of Arizona, and pursuant to Resolution adopted by the Board of Supervisors of said County on the 26th day of April, 1971, a certified copy of which is filed herewith, and petitions the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a district pursuant to Title 45, Chapter 13 of the

Arizona Revised Statutes.

"1. It is proposed that the district be named 'Central Arizona Water Conservation District.'

"2. The Board has found that the public convenience and welfare will be promoted by the establishment of the Central Arizona Water Conservation District.

"3. It is proposed that the Counties of Maricopa, Pima and Pinal, State of Arizona, and such other or additional counties as may petition to be included, be included in the Central Arizona Water Conservation District.

"Request is hereby made that this petition be considered and acted upon in accordance with the provisions of Title 45, Chapter 13, Arizona Revised Statutes.

"Dated this 26th day of April, 1971.

"BOARD OF SUPERVISORS OF MARICOPA COUNTY

"By Henry H. Haws.

"Attest: Rhea Woodall, Clerk."

"P E T I T I O N

"COMES NOW The County of Pima, State of Arizona, and pursuant to Resolution adopted by the Board of Supervisors of said County on the 4th day of May, 1971, a certified copy of which is filed

herewith, and petitions the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a district pursuant to Title 45, Chapter 13 of the Arizona Revised Statutes.

"1. It is proposed that the district be named 'Central Arizona Water Conservation District.'

"2. The Board has found that the public convenience and welfare will be promoted by the establishment of the Central Arizona Water Conservation District.

"3. It is proposed that the Counties of Maricopa, Pima, and Pinal, State of Arizona, and such other or additional counties as may petition to be included, be included in the Central Arizona Water Conservation District.

"Request is hereby made that this petition be considered and acted upon in accordance with the provisions of Title 45, Chapter 13, Arizona Revised Statutes.

"Dated this 4th day of May, 1971.

"PIMA COUNTY BOARD OF SUPERVISORS

"By Dennis Weaver, Chairman

"Attest: Elsa B. Hanna, Clerk."

"NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

"Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

"The hearing will be held from 9:00 AM to 12:00 noon and from 1:30 PM until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

"The Arizona Water Commission requests notification in advance of the hearing by those

desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

"Dated this fourteenth day of May, 1971.

"ARIZONA WATER COMMISSION

"By George E. Leonard, Chairman."

(The following are Xerox copies of affidavits of posting the foregoing notice of hearing by the sheriffs of each of the 14 counties in Arizona:)

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Yavapai County, Arizona

STATE OF ARIZONA)
) ss.
County of Yavapai)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 18th day of May, 1971, and that I personally posted the same at Yavapai County Court House, Prescott, and Yavapai County Building, Camp Verde, and Justice Court Building, Mayer, being three conspicuous places in the County of Yavapai, on the 18th day of May, 1971.

DATED this 18th day of May, 1971.

G. A. Ayars,
Sheriff

By Mary Ormont
Deputy Sheriff

CIVIL DIV

MAY 17 2 44 PM '71

MARICOPA COUNTY
SHERIFF'S OFFICE
PHOENIX, ARIZONA

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Maricopa County, Arizona

197/269
310

STATE OF ARIZONA)
) ss.
County of Maricopa)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at (1) Court House (Basement Bulletin Board), and (2) Main Floor, Court House Bulletin Board, and (3) Bulletin Board on Southern side of Court House (on Jefferson Street), being three conspicuous places in the County of Maricopa, on the 17th day of May, 1971.

DATED this 17th day of May, 1971.

NO FEE

JOHN MUMMERT, Sheriff
Sheriff

By F. B. McFadden
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

GRAHAM County, Arizona

RECEIVED
TIME 1130 A.M.
MAY 17 1971
SHERIFF'S OFFICE
GRAHAM COUNTY, ARIZ.
BY E. Cluff

STATE OF ARIZONA)
) ss.
County of GRAHAM)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17 day of May, 1971, and that I personally posted the same at The Graham County Court House, and at the United States Post office, and at the Safford City Hall, Safford, Az., being three conspicuous places in the County of GRAHAM, on the 17 day of May, 1971.

DATED this 17 day of May, 1971.

H. O. Stevens
Sheriff

By Ervin Cluff
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Coconino County, Arizona

STATE OF ARIZONA)
) ss.
County of Coconino)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at _____ Sheriffs Office _____, and _____ 1st Floor at Court House _____, and _____ 2nd Floor at Court House _____, being three conspicuous places in the County of Coconino, on the 17th day of May, 1971.

DATED this 17th day of May, 1971.

Carl Richardson
Sheriff

By M. Fowler
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Navajo County, Arizona

STATE OF ARIZONA)
) ss.
County of Navajo)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17 day of May, 1971, and that I personally posted the same at _____ Court House _____, and _____ Post Offices, and _____ City Hall _____, being three conspicuous places in the County of Navajo, on the 17 day of May, 1971.

DATED this 17 day of May, 1971.

Lyle E. Jenkins
Sheriff

By Leroy M. Espinosa
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

MOHAVE County, Arizona

STATE OF ARIZONA)
) ss.
County of MOHAVE)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17 day of MAY, 1971, and that I personally posted the same at POST OFFICE LAKE HAVASU CITY, and SHERIFF'S SUB-STATION BULLHEAD CITY, and COUNTY COURT HOUSE KINGMAN, ARIZONA, being three conspicuous places in the County of MOHAVE, on the 17 day of MAY, 1971.

DATED this 17 day of MAY, 1971.

FLOYD L. CISNEY
Sheriff

By _____
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

SANTA CRUZ County, Arizona

STATE OF ARIZONA)
) ss.
County of santa cruz)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at SANTA CRUZ COUNTY COURTHOUSE, and GEBLER BLDG., NOGALES, ARIZONA, and CITY WATER DEPT. OFFICE, being three conspicuous places in the County of SANTA CRUZ, on the 17th day of May, 1971.

DATED this 17th day of May, 1971.

E. ZEKE BEJARANO,
Sheriff

By D.R. Kenson
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Greenlee County, Arizona

STATE OF ARIZONA)
) ss.
County of greenlee)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17 day of May, 1971, and that I/~~personnaddy~~ caused to be posted the same at 8:51 A.M. May 18, 1971, Clifton Post Office., and 9:09 A.M. May 18, 1971, Morenci Post Office., and 11:48 A.M. May 19, 1971 Duncan Post Office, being three conspicuous places in the County of Greenlee, on the 19 day of May, 1971.

DATED this 19 day of May, 1971.

Forrest G. Wilkerson
Sheriff

By L.J. Thompson
L.J.Thompson Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

PIMA County, Arizona

OFFICE OF THE SHERIFF

STATE OF ARIZONA)
) ss.
County of PIMA)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at West Door of the Pima County Courthouse, and North Door of the Pima County Courthouse, and 55 West Congress Street, Justice Building, being three conspicuous places in the County of Pima, on the 17th day of May, 1971, at 1:50 P.M.

DATED this 18th day of May, 1971.

WALDON V. BURR
Sheriff

By _____
Civil Deputy Sheriff
L.W. Robinson

Fees: NO CHARGE

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Apache County, Arizona

STATE OF ARIZONA)
) ss.
County of Apache)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at The Apache County Courthouse, and Post Office at St. Johns, Apache County, and Post Office at Springerville, Apache County, being three conspicuous places in the County of Apache, on the 20th day of May, 1971.

DATED this 20th day of May, 1971.

Edgar B. Sperry
Sheriff

By _____
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

YUMA County, Arizona

STATE OF ARIZONA)
) ss.
County of YUMA)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at FRONT DOOR OF OF THE COUNTY COURT HOUSE, and FRONT DOOR OF THE YUMA COUNTY JAIL, and FRONT DOOR OF THE YUMA CITY HALL, being three conspicuous places in the County of YUMA, on the 17th day of May, 1971.

DATED this 17th day of May, 1971.

TRAVIS YANCEY
Sheriff

By J. [illegible]
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

Cochise County, Arizona

STATE OF ARIZONA)
) ss.
County of Cochise)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 18 day of May, 1971, and that I personally posted the same at Cochise County Court House, and San Jose Post Office, and Warren Post Office, being three conspicuous places in the County of Cochise, on the 18 day of May, 1971.

DATED this 18 day of May, 1971.

J. J. "Jim" Wadcox
Sheriff

By Robert Dickerson
Deputy Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

GILA County, Arizona

STATE OF ARIZONA)
) ss.
County of Gila)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at Front bulletion Board, Gila Co. Court House, and Gila Co. Adminst. Bldg. Payson, Az., and U.S. Post Office Bldg. Winkleman, being three conspicuous places in the County of Gila, on the 19th day of May, 1971.

DATED this 24th day of May, 1971.

TED LEWIS
Sheriff

By [signature]
Under ~~Deputy~~ Sheriff

AFFIDAVIT OF POSTING NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

OFFICE OF THE
SHERIFF

PINAL County, Arizona

STATE OF ARIZONA)
) ss.
County of PINAL)

I hereby certify that I received the within "Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District" on the 17th day of May, 1971, and that I personally posted the same at Bulletin Board Court House, Florence, and Bulletin Board Sheriffs Off. Casa Grande and Bulletin Board Sheriffs Off. Coolidge, being three conspicuous places in the County of Pinal, on the 18thday of May, 1971.

DATED this 18th day of May, 1971.

Coy K. De Arman
Sheriff

By M. K. Hodo
Civil Deputy Sheriff

(The following is the statement submitted by Lew Davis, Tucson, Arizona:)

"Mr. Chairman and members of the Arizona Water Commission, my name is Lew Davis. I am a resident of and for six years was Mayor of the City of Tucson.

"As a land developer for 20 years I have been a close observer of the water supply problems of the Tucson metropolitan area. As Mayor I was deeply involved in the planning and execution of programs to keep water flowing to serve an ever increasing population. Some of our plans worked, some did not. No means has yet been found to insure an adequate supply of water for an area in which over 300,000 persons live.

"Tucson gets its water from deep wells, and while there has been much talk about large quantities of water still in storage underground, there is no satisfactory proof that it can be pumped from the tight formations in which such water may exist.

"We will try anything in Tucson to obtain more water, and right now it seems that the Central Arizona Project is our best bet, even though we must look beyond it, as well, to all other

potential longer-range sources.

"Tucson will surely continue to grow in the future as it has in the past 20 years, unless our water supply fails. If that happens, of course, instead of growing it will sink into economic oblivion, and eventually blow away with the desert wind. Cities with too little water just don't stand still in pleasant relaxation. They die.

"Faced with a problem like that, we must revise our thinking about the price we pay for water. From any new source the cost will be higher. Our choice is limited to paying the price or going dry and moving away.

"The Pima County Board of Supervisors has petitioned for organization of a Water Conservation District to contract for water from the Central Arizona Project and plans to help pay for that project through a small tax levy on property.

"I stand fully in support of such action, and I plead that this Commission move swiftly to implement it."

(The following is the statement submitted by Evo DeConcini, Tucson, Arizona:)

"Chairman Leonard and members of the Arizona Water Commission, my name is Evo DeConcini. I am

an attorney by profession, a former justice of the Arizona Supreme Court, and a former member of this Commission. My residence is in the City of Tucson. For many years I have been actively interested in the water problems of Arizona and particularly in the efforts of the City of Tucson to assure an adequate supply for its ever growing population and for its business and industrial establishments.

"Tucson and its metropolitan area is not so fortunately located near an available source of stored surface stream flow as are the cities of the Salt River Valley. We are forced to depend upon pumped groundwater which we know to be a limited resource under present rates of use, even though we cannot precisely date the point at which that source will fail to meet our needs. Shortages appear to be inevitable without supplementation, and we have for many years looked to the Central Arizona Project as at least a primary means of increasing our municipal and industrial water supply.

"The City of Tucson and the area surrounding it has advised the Bureau of Reclamation that it anticipates an ultimate need for about 200,000

acre-feet of Central Arizona Project water annually. We know that the cost of this water will be high by yesterday's and even today's price standards, but that appears to be the irreversible trend of everything these days, and we accept it as part of the cost of living where we do in an arid land.

"It is my understanding that the federal government let it be known early this year that before construction of the Central Arizona Project begins there must be a single agency with which contracts for delivery of water can be negotiated, and which has authority to levy a tax to guarantee repayment of construction costs.

"To meet those conditions, the Arizona Legislature has authorized the organization of a Water Conservation District having the required authority; and this hearing by your Commission is the next step required for establishment of the District.

"It is also my understanding that the new District's tax levying authority will, if and when exercised, have the effect of spreading the burden of cost repayment among all of the Project's beneficiaries and holding the price charged for municipal and industrial uses as nearly to the

estimated $50.00 per acre-foot as possible in view of escalating construction costs.

"I find myself in sympathy with that purpose, and I strongly recommend to this Commission that it lose no time in implementing organization of the authorized Water Conservation District so that its essential functions may be started without delay.

"Knowledge of Arizona's history and respect for its future leads to only one possible conclusion: Water is the absolutely essential ingredient of all that we are and of all that we ever hope to become. We will never have quite enough of it, but let us miss no opportunity to add to what little we have.

"Respectfully submitted,

"Evo DeConcini

"510 Valley N. Bldg.

"Tucson 85706."

(The following is the statement submitted by James P. Simmons, President, United Bank of Arizona:)

"Mr. George E. Leonard

"Chairman

"Arizona Water Commission

"34 West Monroe

"Phoenix, Arizona

"Dear Sir:

"I welcome the opportunity to make this statement because my bank is vitally concerned with the controlled growth of the central Phoenix area and we fully recognize that the Central Arizona Project is essential to the economic and social well being of all of the residents in metropolitan Phoenix.

"We simply must substantially reduce our continuing withdrawal of ground water because it is being consumed at a much faster rate than it is being replenished. The ground water supply is not inexhaustible and we must, as quickly as we can, decrease our consumption to a level equal to the rate of replenishment. The only available step to be taken which would substantially alleviate the present unsatisfactory situation by permitting an alternative source of water is the successful construction of the Central Arizona Project with its sizable contribution of water from the Colorado River. This would then lower the consumption of ground water.

"We believe that the Central Arizona Project is not in any way an effort to expand our economy but rather it is essential to maintaining our

existing economy, particularly the irrigated agricultural sector. Agriculture plays a vital role in our Central Arizona economy. It supplies tens of thousands of jobs directly and indirectly. We must make sure that this important factor in our economy continues its contribution. The only way we can do this is to make certain that the Central Arizona Project is complete, thus assuring the necessary water supply.

"The United Bank of Arizona is in complete support of the efforts to organize a water conservation district to contract for water from the Central Arizona Project. We sincerely request that this commission take prompt action to establish a water conservation district so that our citizens can continue to have the employment that results directly and indirectly from the availability of water in this area.

"Respectfully yours,

"James P. Simmons, President."

(The following is the statement submitted by Electrical District Number Six, Pinal County, Arizona:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Electrical District No. 6 is an electrical district partially located within the boundaries of the New Magma Irrigation & Drainage District.

"Its Board of Directors and members are thoroughly familiar with the water conditions in this area, including the rapidly declining underground water.

"The Board of Directors of Electrical District No. 6 believes that the public convenience and welfare of the State of Arizona will be served by the establishment of the proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

"This District does not contemplate testifying at the hearing, but will have representatives present for the purpose of answering any questions that you may have.

"Very truly yours,

"ELECTRICAL DISTRICT NO. 6

"By Ray Schnetf."

(The following is the statement submitted by Electrical District No. 3, Maricopa, Arizona:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Electrical District No. 3 is an electrical district located within the boundaries of the Maricopa-Stanfield Irrigation & Drainage District and is familiar with the critical water condition in this area.

"The Board of Directors of Electrical District No. 3 believes the public convenience and welfare of the State of Arizona will be served by the establishment of this proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

"This District does not contemplate testifying at the hearing, but will have representatives present for the purpose of answering any questions that you may have.

"Very truly yours,

"ELECTRICAL DISTRICT NO. 3

"By W. A. Dunn, Chairman."

(The following is the statement submitted by New Magma Irrigation & Drainage District:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Pursuant to Notice of Hearing on petition for formation of multi-county water conservation district, New Magma Irrigation & Drainage District hereby submits the following written statement of this District in support of the formation of said district.

"New Magma Irrigation & Drainage District is an irrigation district duly organized under the laws of the State of Arizona (Title 45, Chapter 6, Arizona Revised Statutes) and, as such, is a municipal corporation (Article 13, Section 7, Arizona Constitution).

"The District is located in both Maricopa and

Pinal Counties and is approximately 38 miles Southeast of Phoenix. There are approximately 46,075 acres within the District's boundaries, of which 32,593 acres have recent irrigation history. The present source of water for the irrigation of this land is deep well irrigation pumping from underground aquifers. The entire district lies within what has been designated by the State Land Department of the State of Arizona as 'a critical underground water area.'

"The District has filed application with the Secretary of the Interior for a contract for water from the Central Arizona Project and has, pursuant to the request of the Secretary, filed an Expression of Interest in contracting for Central Arizona Project water in the amount of 130,096 acre-feet per year.

"The District has completed preliminary engineering and planning studies in connection with its application. A copy of the final draft of the Engineering and Planning Study has previously been submitted to you and is incorporated herewith by reference as a part of our statement in support of the formation of the proposed multi-county water conservation district.

"This District believes that the public convenience and welfare of the State of Arizona will be served by the establishment of the proposed district and respectfull urges that your Commission declare the water conservation district organized as petitioned for.

"Gordon D. Jorgensen of R. W. Beck and Associates, District Engineer; and William D. Baker of Rawlins, Ellis, Burrus & Kiewit, District Attorney, will, on behalf of New Magma Irrigation & Drainage District, attend the hearing set for June 8th and will be available for answering of any questions that you may have. Unless there are some questions that require answers which are not covered in this letter or in the Engineering and Planning Study submitted herewith, we would not contemplate testifying at the hearin.

"Respectfully submitted,

"NEW MAGMA IRRIGATION & DRAINAGE DISTRICT

"By J. O. Combs, President."

