

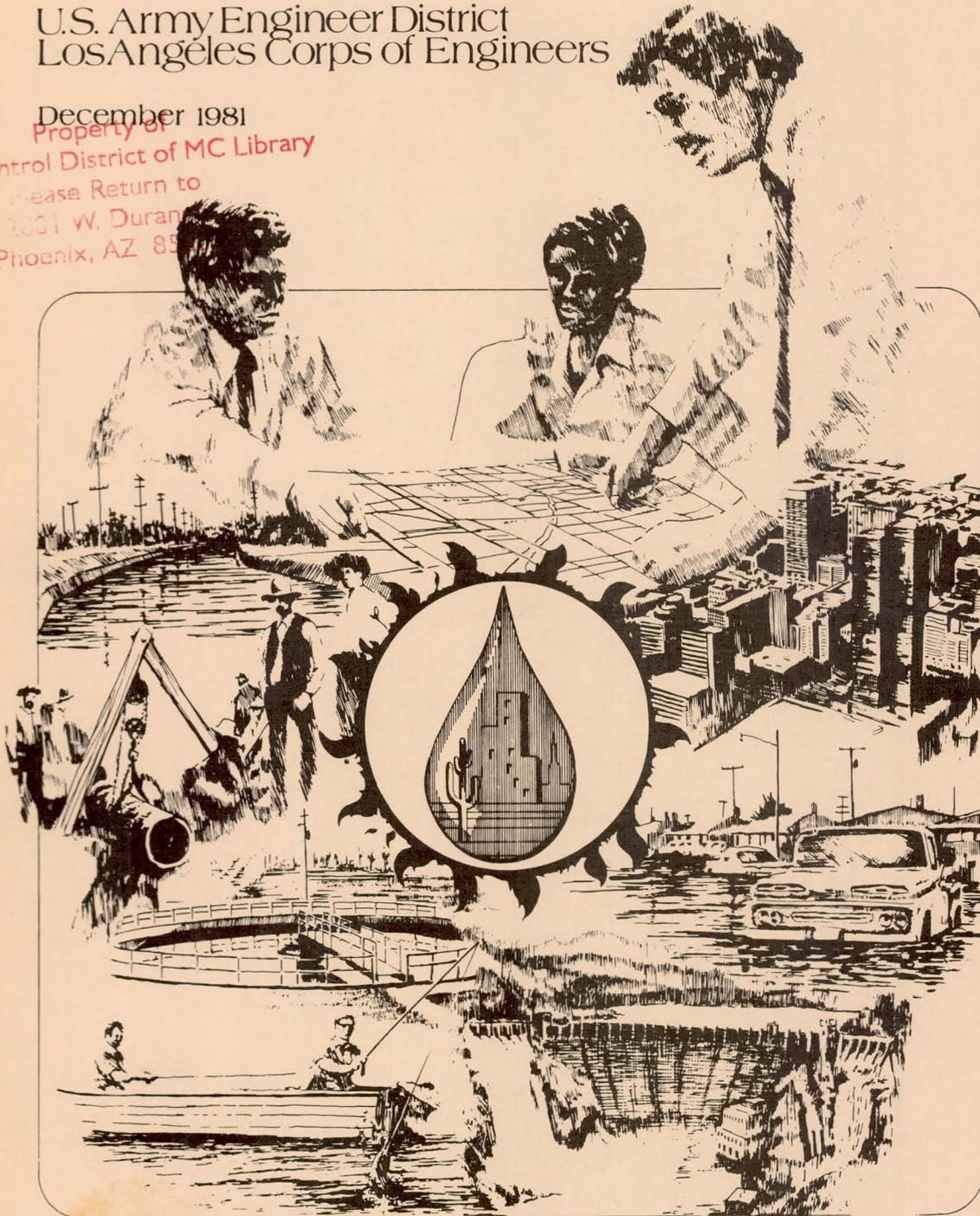
INSTITUTIONAL ANALYSIS APPENDIX

Phoenix Urban Study Final Report

U.S. Army Engineer District
Los Angeles Corps of Engineers

December 1981

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INSTITUTIONAL ANALYSIS APPENDIX

PHOENIX URBAN STUDY

FINAL REPORT

U.S. ARMY ENGINEER DISTRICT

LOS ANGELES

CORPS OF ENGINEERS

DECEMBER 1981

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PREFACE

Water has been the single most important factor contributing to the phenomenal growth of the Phoenix metropolitan area. A century ago, planners in the Salt River Valley were laying the groundwork to develop the limited water resources of the area to the maximum extent possible. In so doing they provided the most feasible location for development of a large population center in the lower Colorado River Basin. The successful development that resulted from the efforts of these pioneers in water resource planning, however, has placed an even greater demand on current available water resources. In recognition of the need to extend and refine water resource planning, the U.S. Army Corps of Engineers undertook the Phoenix Urban Study in cooperation with local authorities.

THE STUDY

During the course of the Phoenix Urban Study, water resource plans formulated were consistent with other urban programs and are flexible enough to allow accommodation of changing social and economic conditions. Because the study interfaced closely with water resource programs of other agencies, special attention was devoted to insuring that it did not duplicate the efforts of other agencies, but served as an extension and a coordination of these efforts.

STUDY REPORT

The Institutional Analysis Appendix of the Urban Study Final Report provides an inventory of existing governmental and quasi-governmental agencies and organizations, together with brief discussions of how alternative water resource plans generated by the Urban Study affect and are affected by existing or proposed institutions. Federal, state, county, and local institutions are discussed. For a more graphic depiction of the Final Report organization and the place of the Institutional Analysis Appendix in it, refer to Figure P-1.

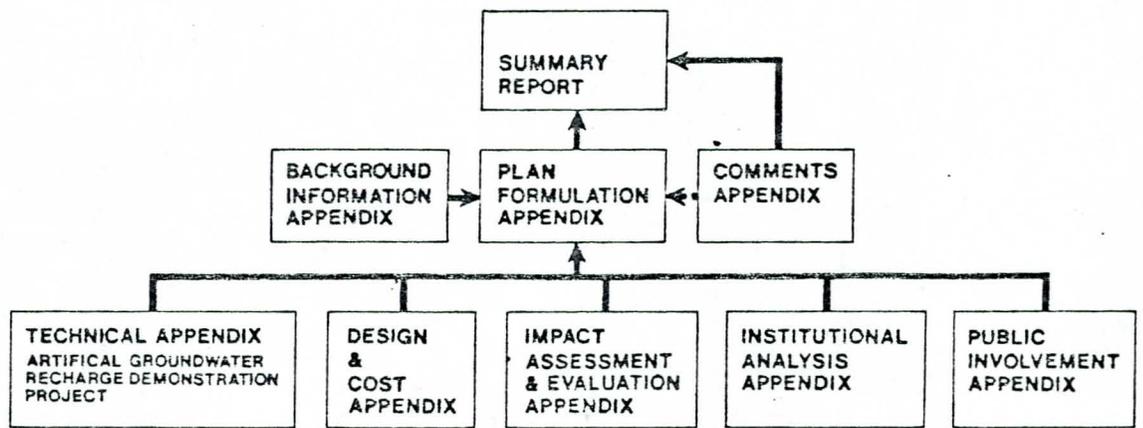


Figure P-1
Study Report
Organization & Content

CHAPTER I

INTRODUCTION

The primary objective of the Corps of Engineers' Urban Study planning process is the development of implementable solutions for urban water and related land resource problems. If planners are to meet this goal, they must have a knowledge of existing federal, state, regional, and local institutions. They also must know the relationships of these organizations to water resources development. This awareness is necessary to avoid duplication of planning efforts and to ensure that the resulting plans can be carried out efficiently by existing or proposed agencies.

The Institutional Analysis Appendix seeks to present descriptive analyses of the federal, state, county, and local agencies that are concerned with water resource issues in the metropolitan Phoenix area. These descriptions relate the purposes, sizes, and occasionally the recent budgets, planning projects, and key personnel of the institutions. Once arranged, this data base provides the information necessary for the development of implementation schemes for plans developed during the Urban Study.

The concept of institutions, as considered in this appendix, is a broad one encompassing public agencies at all levels of government, private parties, and nonorganizational elements such as laws, processes, traditions, and patterns of behavior.

The main focus of this report will be on the formal institutional elements such as legal powers, functions, operations and authorities. The subtle aspects of institutions will be considered in a perfunctory manner. Pertinent court decisions, out-of-court settlements, intergovernmental agreements, as well as statutory powers, and jurisdictional boundaries are all institutional elements included in this data base.

DATA COLLECTION METHODOLOGY

The methodology, or approach, that was used to gather the information on existing water resource management and development institutions for the data collection phase of the institutional analysis process is briefly described below. In gathering information, principal reliance has been placed on existing written sources and interviews with agency staff personnel (both telephone and personal interviews were conducted).

Information sources used in developing the existing data base included: The Arizona Revised Statutes, legislation reports, court cases, published interpretations of legal decisions and water laws, agency reports, by-laws rules, regulations, organizational charts, and substantive memoranda, capital improvement plans, water and sewer plans, newspaper reports, as well as other sources. Key source documents are listed in the bibliography (see Appendix A).

The product of this data collection phase is a synopsis of agencies, groups of similar organizations, and nonorganizational institutions. The synopsis is organized to a) provide an understanding of existing water resource institutions, b) organize the data base for analysis, and c) indicate areas where additional information is needed. For organizational and presentation purposes, the synopsis looks at the following categories of agencies or authorities: Federal, state, county and regional, special districts, cities and towns, and other authorities.

This data collection portion of the institutional analysis process is not an exhaustive discussion of all Federal, state, regional and local agencies, but includes those which are germane to Phoenix Urban Study goals.

CHAPTER II

FEDERAL

Arizona has a six member congressional delegation. The two senators are Barry Goldwater and Dennis DeConcini. The four representatives and respective districts are: John Rhodes, No. 1; Morris Udall, No. 2; Robert Stump, No. 3; and Eldon Rudd, No. 4.

Water resource administration is influenced by the Federal Government not only through the congressional delegation and the various government agencies, but also by the large Federal ownership of land in the state. Federally owned or managed land comprises approximately 61 percent of the total land area of Maricopa County. This section presents an overview of the Federal agencies which affect water resource management in the state. These agencies have been granted power, authority and/or duties which have an impact on water resources by the U.S. Congress. Each agency plays either a direct or indirect role in the state's water resource planning. No attempt has been made to evaluate the agencies' programs, but rather this appendix presents a review of their powers and duties.

U.S. DEPARTMENT OF AGRICULTURE

Agricultural Research Service

An important arm of the Department of Agriculture in the field of soil and water conservation is the Agricultural Research Service (ARS). Created in 1953, when several agricultural research bureaus were combined, ARS has the mission of providing the necessary knowledge and technology so that farmers can produce efficiently, conserve the environment, and produce a more abundant supply of agricultural products.

In Arizona, the work of ARS is divided among three centers which devote their efforts toward solving soil and water conservation problems. The service maintains a center for hydrologic investigations and soil and water management at Tucson in connection with the Agricultural Experiment Station. There are also soil and water conservation agencies in Yuma and Phoenix.

There is a considerable amount of cooperation between ARS and other Federal and state agencies. Some of the researchers in the Soil and Water Conservation Research Division are also members of the Arizona Agricultural Experiment Station. They may teach some classes at the University of Arizona, utilize graduate students in their research, and correlate their research with the experiment station's

work. The ARS workers utilize the experimental farms at the University of Arizona in Mesa, and elsewhere in the state.

The following section is directed toward the specific research of U.S. Water Conservation Laboratory of ARS.

U.S. Water Conservation Laboratory

The Water Conservation Laboratory (at first called the Southwest Water Conservation Laboratory) was established in Phoenix in 1959 by the Agricultural Research Service. The Laboratory was established as part of a nationwide effort to accelerate research on methods for conserving the existing water supplies and increasing water yields. Research investigations have undertaken such varied aspects as reduced evaporation during the hydrologic cycle, reduction of plant transpiration, enhancement of precipitation runoff, increased irrigation efficiency, etc. To avoid duplication of effort, all research programs are planned in consultation with the Agricultural Experiment Stations in Arizona, Nevada, New Mexico, and Utah, and with research by the Soil Conservation Service.

Director of the Water Conservation Laboratory is Dr. Herman Bouwer, who supervises a staff of 45 persons, 17 of whom are professional personnel engaged in various research projects of local and international significance. The main project of importance to the institutional study is the Laboratory's Flushing Meadows project which is located west of Phoenix. Flushing Meadows is in the Salt River bed about 1.5 miles downstream from the 91st Avenue Sewage Treatment Plant. The project was installed in September 1967 for the purpose of renovating secondary sewage effluent by land treatment process through rapid infiltration basins. The feasibility of using secondary sewage effluent for unrestricted irrigation, recreation, and certain industrial uses is tested. The primary potential in the land treatment system is in the reuse of the effluent to reduce the overdraft on groundwater.

The total wastewater flow from Phoenix and adjacent cities is approximately 100 million gallons per day (mgd), which would be sufficient to irrigate about 27,000 acres. To carry this a step further, the waste flow is expected to reach about 250 mgd by the year 2000; this could irrigate nearly 70,000 acres.(1)

1. H. Bouwer, "Infiltration and hydraulic aspects of the Flushing Meadows Project," (May 1974), Journal Water Pollution Control Federation.

The issue of "whose water was it?" played a major role in the allocation of the wastewater from the 91st Avenue Treatment Plant. When the Water Conservation Laboratory began the Flushing Meadows experiment it was in cooperation with the Salt River Project (SRP). The project was only partially supported by Federal funds. Particularly interesting about this project, beyond its technical significance are the broad legal implications, none of which have yet been directly addressed.

The SRP was interested in developing the land treatment process in order to reclaim the effluent for agricultural irrigation, but the City of Phoenix, arguing that they owned the effluent, tried to sell it to the Buckeye Irrigation District, to the south and west of Phoenix. The SRP, invoking the principle of appurtenance, argued that all the effluent discharged which was originally supplied for association lands still belonged to those lands. Since 1919, the SRP Agricultural Improvement District has collected tail-water from farmland for reuse. The SRP claimed was that effluent was just municipal tail-water.(2)

The effluent issue was an example of the attempt by the institutions involved in enhancing water reuse to fit it to their own institutional purposes and goals. To the irrigation project, effluent would enable the reuse of domestic, commercial, and industrial water, thereby improving water system efficiency because less water would be needed to serve the same number of water users. To the City of Phoenix, this water was attractive because it could be sold to downstream water users to add revenues to its water operation, or perhaps used to create recreation opportunities. This issue illustrates how organizations interpret and make decisions in an attempt to secure a more favorable economic climate.

The dispute was settled (out of court) with the City of Phoenix retaining ownership of the effluent. It is interesting to note that the settlement came about in part as the result of pressure on the City of Phoenix in regard to another issue. (An SRP bond election was in jeopardy because the validity of their voting procedure was being challenged by the City of Phoenix. Prior to 1970, 1 acre of land entitled the owners one vote, but most residential lots are less than 1 acre which reduced the urban community's participation in the project's affairs.)(3) The settlement over the waste water

2. C. L. Smith, "The SRP; A case Study in Cultural Adaption to an Urbanizing Community."

3. "Resource Allocating Special Districts in Metropolitan Phoenix," David Edmund Torres, (Master Thesis) Arizona State University, December 1975, p.36.

effluent was, in a sense, an institutional trade off that resulted from various political, social, and water-related issues.

(See also - Section on Special Districts, "The Salt River Project.")

Agricultural Stabilization and Conservation Service

Specific land-use programs designed for resource protection and farm income stabilization are administered by the Agricultural Stabilization and Conservation Service (ASCS). The service provides cost sharing (generally on a 50-50 basis) with individual farmers or ranchers to carry out needed conservation and environmental measures.

In Arizona, ASCS administers the Agricultural Conservation Program, a 40 year-old assistance program that began during the Dust Bowl era of the 1930s. Under this program, farmers can get government payments to cover 50 to 70 percent of the cost of carrying out approved conservation projects on their land. The subsidy programs are usually established based on the policies and recommendations of the Soil Conservation Service as to the type of practice and the amount needed for each conservation project or practice. Projects in Maricopa County authorized under the Agricultural Conservation Program include such things as erosion prevention measures, installation of some phase of an irrigation project, diversion dikes for flood protection, etc.

Opponents of the Conservation Program argue that present-day farmers will invest in good conservation practices without this Federal incentive. Proponents contend that programs in soil and water conservation practices are slow and that the program still has much value in providing incentives to farmers, particularly small or low income operators.

The ASCS budget for the Agricultural Conservation Program in Maricopa County was slightly over \$200,000 in 1975. In past years annual spending for the program was approximately \$275,000. In this state, operations of ASCS are supervised by an Arizona State Committee, while day-to-day operations are carried out by the Maricopa County Committee of the ASCS. The Maricopa County agricultural extension agent serves as an exofficio member of the county committee. ASCS is an agency of the Department of Agriculture and was established (nationally) in 1961 under various departmental reorganization plans (5 U.S.C. 301) and USDA Reorganization Plan 2 of 1953.

Farmers Home Administration

The Farmers Home Administration (FMHA) is an institution of limited water resource authority, in that their general responsibility is to provide loans to rural farmers, or to rural areas and towns of up to 10,000 people to develop community facilities. Major programs are the soil and water conservation loans, and recreation loans for converting farms to outdoor income-producing recreational enterprises that are available through FMHA. Also, provided by FMHA are emergency loans to farmers and ranchers for property damage or production losses as a result of natural disasters. FMHA loans are also available to sponsors of Resource Conservation and Development Projects to assist in their share of project measure costs.

U.S. Forest Service

The forested lands in Arizona are important in terms of water supply. The national forests in the state occupy 11,381,541 acres or approximately 16 percent of the area of the state, receive 25 percent of the total precipitation, and furnish 37 percent of the surface water runoff by volume.(4)

The administration of federally owned lands that make up the national forest and national grasslands system is the program best known to the public. They are managed in accordance with the Multiple Use-Sustained Yield Act of June 1960 (PL 86-517). Forest, range lands, water, and soil resources are managed harmoniously in order to improve recreation, quality of wildlife, timber production, cattle production, and water yields.

Nearly 90 percent of the Salt River Project watershed, which is the main source of surface water for the Phoenix region, is owned by or trust land of the Federal Government, either under the jurisdiction of the Forest Service or the Bureau of Indian Affairs.(5) The Salt River Valley Water Users Association's interest in the watershed area concerns primarily increased water yields. In June 1964, the association signed an agreement with the Forest Service where by both would share equally the cost of rehabilitating water-producing lands. Most of the money (\$7 million over a 10-year-period) will be used for the conversion of chaparral to grassland and removal of other species (including phreatophytes) and timber lands.(6)

4. Mann, "Politics of Water," p. 152.
5. Smith, "The Salt River Project: A Case Study in Cultural Adaption to an Urbanizing Community," p. 60.
6. Cook, "Water Administration in Arizona," p.93.

Of special importance to the Urban Study is the Tonto National Forest which is located to the north and northeast of the Phoenix metropolitan area. The Tonto National Forest occupies 1,035 square miles or 11.2 percent of the total area of Maricopa County. Six of the seven reservoirs providing surface water and extensive recreation facilities to the metropolitan area are located within the boundaries of the Tonto Forest.

The Forest Service periodically designates certain areas of forest land adjacent to urban areas as eligible for exchange. Because of this land exchange practice, the Tonto National Forest in the county has been reduced by about 33 square miles (over 14,000 acres). Presently there are approximately 14 square miles (9,000 acres) located between Carefree and the McDowell Mountain Regional Park that are subject to exchange by the Forest Service.(7)

Soil Conservation Service

The establishing and enabling act of the Soil Conservation Service (SCS) was passed in 1935, and in 1937 the SCS began active cooperation with local soil and water conservation districts set up by the states. SCS is responsible for developing and carrying out a national soil and water conservation program in cooperation with landowners, community planning agencies, regional resource groups and other government agencies. SCS also assists in agricultural pollution control, environmental improvement, and rural community development.

In Arizona SCS is concerned with three different types of geographic districts. The first is the work unit area. The work unit is the basic line office of the SCS. It is responsible for direct technical assistance to one or more Soil Conservation Districts. Its boundaries are coterminous with the exterior boundaries of all the districts served. The number of Soil Conservation Districts to be served by a work unit is a determination to be made by the State Conservationist of the SCS. Consideration is given to size of the area, assessability from various centers of population and activity, workload expected in the unit, transportation systems for the area served, the amount of personnel available to provide assistance, and recommendations of SCS supervisors.

The second type of areas of concern to SCS, are watersheds on which applications for assistance under Public Law 566 have been submitted. Political and social boundaries can, and often do, bisect watersheds.

7. "A Report Upon the Future General Land Use for Maricopa County," County Planning Department (Feb. 1975), p. 17.

The Watershed Protection Flood Prevention Act, PL 566, authorizes the Secretary of Agriculture to give technical, financial, and credit assistance to local organizations in planning and carrying out projects in watersheds of less than 250,000 acres.

The third geographic areas of concern to SCS are Resource Conservation and Development (RC&D) Projects. Under the authority of the Food and Agriculture Act of 1962, PL 87-703, the USDA gives technical and financial assistance to local groups in the conservation and development of natural resources of their area. The SCS is responsible for the administration of USDA activities relating to RC & D Projects. SCS also helps those groups sponsoring RC & D Projects seek funds and services from other Federal, state, and local sources.