(The following is the statement submitted by Silver Bell Irrigation & Drainage District:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Pursuant to Notice of Hearing on petition for formation of multi-county water conservation district, Silver Bell Irrigation & Drainage District hereby submits the following written statement of this District in support of the formation of said district.

"Silver Bell Irrigation & Drainage District is an irrigation district duly organized under the laws of the State of Arizona (Title 45, Chapter 6, Arizona Revised Statutes) and, as such, is a municipal corporation (Article 13, Section 7, Arizona Constitution).

"The District is located in both Pima and Pinal Counties and is approximately 44 miles northwest of Tucson. There are approximately 53,065 acres within the District boundaries, of which 2,500 acres have recent irrigation history. The present source of water for the irrigation of this land is deep well irrigation pumping from underground aquifers. The entire district lies within what has been designated by the State Land Department of

the State of Arizona as 'a critical underground water area.'

"The District has filed application with the Secretary of the Interior for a contract for water from the Central Arizona Project and has, pursuant to the request of the Secretary, filed an Expression of Interest in contracting for Central Arizona Project water in the amount of 18,000 acre-feet per year.

"This District believes that the public convenience and welfare of the State of Arizona will be served by the establishment of the proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

"Gordon D. Jorgensen of R. W. Beck and Associates, District Engineer, and William D. Baker of Rawlins, Ellis, Burrus & Kiewit, District Attorney, will, on behalf of Silver Bell Irrigation & Drainage District, attend the hearing set for June 8th and will be available for answering of any questions that you may have. Unless there are some questions that require answers which are not covered in this letter, we would not contemplate testifying at the hearing.

"Respectfully submitted,

"SILVER BELL IRRIGATION & DRAINAGE DISTRICT

"W. G. Goering."

(The following is the statement submitted by Central Arizona Irrigation & Drainage District:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Pursuant to Notice of Hearing on petition for formation of multi-county water conservation district, Central Arizona Irrigation & Drainage District hereby submits the following written statement of this District in support of the formation of said district.

"Central Arizona Irrigation & Drainage District is an irrigation district duly organized under the laws of the State of Arizona, Title 45, Chapter 6, Arizona Revised Statutes, and as such is a municipal corporation, Article 13, Section 7, Arizona Constitution.

"The District is located in the central part of

Pinal County and is approximately 70 miles Southeast of Phoenix and 40 miles Northwest of Tucson. There are approximately 140,000 acres within the District's boundaries of which 129,000 acres have recent irrigation history. The present source of water for the irrigation of this land is deep well irrigation pumping from underground aquifers. The entire district lies within what has been designated by the State Land Department of the State of Arizona as 'a critical underground water area'. This District is recognized as one of the two most critical underground water areas in the State of Arizona.

"The District has filed application with the Secretary of the Interior for a contract for water from the Central Arizona Project and has, pursuant to the request of the Secretary, filed an Expression of Interest in contracting for Central Arizona Project water in the amount of 518,068 acre-feet per year.

"The District has completed preliminary engineering and planning studies in connection with its application. A copy of the preliminary draft of the Engineering and Planning Study is submitted herewith as a part of our statement in support of

the formation of the proposed multi-county water conservation district.

"This District believes that the public convenience and welfare of the State of Arizona will be served by the establishment of the proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

"Gordon D. Jorgensen of R. W. Beck and Associates, District Engineer; and R. J. Ellis of Rawlins, Ellis, Burrus & Kiewit, District Attorney, will on behalf of Central Arizona Irrigation & Drainage District attend the hearing set for June 8th and will be available for answering of any questions that you may have. Unless there are some questions that require answers which are not covered in this letter or in the Engineering and Planning Study submitted herewith, we would not contemplate testifying at the hearing.

"Respectfully submitted,

"CENTRAL ARIZONA IRRIGATION & DRAINAGE DISTRICT

"By James L. Savage and William T. Elliott, 1st Vice-President.

"Enclosure

"EXHIBIT B: Central Arizona Project Engineering

And Planning Study, Central Arizona Irrigation & Drainage District, R. W. Beck & Associates; March 1971. On file in the offices of the Arizona Water Commission, 34 W. Monroe, Phoenix, Arizona."

(The following is the statement submitted by Mr. A. B. Campbell, Vice President and Cashier and Secretary to the Board of Directors of First National Bank of Arizona:)

"Statement

"Arizona Water Commission Hearing - June 8, 1971

"I am A. B. Campbell, Vice President and Cashier and Secretary to the Board of Directors of First National Bank of Arizona. My statement, which has the approval of management of the bank, is directed to the need for water and the concern of my associates about rising costs resulting from delays in construction of the Central Arizona Project.

"Through its economic research the bank has long been aware and has published bulletins concerning the need for additional sources of water for Central Arizona. One such bulletin, the October 1968 issue of Profile of Arizona (which was distributed nationally), is appended. Further, First National Bank of Arizona has actively supported the Central Arizona Project Association

1st

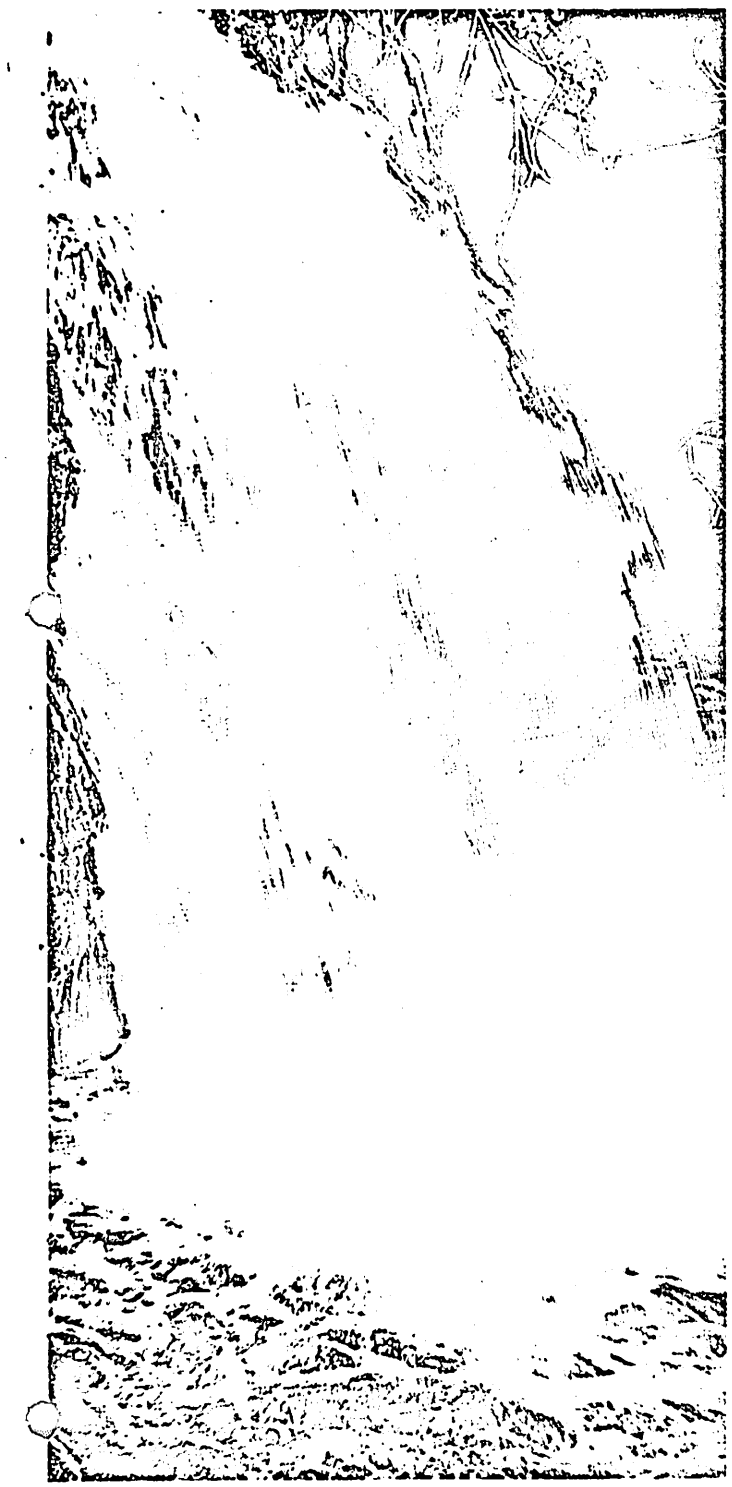
profile of ARIZONA

179a

OCTOBER 1968

Prepared monthly by the Marketing and Research Department ○ P.O. Box 2551 ○ Phoenix, Arizona 85002

A SPECIAL REPORT . . . THE CENTRAL ARIZONA PROJECT



Havasu Creek, tumbling toward the Colorado River, symbolizes additional water to be provided Arizona by the CAP.

Presidential approval last month of the Central Arizona Project culminated more than 40 years of planning, legal action and legislative effort by Arizonans and friends of Arizona to bring additional water to principal farming areas and population centers of the state.

CAP will not only assure the continuing and dramatic development of Arizona. As a national wealth-creating investment, it will benefit hundreds of thousands of Americans who have interests in multi-million dollar manufacturing, mining, agricultural, construction, distribution and service enterprises here.

"Arizona Grows Where Water Flows"

Water reclamation aided development along the Salt River centuries before settlers started farming there in the 1860's. Over 2,000 years ago Indians known as the Hohokam were irrigating crops from hand-dug canals. Modern canals of the Salt River Project follow portions of the ancient pattern.

The Salt River Project was the nation's initial great reclamation undertaking. The first reservoir in the system was created behind Theodore Roosevelt Dam, 80 miles upstream from Phoenix. Completed in 1911, the dam forms the keystone of a multiple-lake complex which provides Metropolitan Phoenix one of the best assured supplies of water in the country.

Total cost of Roosevelt Dam, access roads and hydro-generators was $10,166,000. Federal funds loaned for construction were fully repaid more than ten years ago.

Except for the Colorado River, Arizona sources of surface water have been developed extensively. Along the Gila, the San Carlos Project supplies irrigation water to productive farmland in Pinal County. The reservoir formed behind Coolidge Dam — San Carlos Lake — has a capacity of 1.3 million acre-feet of water.

The Yuma area and nearby Wellton-Mohawk Valley are principal beneficiaries of the Colorado River. Wellton-Mohawk was an area of economic distress just over 20 years ago. The valley now contains 75,000 acres of rich farmland irrigated by Colorado River water.

Continued on following page

Pumping Draws Down Underground Reserves

A good supply of underground water has supplemented that obtained from surface flow, but reserves are only partially recharged. Steady withdrawal has reduced water levels and in many cases made pumping uneconomical for agricultural use. Approximately half of present water usage represents "deficit spending."

The Water Deficit — Annual Water Use in CAP Area

	Acre-Feet of Water*	
Available Surface Water	1,020,000	
Pumped Ground Water	3,470,000	
Total Annual Use		4,490,000
Surface Water Renewed Annually	1,020,000	
Ground Water Recharged Annually	1,280,000	
Total Renewed and Recharged		2,300,000
Annual Deficit		2,190,000

*One acre-foot is equal to 325,825 gallons.

Despite intensive programs to conserve water and to use it efficiently, thousands of acres of fertile farmland were being abandoned annually. It was from this need that the Central Arizona Project was conceived — a plan to bring an additional 1.2 million acre-feet of Colorado River water to central and southern Arizona.

The project was designed jointly by the State of Arizona and the U. S. Bureau of Reclamation, and reported to Congress in 1947. The Senate passed the CAP bill in 1950 and again in 1951. But legislation was blocked when Arizona's claim to the required additional Colorado River water was challenged in the House.

More than eleven years of litigation ended in June 1963 when the U. S. Supreme Court upheld Arizona's right to 2.8 million acre-feet of mainstream Colorado River water. The court also held that waters of tributaries, such as the important Gila River in Arizona, remain for the exclusive use of each state.

Further unsuccessful attempts at enabling legislation followed until passage this year of a compromise bill.

All Arizona Will Benefit

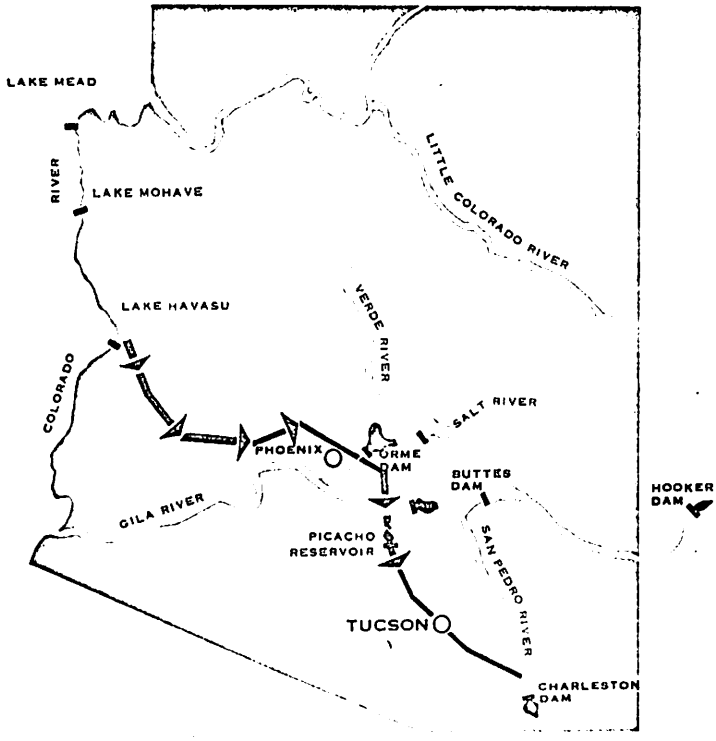
Containing 75 percent of the state's population, 90 percent of its industry and 60 percent of the irrigated land, the Maricopa, Pinal and Pima County area to be served by CAP is of vital economic importance.

To recognize the miracle of irrigation, it is necessary only to drive from lush farmlands to adjacent areas where vegetation depends solely on rainfall. Land here is just as fertile and climate is equally favorable but, with inadequate water, only desert growth survives.

Through the Central Arizona Project, much of the one million acres of irrigated land can be kept in production. In addition, communities which depend on pumped water for urban needs will have a new source before underground reserves are depleted. Even to areas outside the project, preservation of the tax base which the additional water will permit is a most important benefit.

Concluded on following page

The Basic Plan



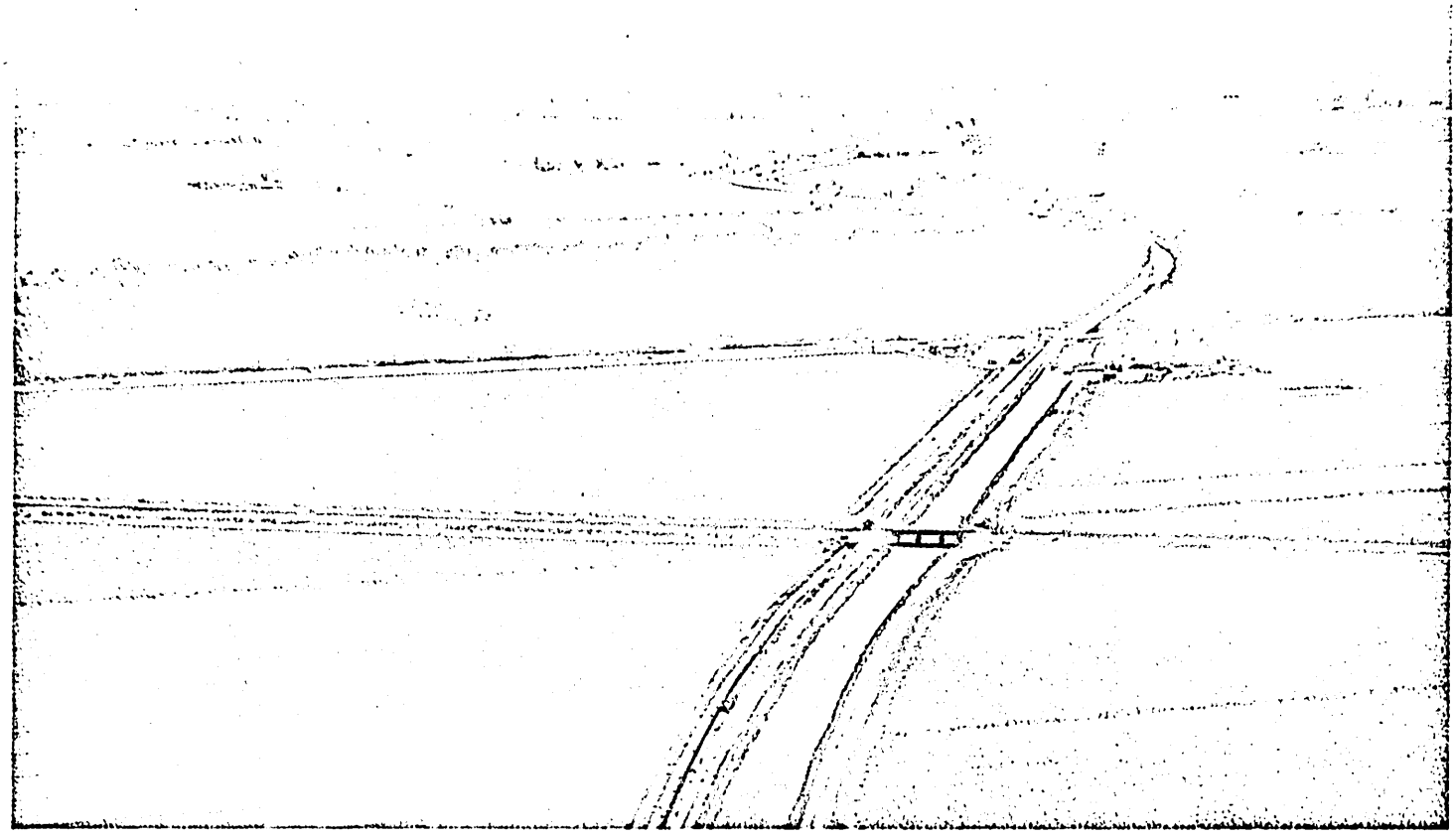
Sale of water and power over a 50-year period will return approximately 90 percent of the project cost.

From Lake Havasu just above Parker Dam, water will be lifted about 900 feet over mountains and then transported via the Granite Reef Aqueduct to a reservoir behind Orme Dam at the junction of the Verde and Salt Rivers, just northeast of Mesa and 20 miles east of Phoenix. Power for pumping will come from a steam-electric generating facility to be built by non-federal funds, utilizing coal from the Navajo Reservation.

The Salt-Gila Aqueduct will take water south to Picacho Reservoir, about 15 miles south of Coolidge where it will move to Tucson by aqueduct. Another phase of the project will include Charleston Dam on the San Pedro River between Benson and Bisbee, with a second aqueduct also carrying water to Tucson.

Water exchange and interbasin transfers will be effected as feasible where direct service would not be practical.

Completion of the $1 billion project is expected to take nearly 10 years, although diversion facilities could be finished sooner, depending on the rate funds are provided by Congress for construction.



Farmland near Mesa, once desert, has been turned into productive use through irrigation.

During the construction period millions of dollars will flow into the economies of communities inside and outside the ultimate water service area. New lakes created will add recreational facilities and produce opportunities for further development of the visitor industry.

Agriculture utilizes 90 percent of all water produced in Arizona. But as Arizona cities grow, urban developments displace irrigated agricultural acreage in many instances. Where this conversion of land use occurs, economic growth is possible without additional water supplies.

Some Water Re-used Seven Times

Of necessity, Arizona has great interest in the conservation of water, and has an impressive record of achievement. Some highlights of that record are presented here.

- More than 95 percent of all water delivered to municipal water users in Arizona is metered. Farm irrigation deliveries are also carefully measured by all water districts in Central Arizona.
- Arizona farmers have invested more than $115,000,000 on ditch lining, land releveling and pump-back systems to conserve water.
- More than 2,000 miles of district delivery canals are lined, and more are in process each year.
- Sixty-four percent (7,672 miles) of all farm irrigation ditches are lined with concrete to prevent water loss, and lining continues at a rapid rate.
- The Salt River Project in Central Arizona has invested $15,000,000 during the last 15 years on works to conserve water and deliver it efficiently.
- Salt River Project and U. S. Forest Service will spend approximately $75,000,000 in the next 25 years to improve the efficiency of water yield on 7,500,000 acres of Arizona watershed lands.
- Principal industrial user of water in Arizona is the mining industry. For every 1,000 gallons of new water used by this industry, 3,000 gallons are reused — some as many as seven times.
- Direct reuse of municipal sewage water is at present limited to irrigation of non-food crops, but intensive research programs are in process to develop means of a higher economic use of treated effluent from Phoenix and Tucson.

Approval of the Central Arizona Project removes the greatest impediment to Arizona's future growth. While questions remain concerning water distribution within the state, Arizonans will continue to make most effective use of this wondrous natural element.

THE ARIZONA ECONOMY IN REVIEW

Establishment of a National Aviation Training Center near Chandler is being planned. The proposed Arizona State University facility would train 2,000 persons annually in technical, administrative and flight skills for the civil aviation industry. The $21.5 million center would be financed by federal, state and private funds.

* * *

Prudential Insurance of America has selected Phoenix as site for a new administrative office that will initially employ about 70 people. Prudential has been a large Arizona investor for many years.

* * *

The final link of Interstate Highway 10 between Phoenix and Tucson was opened last month, reducing travel distance to 113 miles and encouraging more rapid development of the intervening land corridor.

* * *

B. V. D. dedicated a 200-employee plant at the Hopi Industrial Park in Winslow last month. The largest manufacturer in northern Arizona, the plant will add a payroll of $1 million a year to Winslow's economy.

* * *

Arizona's first K Mart store, a division of S. S. Kresge, has opened in Scottsdale. Two more K Mart outlets are under construction in Phoenix and Tucson.

* * *

M. C. Davis Company of Arizona City recently began producing coils for stereophonic equipment and other miniature electronic applications. Employment is expected to reach 50 by the end of the year.

Hamilton Aircraft Co., Tucson, has readied a $300,000 turboprop plane for flight testing. Plans to build two turboliners a month will boost the annual Hamilton payroll to $2.5 million. The engines will be produced by AiResearch, Phoenix.

* * *

Coca-Cola will erect a $1.5 million automated canning and distribution plant in Phoenix. Production from the new facility, scheduled for operation next year, will be in addition to that of the present 99,000 square foot Phoenix Coca-Cola bottling plant.

* * *

Enrollment in higher education exceeds 81,000 for the fall semester. Arizona State University, Tempe heads the list with 23,272; University of Arizona, Tucson, 23,000; Northern Arizona University, Flagstaff, 8,000; and the state's junior colleges total 26,850.

* * *

Nonfarm wage and salary employment in Arizona of 464,000 at mid-August represented a gain of 30,000 or 7 percent over the corresponding month a year ago. The increase reflects over-the-year gains in all industry categories and mining expansions following the copper strike settlement.

* * *

Barrow Neurological Institute plans a $1.4 million expansion at St. Joseph's Hospital, Phoenix. The new construction will bring the hospital's total area to 456,000 square feet and total patient beds to 553. The Institute is one of only three in North America.

ARIZONA BUSINESS INDICATORS

	1968		1967	Percent Change August '68 vs. August '67
Bank Debits (000)	August	July	August	
Phoenix	$1,394,767	$1,595,335	$1,298,000	+ 7.4
Tucson	347,029	403,749	343,951	+ 0.8
Nonagricultural Employment	464,000	465,300	434,000	+ 6.9
Trade	104,200	104,100	101,200	+ 2.9
Manufacturing	84,300	84,700	77,700	+ 8.5
Average Work Week — Mfg.	41.1	41.1	40.8	+ 0.7
Unemployment	20,500	22,000	24,600	—16.7
Percent of Labor Force (Actual)	3.5	3.7	4.3	

since that non-profit organization was founded.

"Department of Commerce reports show that construction costs are climbing at the rate of nine percent a year. Further delays in construction of the Central Arizona Project will be quite costly to the taxpayers.

"My associates and I understand that organization of a Water Conservation District such as is being considered here is essential to the start of construction of the Central Arizona Project. Because additional sources of water are needed, and because delays are proving costly, we urge the Arizona Water Commission to declare the district organized.

"A. B. Campbell

"June 7, 1971."

(The following is the statement submitted by Mr. J. E. Phillips, Town Manager, Town of Paradise Valley:)

"Arizona Water Commission

"Suite 707

"The Arizona Bank Bldg.

"34 W. Monroe St.

"Phoenix, Arizona 85003

"Dear Sir:

"We do support the organization of the Arizona

Water Conservation District to negotiate water contracts so that construction of the Central Arizona Project can be put underway.

"Please advise us of the time we should appear at the hearing to be held June 8, 1971.

"Sincerely,

"J. E. Phillips, Town Manager."

(The following is the statement submitted by Mr. Robert Lee, Mayor, City of Eloy, Arizona:)

"Statement By Robert Lee, Mayor, City of Eloy, Arizona

"June 8, 1971

"My name is Robert Lee and I am the mayor of the City of Eloy, Arizona. This statement is being made in connection with our request for an allocation of water from the Colorado River through the Central Arizona Project.

"During the past two years, the City of Eloy has experienced a population increase of 30%. In addition, it has grown in geographic size from approximately 12 square miles to approximately 40 square miles. This recent large annexation is currently being subdivided in preparation for an anticipated large influx of people. Because of this preparation in the uniqueness of Eloy's

location along Interstate #10 and midway between the cities of Phoenix and Tucson, I am convinced that our community will become a large urbanized area within the next few years.

"Because of this anticipated population growth, it is absolutely essential that we find some means of increasing our water supply to handle this growth.

"Robert Lee, Mayor, City of Eloy."

(The following is the statement submitted by Mr. Ben Avery:)

"Statement of Ben Avery, a resident of Arizona 62 years, and for the past 43 years an outdoor writer and reporter of Arizona's struggle for water from the Colorado River

"Gentlemen:

"I feel that as a citizen interested in all phases of Arizona's economic, recreational, and ecological well-being, I must say something in support of creating the proposed multi-county water conservation district.

"It is the only feasible and orderly way for Arizona to contract for repayment of the Central Arizona Project in such a manner that project costs may be spread as widely as possible among those who

will benefit from the CAP. And those benefits certainly will not be restricted to the irrigation districts or the municipalities. Actually the benefits, even without wider water distribution, will be felt in all counties of the state tax-wise and economically.

"So I must support creation of the district for this purpose.

"At the same time, I want to voice my disappointment that the legislation creating the authority for the district was not a little broader in scope to allow participation on other than a county basis, but if the need arises the law can be changed by a future legislature in that respect.

"And after listening to testimony this morning, I am amazed at the lack of understanding of Arizona's water and human problems.

"Those of us who have lived here many years, I believe, have a better perspective. Today's overdraft on the Colorado River may change next year or the next. Historic records and physical evidence show that the river has delivered tremendous flows in the past, and no doubt will do so again. The same can be said of the Gila and the Salt.

"I was struck by the honesty of the little girl who objected to the building of Orme Dam because she would lose her favorite tubing place. Many other conservationists strongly support the building of Orme Dam, however, because it will provide swimming and boating and fishing recreation for thousands, and also because it will provide enough flood control to make it unnecessary to rip out the downstream green belt and destroy valuable dove and whitewing nesting habitat.

"Many changes have been made in Arizona by man. The building of the dams destroyed the runs of squawfish up our rivers, but they made possible far more fishing for bass, walleyes, panfish, catfish and trout than the squawfish ever could have provided.

"Looking back, I often feel how nice it would have been if the growth of our state had stopped 40 years ago. But no one in Arizona felt that way 40 years ago. I think what this really means is that we have damaged the quality of life in Arizona by lack of planning for the wise use of our resources by so many people, and we regret that damage. But we will continue to grow in population and industry. Agriculture no doubt will be limited

as we know it now. We must have more water to protect the state from further damage by growth, and it appears that all additional water that comes to Central Arizona must come through the CAP ditch. We must build it as soon as possible.

"Ben Avery."

(The following is the statement submitted by Mr. Michael A. Curtis on behalf of Electrical District Number Five:)

"Arizona Water Commission

"Interstate Stream Commission

"34 West Monroe

"Phoenix, Arizona 85003

"Attention: Mr. Wesley Steiner

"In re: Formation of a Maricopa-Pinal-Pima Water Conservancy District Supported By Electrical District Number Five of Pinal County, Arizona

"Dear Mr. Steiner:

"On behalf of Electrical District Number Five of Pinal County I have been instructed to file with you this letter in support of the formation of the three-county conservancy district as presently proposed in order to secure the benefits of Central Arizona Project water.

"Electrical District Number Five of Pinal

County, Arizona, was organized in 1946 to provide electrical energy to an essentially rural area, thereby allowing the agricultural interests in that area economically to pump water for their crops.

"The District is a political subdivision of the State and its affairs are administered by a Board of Directors of resident land owners. The District has always supported and encouraged the efforts of the State of Arizona to acquire Central Arizona Project water, and the District's position is that the formation of the proposed conservancy district will be of benefit not only to the District, but to the State as a whole.

"Electrical District Number Five of Pinal County is within the boundaries of the Central Arizona Irrigation and Drainage District. The delivery of water to the District would be through the agency of the Irrigation and Drainage District.

"Electrical District Number Five of Pinal County, Arizona, wishes to publicly declare its support for the Central Arizona Project and for the proposed conservancy district.

"Very truly yours,

"Michael A. Curtis."

(The following is the statement submitted by Maricopa-Stanfield Irrigation & Drainage District:)

"Arizona Water Commission

"34 West Monroe Street

"7th Floor

"Phoenix, Arizona 85003

"Gentlemen:

"Re: Hearing on Multi-County Water Conservation District Formation

"Pursuant to Notice of Hearing on petition for formation of multi-county water conservation district, Maricopa-Stanfield Irrigation & Drainage District hereby submits the following written statement of this District in support of the formation of said district.

"Maricopa-Stanfield Irrigation & Drainage District is an irrigation district duly organized under the laws of the State of Arizona, Title 45, Chapter 6, Arizona Revised Statutes, and as such is a municipal corporation, Article 13, Section 7, Arizona Constitution. The District is located in the western part of Pinal County and is approximately 25 miles South of Phoenix and 65 miles Northwest of Tucson. There are approximately 149,000 acres within the District's boundaries

"This District believes that the public convenience and welfare of the State of Arizona will be served by the establishment of the proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

"Gordon D. Jorgensen of R. W. Beck and Associates, District Engineer; and R. J. Ellis of Rawlins, Ellis, Burrus and Kiewit, District Attorney, will on behalf of Maricopa-Stanfield Irrigation & Drainage District attend the hearing set for June 8th and will be available for answering of any questions that you may have. Unless there are some questions that require answers which are not covered in this letter or in the Engineering and Planning Study submitted herewith, we would not contemplate testifying at the hearing.

"Respectfully submitted,

"MARICOPA-STANFIELD IRRIGATION & DRAINAGE DISTRICT

"By John E. Smith, President

"Enclosure

"EXHIBIT A: Central Arizona Project Engineering And Planning Study, Maricopa-Stanfield Irrigation and Drainage District, R. W. Beck & Associates;

"This District believes that the public convenience and welfare of the State of Arizona will be served by the establishment of the proposed district and respectfully urges that your Commission declare the water conservation district organized as petitioned for.

"Gordon D. Jorgensen of R. W. Beck and Associates, District Engineer; and R. J. Ellis of Rawlins, Ellis, Burrus and Kiewit, District Attorney, will on behalf of Maricopa-Stanfield Irrigation & Drainage District attend the hearing set for June 8th and will be available for answering of any questions that you may have. Unless there are some questions that require answers which are not covered in this letter or in the Engineering and Planning Study submitted herewith, we would not contemplate testifying at the hearing.

"Respectfully submitted,

"MARICOPA-STANFIELD IRRIGATION & DRAINAGE DISTRICT

"By John E. Smith, President

"Enclosure

"EXHIBIT A: Central Arizona Project Engineering And Planning Study, Maricopa-Stanfield Irrigation and Drainage District, R. W. Beck & Associates;

March 1971. On file in the Offices of the Arizona Water Commission, 34 W. Monroe, Phoenix, Arizona."

(The following is the statement submitted by Dr. J. D. Garcia, member of the State Board of Directors, and on behalf of, the Arizona Consumers Council:)

"STATEMENT FOR THE RECORD

"of the Arizona Water Commission hearings on the creation of a consolidated water district to buy Central Arizona Project water, held in Phoenix, Arizona on June 8, 1971.

"Submitted by Dr. J. D. Garcia, 5141 E. Hawthorne Pl., Tucson, Arizona, member of the State Board of Directors, and on behalf of, the Arizona Consumers Council.

"The Arizona Consumers Council has as its only purpose the protection of the consumers' interests. Our goal is to increase the quality of life for all consumers at the lowest equitable cost. Because of this, we are concerned about the effects of the Central Arizona Project on consumers in the metropolitan areas of Arizona.

"It is our understanding, based on projected studies, that the cost of water from the Central Arizona Project to municipalities will be $55. per acre-foot. (This statement and subsequently quoted

facts are based on evidence contained in an article by Drs. R. A. Young and W. E. Martin, "The Economics of Arizona's Water Problem", appearing in Volume 16, The Arizona Review, 1967, pages 9-18, as well as a paper by the same authors presented at the 8th Annual Meeting of the Western Regional Science Association on February 7-9, 1969 at Newport Beach, California, both of which are appended hereto.) This is about a factor of 10 more than the current costs of water for most municipalities.

"The fact that these costs may be paid by the consumers in the form of taxes rather than directly in their water or electric bill does not alter the situation. The consumer will be paying a very high price for this water, of which he will only use 10 percent directly, since 90 percent of the water in Arizona is used for agriculture.

"Many of the arguments in favor of the Central Arizona Project are based on projections into future needs, and are couched in terms of "far-sighted long range planning". Yet the facts seem to belie this. Less than 10 percent of the income of Arizona is derived from agricultural activities. Furthermore, the total acreage of irrigated crops has been declining over the last ten

years, even with the currently available cheap ground water. Central Arizona Project will be very expensive by today's standards. Electronic and other low-water requirement industries would seem to be a better direction for economic growth in the southwest. Studies to date indicate that Arizona has sufficient water for municipal and manufacturing needs.

"From the consumers' viewpoint, the direct outlay of money on their part, either in the form of taxes or higher utility bills, for a project whose returns to the entire economy are marginal, has to be viewed as poor economics.

"We ask that the Arizona Water Commission delay all decisions involving initiation of construction of the Central Arizona Project until it has determined that those who will pay for the project will benefit from it. I repeat that all present indications are that Arizona has sufficient water for its non-agricultural needs.

"The Arizona Consumers Council urges that the cost effectiveness for the consumer be given primary consideration in the decision whether or not to create this water district."