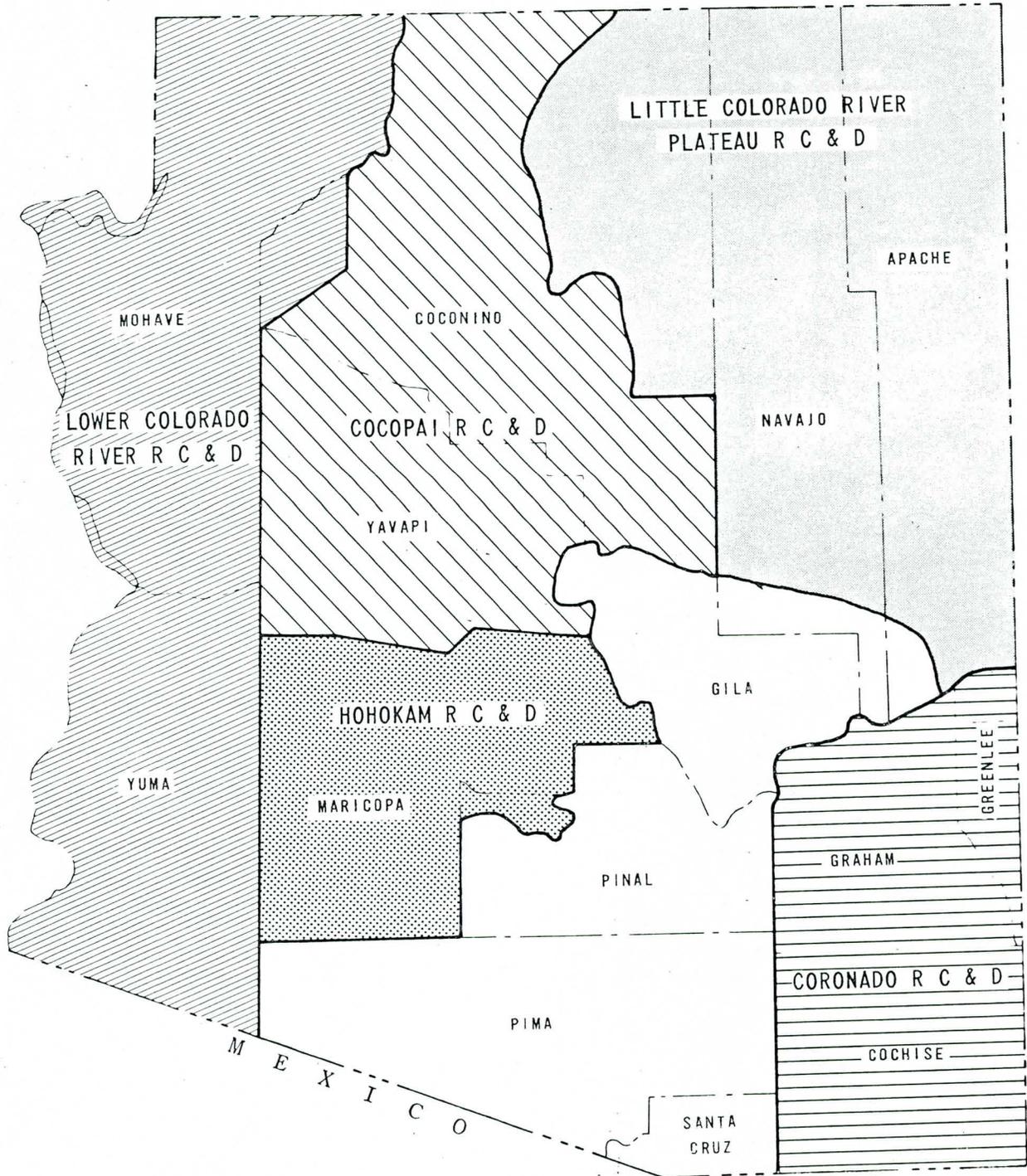
The area or boundary of an RC & D project is determined by local needs and desires, limited only by the area in which local initiative and leadership can be effective. Also, the areas are limited in size to those for which the necessary surveys and investigations needed in planning can be carried out within reasonable time. The areas in Arizona are defined as combinations of Soil Conservation Districts.

The Hohokam RC & D Project (see Figure II-1 for location of project) and its measures of importance to this study are briefly described below. It should be reemphasized that RC & D projects are local programs sponsored by conservation districts, county governments, municipalities, state agencies, comprehensive planning agencies and local nonprofit organizations. These projects, however, receive both technical and financial assistance from the Federal Government.

Hohokam Resource Conservation and Development Project

The Hohokam RC & D Project includes all of Maricopa County and 282,332 acres in Pinal County. The project is sponsored by six natural resource conservation districts (NRCD), nine cities and towns, four irrigation or water construction districts, two Indian reservations, and an area development association.

The project is currently considering a resolution that would expand the boundaries of the Hohokam RC & D Project to include all of the Tonto NRCD. Several irrigation districts in the Queen Creek area near Chandler have also requested they be included in the RC & D project area. If approved, the project area would then encompass all of Gila and Pinal Counties, plus the present area of Maricopa County.



LEGEND

- | | |
|-----------------|---------|
| STATE BOUNDRY | ----- |
| COUNTY BOUNDRY | ----- |
| R C & D BOUNDRY | ----- |
| COUNTY NAME | PIMA |
| R C & D NAME | COCOPAI |

ARIZONA RESOURCE CONSERVATION
AND DEVELOPMENT AREAS

Figure II-1

Planning assistance is provided to the Hohokam RC & D Project by planners and other technical personnel of the Soil Conservation Service. Because of the limited planning time available to SCS, all RC & D projects are required to list their high priority measures, four of which are then selected from the state list for immediate planning.

Proposed measures may be initiated by any agency, organization, or individual but must meet these requirements for (Federal) technical and financial assistance: a) have community benefits; b) have a sponsor with legal authority to implement the measure; and c) develop an RC & D "Measure Plan" which consists of an area description, objectives, alternatives, economic analysis, and operation and maintenance items as may be required.

The long-standing alliance between SCS and the local members of the Hohokam project has been criticized because of the dominant influence of the Federal agency in the development of small watershed project.(8)

The functional power of the Hohokam RC & D Project is in the services it provides in these aspects:

- Serves as a sounding board for the development of projects in a wide region of central Arizona.
- Oversees the planning necessary to develop "measure plans" which are necessary prior to adoption of a project by SCS or other agencies.
- Establishes project priorities based on area needs, a necessity for receiving Federal project assistance.
- Serves as an established public involvement network for Federally assisted programs.

One source of financial assistance for local sponsoring agencies to help meet their share of project costs is through Farmers Home Administration Loans. These FMHA loans may not exceed \$250,000.

8. Robert J. Morgan, "The State and Watershed Development State Government, "XXIX (Jan. 1956), p. 13.

The following listing summarizes measures of relevance to the Urban Study that have been adopted by the Hohokam RC & D Project:

A. Priority Measures

1. Beardsley Canal Lining Project
2. Lawsuit Flood Control Project
3. SRP Western Canal Lining Project
4. Tempe Kiwanis Park Water-Based Recreation Facility
5. Granite Reef Flood Control Project
6. Rio Salado Tempe ASU Water-Based Recreation Development (New Measure Proposal)
7. Alta Vista Flood Control Project - widening and deepening an existing Salt River Valley Water Users Association's waste ditch in southwest Phoenix to dispose of floodwaters that collect east of 43rd Avenue.

B. Flood Prevention Measures

1. New River and Phoenix City Stream Flood Control Project (Design and Construction Stage)
Estimated Cost: \$283,830,000 (1975)
Purpose: To provide the Phoenix metropolitan area with flood protection.
Sponsors/Assistance: Flood Control District of Maricopa County (FCDMC), Corps of Engineers (COE).
2. Lower Queen Creek Watershed Project (Planning Stage)
Estimated Cost: \$3,150,000
Purpose: To construct a floodway that will protect the Central Arizona Project (CAP) Canal and farmlands below it.
Sponsor: Bureau of Reclamation.
3. Buckhorn-Mesa Flood Control Project: (Spook Hill Phase in Operation Stage. Remainder in planning Stage.)
Estimated Cost: \$7,427,000
Purpose: To protect urban areas of Apache Junction and the CAP Canal from flood damage.
Sponsors/Assistance: East Maricopa NRCD, town of Guadalupe, SCS.
4. Guadalupe Development (Structural measures completed June 1975)
Estimated Cost: flood control only \$373,000
Purpose: To provide flood control facilities for the town of Guadalupe. The plans also call for economic development, community improvement, recreational facilities, and other items.

Sponsors/Assistance: East Maricopa NRCD, town of Guadalupe, SCS.

5. Buckeye Flood Control Project (Structural measures complete)
Estimated Cost: \$7 million
Purpose: To protect Interstate 10, cropland, and the town of Buckeye from flood damage.
Sponsors/Assistance: Buckeye-Roosevelt NRCD, town of Buckeye FCDMC, SCS.
 6. Roosevelt Water Conservation District Floodway (First Phase from Gila River to Highway 87 - Survey and Design Stage; Remainder of the Project - Planning Stage)
Estimated Cost: Approximately \$28 million
 7. Gila Floodway (Feasibility Stage)
Estimated Cost: Approximate \$13 million
Purpose: To conduct flood waters from the Tempe-Mesa-Chandler-Gilbert area to the Gila River.
Sponsors/Assistance: FCDMC, Salt River Project, Hohokam RCD, Mesa, Tempe, Gilbert and Chandler.
 8. Grand Canal Flood Relief
Estimated Cost: \$300,000
Purpose: To widen and line the canal for flood control benefits.
Sponsors: Salt River Valley Water Users Association, Agua Fria-New River NRCD, MCFCD, Phoenix and Glendale.
- C. Public Water-Based Fish, Wildlife and Recreation Development
1. Alvord Park Water-Based Recreational Development (Construction Stage)
Estimated Cost: \$938,000
Purpose: Develop water-based recreational facility for southwest Phoenix
Sponsors: Heritage Conservation and Recreation Service and Phoenix, matched and donated labor from the local Operating Engineers Union.

DEPARTMENT OF THE ARMY

U.S. Army Corps of Engineers

The Corps of Engineers' responsibilities for civil works began immediately after the conclusion of the Revolutionary War, and since 1824 it has been the principal developer of the United States water resources. The Corps administers the following Federal programs which are pertinent to the Phoenix Urban Study:

1. Flood Plain Management Services
Authorization: Section 206, of the Flood Control Act, 1060, as amended, Public Law 86645; 33 U.S.C. 709a.
Objective: To promote appropriate recognition of flood hazards in land and water use planning and development through the provision of needed information, technical assistance, and guidance.
2. Flood Control Works and Federally Authorized Coastal Protection Works, Rehabilitation (Public Law 99 Program).
Authorization: Public Law 84-99, Flood Control Act of 1941; Public Law 77-228; as amended by Public Law 87-874; 33 U.S.C. 701n.
Objective: To assist in the repair and restoration of flood control works damaged by flood, or federally authorized hurricane-flood and shore protection works damaged by extraordinary wind, wave, or water action.
3. Floodfighting and Rescue Operation, and Emergency Protection of Coastal Protective Works Federally Authorized (Public Law 99 Program)
Authorization: Flood Control Act of 1941; Public Law 77-228, as amended by Public Law 84-99, and Public Law 87-874; U.S.C.
Objective: To provide emergency assistance as required to supplement local efforts and capabilities in time of flood or coastal storm.
4. Protection of Essential Highways, Highway Bridge Approaches, and Public Works (Emergency Bank Protection)
Authorization: Section 14 of 1946 Flood Control Act; Public Law 79-526; 33 U.S.C. 701s, as amended by Public Law 93-251.
Objective: To provide protection for highways, highway bridges, and essential public works endangered by flood-caused erosion.
5. Control Projects (Small Flood Control Project)

Authorization: Section 205, 2948 Flood Control Act; Public Law 80-858 as amended; 33 U.S.C. 701s; as amended by Public Law 93-251.

Objective: To reduce flood damages through projects not specifically authorized by Congress.

Types of Assistance: Provision of Specialized Services.

6. Snagging and Clearing for Flood Control

Authorization: Section 2 of the 1937 Flood Control Act, as amended; Public Law 79-14, 33 U.S.C. 701g, as amended by Public Law 93-251.

Objective: To reduce flood damages.

Types of Assistance: Provision of Specialized Services.

The Corps of Engineer's involvement in the Phoenix Urban Study Program began in 1973, in compliance with a resolution adopted by the Committee on Public Works of the United States Senate which states:

"That the Board of Engineers, created under the provisions of Section 3 of the River and Harbor Act approved June 13, 1902, be, and is hereby required to review with the Chief of Engineers pertinent reports pertaining to Maricopa County, Arizona, with a view to determining whether any modifications of the recommendations contained therein are advisable at the present time, with particular reference to providing a plan for the control, development, utilization, and conservation of water and related land resources of the Phoenix Metropolitan region, with due consideration for metropolitan planning activities in the area. Such study to include appropriate consideration of the needs for protection against floods, storm drainage improvement, wise use of flood plain lands, general recreation facilities, regional water supply, waste water management facilities, enhancement and conservation of fish and wildlife, and other allied measures for environmental enhancement and economic and human resources development to be harmonious components of comprehensive development plans for the metropolitan Phoenix region."