THE ECONOMICS OF ARIZONA'S WATER PROBLEM

by

Robert A. Young

and

William E. Martin

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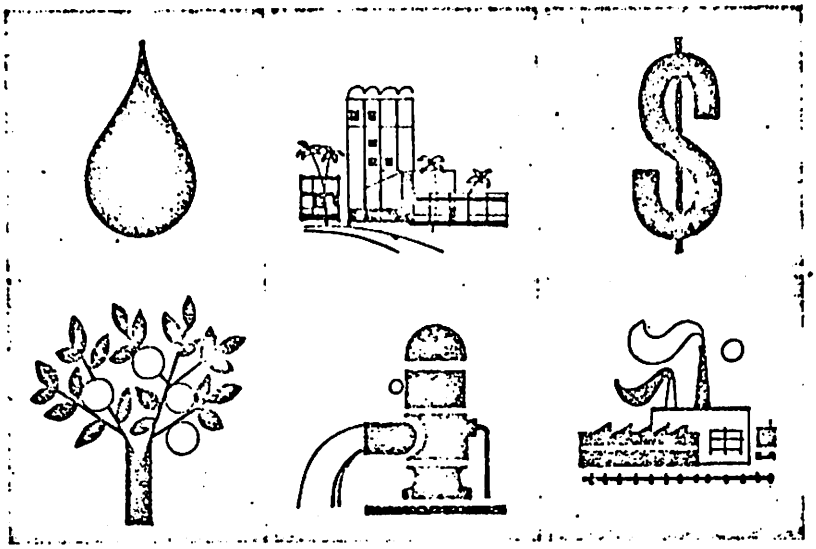
The University of Arizona
Tucson, Arizona



THE ECONOMICS OF ARIZONA'S WATER PROBLEM

Robert A. Young and William E. Martin

As Arizona stands at the critical point in making decisions on water, it is important to examine the economics of the state's water problems.

Most people in the arid Southwest have long regarded water as a unique commodity. They have felt that its development and allocation should not be subject to the dollars and cents discipline of the marketplace. Although this view can be defended in areas where water is so scarce that life itself depends on it, it is hard to support in Arizona where annual per capita consumption of water ranks among the highest in the nation if not the world. Therefore, it is presumed that signals offered by the price system should have relevance in allocation of water in Arizona.

This analysis further assumes policies should be evaluated in terms of their relative ability to create jobs and income for Arizona citizens. We advocate choices which would maximize the aggregate income of the state's population. In addition, we require that no one segment of the population should gain an unfair advantage over any other segment in the distribution of income gains. We are concerned with the *size* of the "income pie" attributable to each alternative water policy and the *division* of this pie.

The following analysis outlines basic facts pertinent to the present water situation, then examines two major alternative solutions in terms of the ability of each to meet stated goals. Finally, conclusions are drawn which seem to follow from the analysis. We expect to demonstrate that first, the water crisis in Arizona is not as widespread or as critical as some believe; second, that the Central Arizona Project has not been clearly established as a satisfactory solution to the problems which do in fact exist; and third, that alternatives to the Central Arizona Project are available which will permit the economic growth of the state to continue at its recent rapid rate.

FACTS BEHIND THE PROBLEM

The current supply and consumption of water in Arizona and some of the economic factors bearing on the value of additional water to the state must be understood.

Water Consumption[1]

Crop irrigation accounts for over 90 percent of the water consumed each year in Arizona. All uses other than crop irrigation — manufacturing, thermal generation of electricity, mining and smelting, livestock watering, timber products, recreation, municipal and household uses

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• *This article is based on a series of studies carried out at The University of Arizona over the past several years on the economics of water development and use in Arizona. Drs. Young and Martin are Associate Professors of Agricultural Economics. The authors gratefully acknowledge insights into the various issues provided by Dr. Maurice M. Kelso.*

Arizona Agricultural Experiment Station Journal Series No. 1209.

[1] For a more detailed breakdown see William E. Martin and Leonard G. Bower, "Patterns of Water Use in the Arizona Economy," *Arizona Review*, Vol. 5, No. 12, December 1966 (Table 1, page 4).

— together take only one-half million acre-feet (m.a.f.) of the six and one-half million used.[2] Of the water used on cropland irrigation, 2.5 million acre-feet are used on high value intensive crops (cotton, vegetables, field fruits, citrus), while the remaining water — 3.5 million acre-feet — is used to irrigate low value extensive crops (feed grains and forages).

Put on a per capita basis, use of water in Arizona is about 4,700 gallons per person per day, some three times the average for the United States. This makes Arizona the seventh largest water user per capita in the nation.

Water Resources[3]

Water resources are conveniently considered in two categories: surface flow from rivers and streams and groundwater stored in water bearing strata beneath the valleys of the state. Surface water is derived primarily from continuing flow of the Colorado, Salt, Verde and Gila rivers. The Supreme Court decision of 1964 in the Arizona-California controversy over the division of waters in the Colorado allocated 2.8 million acre-feet to Arizona in years when the usual flow is available. The Secretary of the Interior has authority to allocate and distribute waters of the mainstream of the Colorado in water-short years.

Net diversions from the Colorado in Yuma County have averaged around 1.0 million acre-feet in recent years. A priority has been given to the Colorado River Indian Reservation out of Arizona's apportionment, but some 1.2 million acre-feet remain for development. The Salt-Verde and the Gila River systems have long been fully developed. These also contribute an annual flow of about 1.0 million acre-feet.

An estimated *4.5 billion* acre-feet of groundwater (water clinging to and saturating the rock strata below the earth's surface) was once stored in Arizona. Perhaps some 15 percent of this (700 million acre-feet) was economically recoverable. Some 100 million acre-feet have been already withdrawn.[4] The current annual rate of withdrawal from groundwater reserves is estimated at 4.5 million acre-feet. An estimated 1.0 million acre-feet is recharged through natural processes, leaving a net withdrawal (or overdraft) of about 3.5 million acre-feet per year. At this rate of withdrawal, there will be an economically available supply for some 170 years.

Thus, we assume here that, in general, groundwater resources are subject to an economic rather than a physical limitation. We recognize, of course, certain exceptions such as where water bearing strata are physically limited or water quality problems exist. But these are exceptions, not the rule.

Consumption and supply is summarized by the 1965 water budget for Arizona:

Annual Supply	*million acre-feet*
Annual Diversion from Surface Water Flow	2.0
Annual Groundwater Recharge	1.0
Total Annual Available Supply	3.0
Annual Consumption	
All Uses Other than Cropland Irrigation	0.5
Cropland Irrigation	6.0
High Value Intensive Crops 2.5	
Low Value Extensive Crops 3.5	
Total Annual Consumption	6.5
Annual Deficit	
(Met by Groundwater Overdraft)	3.5

Income Generating Capacity of Arizona Industries

Table 1 illustrates the relative income generating capacity of water in various alternative uses in Arizona. Personal income is defined here as the sum of wages, rents, profits and interest received by persons in each sector of the economy. This total is then divided by the acre-feet of water consumed to provide an estimate of the income generating capacity per acre-foot of water used for each sector. (The personal income figure is *not* the value of the water. The personal income is greater than the price the producer could pay for an acre-foot

[2] An acre-foot is the volume of water required to cover an acre to the depth of one foot — approximately 326,000 gallons.

[3] For additional details, see J. W. Harshbarger, *et al.*, *Arizona Water*, U.S. Geological Survey Water Supply Paper 1648, Washington, D.C., 1966, and references cited therein.

TABLE 1

PERSONAL INCOME PER ACRE-FOOT OF WATER INTAKE IN ARIZONA SECTORS AND RANK OF EACH, 1958[a]

Sector	Dollars of Personal Income per Acre-Foot[b]	Sector Rank[c]
Food & Feed Grains	14	10
Forage Crops	18	9
High Value Intensive Crops[d]	80	8
Livestock & Poultry	1,953	6
Agricultural Processing Industries	15,332	3
Utilities	2,886	5
Mining	3,248	4
Primary Metals	1,685	7
Manufacturing	82,301	1
Trade, Transportation & Services	60,761	2

a Adapted from Anilkumar G. Tijoriwala, William E. Martin and Leonard G. Bower, *The Structure of the Arizona Economy: Output Interrelationships and Their Effects on Water and Labor Requirements, Part I. The Input-Output Model and Its Interpretation and Part II. Statistical Supplement*, Arizona Agricultural Experiment Station Technical Bulletins 180 and 181 (forthcoming), 1967.

b Personal income is here defined to include wages and salaries, rents, profits and interest.

c Ranked from highest to lowest value added.

d Includes cotton, vegetables, citrus and other fruits.

[4] Harshbarger, *et al.*, *op. cit.*

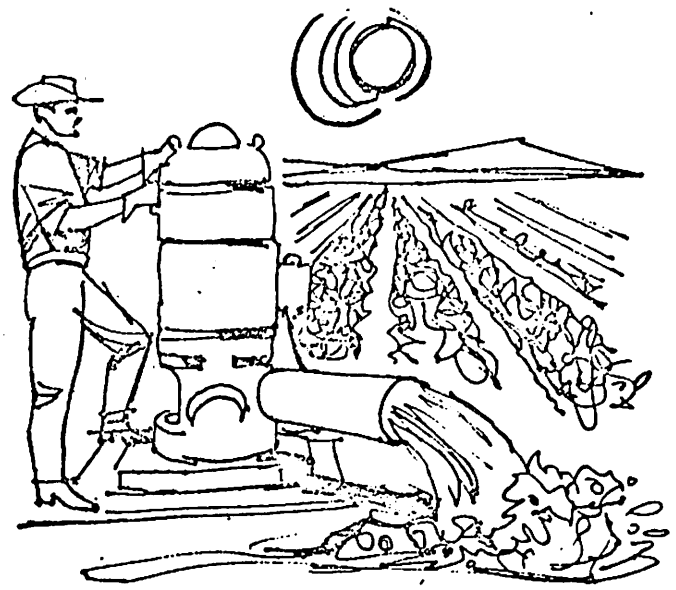
of water since the wages, rents and interest must first be paid.) The comparative values shown between the high intensity and the low intensity crops are striking. The various nonagricultural sectors generate incomes ranging from 20 to nearly one thousand times as large per acre-foot of water as even high value intensive agricultural sectors.

The proportion of total personal income in the state generated by agricultural activities is of interest. Feed and food grain and forage crop sectors use about 54 percent of *all* water consumed in Arizona and yet these sectors directly account for only about 1.5 percent of personal income in the entire economy. High valued intensive crops, using 38 percent of all water, directly contribute six percent of the personal income in the state.

What about personal income generated indirectly because inputs must be purchased from other sectors of the economy? While a dollar's worth of personal income is being produced by food and feed grains, requirements for inputs generate 23 cents of personal income in the rest of the economy. Six cents of personal income is indirectly generated while a dollar of personal income is being produced by forage crops. About 16 cents is indirectly generated while producing a dollar of personal income with high value intensive crops. These values can be converted to dollars of personal income generated *indirectly* by an acre-foot of water use and compared with personal income generated directly (Table 1). Food and feed grains generate an additional three dollars, forage crops an additional one dollar and high value intensive crops an additional $13. When direct and indirect effects of water use are added together, the sums are still far smaller than even the direct effects of water use in other sectors of the economy.

The Outlook for Irrigated Agricultural Crops in Arizona

Other considerations of the water problem relate to the long-term outlook for various classes of Arizona's irrigated agricultural crops.



Cotton has long been the major income producer among irrigated crops in Arizona. However, serious inroads into cotton's traditional markets have been made in recent years by competition from foreign cotton producers and synthetic fibers. The current cotton program has tried to stem this trend by reducing permitted cotton acreage (Table 2) and lowering the effective price to domestic mills by over one-fourth. In spite of these steps, as well as a substantial increase in population and a war-inflated economy, domestic cotton consumption is still lower than it was in 1950-51. Although the will of Congress is uncertain, the long-term outlook for cotton prices is probably for a substantial reduction. Future lint prices will most likely be 25 cents or less per pound as compared to a current effective price of about 32 cents.

Trends in production of other Arizona irrigated crops are also shown in Table 2. Specialty crops such as fresh vegetables are not of major importance as water users, although they do return a relatively large income. With the exception of lettuce, the Arizona share of these crops is declining, perhaps due to competition from more favorable production and markets in other states and Mexico.

TABLE 2

ACREAGE OF SELECTED IRRIGATED CROPS IN ARIZONA, SELECTED YEARS, 1945 - 1965

Year	All Cotton	Wheat	Sorghum for Silage and Grain	Barley	Alfalfa Hay	Alfalfa Seed	Carrots	Lettuce (Early Spring)	Lettuce (Fall)	Cantaloupe (Early Summer)
					(1,000 Harvested Acres)					
1945	154	24	55	78	232	40	10	13	17	10
1950	275	25	99	157	201	60	8	14	15	11
1955	355	42	173	174	223	34	5	12	14	7
1960	426	22	160	150	225	20	2	24	21	2
1965	339	26	187	169	191	16	2	17	19	1
1966 (Est.)	251									

Source: Arizona Crop and Livestock Reporting Service, *Arizona Agricultural Statistics 1867-1965*, Phoenix, 1966.

Citrus fruits are not shown in Table 2 because comparable data is lacking. This sector is not of major importance — less than five percent of irrigated crop acreage in the state. There is little incentive for expansion in the near future. In fact, huge investments in orange groves in Florida in recent years resulted in sharply increasing supplies and depressed prices. For the first time the government has entered into price support operations for orange products.

Generally speaking, markets and prices for high value crops grown in Arizona have been in unfavorable trends. There is no evidence that this trend will change.

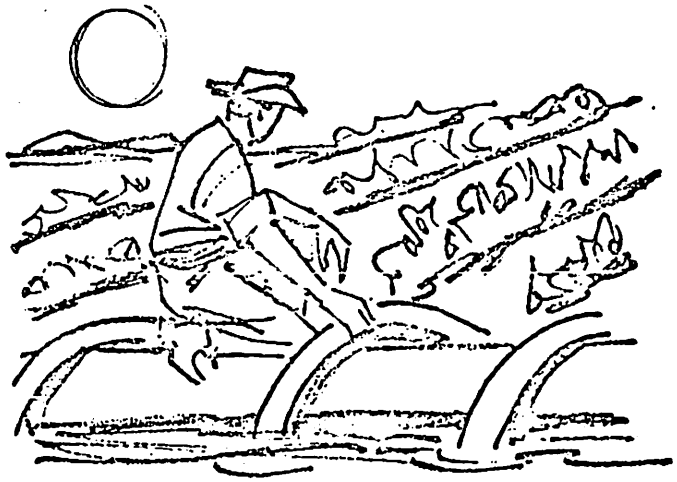
ARIZONA'S REAL WATER PROBLEM

There are vast supplies of groundwater still untapped and an increment of surface water in the Colorado River yet undeveloped. Water consumption is at a comparatively high rate. In fact, water is so inexpensive that most present uses are relatively unproductive in terms of income generated. Wherein, then, lies Arizona's water problem?

Most of the public discussion on water has focused on the continuing deficit in the groundwater account and the resulting plight of farmers in areas relying on pumped groundwater for irrigation. It has also focused on water problems municipalities may face in meeting the needs of a rapidly growing population.

Beginning with the farmers, consider the claim that large acreages of irrigated farmland have gone out of production due to lack of water or high cost of pumping. While we know that certain lands have been abandoned from these causes, evidence available does not support the more extreme assertions made on this point. A study at The University of Arizona comparing changes in amount of land in crop production in a sample of lands supplied by pump water in central Arizona between 1957 and 1963 showed a net increase in irrigated land.[5] Furthermore, general statistics on total lands cropped in Arizona over the last two decades fail to support the crisis thesis. There were some 50 percent more acres of irrigated crops in Arizona in 1965 than in 1945 and the 1965 acreage was still higher than that in 1955. The 1965 irrigated acreage was somewhat less than the peak acreage reached during the Korean War cotton boom of the early 1950's, but the downward adjustments seem associated with changes in the cotton acreage control programs.[6]

Are the claims of difficulties made in behalf of farmers and farm communities then unfounded? Serious problems do in fact exist. Rising costs and shrinking markets faced by Arizona's farmers are clearly real. Increasing costs imply a decreasing earning power (other things unchanged) which is, in turn, reflected in declining prices for which the land can be sold.[7] We hypothesize that this inexorable erosion of their asset value is a major factor motivating farmers to get water at a stable, low price. The cost and income situation of farmers has further but differential impacts on communities serving farmers. Increased water costs imply increased business for those dealing in energy and equipment for pumping water but it also implies decreased family consumption. As farmers are eventually forced out of business — and many of them will be unless conditions are changed — communities serving them will experience losses in employment and income. However, as we will show in the following sections, high water costs such as proposed under the Central Arizona Project are not the answer to the farmers' economic problem. Higher income sectors of agriculture will persist without subsidy from nonagricultural sectors.



Now we turn to municipal and industrial water uses. The population of central Arizona's major metropolitan areas has grown very rapidly since World War II, but the resulting demand for water is not large relative to the economy as a whole (less than ten percent). The Phoenix metropolitan area has, in part, been able to absorb the increasing demand because agricultural water rights were acquired as farmland was converted into urban uses. Tucson, relying entirely on groundwater, is moving further and further from the city in developing new well fields. The resulting water comes at higher costs. Even in Pima County, however, consumption of water by the relatively small agricultural sector outstrips that of the urban population. Therefore, water is available for municipal uses if needed.

One of the constraints faced by municipal water planners in their water acquisition programs has been the fear that, if new water supplies were obtained at the

[5] Reported by M. M. Kelso in *Arizona Farmer-Ranchman*, Phoenix, September 19, 1964.

[6] See, for example, Thomas M. Stubblefield, ed., *Agriculture*, Tenth Arizona Town Hall, Arizona Academy, Phoenix (forthcoming), 1967, Chapter IV.

[7] The farm budgets shown in Tables 3 through 5 show that net returns are indeed low.

expense of agricultural production, resulting impacts on agricultural employment and income would make the effective cost of the water quite high. In view of the estimates presented earlier concerning the indirect income generating capacity of agricultural production (and further evidence presented in a later section) it appears such indirect costs would not be large.

Thus, evidence does not show Arizona's water problem to be a physical shortage of water or a rapidly collapsing agricultural sector due to the groundwater overdraft. *Arizona's real problem lies in allocating its available water so as to maintain a high rate of economic growth.*

Next we examine two alternative proposals to meet this problem.

THE CENTRAL ARIZONA PROJECT

The Central Arizona Project has been proposed as a device for partially stemming the overdraft on Arizona's groundwater supply and furthering the growth of the economy. The project envisions delivery of approximately 1.2 million acre-feet of water (about one-third of the overdraft) from the Colorado River into central and southern Arizona for both municipal and agricultural users. Financial support from both federal and state sources has been proposed. Costs of construction must be repaid in either case, but the federal financing would be somewhat more favorable due to lower interest charges and the fact that some costs would not be reimbursable by purchasers of water. Our general conclusions do not appear affected by the source of financing. We use the Bureau of Reclamation's figures on construction costs while relying on our own estimates of economic benefits.

Water delivered to central Arizona by the Central Arizona Project will cost from $25 to $30 per acre-foot at the canal side. Since this price is conceded to be too high for farmers to pay, a lower price would be charged to farmers. The difference would be made up from higher prices to municipal and industrial users and by revenue from either the proposed dams or property taxes. In the tentative proposals for either a state-financed or a federally-financed project, $10 would be charged to farmers at delivery points on the main canal. Municipalities would be charged $50 per acre-foot. These figures do not include the cost of facilities to transport water from the Project canal to final users. In cases where such organizations do not already exist, irrigation districts have been formed which would construct and operate the necessary distribution systems. These facilities would add a cost variously estimated to average $5.50 to $7.83 per acre-foot to the farmer's canal-side price if such facilities were not already available.[8] (Since no plan has yet been settled upon as to final disposition of the water, estimates are conjectural.) It is precisely these areas where distribution systems are not presently constructed that the farmers' water problem is becoming most critical. The Maricopa-Stanfield area is an example.

[8] Of this additional cost, $3.33 is due to water losses between the main canal and the farmers' headgate. This cost would occur even if distribution facilities were already available.

TABLE 3

TYPICAL INCOME, WATER USE AND VARIABLE COSTS PER ACRE FOR PINAL COUNTY FIELD CROPS[a, b]

Item	Pumping Lift (feet)[c] 315	460	504
Upland Cotton (skip-row planted)			
Water Use per Acre (acre-feet)[d]	6.0	5.0	5.0
Total Income per Acre ($)[e]	320.54	310.46	310.46
Total Variable Costs ($)	187.01	193.53	200.78
Income over Variable Costs ($)	133.53	116.93	109.68
Barley			
Water Use per Acre (acre-feet)[d]	3.0	2.5	2.0
Total Income per Acre ($)[e]	91.27	85.00	77.80
Total Variable Costs ($)	59.47	62.97	60.04
Income over Variable Costs ($)	31.80	22.03	17.76
Alfalfa Hay			
Water Use per Acre (acre-feet)	6.1	6.1	6.1
Total Income per Acre ($)	159.50	159.50	159.50
Total Variable Costs ($)	126.56	146.27	154.17
Income over Variable Costs ($)	32.94	13.23	5.33
Grain Sorghum			
Water Use per Acre (acre-feet)[d]	3.3	2.75	2.2
Total Income per Acre ($)[e]	104.24	97.42	88.92
Total Variable Costs ($)	70.92	74.78	71.14
Income over Variable Costs ($)	33.32	22.64	17.78

a Source: Based on a 1964 survey of over 600 Arizona farmers under the project, "Water in Relation to Social and Economic Growth in an Arid Environment."

b Price of cotton projected at $.25 per pound. Other prices are approximately at current levels.

c Approximate variable pumping costs for these lifts are:
$ 7.05 per acre-foot 315 feet of pumping lift
$10.30 per acre-foot 460 feet of pumping lift
$12.08 per acre-foot 540 feet of pumping lift

d Quantity of water applied is reduced as pumping depth and variable cost of pumping increase.

e Income per acre varies with quantity of water applied.

The CAP as a Solution for Agriculture

Since the Project has been primarily justified as a solution to the water problem of the agricultural sector, the questions arise: could farmers purchase this water at a total cost of $15.50 to $17.83 per acre-foot? Even if they could, would such a purchase be profitable?

We approach answers by showing changes in net income which would accrue to a typical central Arizona pump-irrigated field crop farm under two different situations. The first is in an average year of the 60-year planning horizon when it is assumed to pump its own water supply. The second alternative is when various quantities of project-supplied water would be available.

Characteristics of this typical central Arizona farm are adapted from a survey of over 600 Arizona farmers taken under the direction of the authors in 1964. This

TABLE 4

OVERHEAD COSTS FOR TYPICAL PINAL COUNTY CROP FARM[a]

Item	Dollars per Farm	Pumping Lift (feet) 315	460	540
Buildings, Concrete Ditches, Fences, etc.				
Depreciation and Repairs	$ 3,864			
Insurance	215			
Machinery and Equipment				
Depreciation	12,135			
Insurance	652			
Interest on Investment at 6 percent	4,483			
Miscellaneous Insurance, Licenses, Fees, etc.	656			
Taxes: Real Estate and Personal Property (excluding wells)	4,550			
Depreciation, Interest and Taxes on Irrigation Wells and Equipment[b]		$10,584	$13,027	$13,531
Total		$37,139	$39,582	$40,086

a Source: Based on a 1964 survey of over 600 Arizona farmers under the project, "Water in Relation to Social and Economic Growth in an Arid Environment," Department of Agricultural Economics, The University of Arizona. A charge for investment in land and improvements other than wells is not included.

b Includes depreciation of wells and equipment, property taxes and interest on investment at six percent on the equipment.

typical farm has 700 cropland acres allocated as follows: cotton, 39 percent; alfalfa, 16 percent; barley, 25 percent; and grain sorghum, 20 percent. In addition, the following assumptions are made:

Assumption One. Changes in product prices and costs of purchased materials are assumed to be such that the margin of income over expenses remains constant over the planning period. Assumed prices for farm products are: cotton lint, $.25 per pound; barley, $2.50 per hundredweight; alfalfa hay, $25 per ton; and sorghum, $2.25 per hundredweight.

Assumption Two. Demand for food and fiber commodities produced in Arizona will increase no more rapidly than will the increased unit yields resulting from technological advances.

Analysis of income changes to the typical farm is shown in Tables 3, 4 and 5. Table 3 shows returns (income) over variable costs per acre for three different pumping depths. Note that when water depth reaches 540 feet and variable water costs are slightly over $12 per acre-foot, returns over variable costs for all crops except cotton (and of course specialty crops) are under $20. Thus, at these water costs, there is little income over variable costs to help cover the farm's overhead expenses

TABLE 5

NET INCOME SUMMARY FOR TYPICAL PINAL COUNTY CROP FARM[a]

Item	Dollars per Farm — Pumping Lift (feet) 315	460	540
Gross Income	$135,455	$130,681	$128,231
Variable Costs	85,383	90,563	92,408
Income Over Variable Costs	50,072	40,118	35,823
Overhead Costs	37,139	39,582	40,086
Return to Management and Investment in Land and Improvements[b]	12,933	536	—4,263

a Source: Derived from Tables 3 and 4. Crop acreages are: 270 cotton, 175 barley, 115 alfalfa and 140 grain sorghum.

b A charge for investment in irrigation wells and equipment is included in fixed costs.

such as taxes, insurance, depreciation, interest on investment and the manager's effort and risk.

Table 4 summarizes the farm's overhead expenses except for a return to management and investment in land and improvements. Table 5 summarizes crop budgets and overhead expenses into a total farm statement of expenses and returns. Table 5 shows that a farmer in deep water areas of Arizona would be in financial difficulty if cotton prices fell to the levels we project. He will be in dire need of inexpensive water. Unfortunately, even under favorable terms proposed in the Project, water will not be inexpensive. Implications for the farmer to contract for Project water at the assumed cost of $10 per acre-foot at the main canal are discussed below. Three situations will be considered, two where present water supplies are entirely pumped and one where distribution systems for surface irrigation exist.

Situation One. Assume a farm whose variable cost for pumping water is now $10.30 per acre-foot. A farmer must decide whether or not to contract to receive water costing $17.83 per acre-foot from a new irrigation district with a new distribution system to deliver Central Arizona Project water.

Each farmer receiving water makes a contract for enough surface water to grow all his crops without resorting to pumping. Typically (shown in our budget) this is about four acre-feet of water (3.91) per acre of crops. Our typical farm would contract for 2,735 acre-feet of water per year at $17.83 per acre-foot for a total additional overhead cost of $48,765. (In the early stages of the Project enough water would be available to supply about 285 farms of this size, taking into account transmission losses.) Variable water costs would be reduced by $28,170; overhead costs on irrigation wells and equipment would be reduced by $13,027 per year (if the wells were already paid for and the farmer could count on

enough water so no supplementary pumping would be necessary).

Under these conditions, all crops would be grown and all water used since (once the contract had been made) the additional cost of actually using the water would be very small. However, net returns to management and investment in land and improvements would fall to a minus $7,024. Assuming the lower projected cotton prices, the farmer would already be in trouble before the new water became available. He would be receiving only $536 for his management and investment with $10.30 per acre-foot as the variable cost of water. But with Project water his return would become negative.

Such a loss could not be sustained indefinitely. Since his net returns would decline more rapidly with high cost Project water than pumped water, the farmer would be forced out of business much sooner than if he had not made the contract. Since net farm income would decline and fewer farms would be in operation, the net multiplier value and thus the secondary income effects on the Arizona economy would obviously be negative. Under these assumptions income in Arizona would *decline* as a result of the Project as proposed.

Situation Two. Each farmer in a new irrigation district (now pumping water at $10.30 per acre-foot) contracts for about one and one-half acre-feet of water per cropped acre. Such a situation would imply higher irrigation district distribution costs than in the first example since more farmers would be receiving less water individually. Distribution systems would have to cover a much larger area. We have no exact estimates of distribution costs under these circumstances, but we assume a price of $20 per acre-foot to the farmer for water including the cost of a distribution system.

The farmer's additional overhead costs would be $20 times 1.5 acre-feet times 700 acres to equal $21,000 for 1,050 acre-feet of water. Variable water costs would be reduced by $10,815. Additional water would be pumped as before at a cost of $10.30 per acre-foot. As long as the farmer could remain in business (cover both overhead and variable costs for the entire farm) he would continue to grow his low return crops (barley, sorghum, alfalfa) as long as they return more than variable costs and thus contribute toward covering overhead costs for the entire farm. Since $10.30 is still less than the break-even variable costs for these crops (Table 6) these crops would be included.

Net return to management and investment in land and improvements would now equal *minus* $9,649 as compared to $536 when his water supply is entirely pumped. The farmer would be worse off than if he had to buy four acre-feet of water per acre and much worse off than if he were pumping all his own water. This is so because he must maintain his pumping plant. Thus, these overhead costs are not ignored as in the case of purchase of his entire water supply. The net multiplier effect on the Arizona economy would, of course, be negative.

TABLE 6

WATER COSTS AT WHICH CROPS JUST COVER THE VARIABLE COST OF PUMPING

Crop	Cost (Dollars per Acre-Foot)
Cotton @ 25.0¢ per lb.[a]	$33.69
(Cotton under current government support)	(54.83)
Barley	19.11
Alfalfa	13.28
Grain Sorghum	18.53

[a] Source: Long-run projected price.

In both Situations One and Two, farmers could remain in business at the start of the Project as long as cotton prices remained at or near recent levels. If and when cotton prices fall to a level near our long-term forecast, farmers in deep water areas could not remain in business over the long term with or without Central Arizona Project water.

Table 6 illustrates the problem farmers are facing. Alfalfa, barley and sorghum can only be grown at water prices of less than about $19 per acre-foot — and then only if they are grown in conjunction with a crop such as cotton at current prices also covering their overhead costs. For example, grain sorghum covers only variable costs at a water price of $18.53 and at that price contributes no net return toward payment of overhead costs such as taxes, insurance, depreciation, mortgage payments, etc.

As pumping costs rise above these figures, these crops will no longer be grown. When pumping costs reach $19.11, cotton will be the only nonspecialty crop left in production.

Situation Three. In this case it is assumed that the water for irrigation will be delivered to farms within operating irrigation districts with existing distribution systems. Project water would then replace the water of those districts presently being obtained from underground sources.

Project water would be supplementary to existing low cost surface water supplies. There would be little or no additional investment required for distribution systems. Farmers could afford the water. The cost of water from the Central Arizona Project would be approximately equal to the variable cost of the water these districts are now pumping.

Nevertheless, at least two objections can be raised to this situation as well. The first question concerns the

extent of direct irrigation benefits which could be attributed to the Project. The 1964 Supplemental Information Report on the Central Arizona Project lists direct irrigation benefits of $32 million.[9] Agricultural deliveries are set at 817,000 acre-feet per year, implying direct benefits from irrigation of some $40 per acre-foot.

Now we examine this figure in terms of our typical Pinal County field crop farm. At current prices (used by the Bureau) our typical farm generates $170,000 of income on its 700 acres or about $243 an acre. Assuming a consumption of about four acre-feet of water per acre, this is $61 of income per acre-foot of water consumed. Estimates derived from Tables 3, 4 and 5 indicate that on this typical farm $32 per acre-foot is required to meet cash expenses and depreciation. This leaves only $29 per acre-foot of water consumed to pay for water costs, return to management and investment in land and improvements. If we assume land is valued at $500 per acre, an interest rate of five percent and allocation of five percent of gross income for management, another $9 per acre-foot is accounted for. This leaves some $20 per acre-foot as the limit the farmer could pay for water. This is our estimate of the maximum value of an acre-foot of water on previously uncropped land. The Bureau calls this concept "new land equivalent." Applying their concept our estimate of direct benefits is only one-half as large as theirs. We further maintain that, since the land to be irrigated by the Project is being farmed and has a water supply, the new land equivalent concept is erroneous and overestimates benefits attributable to additional water.

Secondly, as we assumed earlier, potential income gains from the Project should be distributed in an equitable manner. The amount of subsidy to agriculture which nonagricultural sectors can afford remains to be examined.

One way to approach this issue is by examining the indirect irrigation benefits attributable to the Project by the Bureau of Reclamation. In the Supplemental Information Report previously cited this figure is given as $36.5 million per year, or roughly $45 of indirect irrigation benefits per acre-foot of water. We find this figure is also startlingly large. Our recent analysis of income generated by various sectors of the economy through their purchases from the various other sectors[10] shows that, in the cotton and feed grain sectors, a dollar of additional output will generate approximately one additional dollar in income in all the other sectors of the state's economy.[11] Only the net profit in the additional dollar (after all other factors of production are paid) can be considered available to pay for water. Again we use $61 as the income per acre-foot of water consumed on our typical farm. If we assume a liberal seven and one-half percent rate of profit on gross sales, net indirect benefits to the state from irrigation would be only $4.58 per acre-foot.[12] This would be the *limit* to which farmers could *equitably* be subsidized by nonagricultural sectors of the economy. If the subsidy to agriculture is limited to this amount and if the total water cost is $25 to $30 at canal side, a price of $21 to $26 per acre-foot at canal side and $26 to $34 at the farm is implied. Our previous analysis indicates this price would compare unfavorably with pumped water costs for many years to come. Even farmers in existing irrigation districts would find this price unfeasible.

The CAP as a Solution for Municipalities

Municipalities would not necessarily be acting in the best interests of their citizens if they contracted for Colorado River water at $50 per acre-foot when, in most cases, they have readily usable groundwater supplies available. It will be many decades before the cost of groundwater would exceed the cost of purchasing Central Arizona Project water and purifying it for household use. Furthermore, it appears that forcing high cost water on municipalities and industries would impede economic growth rather than encourage it.

A recent study indicates that irrigation wells produce water for a total cost at the pump of about $.03 per acre-foot per foot of lift.[13] Thus, even when pumping lifts reach 500 feet, water would cost no more than $15 per acre-foot to produce (500 x $.03 = $15). It is likely that wells producing water for municipal use could improve on these costs since the more stable urban demand would permit a more effective use of the pumping plant. Cities could establish their well fields at some distance away from their boundaries and still have groundwater at a net cost less than $50 per acre-foot for many years.

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[9] Bureau of Reclamation, U.S. Department of the Interior, *Pacific Southwest Water Plan: Supplemental Information Report on the Central Arizona Project*, Boulder City, Nevada, January 1964.

[10] Anilkumar G. Tijoriwala, William E. Martin and Leonard G. Bower, *The Structure of the Arizona Economy: Output Interrelationships and Their Effects on Water and Labor Requirements; Part I, The Input-Output Model and Its Interpretation and Part II, Statistical Supplement*, Arizona Agricultural Experiment Station Technical Bulletins 180 and 181 (forthcoming), 1967. Also, William E. Martin and Leonard G. Bower, "Input-Output: An Arizona Model," *Arizona Review*, February 1967.

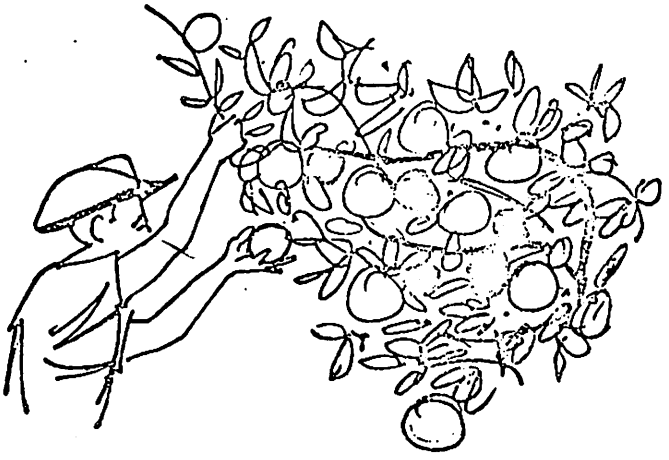
[11] Adapted from Tijoriwala, Martin and Bower, *op. cit.*, to include additional effects not considered in the bulletins. The Bureau of Reclamation figures cited are for the national economy and therefore not strictly comparable. In terms of evaluating a state project or the pay-back capacity of a federal project only the income generated in the state is relevant.

[12] We are by no means the first academic economists to disagree with the Bureau as to the benefits attributable to water projects. For a recent example, see J. S. Bain, *et al., Northern California's Water Industry*, Johns Hopkins University Press, 1966.