Under provisions of Section 404 of the Water Pollution Control Act amendments of 1972 (P.L. 92-500), the Corps of Engineers was delegated the authority to regulate the discharge of dredge or fill material into the waters of the United States. When applications are made for 404 permits, Corps personnel investigate the sites in question and record impacts of the proposed work on the human environment. This information is then used in making the final decision on each permit application.

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) was created in 1970 by the Reorganization Plan 4. The functions of NOAA include reporting the weather for the United States and its possessions and providing forecasts to the general public. Special services in support of marine activities, agriculture, forestry, and urban air quality are also conducted by NOAA. Management of ocean and inland water living resources is included in the functions of the NOAA.

DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT

Federal Insurance Administration

The Federal Insurance Administration (FIA) administers three property insurance programs mandated by Congress. These programs are: Flood Insurance, Riot Reinsurance, and Crime Insurance.

The National Flood Insurance Program provides federally subsidized flood insurance to property owners in flood or flood related prone areas. To be available for flood insurance, communities must adopt and administer flood plain management regulations. Once a community qualifies for the program, flood insurance policies can be obtained from any licensed property insurance agent.

The Federal Disaster Protection Act of 1973 required that Federal financial assistance for construction or acquisition in areas which are flood prone be protected by flood insurance. One year after identification by FIA, flood prone communities must adopt a flood plain management regulation or they will be denied Federal related assistance for projects within identified flood hazard areas.

DEPARTMENT OF INTERIOR

Bureau of Indian Affairs

The Bureau of Indian Affairs (BIA) is essentially a service agency for tribal groups or Indian Reservations. The chief function of the Bureau is to hold the Indians land in trust. Activities of the BIA include watershed management, construction of water works, and the distribution of irrigation water.

There are five reservations which are either wholly or partially located in Maricopa County, entailing approximately 4-1/2 percent of the land area. The reservations are: Salt River, Fort McDowell and Gila River Indian Communities and the Papago Indian Reservation and Associated Gila Bend Indian Reservation. Development upon Indian reservation land has been hindered by the lack of sufficient quantities of water. Satisfactory settlement to Indian claims to area groundwater and CAP allocations could have a great impact on water resources in the study area.

U.S. Geological Survey

The U.S. Geological Survey (USGS) was created as an agency within the Department of Interior by an act of Congress in 1879. The USGS is a research fact finding agency with four divisions: topographic, geologic, water resources, and conservation.

The water resource division is responsible for: determining the source, quantity, quality, distribution, movement, and availability of both surface and subsurface waters, interpretive studies of areas with existing or potential water problems, and a continuing inventory of the nation's water resources. The data are shared with state and local agencies responsible for planning and financing water-resource investigation.

For Arizona, data available from USGS include: streamflow records, information on surface water resources, flood information, flood plain maps, and ground-water data on most commercial and private wells.

Bureau of Land Management

The Bureau of Land Management (BLM) was formed in 1946 when the general land office and grazing services were combined under the auspices of the Department of Interior. The BLM is the nation's primary Federal land agency and though originally concerned with grazing and minerals on the lands held in trust, is now a "multiple-use" manager of these lands. As a multiple-use manager, the BLM is committed to the best use of lands for the nation's growth and environment. The management duties include: watershed protection, enhancement of water quality, and environmental review and analysis.

Long range objectives of the watershed program are to stabilize, develop, and improve watershed conditions to meet specific needs. These needs include water quality and quantity, reduction of flood damage, and the reduction of sediment. The objective of the recreation program is to provide recreation opportunities on BLM lands for

the benefit of residents and visitors. Water protection is inherently involved in this program. Other Federal, state, and local agencies cooperate with the BLM in programs involving management and development of the state's recreation and wildlife resources.(9)

A state office of the BLM is located in Phoenix with two district offices in the study area. A state advisory board exists and its members are appointed by the State Director upon the Governor's recommendation. This board advises the State Director on land and resource management in the state.

Heritage Conservation and Recreation Service (Bureau of Outdoor Recreation)

The Bureau of Outdoor Recreation (BOR) was created within the Department of Interior on April 2, 1962. The BOR was responsible for the preparation of a nationwide outdoor recreation plan and establishes policies relating to recreation, wildlife, and water resource projects. In 1978, the office became known as the Heritage Conservation and Recreation Service (HCRS).

The Administration of the Land and Water Conservation Act of 1965 was delegated by the Secretary of Interior to the BOR. This program provides grants to states and their political subdivisions for the purposes of planning acquisition and facility development. These grants can be used for the purchase of Federal lands and water areas for recreational purposes.

As the result of recent administration directives, the functions of the Heritage Conservation and Recreation Service have been transferred to the National Park Service.

Bureau of Reclamation

The Bureau of Reclamation was established as a separate entity within the government in 1923, having previously been a part of the U. S. Geological Survey. The Bureau is responsible for water use and conservation in the 17 contiguous western states and Hawaii. The Bureau cooperates with other Federal, state, and local agencies in facility projects such as: dams, reservoirs, and distribution systems. These projects are conducted under the "multiple-purpose" concept for industrial water supply, irrigation, and flood control. In the metropolitan area of Phoenix, the Central Arizona Project (CAP) is being constructed under the auspices of the Bureau.

The original purpose of CAP was to provide water to rescue the agricultural lands which were diminishing as the result of a lack of water. The

9. BLM Facts, "Arizona National Resource Lands Diggers," 1976, p. 25 IBID p. 59.

emphasis has changed to assure a sufficient water supply for a rapidly urbanizing area. To provide the water, CAP will divert water from the Colorado River via an aqueduct from Lake Havasu to the Phoenix metropolitan area. This aqueduct (Granite Reef) is 190 miles in length .(10)

At present there are three litigations pending which affect the project. The first suit, which is now in the Federal District Court, is seeking stopping of construction of river siphons on the Agua Fria, New, and Salt Rivers. An injunction has not been issued and the suit is still in hearings.(11) Two other suits have been brought by Indian Communities in the area against CAP, but pertain to water allocations rather than construction of the project.(12) The Salt River Pima Indian Community have brought a suit against the Secretary of Interior to increase their allocations of water for irrigation. The other suit concerning water allocations has been brought by the Gila River Indian Community against the Secretary of Interior, Arizona Water Commission and the Central Arizona Water Conservation District. This suit goes beyond allocation of CAP water, and deals with historic rights of water by the Indians. The last two suits are recent and, as yet, hearings have not started in the Federal District Courts.

U.S. Fish and Wildlife Service

In 1940, the Bureau of Fishes and the Bureau of Biological Survey were consolidated forming the U.S. Fish and Wildlife Service (FWS). The service provides for resource management of the land and water environment of the nation, also conducting studies involving river basins and wilderness areas. In addition, FWS, through provisions of the Fish and Wildlife Coordination Act and the Endangered Species Act, reviews the environmental impacts of water resource plans and recommends appropriate loss prevention, compensation, mitigation, and enhancement measures.

Federal Highway Administration

The Federal Highway Administration is in charge of the total operation and environment of the nation's highway system. Financial assistance is provided by the administration for highway construction. The administration preserves areas of natural beauty, and recreation lands along the highways. During the construction of any highway, an Environment Impact Statement (EIS) must be completed.

10. Conversation with Mr. Farland, Bureau of Reclamation Information Officer, February 7, 1977.

11. IBID

12. IBID

NUCLEAR REGULATORY COMMISSION

The Nuclear Regulatory Commission (NRC) was established as an independent regulatory agency under the Energy Reorganization Act of 1974. All powers and regulatory functions were transferred from the Atomic Energy Commission to the NRC by this act. The purpose of this commission is to assure that the civilian uses of nuclear materials and facilities are conducted in a manner not to endanger the citizens or the environment of the nation.

ENVIRONMENTAL PROTECTION AGENCY

In 1970, the creation of the U.S. Environmental Protection Agency (EPA) brought together the major Federal pollution control programs previously existing in four separate agencies and one interagency council. One of the agencies consolidated was the Federal Water Quality Administration (FWQA), formerly in the Department of the Interior. EPA has the responsibility for the administration of the Federal Water Pollution Control Act and under this authority cooperates with Federal and state agencies and with municipalities and industries in developing comprehensive programs to improve the quality of surface and groundwater. Other EPA activities include: 1) administration of Federal grants to state and interstate water quality control and pollution agencies, 2) grants to municipalities for water quality planning and for waste treatment works construction, 3) grants for research, development, and water pollution control programs, 4) development and application of water quality control standards for interstate streams, 5) interstate pollution surveillance, 6) training of pollution control personnel and technical assistance to states and localities, 7) establishment of field and research laboratories to develop technicians and to train personnel in water quality control, 8) dissemination of public information on water quality and pollution control, 9) establishment of enforcement programs for implementation of the Federal Water Pollution Control Act, 10) control of pollution from Federal installation, and 11) control of oil pollution in navigable waters.

In addition to assuming the responsibilities of the FWQA, the new Environmental Protection Agency also acquired the following programs and authorities: 1) the National Air Pollution Control Administration, formerly in the Department of Health, Education, and Welfare (HEW), 2) parts of the Environmental Control Administration (Bureaus of Solid Waste Management, Water Hygiene and a portion of the Bureau of Radiological Health), also from HEW, 3) the pesticides research and standard-setting program of the Food and Drug Administration, 4) pesticides registration authority of the Department of Agriculture, 5) the authority to perform general ecological research, from the Council of Environmental Quality, 6) certain pesticide research authorities of the Department of Interior, 7) the environmental

radiation protection standard-setting functions of the Atomic Energy Commission, and 8) the functions of the Federal Radiation Council. The agency is also active in enforcing the River and Harbor Act of 1899.

EPA conducts several assistance programs. They include grants for waste water treatment works, grants for program development, technical assistance, and manpower development. The construction grants program is by far the largest, with \$2 billion in Federal funds awarded nationwide in fiscal year 1973, \$3 billion in 1974, and \$4 billion in 1975. Presently, the Federal share is 75 percent of the project's costs. A variety of projects are eligible for funding including treatment plants and interceptor sewers. EPA also provides grants to help state and interstate agencies in control of water pollution in the water quality planning and standard setting, surveillance, enforcement, issuance of permits, executive management, and administration of the construction grants program.

EPA assists state and local government and industries in complex pollution problems by providing services ranging from technical advice and consultation to extensive long-term field and laboratory studies.

CHAPTER III

STATE

The state agencies examined in this section have been granted various forms of authority, power and/or duties which influence the water resources by state statutes. These agencies vary in size and impact and in many cases are interconnected by legislative or regulatory powers or informal working arrangements. This section portrays an overview of each agency identified as having a role, either direct or indirect, in water resource planning.

Overlapping authority existed among several of the identified agencies. An example is the State Land Department and the Arizona Water Commission. Andrew Bettwy, Director of the State Land Department before the House Committee on Natural Resources and Energy stated there existed a conflict between the two agencies over the issue of water rights.(13) The Land Department issued water rights to groundwater and the Commission determined adequacy of water supply for new subdivision developments. Other agencies which have similar duties are: the Fish and Game Department, the Water Commission, the Water Quality Control Council, and the Department of Health Services.

The restriction of any conflicting roles ultimately relies on the state legislature, although many are resolved by coordination between the conflicting agencies. Bills have been introduced into the legislature to create a Department of Natural Resources, thus, consolidating water resources authority. These bills, however, are apparently receiving very limited support.