[13] Aaron G. Nelson and Charles D. Busch, *Costs of Pumping Water in Central Arizona*, Arizona Agricultural Experiment Station, Technical Bulletin 182 (forthcoming), 1967.

The CAP: Conclusions

Our estimates cast doubt as to whether the Project can generate economic benefits to the state in excess of costs entailed by its construction and operation. This is not to say the Project cannot be financed. Just as a business firm can make one unprofitable investment and cover the losses out of other profitable activities and reduced dividends to stockholders, so can Arizona make an investment which fails to return a margin over its costs and finance the loss by increasing taxes on the public or by charging higher prices to municipal and industrial water consumers. The fact that sufficient resources are available to finance an investment is no measure of the investment's economic desirability.



ALTERNATIVE TO THE CENTRAL ARIZONA PROJECT

Arizona's basic goal should be to utilize her natural resources to attain a high rate of economic growth. Our water resources consist of three parts: the almost fully developed surface waters within our state, our "overdeveloped" groundwater supply and the unused portions of the Colorado River to which we are entitled. Each of these sources must be allocated to its most productive use for the highest rate of economic growth.

What are these uses? With the exception of current plans for the Colorado River water under the Central Arizona Project, proper allocations are being made today. Our inexpensive surface waters are used by agriculture (where return per acre-foot is relatively low) until they are needed for municipal and industrial use. These users can purchase the water from agriculture as needed since they can afford to pay a much higher price per acre-foot. This has occurred in Phoenix area cities, for example, which have expanded throughout the Salt River Project.

Our groundwater reserves are presently mined in considerable excess of their recharge. This overdraft and consequent lowering the groundwater table has generated the "Arizona water crisis." It is for this reason that the Central Arizona Project is proposed. But as our analysis shows, even at the outset when the maximum Colorado River water would be available, the Central Arizona Project would cancel only one-third of the overdraft. Two-thirds of the overdraft would remain, the groundwater level would continue to fall and the basic "water crisis" would be with us just as it is now. Cancellation of one-third of the overdraft would be a Pyrrhic victory, gained by charging municipalities higher prices for water than they can expect to pay for many years for pump water. Further, the Project would bring in water farmers in pump areas could not afford to buy and farmers in irrigation districts do not particularly need. As shown in the previous section, such action would have a negative multiplier effect on the overall Arizona economy.

The alternative is to continue to pump groundwater for agricultural use as long as farmers can afford to pay the price. It follows that total agricultural acreage will decline as the least profitable crops are no longer grown. As acreage declines and water use diminishes, the overdraft will diminish and high valued agricultural and domestic uses will pump the water as before. When higher valued uses need the groundwater they will bid it away just as they have done with our surface waters.

Even the adjustment in agriculture may not be as drastic as suggested. Recent projections of agricultural adjustment in Pinal County through the year 2006 indicate the following:[14] acreage of feed grains and alfalfa will decline continuously but cotton acreage will not decline from the 1966 level; however, while total acreage will drop by 50 percent between 1966 and 2006, net income to farmers (income over variable costs) will decline by only 20 percent because feed grains and alfalfa are presently contributing only slightly toward net income.

The remaining question is how to use our Colorado River water entitlement. The obvious answer is that, since it cannot be effectively used in central Arizona, we should at least investigate the possibility of using the water near its source in the river. There are no good data relative to this alternative — precisely the reason it needs investigating. Some rough figures might set the problem in perspective, however.

If 1.2 million acre-feet are available from the river and if diversion and transfer losses are about .2 million acre-feet, the remaining one million acre-feet could support about 167,000 acres of agricultural land. (About six acre-feet per acre are needed on the sandier soils near the Colorado as compared to four acre-feet in central Arizona.) Is there this much arable land proximate to the river? No comprehensive studies of arable lands are available. However, possibilities for further development

[14] Harold M. Stults, "Predicting Farmer Response to a Falling Water Table: An Arizona Case Study," presented to the Committee on the Economics of Water Resources Development of the Western Agricultural Economics Research Council, Las Vegas, Nevada, December 8, 1966.

include (1) the Yuma desert (where water requirements per acre are extremely high but which has a potential for citrus production); (2) areas adjacent to present irrigation projects (the Wellton-Mohawk in particular); (3) lands in the Cibola-Ehrenberg district; and (4) some of the valleys and plains which lie from 50 to 80 miles inland from the river (Cactus Plain, Ranegras Plain, McMullin and Butler Valleys). At least ten townships or 230,000 acres appear promising within these areas — more than enough to absorb the one million acre-feet of available water.

As in central Arizona barley, grain sorghum and forages would be marginal users of water. But surely the cost of delivering water to these crops would be less than with the Central Arizona Project. Whether a "Western Arizona Project" would actually provide benefits above its cost would require further investigation. Plans for such a project should include provision for making the water available to central Arizona once demands from the growing economy and costs of alternative sources so dictate.

CONTINUED ECONOMIC GROWTH

We wish to demonstrate one final point: economic growth can continue in Arizona without importation of water. Table 2 illustrated relative income generating capabilities of various sectors of the economy as related to their use of water. Reallocation of water from low valued uses, such as agriculture, to high valued uses, such as manufacturing, is an important avenue for growth. Each time a business firm establishes a new plant in Arizona using land and water resources formerly used in lower valued uses, a jump in income and employment is recorded. Recently, for example, a large meat processing company decided to build a livestock slaughter facility in Tolleson. Their water demands seem large — 2 to 2.25 million gallons a day or about six to seven acre-feet. However, in a year this plant would use no more water than would, for example, 600 acres of sorghum. Six hundred acres of sorghum generate about $58,500 per year of gross income and about 9,000 man-hours (or perhaps three and one-half man-years) of employment. The work force contemplated for the processing plant is about 225 employees, or some *65 times as large* as the sorghum crop. The relative volume of income generated by the proposed plant would probably be even larger since wages in such employment are greater than in farming. Furthermore, much of the water used in this plant would not be lost in the process, as it would be in agriculture, but would be available for use again in crop irrigation after being suitably processed.

In order to facilitate this process of reallocation to higher valued uses, it is important that Arizona water policy include legislative provisions to insure that water supplies are freely transferable between uses when economic factors so dictate.

CONCLUSION

If the water problem is viewed simply in terms of the groundwater overdraft, the obvious solution is to import surface water from other river basins. However, if the problem is to obtain maximum economic growth for the state, this water must generate benefits in excess of costs of transporting and distributing it. Since this is not the case, reallocation of available water becomes the preferred solution.

June 3, 1969

THE NEED FOR ADDITIONAL WATER IN THE ARID SOUTHWEST: AN ECONOMIST'S DISSENT

by

William E. Martin and Robert A. Young

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The Need for Additional Water in the Arid Southwest: An Economist's Dissent

William E. Martin and Robert A. Young*

The framers of water policy in the arid western United States have generally been committed to providing a full and plentiful supply of water, on the assumption that water was the "limiting resource" and that rapid expansion of the local and regional economies depends directly upon a liberal water supply. This proposition has been accepted by the public largely on the grounds that it was and is self evidently true. With the stark vistas of our desert surroundings serving as sufficient proof that water is a crucial resource, numerous schemes are presently being considered throughout the Southwest for obtaining additional supplies. Given the current state of technology, these schemes usually involve a transfer of water from those regions that are endowed with an apparent abundance. For example, Arizona officials were arguing more than two decades ago, as they are now, that the Arizona economy was facing imminent decline for lack of

*William E. Martin and Robert A. Young are Professor and Associate Professor, respectively, Department of Agricultural Economics, The University of Arizona.

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additional water and that the only solution lay in tapping the Colorado River.[1]

We, and several of our colleagues, on the basis of several years of investigation of the empirical evidence, have reached the conclusion that although economic growth in the West may originally have been based on a liberal water supply, additional water is no longer necessary (at least in the foreseeable future) and may in fact be "detremental to our health." In this paper, we review the evidence in support of this conclusion. Our specific evidence is related only to the State of Arizona. However, we believe our findings have implications for the whole Southwest. The "water importation virus" has lately become quite pervasive.

The Arguments for Additional Water

The necessity for water importation into Arizona (and elsewhere in the West) has been justified on several grounds. It has been argued, first, that such a plan is a necessary condition to insure the continued growth of the economy. Second, it has been asserted that such a project would rescue agricultural communities dependent upon a dwindling supply of groundwater. Third, it is argued that additional water is desirable from the economic viewpoint, in that the benefits of such an investment will exceed the

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1. See, for example, the testimony contained in any of the Hearings before the U. S. Congress in support of the C.A.P. in 1949 and subsequently. Congress last year approved the Colorado River Basin Project, whose $1.3 billion price tag makes it the largest single-package Reclamation authorization bill ever approved. The key feature of the plan, accounting for some three-fourths of the costs, is the Central Arizona Project (CAP), which will deliver over one million acre feet of Colorado River water to the Phoenix and Tucson areas of Central Arizona. Appropriation of the necessary funds will be considered at a later date.

costs. Fourth, it has been stated that additional water would provide economic benefits to be widely shared by "all citizens." In the following sections we turn to the evidence for Arizona relative to each of these four assertions, while arguing for the wider applicability of our conclusions.

Water and Economic Growth

Sufficient time has elapsed since the late 1940's to provide an adequate test of the hypothesis that continued economic growth in Arizona was dependent upon supplemental supplies of water. Population, employment, production, income and other measures have all registered growth rates that are among the highest in the nation, ranging from 200 to 600 percent and higher over a 20 year period (11). By any measure, the hypothesis can hardly account for the data. Let us examine a model which does explain the data, and thus can be used as a basis for a prognosis for the future.

Over 90 percent of the 6 to 7 million acre feet of water utilized each year currently goes for crop irrigation. All other uses, household consumption, mining, manufacturing, etc., account for less than 10 percent of total water use (7). Personal income (wages, salaries, rents, profits and interest) amounts to about $16 per acre foot of water used in the grain and forage sectors which utilize over half the annual water use. All irrigated crop sectors accounted for less than eight percent of personal income and grains and forages less than two percent of personal income as long ago as 1958 (the time period used in the only detailed study of the structure of the State presently available) (9). In contrast, returns per unit of water intake are relatively high in the nonagricultural sectors. In the manufacturing sector, the equivalent figure is greater than $80,000 per acre foot. A case in point: one of the large electronic plants in the Phoenix

area provides more man-years of employment than do all the crop farms in Maricopa County, on an annual water consumption equivalent to that on about 1,000 acres of crops. Maricopa County has about 41 percent of all cropland in Arizona.

The manufacturing, tourist and associated service industries have been the most rapidly growing sectors since World War II. Manufacturing volume has increased more than ten-fold and tourist spending nearly as much (11).

The market for land and water resources has been responsive to changing demands. This responsiveness, taken together with abundant and inexpensive groundwater supplies, has permitted water to be readily available to the most rapidly growing sectors of the economy at relatively low cost. Many firms need only small supplies and have obtained them through the municipal distribution systems who in turn have been absorbing water from agricultural land taken over by urban expansion. Others have taken advantage of the availability in much of Central Arizona of good quality supplies of groundwater at costs of about three to five cents per thousand gallons. Groundwater supplies have been such that physical exhaustion or deteriorating quality have occurred in only scattered instances. Thus economic forces, rather than physical limits, have been the major influences on water utilization.

What of the irrigated crop sectors themselves who use the great majority of the water? Have they experienced the declines in production, income and employment that had been forecast for them in the absence of supplemental water? The volume of crop sales in Arizona expanded some threefold in the first twenty postwar years. Some of this was price inflation, but even when inflation is taken into consideration, irrigated farming emerges as a rather

robust corpse. There is, in fact, considerable evidence of increased activity even in the areas completely dependent upon pumped water, in spite of falling groundwater tables.[2] How is this unexpected result explained? We can look at two factors, the impact of technological improvement and the fact that water using firms can usually adjust their operations to cope with increasingly costly water.

Technological advance is a potent force in the modern economy, and has had a major influence in the adjustment of the Arizona economy to water scarcity. Improved efficiency of pumping plants, more productive crop varieties and better techniques of water application are examples. An important indirect influence has been the declining real cost of electricity and natural gas for pumping, brought about largely by changing technologies in the energy industry.

The modern Arizona farmer has shown that he does adjust to water scarcity in a manner consistent with production economics theory. Producers substitute other productive resources for water when water becomes more scarce and expensive. An example of such a substitution is the investments made in water saving conveyances (pipelines or concrete ditches). Another adjustment is the shifting of resources from marginally profitable crops into more productive activities exemplified by the recent introduction of pecans and sugar beets

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2. One example is the near doubling of irrigated land in the Sulfer Springs Valley over the past several years. Another example is the results of a pair of aerial surveys designed to measure the impact of water scarcity on the acreage of land cropped in Central Arizona pumped water areas. Contrary to the hypothesis motivating the study, the acreage of land irrigated was found to have increased substantially during the five-year periods between the surveys (5).

into the Central Arizona area. In addition, today's larger farms make more efficient use of all resources. Thus, scale economies have helped to offset higher water costs.

In sum, then, a dynamic economy, relying on a free market for land and water resources, technological improvements, and the great adaptability of water users, coupled with the fact that the most rapidly growing sectors of the economy demand relatively minor amounts of water, serves to explain the present prosperous state of the economy and the consequent failure of earlier dire predictions to materialize. We conclude from the evidence that water has not been the limiting factor on growth in Arizona up to the present time and has, in fact, been inexpensive and ample in supply.[3]

(Since a lead time of a decade or more is required for planning and constructing major water conveyance systems, we must inquire into what conditions are most likely in future periods before judging the desirability of water transfer investments. It is convenient to postpone that inquiry to a later point in this paper.)

The Case for a Rescue Operation

Underlying some arguments for additional water in Arizona is the belief that conditions are such that the agricultural lands dependent upon pumped water are presently being abandoned at a rapid rate, and that the communities supported by these farms are thereby feeling economic stresses. It is felt that in the absence of additional water to rescue the agricultural economy, major deflations in the value of capital assets are likely.

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3. The power of a freely functioning economy to mitigate the economic consequences of an increasing scarcity of a natural resource has been amply conceptualized by Barnett and Morse (1). Our analysis constitutes an empirical demonstration of their theoretical model.

We have already commented on the validity of the land abandonment thesis in the past and present, but what of the future? Will the need arise for water imports to rescue Central Arizona agriculture? A recent study of Pinal County by Stults (8) throws some light on this question. Assuming no new water supplies, no new restrictions on groundwater use, that water withdrawals will have the same impact on the declining water table as has been recorded in the past, and that growers can and will adjust cropping and water use patterns in response to changing prices and costs, Stults projected cropping patterns, net incomes and water uses for forty years into the future (to 2006). On the further condition that federal agricultural programs remain unchanged, his projections indicated that irrigated acreage cropped would in fact drop nearly by half. But, the reduction would be entirely at the expense of low-valued crops which are at present contributing little to net return. Farm size would continue to increase, as small farms unable to cope with technical change and higher water costs would be consolidated into larger units. Acreage of cotton, specialty vegetable crops and citrus would not be sensitive to water costs even that far into the future. Water use was projected to decline some 45 percent as crop acreage decreased. The average pumping lift of the areas currently with deepest wells would increase another 300 feet, to about 810 feet, but most areas would have water available at much lesser depths than this. Most significantly, while crop acreage and water use fall to nearly half of their current levels, net returns in excess of variable costs decline by only twenty percent. Two-thirds of this impact is associated with changes in production of low-valued crops, the balance in increased water costs in the high-valued sectors. None of these effects are because of a physical

lack of water. They are merely profit maximizing response to increasing water cost associated with increasing pumping depths.

A detailed model of the hydrology of the groundwater basin was not available to Stults, thus he assumed "that water withdrawals would have the same impact on the declining water table as had been recorded in the past." Some suspicion of his results was expressed because of this simplifying assumption. We have since redone his analysis utilizing an electric analog model of the groundwater system recently completed by the U. S. Geological Survey, and introducing several other improvements in the economic portion of the model. The preliminary results show even less projected decline in both net income and the groundwater level than for the Stults analysis.

These analyses, together with the earlier discussion on economic growth, seem to cast doubt on the need for a rescue operation in the form of a major water importation scheme. The impacts of increasing water costs are likely to be registered slowly over a period of several decades since they can be partly ameliorated by new technologies and adjustment of crop production patterns.

We observe that the agricultural communities in Central Arizona <u>are</u> undergoing significant changes. Economic activity in many of these towns, for example, has drastically declined in comparison to their heyday in the early 1950's, when a cotton boom brought thousands of workers in to develop land and irrigation systems and to tend and harvest the cotton. However, it would be mistaken to associate these changes more than slightly with the water supply. More crucial has been the effect of improved agricultural technologies which have largely made hand workers obsolete in cultivating and harvesting cotton, and government programs which have drastically re-

duced cotton acreage. Another blow to some towns comes then the interstate expressway system is routed around the town, depriving it of income from serving travelers.

These sorts of outside forces can be expected to continue to shape the future of Southwestern communities. Adjustments in the federal cotton programs, which can be expected over the longer term in response to improvements in synthetic fibers, have a potentially devastating impact upon agricultural income in California, Arizona, New Mexico and Texas. Previous experience suggests that the trends in technological advance in crop production will continue to reduce the demand for labor for all crops and contribute to the growing size of farms. Solution to such problems should be based on an appropriate association of remedies to actual causes. Additional water has little relevancy to coping with most of these changes.

Additional Water and Economic Efficiency

"Cost-benefit analysis" has been developed to insure that the signals of the price system that reflect the preferences of consumers and relative scarcities of resources are brought to bear in public investment evaluation as they would be in the calculations of private firms. If the economic benefits genuinely exceed the economic costs, projects are "economically efficient," that is, they can make a contribution to rising standards of living. If, however, the costs exceed the benefits, the project will result in some reduction of the national income, and is in this sense, undesirable.

The canons of benefit-cost analysis require, among other things, that the value of the gains incremental to the project must exceed the incremental costs. Incremental (marginal) is the crucial word. If benefit-cost analysts

would rigorously observe the implications of this word, we believe much of the controversy over water projects would disappear. We return to our Arizona example to illustrate this principle.

First, municipalities and industry (who account for less than ten percent of total water use) can always obtain adequate quantities of inexpensive water by purchasing water from agriculture (who uses the other 90 plus percent). We have already shown how regional growth has been achieved through this process. Thus, any additional water must be evaluated at its incremental value in agriculture where declining activity would occur.

Secondly, within agriculture particular crops are marginal. As the Stults analysis showed, any change in net income occurs at a much slower rate than does the decrease in either acreage or water use. One of the myths associated with the declining water table in the Southwest is that a loss in acreage because of increasing water cost implies a proportionate loss of income.[4] Obviously, such a phenomenon will not occur so long as adjustments in cropping patterns are made at the margin of crop profitability and acreage continues to transfer to the larger, more efficient farms. Some crops typically yield very high net returns per acre while other crops have low net returns. Naturally, acreage of low-valued crops will drop out before acreage of high-valued crops and shifting production to the larger farms will help maintain income levels.

Since adjustments to the falling water table take place with the marginal crops, any new imported water supplies must also be valued at that margin.

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4. This myth is perpetuated in the literature where analyses use concepts such as the "composite acre" (Grubb, 2) or the "new land equivalent" of the Bureau of Reclamation (10).

Given the present cropping opportunities in the Southwest, additional supplies of water could be expected to be used to expand or maintain the acreage of hay and feed grains. High-valued crops will continue to be grown up to the limit of their allotment (for cotton) or market (for fruits and vegetables) for many decades without additional water supplies. Farmers would benefit from imported water only to the extent that the additional supply of water contributed to their net income by reducing their water cost or by allowing additional profitable acreage of low-valued crops.

This conclusion presents the area with an apparently insolvable difficulty. It is quite true that the water table is falling, water costs are rising, and acreage and net farm income will soon begin to decline. But low-valued crops can be grown only if water costs are also low. That low-valued crops are currently being grown shows that water costs still are relatively low. In fact, as we have shown elsewhere (13), introduction of supplemental water into the Central Arizona area at any price much above $3 or $4 per acre-foot at the main canal, would actually hasten the net income decline and land devaluation. Since the least expensive additional supply suggested would be sold to farmers at $10 per acre-foot at main canal side (subsidized by municipalities and industries from an average cost of about $35), the chance of reversing the net income decline looks very bleak.[5] When the water table falls to the point that imported water becomes the least expensive source, both pumped and imported surface water will be too expensive

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5. There would be an additional cost of $5 to $8 per acre-foot to transport the water from the main canal to the farm headgate in all areas where local surface supply systems are not presently available. This is the cost of organizing, building and operating a local irrigation district.

to support the low-valued crops if the low-valued crops must pay for their own water.

The net results in acreage decline would depend on whether the imported water would be supplied in increments as needed (and thus be a variable cost) or in a given quantity for a fixed cost. If it would be supplied as an expensive variable cost it simply would not be used. If firm contracts were necessary to obtain water (as seems most likely), water would be used on all land and all crops since its variable cost would be zero. Net income and land values would fall more rapidly than Stults projects but more total output would be produced. This would create the odd situation where net direct benefits to farmers would be negative, but some indirect benefits to the community would be generated.

Because opportunities for obtaining additional surface supplies anywhere in the arid Southwest at a lower cost than suggested above seem to be quite limited, implications of the Arizona case should be quite widespread.

Note that if additional water would actually hasten acreage abandonment, not only are the direct benefits less than the costs (in fact are negative) but also any indirect benefits would be negative. However, where additional water would preserve farm acreage the indirect economic activity generated in other sectors is estimated to range only from $4.50 to $5.80 per acre-foot (6, 13). Clearly direct and indirect benefits are less than the $35 average cost.

It is clear that recent patterns of water use cannot be extended indefinitely into the future, so that one cannot reasonably assert that water importation will never be economically desirable. On the other hand, the

huge investments required to import supplemental water, if made prematurely, could result in substantial economic losses in terms of productive opportunities foregone by the taxpayers who were required to support the project. We have only to review the arguments presented so far to state that little need will exist at least until after the turn of the century.

First, we have faith that the role of technological progress and dynamic adjustments to change which have carried us successfully thus far will continue to partially offset increasing scarcity of water.

Second, we believe that the agricultural sectors presently at the margin in their demand for water, will continue to be the marginal sectors. Projected demands for food and fiber from U. S. agriculture do not show that large increases in acreage now devoted to high valued crops will be necessary (3).

Finally, a number of forecasts to the contrary, vast demands for water for municipal and industrial use appear unlikely to materialize soon. Even in Pima and Maricopa Counties of Arizona (containing Tucson and Phoenix, the main population centers of the State) municipal and industrial use projections in the year 2000 represent only a small fraction of current total consumption, and only about half the annually recurring supplies in the region (12).

Additional Water and the Incidence of Benefits and Costs

The final argument for additional water must be restated as follows. If additional water would in fact bring benefits to the region, the benefits would be widely shared by all citizens. Such an argument is difficult to support in view of the following facts.

Those sectors which are particularly vulnerable to rising water costs (the low-valued crop sectors), and therefore would directly benefit from the cheaper water if it could be provided, account for only two percent of the personal income in Arizona. In order to provide these sectors with water cheap enough to provide a net benefit, sectors outside of agriculture would have to contribute a subsidy. To the extent that the subsidy increased these sectors' water costs over any indirect benefits to these sectors, they would be less well off than they were before. We have estimated maximum possible indirect benefits to be about $5.80 per acre-foot of water in Arizona. Using the proposed Central Arizona Project as a model, additional water would cost these sectors about $55 an acre-foot, $20 more than the average cost, and $45 more than the canalside cost to the farmer. It is worthwhile noting that these costs were computed using the low rate of interest (3-1/8 percent) presently the basis for federal cost calculations. A more reasonable rate, say six percent, raises the average cost estimate to nearly $50.

One further distributional problem is relevant. The benefits from federally financed water projects accrue largely to the region of the project while the costs are borne by the taxpayers at large. The unwritten rules of porkbarrel projects call for balancing local gains against only local costs, and ignoring any possible nonlocal costs to the federal treasury. Thus, it is possible for people to agree upon the facts and disagree upon the policy, depending on their relative patriotism between their local versus the national area. We find that in evaluating additional imported water for Arizona, our economist's predilection to weigh all costs against the benefits does not clash with our local patriotic fervor at all.

Additional water at this point in time, with present technologies and costs, is a bad investment for Arizonans as well as for the nation.

Our General Conclusions

We cannot see how costs could be much lower or benefits much higher than in Arizona for large water transfer schemes elsewhere in the Southwest. Thus we are led to the general conclusion that while irrigated agriculture was a cornerstone in the development of most of the Southwest it is no longer necessary or even advantageous to try to maintain a high level of irrigated agriculture on the desert in order to maintain or further the continued development of the already developed economies.

Our view is that irrigation development, its maturation and its ultimate decline are natural phenomena in an economically developing arid region and irrigation decline should not in itself be a subject for general alarm. Our economies do have real problems, but we must search for prescriptions that fit the particular disease.[6]

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6. An excellent "macro" study of the entire Colorado River Basin came to our attention after this paper was written. Heaney (4), apparently without knowledge of our efforts, used similar methods to ours in analyzing water needs of the entire Basin whereas we were concentrating on "micro" studies of representative farms in individual areas of Arizona. Heaney states, "The results of this study indicate that the Colorado River Basin appears to be an undesirable region in the country to expand irrigated agriculture. This infers that the agricultural sector is already over-expanded. Consequently, if it is deemed desirable to continue social overhead in order to promote economic development in the Upper Basin, then further water resources development appears to offer little promise as an alternative."

References 16

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2. Grubb, Herbert W., Importance of Irrigation Water to the Economy of the Texas High Plains, Texas Water Development Board, Rept. No. 11, January, 1966.

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4. Heaney, James P., "Mathematical Programming Model for Long-Range River Basin Planning with Emphasis on the Colorado River Basin," Ph.D. Dissertation in Civil Engineering, Northwestern University, June, 1968 (processed).

5. Kelso, M. M., in Arizona Farmer Ranchman, Phoenix, September 19, 1964.

6. Kelso, M. M. and James J. Jacobs, "Economic Analysis of Transfer of Water from Irrigation to Municipal Use: A Case Study of Tucson," Proceedings of the Western Agricultural Economics Research Council Committee on Economics of Water Resources Development, December, 1967.

7. Martin, William E. and Leonard G. Bower, "Patterns of Water Use in the Arizona Economy," Arizona Review, Vol. 15, No. 12, 1966.

8. Stults, Harold M., "Predicting Farmer Response to a Falling Water Table: An Arizona Case Study," Rept. No. 15, Proceedings of the Committee on the Economics of Water Resources Development of the Western Agricultural Economics Research Council, December, 1966.

9. Tijoriwala, Anilkumar G., William E. Martin and Leonard G. Bower, The Structure of the Arizona Economy: Output Interrelationships and Their Effects on Water and Labor Requirements: Part 1, The Input-Output Model and Its Interpretation, Arizona Agricultural Experiment Station, Technical Bulletin 180, 1968.

10. U. S. Department of the Interior, Bureau of Reclamation, Pacific Southwest Water Plan, Boulder City, Nevada, 1964, p. 9.

11. Valley National Bank, Arizona Statistical Review, Phoenix, September, 1966.

12. Young, Robert A., "The Arizona Water Controversy: An Economist's View," Journal of the Arizona Academy of Sciences, 1969 (forthcoming).

13. Young, Robert A. and William E. Martin, "The Economics of Arizona's Water Problem," Arizona Review, Vol. 16, No. 3, 1967.

(The following is the statement submitted by Mr. Richard F. Rowe, 1825 Palmcroft Way, NW, Phoenix, Arizona 85007:)

"Arizona Water Commission

"34 West Monroe

"Suite 707

"Phoenix, Arizona

"Dear Sirs:

"Would you please enter the following in the record of June 8th Arizona Water Commission hearing on the formation of water districts for the counties of 'Central' Arizona.

"The people of Arizona are worried about many things, but two of these that are mentioned by the citizens of this state more frequently than most are welfare and taxes. Because the formation of these water districts will increase taxes and be another step in the creation of a welfare state for farmers I am opposed to their formation.

"In 1970 the farmers of Maricopa County alone received $16,636,276 in farm subsidies. In addition they will receive water from the Central Arizona Project at a price that it appears will be about one fifth as much as the rest of the citizens of Arizona will pay. Now on top of these

and other benefits the farmers want the citizens of Arizona to pay a property tax to help pay for a $1,000,000,000+++++++++++++++ project to bring water to Central Arizona to grow subsidized, surplus crops. Ridiculous! If this isn't a welfare state for farmers, I have never heard of one.

"The whole thing is even more ridiculous because there is a more rational and simple solution to the 'water problem' than the CAP. It is called 'free enterprise'. Water in Arizona should be sold to the highest bidder. If this was done the inefficient farmers growing marginal crops would be forced to become more efficient or they would be forced out of business. As a substantial part of Arizona's farmland could not be cultivated for a profit under a 'free enterprise' system without subsidies of one type or another, cultivation would decline and agricultural water use would substantially decline also. As agriculture uses 90%+ of the water used in Central Arizona the water problem would be solved.

"Sincerely yours,

"Richard F. Rowe."

(The following is the statement submitted by Mrs. C. A. Miller, 5717 West Clarendon, Phoenix, Arizona:)

"ARIZONA WATER COMMISSION PUBLIC HEARING

"RE: FORMATION OF MULTI-COUNTY WATER CONSERVATION DISTRICT

"JUNE 8, PHOENIX

"NAME: Una E. Miller (Mrs. C. A.)

"ADDRESS: 5717 W. Clarendon

"REPRESENTING: Many friends, members of garden clubs, most of my neighbors and other friends. They are against this project in many respects and are especially confused because no public hearing has ever been allowed up until this time.

"They resent the secrecy surrounding its progress (especially in regard to the Hualapai Dam which is part of the CAP project and which I have been assured by telephone to the offices of my Congressmen was a 'touchy' subject).

"This promotes a cynical attitude on the part of the general public about the whole CAP project.

"We are against this foregone project.

"Una E. Miller."

(The following is the statement submitted by Mr. Stephen M. Williams, 92 West State Avenue, Phoenix, Arizona:)

"Mr. Wes Steiner

"Director

"Arizona Water Commission

"Phoenix, Arizona

"Dear Mr. Steiner:

"Since my working hours prevent me from attending the June 8 public hearing of your commission regarding the formation of a three county water conservancy district to contract for Colorado River water, I would appreciate it if you would include my statements in this letter as part of the hearing record.

"It is to my understanding that the purpose of such a conservancy district, along with contracting for water, would be to levy a tax on the residents of Pima, Pinal and Maricopa counties for the purpose of gathering funds to aid in the construction of the Central Arizona Project. Such a tax would be similar to a school tax in that each resident of the counties involved would pay the price determined by the district and the County Board of Supervisors on each $1,000 assessed

evaluation on his property.

"Please do not hesitate to correct me if my previous statements are erroneous. However, if I am correct about the tax, I would like to go on record as opposing the formation of a three county water conservancy district. I maintain that the residents of these counties are already overtaxed. To burden them further with a tax which would aid in the construction of something with the undetermined environmental impact of the CAP is a step beyond reasonable limits.

"I say that the Central Arizona Project has an undetermined environmental impact because I feel that no one involved with the Project is certain what long term environmental effects of its construction will be. If you could assure me that, if constructed, the Central Arizona Project would not destroy the Colorado River below Parker, not increase salinization in the River due to salt leaching by irrigation water, truly alleviate the deficit pumping of our underground aquifers and not destroy the riparian vegetation at the Orme damsite, I might re-evaluate my opposition to the CAP.

"I must admit that much of my opposition to the Central Arizona Project stems from a lack of

knowledge of the Project. I would appreciate it, Mr. Steiner, if you would send me some background information on the CAP plus a copy of the environmental impact statement on it, if one was made.

"Until I have a chance to evaluate the information you will be sending me, I will have to hold fast in my ignorance and oppose the development of the three county water conservancy district if its purpose is to levy a tax on the residents of Pima, Pinal and Maricopa counties in order to raise funds to aid in the construction of the Central Arizona Project.

"Sincerely,

"Stephen M. Williams."

(The following is the statement submitted by Mr. Donald G. Knox, 3134 West Gelding Drive, Phoenix, Arizona:)

"Mr. Wesley Steiner, Executive Director

"Arizona Water Commission

"34 West Monroe

"Suite 707

"Phoenix, Arizona

"Dear Mr. Steiner:

"The notice of the public hearing in connection

with CAP (June 8) came too late for me to attend, but I would like the remarks below to be part of the Hearing record.

"I am not familiar with the total picture regarding availability and pricing of water; it does, however, seem strange that CAP water should be so much (40 times?) more expensive than SRP water. I am not familiar with the trade-offs and compromises, which I am sure are unavoidable, involved in increasing the water supply to the major population centers in Arizona.

"I do have one strong stand: I do not want to pay for anyone else's water. Everyone (corporate and business and farming entities involved) should pay the same rate for water, plus the cost of getting water to the point of use for that user. The rates MUST be graduated so that the cost per unit goes UP as the total amount used goes up. When water becomes so precious that we have to evict people and wildlife from their homes to get it, we must not tolerate the squandering of this resource. If the above pricing philosophy makes some enterprises uneconomical, so be it.

"The 'average usage' for an urban family is fairly well established. Let this be the base.

Any usage above this will, per unit, cost MORE than the per unit price of the base amount. This policy must apply to ALL users, urban or not, farm or family or whatever.

"Yours truly,

"Donald G. Knox."

(The following is the statement submitted by Mrs. Barbara Prosser Kerr, for the Board of Directors, Arizonans in Defense of the Environment, Inc.:)

"June 10, 1971

"Statement for the official record of the PUBLIC HEARING FOR A WATER CONSERVANCY DISTRICT composed of Maricopa, Pinal and Pima Counties for the purpose of contracting water from the Central Arizona Water Project.

"It is the opinion of Arizonans in Defense of the Environment, Inc. that the public must not, by one subterfuge or another, be deprived of its right to vote on any measure which would in effect levy a tax upon any citizen of this State or any subdivisions thereof. Before any financial obligations are incurred for any citizens from the State of Arizona or any subdivision of the State, we urge that these five questions be answered publically. We further urge that following wide

dissemination of the answers, the informed public subsequently be given an opportunity to vote on whether or not it desires the formation of a Water Conservancy District such as the proposed three county district.

"The five questions are:

"1) What would be the actual cost per acre-foot including tax subsidies for water delivered to Phoenix by the Central Arizona Project? Are estimates in excess of $80. per acre-foot accurate?

"2) What quality of water is the Salt River Project prepared to guarantee for delivery to Phoenix from this project?

"3) Are reports true that CAP water transported to the Tucson area would suffer a loss in excess of 80% due to seepage and evaporation? Would this be accompanied by a decrease in quality due to increased salinity? If so, what is the guaranteed quality of water to be delivered to Tucson?

"4) It is well-known that approximately one-fourth of the electricity to be produced by the proposed coal-fueled Navajo Power Plant at Page will be used to pump water for the CAP. We would like to know the results of a careful comparison of the environmental impact produced by the

Navajo Plant-Central Arizona Project combination on the one hand and the environmental effects of the production of electricity and recovery of high quality water from geothermal sources in the Imperial Valley on the other hand. It is clear that geothermal electricity would involve neither fuel cost nor cost for pollution control. Furthermore, it would not release oxides of nitrogen into the atmosphere as coal-fueled plants necessarily would. We feel that tax money from citizens of Arizona should not be used to provide a market for Peabody's coal with the accompanying rape by strip-mining of the Black Mesa, when economically and environmentally preferable alternatives to coal-fueld plants are available.