Governor's Commission on Arizona Environment

The Governor's Commission on Arizona Environment (GCAE) was established in 1965 by the Governor's Executive Order 75-2, as an outgrowth of the White House Conference on Natural Beauty. The Commission is charged with evaluating Arizona's environmental problems and making "recommendations" to the Governor that, as nearly as possible, represent a cross section of Arizona thought. The Commission has no compulsory powers under state statutory law. Outputs required of the Commission are that data and conclusions be transmitted to the Governor from time to time, and that an annual report be submitted to the Governor.

13. Andrew Bettwy, State Land Director, House Standing Committee on Natural Resources and Energy, January 31, 1977.

The Commission's activities are conducted by six standing committees, subcommittees, and ad hoc subcommittees for special issues. Those standing committees studying various types of water resource topics, and therefore of relevance to this study, are the Water Resources and Health-Environmental Hazards Committees. Also, of importance is the Legislative Committee which works with the Arizona Legislature to secure passage of desirable bills concerning the state's environment. Commission members are appointed by the Governor. The Urban Study Manager is a member of the GCAE.

Arizona Atomic Energy Commission

(A.R.S. 30-654) The Arizona Atomic Energy Commission is required to provide standards for the storage of radioactive material. The Commission provides standards for the disposal of such material into the air, water, sewers, and soil of the state. These standards are to be in accordance with Federal regulations.

Arizona Power Authority

(A.R.S. 30-104) The Arizona Power Authority has the responsibility to take and receive electric power developed from the waters of the main stream of the Colorado River. The agency may acquire and construct transmission systems and facilities to generate, produce and sell at wholesale, as well as deliver power to purchasers. The power authority may also sell and deliver electric energy to consumers located adjacent to its transmission lines who may be without other means of adequate electric supply. To carry out its functions the Power Authority may exercise the power of eminent domain to condemn property for public use. This agency has limited water resource authority with respect to the scope of this study, but is required to cooperate with the State Land Department and the Arizona Water Commission in the planning of hydroelectric power generation aspects of the state's water resources.

Water Quality Control Council

The Water Quality Control Council is a 13 member body authorized by state statute (ARS 36-1853) to administer and enforce water quality standards and adopt a program of water pollution control for water of the state. The Council was appointed by the Governor in 1973, with the Department of Health Services and the Water Commission directed to act as staff for the Council.

Seven Council members are appointed by the Governor and at least one appointee must be from each of the state's four congressional districts. Six are statutory members who may be represented by members of the administrative staffs of their agencies. These statutory members are as follows:

Arizona Department of Health Services Director
Arizona Game and Fish Commission Member
Oil and Gas Conservation Commission Member
Arizona State Land Commissioner
Arizona Water Commission Member
University of Arizona, Agricultural College Dean

Arizona statutes that discuss the fixing of water quality standards by the Council recognized that no single standard of quality is applicable to all streams or to different segments of the same waters, or to different discharges into waters. In fixing the water quality standards, the Council had the mandate to consider the following:

1. The criteria established by the Federal Water Pollution Control Act, as amended, including the Water Quality Act of 1965.
2. The protection of the public health.
3. The size, depth, surface area covered, volume, direction, and rate of flow, stream gradient, and temperature of water.
4. The character and uses of the land area bordering such waters.
5. The uses which have been made, are being made, or may be made of such water for every public or private purpose.
6. The disposal of sewage and all wastes.

7. The extent of pollution resulting from natural causes, including mineral and chemical characteristics.
8. The extent to which suspended solids, colloids, or a combination of solids with other suspended substances may be permitted.
9. The extent to which bacteria and other biological organisms may be permitted.
10. The amount of dissolved oxygen that is to be present and the extent of the oxygen demanding substances which may be permitted.
11. The extent to which toxic substances, chemicals, or deleterious conditions may be permitted.
12. The need for standards for effluents from disposal systems.
13. Whether a standard that is to be applicable to discharges into flowing water or underground water basins should be written in such a way that the degree of pollution tolerated or treatment required will be dependent upon the volume of flow of the receiving water and the extent to which the discharge is diluted therein or the volume of water in such underground water basin.
14. The degree of treatment that will be required for each of the various types of discharges. In formulating any applicable standard pertaining to waste discharge, the Council shall be guided by the degree of treatment or control that is required for the water quality enhancement that is necessary for the present and future beneficial uses of such water.
15. The degree to which any particula waste is amenable to treatment and the cost of such treatment, and shall take into consideration the benefit to the state or the advantage to its people by the prevention, abatement, and control of water pollution as compared to the resultant financial burden on the water user or the unreasonable taking of his property.
16. In formulating any applicable standard pertaining to agricultural irrigation and drainage waters, the Council shall be guided by the principle that such waters are put to beneficial

use within the state for the irrigation of lands or become return flows to the waters of the state and subsequently reused, and that such standard shall not diminish the water available for such uses nor deprive the state of such water.

- B. In administering this article, including the adoption, promulgation, amendment, and modification of standards of quality, the Council shall:
1. Not require any present or future appropriator or user of water to divert, exchange, cease exchanging, store, cease storing, or release any water for the purpose of controlling pollution in the waters of the state.
 2. Exclude from water quality standards wholly private waters closed to all public uses and not discharging into or polluting any other waters of the state.

Office of Economic Planning and Development

The Office of Economic Planning and Development (OEPAD) is within the Governor's office. The executive Director (Larry Landry) is appointed by and serves at the pleasure of the Governor. The Director serves by executive appointment on the following groups:

Colorado Plateau Environmental Advisory Council

Human Resources Advisory County

State Agency Environmental Advisory Council (Chairman)

Central Arizona Project Environmental Advisory Group

State Programming & Coordinating Committee for Federal Programs

Arizona Resources Information System

Governor's Citizen Energy Task Force

State Advisory Council for Vocational Education

OEPAD undertakes programs that are either planning oriented, or programs conducted by the Development Division. These development programs are generally more operational in that they provide services such as industrial and tourism development, advertising and publications. None of OEPAD's programs involve regulation. The planning division, whose programs are of main concern to the Urban Study, is responsible for "economic planning, economic research, and scientific and technological planning" (ARS 41-501).

Some of the key areas where OEPAD provides state level administering responsibility include, but are not limited to the following:

Comprehensive Planning Assistance Program - OEPAD's Planning Division has a number of administration responsibilities of the Comprehensive Planning Assistance Program funded by the U.S. Department of Housing and Urban Development under provisions of Section 701 of the Housing Act. Designation of responsibility for the program was made by the Governor by letter in 1969. This program provides financial assistance to cities, towns, counties, regional councils of government, and Indian tribes for their individual planning needs. In fiscal year 1972-73 the total Federal grant devoted to these activities was approximately \$447,500; in fiscal year 1973-74 funds were \$395,000; in fiscal year 1974-75 funds were \$830,900; in fiscal year 1975-76 funds were \$559,307; in fiscal year 1977-78 funds were \$477,000; and in fiscal year 1978-79 funds were \$453,000.

Areawide Water and Sewer Planning - This project was initiated in 1969 to provide water and sewer facilities planning to Arizona's counties and small communities through nominal grant assistance from the Farmers Home Administration.

State Clearinghouse for Federal Programs - The Planning Division operates the State Clearinghouse, which provides for the review and coordination of federally and conducted activities under the provisions of Office of Management and Budget Circular A-95. Designation of responsibility for this function was made by the Governor by letter on September 2, 1969. This responsibility was reaffirmed and expanded by Executive Order 71-1, issued by the Governor on September 8, 1971. The executive order created the Arizona State Programming and Coordinating Committee for Federal Programs. This Committee, composed of the chief administrators of major state agencies, forms the basic review body for Clearinghouse items. It also is charged with advising the Governor on other matters related to Federal programs. The order mandates that the Office of Economic Planning and Development provide a senior official to be the executive secretary of the Committee and the necessary administrative staff and planning support for the Committee. Executive Order 71-1 was amended to reflect changes in state agencies and replaced by Executive Order 73-2, issued by the Governor on March 15, 1973.

The programs of OEPAD are related to many other agencies because, as part of the Governor's office, OEPAD has an overview function. Overlapping statutory responsibilities further complicate OEPAD's coordination processes, but recent government reorganization programs may ease this overlap. Uncertainty among other agencies concerning the exact role being played by OEPAD also exists as the result of vagueness in the statutes of OEPAD.

In response to the questionnaire for the Arizona Environmental Planning Commission, (14) OEPAD stated that:

"A basic need exists for the state level coordination of programs related to the planning and management of natural resources. Several major agencies have responsibilities for different aspects of resource planning and management. In some respects, these agencies pursue their activities without benefit of adequate coordination. Statutory responsibilities sometimes overlap and duplicate one another. Gaps may exist where no one has specific responsibility. A portion of the solution to this problem could be the creation of a Department of Natural Resources, which would combine the several existing natural resource agencies. This approach has already been taken in other functional areas of State government."

"A second major need is to provide for the coordination of the natural resource functions with other functions, such as transportation, health, etc. This requires an overall state planning and coordination capability. This activity should be placed with the Governor, who should, in effect, be the state planning officer. The organizational structure should be consistent with the capability already existing in his office."
(15)

To date OEPAD's suggestion for establishment of a Department of Natural Resources has not been acted upon.

Arizona Game and Fish Commission and Department

The Department functions under a five man Commission, whose members are appointed for a five year term on a staggered basis by the Governor with the advice and consent of the Senate. The Arizona Game and Fish Commission is required to establish policies and long-range programs for the management, preservation and harvest of wildlife. The Commission sets hunting and fishing seasons and bag limits and issues licenses.

14. The Arizona Environmental Planning Commission was created for the purpose of preparing state legislation to "Establish a comprehensive and coordinated state land planning program." The provisions of the Environmental Planning Act automatically expired June 30, 1975 (31st Arizona Legislature, Session Laws 1973, Chapter 114).

15. Arizona Environmental Planning Commission, questionnaire to state and Federal land-use agencies (1974), unpublished.

The Commission is required to coordinate its activities and plans with the Water Commission when they relate to water use or development, including the abatement of water pollution that may be injurious to wildlife. In this respect, the Commission may sue in the name of the state to prevent pollution of streams. The Commission, with the Governor's approval, has the power to acquire or condemn lands for use as fish hatcheries, game farms, firing ranges, reservoir sites, and rights-of-way to fishing waters.

In addition to the powers conferred upon the Game and Fish Department by state statutes (ARS 17-101 et seq.), the following Federal acts involve the Department in wildlife projects:

1. Federal Aid in Wildlife Restoration Act of 1937 (Pittman-Robertson) and Federal Aid in Fish Restoration Act of 1950 (Dingell-Johnson). Annually more than 90 percent of the Federal aid money used by the Department is received from these two grant-in-civil programs administered by the U.S. Department of the Interior. These funds are utilized by the Department in fish and wildlife research, management, land and water acquisition and development.
2. Fish and Wildlife Coordination Act of 1934, as amended, PL 73-121.
3. Cooperative Agreement, Arizona Game and Fish Commission and Bureau of Land Management, March 27, 1965.
4. Federal Water Project Recreation Act of 1965, PL 89-72.
5. Memorandum of Understanding - Arizona Game and Fish Commission and U.S. Forest Service, No. 15, 1973.