"5) In addition to a comparison of the environmental costs, we request a comparison of the other monetary costs to Arizona citizens. Pollution is not free.

"Unless and until factual and concrete answers to the above questions are made widely known to the citizens of Arizona, whose lives will be unquestionably affected, we are opposed to any further funding or development of the Central Arizona Project including the proposed three-county

conservancy district.

"We certainly do not mean to imply that the financial and/or environmental effects of the proposed Central Arizona Project would be confined within the Arizona borders.

"Barbara Prosser Kerr, for the Board of Directors

"Arizonans in Defense of the Environment, Inc."

(The following is the statement submitted by Mr. Andrew L. Bettwy, State Land Commissioner, State of Arizona:)

"Wesley E. Steiner, Executive Director

"Arizona Water Commission

"34 West Monroe, Suite 707

"The Arizona Bank Building

"Phoenix, Arizona 85003

"Dear Mr. Steiner:

"This Department, speaking from its point of view and duty as the State Agency in water rights and groundwater law administration, soil conservation, State forestry, Clarke-McNary rural fire protection, and State lands including trust lands, commends the creation of the three county (Maricopa, Pima and Pinal) conservancy district to your Commission as a vehicle necessary to advance the date for Federal decision to release funds for the

construction of the Central Arizona Project.

"Sincerely,

"A. L. Bettwy."

(The following is the statement submitted by Mr. Gene E. Rice, Executive Vice President, First Federal Savings and Loan Association of Phoenix:)

"Arizona Water Commission

"Arizona Bank Building - 7th Floor

"34 West Monroe

"Phoenix, Arizona

"Gentlemen:

"On behalf of this Association, I urge that you approve the formation of a Water Conservation District including Pima, Pinal, and Maricopa Counties.

"This Association has over $250 million invested in loans on real estate in these counties. Should a decision on your part adversely affect the contract for water from the Central Arizona Project by the Secretary of the Interior, it would severely affect the value of the properties securing the above loands.

"I urgently request that you take affirmative action on the formation of this district.

"Very truly yours,

"Gene E. Rice, Executive Vice President."

Affidavit of Publisher

Carol Hart, being first duly sworn deposes and says:

That (s)he is the bookkeeper of The GRAHAM COUNTY GUARDIAN, a Weekly newspaper, published in the city of Safford, County of Graham, State of Arizona: That the Notice, a copy of which is hereto attached, described as follows:

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

was published weekly in the entire and regular issue of said GRAHAM COUNTY GUARDIAN for two consecutive weeks, the FIRST publication of said notice being in the issue dated May 19, 1971, and the LAST publication being in the issue dated May 26, 1971

The deponent further says that the Notice was published in the newspaper proper and not in a supplement. thereof.

(Signed) Carol Hart

Sworn and Subscribed to before me this 7th day of June, 1971

Earl Hunt

Notary Public.

My commission expires Sept 24, 1973

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 A.M. to 12:00 noon and from 1:30 P.M. until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
BY George E. Leonard
Chairman

2t 5-26f

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Ariona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

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The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION

(s) GEORGE E. LEONARD
Chairman

PUB: May 22, 29, 1971. 6733

PROOF OF PUBLICATION

STATE OF ARIZONA, }
County of Coconino } ss.

William V. Misslin being duly sworn, deposes and says:

That he is the publisher of Coconino Sun Arizona Daily Sun, a newspaper published at Flagstaff, Coconino County, Arizona; that the Notice of Hearing on Petitions For Formation of a Multi-Coun Water Conservation District Legal #6733 a copy of which is hereunto attached, was first published in said newspaper in its issue dated the 22nd day of May, 1971, and was published in each weekly issue of said newspaper for two consecutive weeks the last publication being in the issue dated the 29th day of May, 1971.

William V. Misslin

Subscribed and sworn to before me this 3rd day of June, 1971

Robert M. McClure
Notary Public

My Commission expires My Commission Expires Jan. 6, 1975

LEGAL NOTICE

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 A.M. to 12:00 noon and from 1:30 P.M. until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

Arizona Water Commission
GEORGE E. LEONARD
Chairman

Publish: May 17, 24, 1971

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA, }
COUNTY OF SANTA CRUZ } SS.

Before me, ..., a Notary Public in and for the County of Santa Cruz, State of Arizona, duly commissioned and sworn, personally appeared:

Eileen O'Donnell, who being first duly sworn deposes and says:

That he is the business manager of THE NOGALES HERALD, a daily newspaper published at Nogales, Santa Cruz County, Arizona, and that the annexed notice or advertisement was published in said daily newspaper for 2 times, the dates of publication being: May 17 and 24, 1971

Eileen O'Donnell

Subscribed and sworn to before me this 2nd day of June, 19 71

Notary Public

My Commission Expires Aug. 3, 1973

My Commission Expires:

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA)
) ss.
County of Apache)

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 AM to 12:00 noon and from 1:30 PM until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
By George E. Leonard
Chairman

1st Publication May 21, 1971
Last Publication May 28, 1971

I, VICTOR H. DITTMAR, being first duly sworn, depose and say: I am the publisher of **Apache County Independent-News**, a weekly newspaper of general circulation published at St. Johns, County of Apache, and State of Arizona; that the attached notice of Hearing Petitions for Formation of a Multi-County Water Conservation District

was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for 2 consecutive issues, the first publication being dated the 21st day of May 1971, and the last publication being dated the 28th day of May, 1971.

Victor H. Dittmar
Publisher, Apache County Independent-News

Subscribed and sworn to before me this 28 day of May, 1971

Edward S. Carter

My Commission Expires: ....., 19.....
My Commission Ex[illegible]

Affidavit of Publication

State of Arizona, }
County of Navajo, } ss.

I, Ann K. Hoyt, being duly sworn, depose and say: I am bookkeeper of HOLBROOK TRIBUNE-NEWS, a newspaper of general circulation published weekly at Holbrook, County of Navajo and State of Arizona; that the Notice of hearing on petitions for formation of a multi-county water conservation district attached hereto, was published in said Paper, THE HOLBROOK TRIBUNE-NEWS, for two consecutive issues, and said notice was published in the regular and entire issue of every number of the paper during the period of the time of publication and was published in the newspaper proper and not in a supplement, the first publication being dated May 20, 1971, and the last publication being dated May 27 1971.

Ann K. Hoyt

SUBSCRIBED AND SWORN TO before me this 27th day of May, 1971

Margaret Cayrou
NOTARY PUBLIC

My commission expires

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 AM to 12:00 noon and from 1:30 PM until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
/s/ BY George E. Leonard
GEORGE E. LEONARD
CHAIRMAN

Proof Of Publication

STATE OF ARIZONA,
County of Mohave } ss.

Cindy Witt, being first duly sworn, says that during the publication of the notice, as herein mentioned, he was and now is the Clerk of the MOHAVE COUNTY MINER, weekly newspaper published on Thursday of each and every week at the town of Kingman, in said county.

That said newspaper was printed and published as aforesaid on the following dates, to-wit:

Thursday May 20, 19 71
Thursday May 27, 19 71
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That the Notice of Hearing

of which the annexed copy is a printed and true copy, was printed and inserted in each and every copy of said newspaper printed and published on the dates aforesaid, and in the body of said newspaper and not in a supplement thereto.

Cindy Witt

Subscribed and sworn to before me this 27th day of May, 19 71

Notary Public

(My commission expires Dec 15, 1974)

NOTICE OF HEARING
ON PETITIONS FOR FORMATION OF
A MULTI-COUNTY WATER
CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 AM to 12:00 noon and from 1:30 PM until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
BY GEORGE E. LEONARD
CHAIRMAN

First Pub. May 20, 1971
Last Pub. May 27, 1971

Publisher's Affidavit of Publication

STATE OF ARIZONA
COUNTY OF YUMA, } ss.

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appar and be heard on any matter relating to the establishment of the proposed district.

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Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
BY /s/ GEORGE E. LEONARD
GOERGE E. LEONARD
CHAIRMAN

Daily May 19, 26, 1971

JONES OSBORN or DONALD N. SOLDWEDEL, having been first duly sworn, deposes and says: that the Yuma Daily Sun is a newspaper of general circulation published daily except Saturday by the Sun Printing Company, in the City of Yuma, County of Yuma, State of Arizona; that he is the publisher of said paper; that the NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

a printed copy of which, as it appeared in said paper, is hereto attached and made a part of this affidavit, was published in the Yuma Daily Sun for TWO issues; that the date of the first publication of said NOTICE

was May 19, 1971, and the date of the last publication being May 26, 1971, and that the dates when said NOTICE

was printed and published in said paper were.

May 19, 26, 1971

Donald N. Soldwedel

Subscribed and sworn to before me, by the said Jones Osborn or Donald N. Soldwedel this 26 day of May, 1971.

Notary Public

My commission expires My Commission Expires June 9, 1972

STATE OF ARIZONA }
COUNTY OF PINAL } ss.

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

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The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

Arizona Water Commission
-s- By George E. Leonard
GEORGE E. LEONARD
CHAIRMAN

No. of publications: 2; dates of publication: May 19, 26, 1971.

Affidavit of Publication

.....Donovan M. Kramer..... first being duly sworn deposes and says: That he is a native born citizen of the United States of America, over 21 years of age,

that he is ....publisher..... . of the Casa Grande Dispatch, a semi-weekly newspaper published at Casa Grande, Pinal County, Arizona, on Monday and Wednesday of each week; that a notice, a full, true and complete printed copy of which is hereunto attached, was printed in the regular edition of said newspaper, and not in a supplement thereto, for ....2.....consecutive ..weeks.. the first publication thereof having been on the ....19...th.....

day of .....May..... A. D., 19..71.....

Second publcation .....May 26,..... 19..71.....

Third publication ..... 19.....

Fourth publication ..... 19.....

Fifth publication ..... 19.....

Sixth publication ..... 19.....

CASA GRANDE DISPATCH

By.....Donovan - Kramer.....
DONOVAN M. KRAMER, Publisher

Subscribed and sworn to before me this.....26 th..
day of.....May..... A. D., 19..71..
.....Eleanor Brewer.....

My commission expires on the .....19 th..... day of .....February... A. D., 19..73.....

Notary Public in and for the County of Pinal, State of Arizona

AFFIDAVIT OF PUBLICATION

STATE OF ARIZONA)
County of Yavapai) ss.

Barbara Chrisman, being first duly sworn, on her oath says:

That she is the Bookkeeper of WESTERN NEWSPAPERS, INC., an Arizona corporation, which owns and publishes the PRESCOTT EVENING COURIER, a Daily Newspaper published in the City of Prescott, County of Yavapai, Arizona; that the notice attached hereto, namely,

Notice of Hearing on Petition

Multi-County Water

has, to the personal knowledge of affiant, been published in the newspaper aforesaid, according to law, from the 18 day of May, 19 71, to the 25 day of May, 19 71 both inclusive, without change, interruption or omission, amounting in all to 2 insertions, made on the following dates:

May 18, 25, 1971

Barbara Chrisman

Subscribed and sworn to before me this 26 day of May, 19 71.

Earl M. [illegible]
Notary Public

My commission expires 11-12-74.

C-96

NOTICE OF HEARING ON PETITIONS FOR INFORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 AM to 12:00 noon and from 1:30 PM until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971
ARIZONA WATER COMMISSION
BY /s/George E. Leonard
CHAIRMAN
2TC Pub May 18, 25, 1971

PROOF OF PUBLICATION

Legal Notice

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 A.M. to 12:00 noon and from 1:30 P.M. until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
By GEORGE E. LEONARD,
Chairman

COUNTY OF COCHISE
STATE OF ARIZONA

Genoveva Fernandez being duly sworn according to law, deposes and says that he is one of the officials of The Dispatch, a newspaper published in the City of Douglas, in said County of Cochise, and State of Arizona, and that the annexed advertisement of:

Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District

was published in said newspaper Weekly for 2 (two) successive Weeks, as follows, to-wit:

From On May 18 and 25, 19 71

to ....., 19....., inclusive.

Douglas Dispatch

Genoveva Fernandez

Subscribed and sworn to before me, this 27th day of May, A. D. 19 71

Hester E. Richards
Notary Public,
Cochise County, Arizona

MY COMMISSION EXPIRES OCTOBER 17, 1974

2M 3-71

ARDEN PUBLISHING COMPANY

TUCSON, ARIZONA

STATE OF ARIZONA }
COUNTY OF PIMA } SS.

FRANK C. DELEHANTY, being first duly sworn deposes and says: That he is the auditor of the ARDEN PUBLISHING COMPANY, a corporation organized and existing under the laws of the State of Arizona, and that the said ARDEN PUBLISHING COMPANY prints and publishes the Arizona Daily Star, a daily newspaper printed and published in the City of Tucson, Pima County, State of Arizona, and having a general circulation in said City, County, State and elsewhere, and that the attached

Notice of Hearing on Petitions for Formation of a Multi-County Water Conservation District

was printed and published correctly in the entire issue of the said Arizona Daily Star on each of the following dates, to-wit:

May 19,26,1971

Frank C. Delehanty

Subscribed and sworn to before me this 26th day of May, 1971

Frances Dubbach
Notary Public

My commission expires March 24th, 1975

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

The hearing will be held from 9:00 AM to 12:00 noon and from 1:30 PM until all persons desiring to testify have been heard. The hearing will be located at 205 West Jefferson Street, Phoenix, Arizona, in the Maricopa County Governmental Complex, Auditorium Building.

The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in relation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
GEORGE E. LEONARD
CHAIRMAN

Publish: May 19, 26, 1971
Arizona Daily Star

ETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of tle 45, Chapter 13 of the Arizona evised Statutes, notice is hereby ve that the Counties of Maricopa, ni and Pima, State of Arizona, ive petitioned the Arizona Water ommission, the successor organiation of the Arizona Interstate ream Commission, to form a ulti-County Water Conservation istrict pursuant to the provisions Title 45, Chapter 13 of the Arina Revised Statutes, and the rizona Water Commission will old a public hearing on said petitions on the 8th day of June, 71, at which time any affected erson may appear and be heard on y matter relating to the establishent of the proposed district.

The hearing will be held from 00 A.M. to 12:00 noon and from 30 P.M. until all persons desiring testify have been heard. The earing will be located at 205 West fferson Street, Phoenix, Arizona, the Maricopa County Governental Complex, Auditorium Buildg.

The Arizona Water Commission quests notification in advance of e hearing by those desiring to stify and suggests that written atements of those intending to stify be mailed to the Arizona ater Commission at 34 West Monc, Phoenix, Arizona, 85003, one eek in advance of the hearing. he Arizona Water Commission rther suggests, in the interest of inimizing repetition of testimony, at, where possible, a spokesman selected to speak on behalf of rge groups of persons who have common interest in appearing in her opposition to or support of e formation of said district.

Dated this fourteenth day of May, 71.

Arizona Water Commission
By George E. Leonard, Chairman
rst Pub: 5/20/71
ist Pub: 5/27/71 Rec.

State of Arizona
County of Gila } ss.

Thomas L. Anderson being first duly sworn deposes and says:

That he is one of the publishers of the (ARIZONA RECORD), (ARIZONA SILVER BELT), a newspaper published Weekly at (Globe), (), in the County of Gila, State of Arizona: that Notice of Hearing on Petitions For Formation of A Multi-County Water Conservation District

a printed copy of which is hereto attached, was published in all the regular Weekly editions of said newspaper (and not a supplement thereof) for Two (2) consecutive Weeks, the dates of publication being as follows, to-wit: May 20, 1971; May 27, 1971

Thomas L. Anderson

Subscribed and sworn to before me this 27th day of June, 19 71

Joyce E. Dunbar
Notary Public

My commission expires May 8, 1972

NOTICE OF HEARING ON PETITIONS FOR FORMATION OF A MULTI-COUNTY WATER CONSERVATION DISTRICT

Pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, notice is hereby given that the Counties of Maricopa, Pinal and Pima, State of Arizona, have petitioned the Arizona Water Commission, the successor organization of the Arizona Interstate Stream Commission, to form a Multi-County Water Conservation District pursuant to the provisions of Title 45, Chapter 13 of the Arizona Revised Statutes, and the Arizona Water Commission will hold a public hearing on said petitions on the 8th day of June, 1971, at which time any affected person may appear and be heard on any matter relating to the establishment of the proposed district.

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The Arizona Water Commission requests notification in advance of the hearing by those desiring to testify and suggests that written statements of those intending to testify be mailed to the Arizona Water Commission at 34 West Monroe, Phoenix, Arizona, 85003, one week in advance of the hearing. The Arizona Water Commission further suggests, in the interest of minimizing repetition of testimony, that, where possible, a spokesman be selected to speak on behalf of large groups of persons who have a common interest in appearing in either opposition to or support of the formation of said district.

Dated this fourteenth day of May, 1971.

ARIZONA WATER COMMISSION
By /S/ GEORGE E. LEONARD
CHAIRMAN

Published: May 18, 25, 1971.

AFFIDAVIT OF PUBLICATION

Number.....

ARIZONA Weekly GAZETTE

STATE OF ARIZONA
COUNTY OF MARICOPA } ss.

GENE C. FIELDS, being first duly sworn, upon oath deposes and says: That he is the publisher of the

ARIZONA WEEKLY GAZETTE

a newspaper of general circulation in the County of Maricopa and the State of Arizona, published at Phoenix, Arizona, and that the copy hereto attached is a true copy of the advertisement as published weekly in the Arizona Weekly Gazette on the following dates:

May 18, 25, 1971

Gene C. Fields

Subscribed and sworn to before me this 25th day of May ~~A.D.~~ 19 71

James W. Evans
Notary Public

My Commission Expires June 3, 1974

I, Sandra W. McFate, hereby certify that I made a shorthand record of the proceedings in the foregoing hearing and that the foregoing 246 typewritten pages constitute a full, true and accurate transcript of said shorthand record.

Dated at Phoenix, Arizona this _____ day of June, 1971.

Sandra W. McFate
Court Reporter