One of the pertinent programs administered by the Commission that is outlined by state law is the Water Conservation and Recreation Development Fund. The statutes state that "the monies of such fund may be used...to pay for recreation benefits...for purchase of engineering services, kind, rights-of-way, water rights or for construction...in such projects or to provide recreational facilities appurtenant thereto."(16)

16. ARS 17-267.

Four Corners Regional Commission

The Four Corners Regional Commission exists for the benefit of Arizona, Colorado, New Mexico, and Utah. The Commission is a Federal-State partnership which serves as a flexible source of Federal funds for rural areas. Title V of the Public Works and Economic Development Act of 1965 authorizes the Four Corners Commission to engage in technical assistance programs, demonstration projects, training projects, supplemental grants, excess property placement, and emergency job programs. Metropolitan areas in the four member states are not eligible for assistance because the major thrust of Commission activities is to reverse rural unemployment and economic decline.

The Supplemental Grant Program of the Commission exists in order to enable states and other entities within the region to take maximum advantage of Federal grant-in-aid programs for which they are eligible, but, because of their economic situation, cannot supply the matching share.

In Arizona, the Four Corners Commission's assistance with water and sewer projects has helped many towns comply with the EPA guidelines.

Each Governor appoints an alternate to the Commission, who meets regularly with the Federal cochairman to present projects for review.

Arizona Water Commission / Department of Water Resources

In 1971 the State Legislature established the Arizona Water Commission (AWC) in an effort to centralize state water responsibilities and abolished the Interstate Stream Commission. All the membership, powers, and duties of the Interstate Stream Commission were transferred to the AWC. The Arizona Resources Board had been inactive for almost 50 years. Its statutory authority for intrastate water planning was abolished and all its duties and powers were transferred to the AWC. Along with this reorganization, the State Legislature transferred the duties of supervision of dam safety from the Arizona Highway Department to the Water Commission.

The AWC was authorized to plan for development and utilization of interstate and intrastate ground and surface waters and to consider aspects of both water quality and quantity. The powers of the Commission were limited to only the quantity of water which is available for use in Arizona, and restricted from impairing existing rights in the state for diversion and use of the Colorado River waters (17)

The AWC was required to coordinate its activities with other state agencies, integrating all programs in water resource planning. These agencies included the Game and Fish Department, State Land Department, Arizona Power Authority, Outdoor Recreation Coordinating Commission, and the State Health Department.

17. ARS 45-512

The Arizona Academy in reviewing the AWC concluded, "the Arizona Water Commission has a broad array of duties and perhaps too little power." (18) These duties as stipulated in state statutes included: formulation of plans for the use of the state's water resources, establishing criteria for designating flood plains, and evaluation of water supplies for subdivision developments not served by municipal water supply. The AWC also was granted the authority to establish water rates and contract for water delivery from the Central Arizona Project (CAP). This power was not limited only to CAP, but included all projects which might be a part of the Arizona Water and Power Plan as well.(19)

The Commission is composed of seven members appointed by the Governor for 6-year terms. The composition of the board must represent at least five separate counties and not more than four members may be of the same political party. Two ex-officio members with no vote on the Commission are the State Land Commissioner and the Chairman of the Power Authority Commission.

In cooperation with the University of Arizona, the AWC undertook development of an Arizona Water Information System. This system computerizes groundwater data, providing information on the availability of water in an area and identifying areas having desired water supply characteristics. (20)

The recommended budget for the AWC for 1977-1978 was \$2,401,700, including all fund sources (general, Federal, and agency) divided between the water resources planning section and the dam supervision section.(21)

Senate Bill 1104 was signed into law in 1973, and Section 45 of this legislation allowed the AWC to provide financial assistance to local government agencies sponsoring Federal flood control projects. AWC reimbursed local agencies up to 50 percent of non-Federal costs associated with flood control. Legislation passed in 1978 also made the AWC the responsible agency for water rights registration in the state, a responsibility which rested formerly with the Arizona State Land Department.

18. Cynthia Clar, "Survey of Growth Management Implementation Mechanisms, Present Policies and Future Choices for the MAG Region," November, 1976, pp.2-18.

19. IBID.

20. Information References: Land and Natural Resources Planning, Department of Revenue, Arizona Resources Information System. Cooperative Publication N.6, 1976, p. 24.1.

21. Executive Budget 1977-78, State of Arizona, pp. 238-239.

The Department of Water Resources was established by the Arizona Legislature on June 11, 1980, and has assumed the responsibilities of the Arizona Water Commission.

The Director of the Department of Water Resources has the ultimate decision-making authority on state water management policies. His authority over water resource development and conservation includes regulation of dam construction, repair, and removal; development of flood control plans; and implementation of groundwater use restrictions.

The Department of Water Resources is responsible for maintaining records of streamflow, groundwater levels, water quality, and other data relating to surface and groundwater. The Director also is responsible for devising a five-step conservation program for each of four Active Management Areas (AMAs) established by the same legislation which created the Department.

The Arizona Water Commission is continued within the Department of Water Resources.

Arizona State Land Department

The Arizona State Land Department (ASLD) was created by the Arizona Legislature in 1915. ASLD is empowered to manage state-owned trust lands and to administer laws relating to waters of the state. These lands are held in trust for over 15 beneficiaries, which include the state schools and hospitals.⁽²²⁾ The state Land Commissioner views that the basic function of the ASLD trust administration "is to produce revenue to support the functions of...beneficiaries."⁽²³⁾ In Maricopa County, the ASLD is trustee over 600,612 acres or about 10 percent of the total land area of the county.⁽²⁴⁾

The functions of ASLD include public land acquisition and disposal, sale of land resources, water administration, land-use planning, coordination of natural resources conservation, and technical assistance

22. Cynthia Clark, "Survey of Growth Management Implementation Mechanisms." p. 2-11.

23. IBID.

24. IBID.

to state agencies and municipal corporations. These functions are divided up into four major offices:

Administrative Services - accounting, data processing, records, and office services.

Contract Audit and Review - case processing, conflict and adjudication functions, appeal bond, support, and regulations review.

Land Use and Planning - resource information data, engineering maps, and appraisals, administration of commercial leases, permits, sales and private and public exchanges.

Natural Resource Conservation - administers state and private forestry, rural fire protection, water rights, flood insurance, and minerals and range habitat program.

The State Land Commissioner, Joe T. Fallini, is the executive officer of the State Land Department. The commissioner is appointed by the Governor with the consent of the Senate for a term of 6 years. Beside the responsibility for the lands of the state, the commissioner as the chief administrator of the department, appropriates state waters, and administers all laws relating to the waters owned by, belonging to, and under control of the State, except those waters under control of the State Water Commission (interstate streams).

Since the formation of the Arizona Water Commission, ASLD's involvement in water resources in the state centered on critical groundwater areas and coordination of the Federal flood plain insurance program.⁽²⁵⁾ ASLD was authorized by law to designate critical ground water areas. Once an area had been designated critical, no person may construct a well within the area without a permit from the department. No permit was issued for the construction of an irrigation well within a critical groundwater area if the area had not been irrigated or cultivated within 5 years of the date when the area was declared critical.

The recommended budget for the department 1977-1978 total program came to \$2,178,000 with 104 full-time employees.⁽²⁶⁾

Arizona Department of Transportation

In 1973, the state Legislature enacted legislation requiring the transition of the Arizona Highway Department and the Arizona State Aeronautics Department into a State Department of Transportation, effective 1 July 1974. This reorganization has resulted in five

25. IBID.

26. Executive Budget 1977-78 State of Arizona, pp. 218-219.

divisions within the department, several of which were existing prior to reorganization. Divisions within ADOT are as follows: 1) an Administrative Services Division, 2) Aeronautics Division, 3) Highway Division, 4) Motor Vehicle Division, and 5) the Transportation Planning Division.

This latter division provides assistance to the Pima and Maricopa Association of Governments, and local government assistance under its transportation planning group. Nine staff members are assigned to provide the Maricopa Association of Governments assistance for the Land Use and Transportation Reevaluation Study.

The environmental planning program within this division identifies and assesses anticipated beneficial or adverse impacts of highway proposals. The department coordinates with all appropriate agencies with regard to the economic, social, and environmental factors of a project.

Arizona Outdoor Recreation Coordinating Commission

The Arizona Outdoor Recreation Coordinating Commission (AORCC) is a seven-member body established by state statute (ARS 41.511.25) to plan, coordinate and administer an outdoor recreation program for the state. The Commission maintains a statewide inventory of outdoor recreation areas and facilities. AORCC coordinates recreational development plans of the state's water resources with the Water Commission.

Federal financial assistance is provided by AORCC through the land and water conservation program for the purposes of planning, acquisition, and development of lands and waters for outdoor recreation. This assistance is to the state and its political subdivisions on a 50-50 matching bases. The State Lake Improvement Program administered by AORCC provides funds for the construction of boating facilities on water and adjacent lands.

The Directors of the Game and Fish Department and the State Parks Board are permanent members of AORCC. The Governor appoints five members to the seven member Commission and of these five, three must be full time park and recreation directors representing different cities, towns, and counties in the state. The members of the commission terms are:

Chairman - Ronald E. Pies
Vice Chairman - Freed Belman
J. Philip Clemons
Robert A. Jantzen
Michael Ramnes
James Ronstadt
James Stalnaker

Arizona State Parks Board

The Arizona State Parks Board is a seven-member body established by state statute (ARS 41.511) to acquire, establish and maintain areas of natural, historic, or scientific interest for the people of the state. The Board has the power of eminent domain for these purposes, but no water, water facilities, or water right of any person can be taken without fair and adequate compensation (ARS 41.511.05).

The State Land Commissioner serves on the Board and the remaining six members are appointed by the Governor. Of these six members, two must represent the livestock industry and one must be engaged in recreational work. The terms of the appointment are for 6 years and the board employs a full-time director (Michael Ramnes).

The appointed members and their term expiration dates are:

Josephine C. Bailey	January 1982
Joe T. Fallini, State Land Commissioner	Statutory
Sam Ramirez	January 1983
Duane Miller	January 1985
Priscilla Robinson	January 1986
Cabot Sedgwick	January 1982
A. C. Williams	January 1984

Arizona Department of Health Services

The Arizona Department of Health Services (ADHS) has been designated by the State Legislature as the state's water pollution control agency. ADHS and the Water Quality Control Council share powers of the Water Pollution Control Act for the purposes of controlling pollution in the state. The Bureau of Water Quality within the ADHS's Division of Environmental Health Services has been delegated the administrative responsibilities of water pollution control.

The Bureau of Water quality reviews all plans for the construction of water and wastewater facilities, develops wastewater management plans, coordinates EPA grants, and monitors all ground and surface waters. It is responsible for the enforcement of regulations of all public and semipublic water systems involved in storage, collection, treatment, or distribution of potable water.

Arizona Corporation Commission

The Arizona Corporation Commission (ACC) is responsible for regulating the public service corporations and has the authority to approve or deny their establishment. The Commission is an elected body of three members serving 6-year terms and has a support staff of 151 employees. There are five divisions within the ACC, which are: incorporating, motor carrier, securities, utilities, and accounting.

The utilities division of ACC regulates and certifies revenue-producing corporations that provide water, sewer, gas, or electric service in the state. The certification process is coordinated with the State Department of Health Services and in Maricopa the County Health Department. Certification will proceed only after compliance has been met with the standards established by the Health Services Department.

Members of the Commission are:

Bud Tims
Jim Weeks
Diane McCarthy

Arizona State Legislature

The Arizona State Legislature is the law-making body for the state composed of the Senate and the House of Representatives. The Legislature is elected by districts. Terms of office are two years.

In addition to making the laws for the state, all state agencies and budgets come under the scrutiny of the Legislature in that the Legislature must approve all the programs and budgets. The Senate also has the authority to act upon the appointments by the Governor to the various boards and commissions.

Prior to a bill reaching the floor of either the House or Senate, the measure is first sent to the appropriate standing committee. Any water legislation, of which there will be several introduced in this session, would normally first go to the Senate's Committee on Natural Resource or the House's Committee on Natural Resources and Energy. These committees, and especially their chairmen, wield a great deal of power. It is in these committees that a measure can die, be held up or sent out to the floor. Once a bill passes on the floor it is sent over to the other house and goes through the same process.

Department of Economic Security

The Department of Economic Security (DES) is the social welfare agency for the state. Major programs of the Department are: employment, job placement and training, vocational rehabilitation, mental retardation, veteran services and aging. The Department also conducts population estimates for the U.S. Bureau of the Census.

A primary function of DES is to gather "people oriented" information, data on manpower, employment, welfare economic, and population. This information is available at the city, county and the state level.

Arizona Resources Information System

The Arizona Resource Information System (ARIS) is within the Department of Revenue. ARIS is a centralized information system to provide land and resource data and technical assistance, and to disseminate this information. The data are provided on a statewide basis in the form of base maps and imagery photos. A notebook has been compiled by ARIS of all state and Federal agencies that have powers, policies, or information regarding land and resource natural resource planning. (27)

The 1977-78 recommended budget for ARIS was \$125,000 with a full-time staff of three employees.

Arizona State University and University of Arizona

These two universities are involved in water resource research, although the University of Arizona (UA) involvement is more intense. The UA has a Water Resource Research Center and Arid Lands Studies, as well as several courses in hydrology and water resource administration. Arizona State University (ASU) does not have any specific studies or center which concentrate on water resources, although courses are available through the Civil Engineering Department. There is an Environmental Studies Center, which is responsible for coordination, development, and presentation of courses and programs in the environmental science.

The Office of Arid Lands Studies serves as a coordinating agency for the other departments and colleges within the UA which are engaged in arid lands research. Although not limited to water research, this agency is involved and works with others on water problems in the arid lands.

27. Program Information, State of Arizona 1977-1978, p. 15.

CHAPTER IV
SPECIAL DISTRICTS

Unlike city, town, and county government which have powers over a broad range of activities, special districts are governments of limited purpose. Most special districts serve a definite geographic area, have an official title, an organizational structure, perpetual existence, and those powers commonly granted to corporate entities. Like other forms of local government, most special districts have a separate legal existence, a high degree of financial and administrative independence, and requirements of public accountability. There are several types of special districts that have as their basic function the development, improvement, or protection of land, such as sewer, agricultural, irrigation (urban and rural), flood control, or soil conservation districts.

To bring into some perspective the control of special districts in the study area, it is interesting to note that in 1974, approximately 62 percent of the electrical energy provided to the metropolitan Phoenix area was allocated, distributed or otherwise controlled by special districts. In that same year, over 90 percent of all the water available in the area was controlled by special districts.(28)

It is relevant to study the authority, as well as the variety of special districts that can be created in Arizona because of the relative ease in implementing special districts. A special district is usually formed to undertake either a single government function or a series of related functions. Although most districts are limited to one service, multipurpose special districts can combine two distinct service functions, or combine functions that are related but have been handled by separate management agencies. (No such multipurpose special districts, however, presently exist in the Urban Study area.)

Historically in the Salt River Valley special districts were formed by landowners to serve the agricultural community. Because the irrigation of farmland in the desert valley required cooperative efforts on the part of landowners, organizations were formed for the purpose of water development and administration. Many of these organizations were formed long before the territorial government exercised any real power. When Arizona became a state (1912), these organizations were able to retain their powers, and state government did not actively enter the field of water administration.

The legislature instead enacted laws which permitted the formation of special districts with many of the characteristics of municipal corporations.(29)

28. Torres, "Resource Allocating Special Districts in Metropolitan Phoenix," p.2.

29. "Water Administration in Arizona: A Problem in Coordination," L. Dean Cook.

Most of the water users' associations, many of the mutual water companies, and other organizations found it to their advantage to form special districts. Residential development has not extensively altered the legal functions of these districts, although some have expanded their services and functions to include urban as well as agricultural areas.(30)

Before discussing the various types of special districts with water resource responsibilities in the study area, a listing of some of the opportunities and constraints of the special district form of government is given below:

Opportunities - Perhaps the primary reason for forming special districts is financial. The district is given authority to tax and borrow money. Revenue bonds are repaid by service users charges which may also divert the need to raise property taxes. Moreover, by drawing the district boundaries to include only the lands benefited by the district's activities, a closer cost-benefit correlation is provided than the general tax system offers.

Special districts are generally easy to form, as state and Federal laws encourage their formation. The formation of a special district may be desired to: 1) avoid partisan politics, 2) to commit an activity to the management of professional specialists such as water management, or 3) to solve a particular problem such as flooding.

Another advantage of special districts is that they cause only minimal disruption within the existing government structures, in that local governments and officials need not be displaced.

Constraints - In contrast, some political analysts contend that special districts may contribute to fragmentation within a metropolitan region; districts may begin to duplicate functions and compete with one another. Many discrete districts may inhibit the development of coordinated planning and comprehensive areawide decision-making. Another disadvantage of the special district is its lack of accountability. Members of the governing board are often appointed, not elected. Representation on the boards may not be proportionate with the communities' population base. That is the one-man, one-vote principle of representation is often by-passed.

Although the County Board of Supervisors has considerable control over the establishments of districts, the state has almost none, and neither county nor state supervises routine operations to any significant extent. However, a degree of state financial control is obtained through the State Board of Certification, which reviews and certifies special district bond issues.(31)

30. Torres, "Resource Allocating Special Districts in Metropolitan Phoenix."

31. ARS 45-2101 et seq.

MULTICOUNTY WATER CONSERVATION DISTRICTS

(ARS 45-2601 et seq.; effective 1971)

Legislation authorizing the formation of multicounty water conservation districts was established for the purpose of contracting for the delivery of Central Arizona Project Waters and for the repayment of these waters. The district satisfies the requirements of Federal reclamation law (43 U.S.C. 1524 (b)(1) of the Central Arizona Project Act) for the creation of a governmental body which can tax district lands to repay reclamation project costs and can appropriate CAP waters in accordance with priorities set by the district and the Secretary of Interior. The district is formed by petition to AWC which must conduct hearings and designate the areas to be included.

A. Central Arizona Water Conservation District (CAWCD)

In July 1971 the counties of Maricopa, Pinal, and Pima took the appropriate steps as described by the Multi-County Water Conservation Districts Act and the CAWCD was created.

The CAWCD is administered by a board of directors, one for each 100,000 people living in the member county (ARS 45-2608). The first board members were appointed by the Governor and the first election was held in November 1972. Elections are held concurrent with the general elections. Board members include: 1 from Pinal, 10 from Maricopa, and 4 from Pima County.

NATURAL RESOURCE CONSERVATION DISTRICTS

These districts are special purpose subdivision of the state government charged with conserving and improving the soil, water, and related natural resources of the state. There are currently 31 natural resource conservation districts (NRCD) in the State, and each is governed by a board of supervisors.

Natural resource conservation districts were formerly known as soil conservation districts. They may be formed by petition of the owners of the land to the State Land Department (ARS 45-2031). If the State Land Commissioner approves, an election is held to determine whether the district shall be created and to elect supervisors.

The district has no compulsory powers. It may conduct surveys and demonstration projects relating to soil conservation, cultivation, and farming practices. It may acquire property and it may enter into cooperative agreements to prevent soil erosion and to promote similar objectives. All participation in the activities of the district is voluntary (ARS 45-2054).

A district is in a position to obtain technical assistance from the Soil Conservation Service and many other agencies. As a legal

subdivision of the state, a district may request assistance from county, state, and Federal agencies to do conservation work in the community which the individual communities may not be able to do by themselves. The SCS assigns technicians to districts which request them in order to assist the districts in carrying out voluntary programs.

Districts annually request state funds to be included in the budget of the State Land Department. If appropriated by the Legislature, funds are allocated to the districts by the State Land Commissioner (maximum \$3,000 per district).(32) Of the 31 NRC Districts in the state, portions of three districts are within the study area. They are the Buckeye-Roosevelt, Agua Fria-New River, and East Maricopa Natural Resource Conservation Districts.

SPECIAL FLOOD CONTROL DISTRICTS

(ARS 45-2351 et seq.)

A special flood control district is a "public political taxing subdivision of the State and a municipal corporation,"(33) a privilege which includes immunity of its property and bonds from taxation.

The County Board of Supervisors have the power to establish special flood control districts. A hearing must be held prior to formation but no election is necessary. The district is governed by a Board of Directors which is the County Board of Supervisors. State statutes provide for the appointment of a chief engineer to administer the district and for creation of a seven member citizens advisory board.

Some of the general duties of the district are as follows:

1. Survey flood control problems and existing facilities, prepare a preliminary plan, and adopt a comprehensive program of flood control.
2. Prepare a 5-year capital improvement program which must be reviewed annually.

Under the law, the district has the power of acquiring, constructing, improving, extending, maintaining, and operating flood control facilities to prevent the loss of life and property due to flooding.

32. "Arizona Land Marks," (Vol. 3, Book 4, 1973), issued by Andrew Bettwy, Commissioner State Land Department.

33. ARS 45-2352.

The district has the power to acquire property by eminent domain, if required, and to obtain rights-of-way for flood control works. To finance these activities, the district may levy taxes for current expenses and, if the district voters approve, issue bonds. Further authority is given to establish and enforce flood channel limits and regulations.

More detailed discussion follows in regard to the administrative, organizational, and financial capabilities of the Flood Control District of Maricopa County.

Flood Control District of Maricopa County

The Flood Control District of Maricopa County (FCDMC) is the first district to have been established under the special flood control districts act.(34) The FCDMC encompasses the entire county, consisting of 9,226 square miles. In, and adjacent to, Maricopa County there are 35 watersheds covering an area totaling 24,787 square miles which generate the floodwaters causing flood damage in Maricopa County.(35)

The District is governed by a board of directors which is the County Board of Supervisors. Provision is also made for the appointment of a chief engineer to administer the District and for the creation of a Citizens Advisory Board (CAB). The CAB consists of seven members, three of whom are residents of cities within the District. The City Engineer of Phoenix and the Chief Engineer or Manager of a major irrigation district (SRP in this case) are ex-officio members. The CAB may make recommendations to the Board of Directors but only in an advisory role. The District is required to engage in planning for flood control. It must survey flood control problems and existing facilities, prepare a preliminary plan, and adopt a comprehensive program of flood control. In addition, the District must prepare a 5-year capital improvement program which must be reviewed annually.

DRAINAGE DISTRICTS

(ARS 45-1201 et seq.)

Five or more owners of agricultural land may organize a drainage district in order to finance work for the drainage of their lands. The district is formed by petitioning the Board of Supervisors,

34. ARS 45-2351 et seq., Arizona Constitution Act. 13 Sec. 7, (effective 23 March 1959).

35. "Flood Control," Flood Control District, Maricopa County, 20 August 1973.

who determine the boundaries of the district and call an election. Upon majority approval by the property owners the district is established. The Board of Supervisors do not have the authority to review the proposed drainage system. The Board of Directors, the governing body of the district, is empowered to construct, maintain, operate, and keep in repair all works necessary for drainage purposes. The board may locate drainage works and lines for any canals, sluices, and watergates, plus necessary branches on any land which is deemed suitable. In conjunction with this authority, the board may acquire by purchase or condemnation any land needed for the construction of works required for drainage purposes. To finance the activities of the district, the board may issue bonds and levy taxes and special assessments.

FLOOD CONTROL DISTRICT

"General" flood control districts parallel drainage districts in form, organization, authority and are established by following the same procedure. The works constructed, however, are not drainage works but must be works "Suitable proper and convenient for the protection of the lands of the district from the overflow, washing or manace...to which the district is subject." (ARS 45-2301).

It would appear that districts were established in part for the purpose of working with, and receiving Federal assistance on flood control projects.

A 1963 decision by the Arizona Court of Appeals may help in distinguishing between the aforementioned -

Special Flood Control Districts	ARS 45-2351
Drainage Districts	ARS 45-1201
Flood Control Districts	ARS 45-2301

The Court of Appeals held that the statute which provides for creation of flood control districts by five or more landowners (ARS 45-2301) was not impliedly repealed by subsequent legislation whereby "special" flood control districts could be created by County Board of Supervisors (ARS 45-2351).

There are other material differences between the provisions of the two enactments, these are but two examples:

1. A. Under the old law, or "general flood control district, a Board of Directors of electors is the governing body.
B. Under the new, or "special" flood control district, the County Board of Supervisors is the governing body.
2. A. The general flood control district could consist of portions of two or more counties.

- B. The special FCD must lie within the county governed by the Board of Supervisors.

AGRICULTURAL IMPROVEMENT DISTRICTS

An agricultural improvement district may be formed by petition of five or more owners of agricultural land to the County Board of Supervisors. The board determines district boundaries and holds an election in which only property owners may vote. The district is a form of government used to implement Federal reclamation projects. (36)

The agricultural improvement district, according to statutory authority, is formed for the purpose of: 1) securing water necessary to irrigate land, 2) providing for the storage, regulation, and distribution of water, 3) providing for drainage works on land, and 4) selling surplus water or power generated by the district. (37)

The initial provisions for agricultural improvement districts were enacted by the Arizona Legislature in 1922. (38) The State Legislature first passed the district law in order to allow lands which were not "member lands" (39) to become part of the Salt River Valley Water Users Association.

In 1937, the political subdivision or municipal status) was added to the agricultural improvement district laws of the state. (40) The main purpose for this was to allow the Salt River Project to levy assessments to refinance debts incurred for construction of project facilities built during the 1920s with tax-exempt municipal bonds with a lower interest rate and longer period to mature. The district status allowed the project to expand facilities for storing water and producing power.

In 1923, three agricultural improvement districts were formed within the exterior boundaries of the US Reclamation Project, allowing enclaves to become part of the Water Users Association. However, the agricultural improvement district laws effectively prevented agricultural lands outside the Reclamation Project area from joining.

36. ARS 45-903

37. IBID.

38. Sec. 1, CH. 23, Laws of 1922. These provisions and subsequent amendments are presently codified as ARS 45-901 et seq. (1956).

39. "Member Lands" - land that was pledged to the Salt River Valley Water Users Association in 1903.

40. Session laws 1935, 1st Special Session, 1936; p. 29.

The Salt River Project is one of the largest special districts in the United States (41) Further attention to the agricultural improvement district will be focused on the institution of the Salt River Project as a whole. Discussion of this important institution will include an analysis of the Salt River Valley Water Users Association, as well as a more in-depth analysis of the Salt River Project Agricultural Improvement and Power District. This organization is collectively referred to as the Salt River Project.

Salt River Project - The Association and the District

In order to adequately discuss the diverse institutional role the Salt River Project has today, it is necessary to review the historical development of the project's organizational structure.

The need for permanent water storage and related irrigation facilities was recognized early because of the erratic flow of the Salt and Verde Rivers. Large-scale farming, and urban and commercial development were found to be impossible in the Salt River Valley without some type of protection against the ever-present problems of drought and flooding.

In 1902, the National Reclamation Act was passed by Congress which made Federal aid available for the construction of reclamation projects. Local landowners created the Salt River Valley Water Users Association in 1903 as a result of the Federal Government's request for an

41. The five largest special districts in the United States based on total revenue, expenditures, and debt are (millions):

	Revenues	Expenditures	Debt
Metro. Water Dist. of So. Cal.	\$74.0	\$84.0-	\$140.3
Salt River Project	50.7	53.2	119.7
Sacramento Mun. Utility Dist.	47.6	50.3	172.2
Indianapolis Utilities Dist.	43.9	43.0	15.7
Omaha Pub. Power Dist.	39.3	42.0	112.6

U.S. Department of Commerce, 1967 Census of Governments, No. 2: Finances of Special Districts 62-79. Source: "Voter, Restrictions in Special Districts: A case Study of the Salt River Project." Arizona State Law Journal, Vol. 1969, No. 4.

organization which represented "owners of a majority of the acreage suitable for irrigation" (as determined by the U.S. Geological Survey's feasibility studies on the proposed site for the Theodore Roosevelt Dam).(42) Since the territorial laws of Arizona did not provide for irrigation districts, the Association had to take the form of a corporation, organized by and for the benefit of about 4,000 private landowners and approximately 240,000 acres composing the proposed reclamation area.(43) The Association was looked upon by Federal authorities as a perpetual corporate body that would guarantee the repayment of construction costs for the reclamation facilities, collect from the landowners, and insure an equitable distribution of the water and water rights to the landowners in the reclamation area.

In 1937, the Association formed the Salt River Valley Project Agricultural Improvement and Power District in order to receive the privileges and immunities of a municipality.(44) As previously mentioned, the major reason for creating the district was to refinance debts incurred for construction of facilities built during the 1920s.(45) The Federal Government had declined to advance further funds for the construction of these additional facilities, but did authorize the association to obtain the necessary financing on its own behalf.(45)

With the creation of the District, the following changes took place:

1. All property rights were transferred from the Association to the District; and
2. The District could include the reduction of the cost of irrigation by the sale of surplus water or power.

The governing body of the District is identical to that of the association; a 10 member board of directors and a 30 member council. When the District was formed, it adopted an acreage basis for voting, which originally provided that a qualified elector could cast one vote per acre of land owned within the District. Prior to 1969,

42. Torres, "Resource Allocating Special Districts in Metropolitan Phoenix, p.10.

43. Originally referred to as the Hansbrough-Newland Bill, the National Reclamation Act of 1902 is presently codified as 43 USC Sec. 371 et seq. (1964). This act provided for Federal financing of reclamation projects with funds secured from the sale of public lands. Registration was advocated by Theodore Roosevelt.

44. ARS 45-902 et seq. Smith, "The Salt River Project: A Case Study in Cultural Adaptation to an Urbanizing Community," (1972) pg. 17.

45. "Voting in Special District," p.653

a qualified voter in association elections was entitled to one vote for each acre of land owned, but not to exceed 160 votes.(46)

In 1969, the statutes were amended to provide fractional voting for persons owning less than a full acre of land..."the fractional vote shall be equal to the fraction of an acre owned by the elector."(47) The District's voting regulations are identical to those of the Association, with the exception that District voters are not subject to the 160 vote limitation. The similarity of the voting systems has resulted in the same persons serving as council and board members for both the District and the Association. Likewise, the principal corporate officers serve both organizations in the same capacity.

In July 1975, a law suit was brought that seeks to change SRP's present fractional acreage voting system to a one-man, one-vote system. The suit says that the present system favors large landowners - primary farmers and ranchers - who use much SRP supplied water.(48) The suit was filed in U.S. District Court by Bruce Meyerson of the Arizona Center for Law in the Public Interest on behalf of several persons who do not own land and persons who own less than one acre in the SRP District.

In a statement filed jointly by the Center for Law and SRP, it was stated that a major voting change "could interfere with the present harmony of the operation. This would make it more difficult to borrow funds and would increase interest rates. An initial change in the composition of the District Board of Directors would...result in greater difficulty and higher cost of borrowing capital funds."(49)

The following summarizes, within the Salt River Project, the present organizational responsibilities of the District and Association:(50)

46."Voting in Special District," p.651. "The motivation and justification for this limitation on number of votes would appear to emanate from the Reclamation Act. At the time the Project was created, the Act contained several provisions that indicated a congressional intent to limit the benefits of irrigated land within a reclamation project to that acreage 'reasonably required for the support of a family..."

The Congress indicated that such a 'farm unit' should not exceed 160 acres." 43 USC Sec. 419, 434, 451h (1964).

47.ARS 45-983(c)(Supp.1969).

48.Arizona Republic, "Both sides in SRP suit expect voting change to bring trouble," (27 Feb.1976).

49.Arizona Republic, 27 February 1976.

50. "Voting in Special Districts," p. 656-657.

1. The District owns all project property, real and personal, and the rights and revenues arising therefrom, subject to the interests of the Federal Government.
2. The District is responsible for the operation and maintenance of the power system, and for the construction of both the power and the irrigation systems.
3. The Association, as agent for the District, is responsible for the operation and maintenance of the irrigation and drainage systems.
4. The District has relieved the Association of all contractual obligations to which it was a party, with the exception of certain agreements involving the storage, diversion, or delivery of water. The Federal Government has not released the Association from any of its original contractual obligations.

The juristic nature of the Salt River Project - the Association and the District - has been bandied about by the Arizona courts on numerous occasions. The courts have been unable to issue a precise legal status for the project, but the status of its components may be viewed in three respects:

1. As a municipality under the laws of the State of Arizona.(51)
2. As a "private corporation with a public purpose."(52)
3. As a Federal reclamation project.(53)

Although the project has characteristics of each form of organization, it is actually a melding of all three.

The following two events illustrate the complex relationship off the project with other institutions present in the study area.

51. ARS 45-902 et seq.; Arizona Constitution Article 15, Section 2. See also: City of Mesa v. Salt River Project Agricultural Imp. & Power District, 92 Ariz. 91, 97, 373 p.2d 722, 726 (1962); Uhlmann v. Wren 97 Ariz. 366, 401 P.2d 113 (1965)

52. Citrus Growers' Dev. Assn. v. Salt River Valley Water Users' Assn., 34 Ariz. 106, 110, 268 p.773-775 (1928).

53. 43 USC Sec. 371 et seq. (National Reclamation Act). City of Mesa v. Salt River Project 92 Ariz. 91, 373 p.2d 722, appeal dismissed.

City of Mesa v. Salt River Project(54)

The Salt River Project's tie with the Federal Government has in the past been used as a source of power to ward off threats from outside organizations. For example, in 1963, the City of Mesa annexed a 50-square-mile area and intended to provide electrical service to this new area, as they do for other areas within the city limits. The project, however, was already providing electrical service. U.S. Attorneys entered the case on behalf of the project and cited the 1902 National Reclamation Act in their argument, stating that SRP is a reclamation project, thus is Federally owned property. The court ruled in favor of SRP on the basis that there was a Federal interest in the project. Based on other Arizona cases, it was possible that without Federal intervention SRP would have lost its case with Mesa.

Settlement Concerning Sewage Effluent

In 1969, one of the more dramatic events involving the project was a threatened suit by the principal municipalities within the project area. The Arizona Republic reported that the cities were considering filing suit against the District because of its practice of excluding from its electorate those persons who own less than 1 acre of land. The cities asserted that because those persons were not allowed to vote, the project's 1968 bond issue election should be invalidated. The cities proposed that the acreage voting system be maintained, but the landowners of under an acre be allowed one vote. The cities also contended that the divisional boundaries within the District should be redrawn on the basis of population. After the announcement of the proposed suit, the cities and the district management entered into serious negotiations. The result of these negotiations was an agreement that the cities would not file suit and would support the District's proposed "fractional voting" legislation in exchange for the District's withdrawal of its claim for the use of certain sewage effluent that the cities would, thereafter, trade to the district for freshwater.(55) Although they had previously rejected the District's fractional voting proposal, the cities apparently decided that obtaining the right to the sewage effluent was a financial vindication of its citizenry's voting rights in district elections. Thus, the suit was not pursued and the fractional voting legislation was enacted.(56)

54. Torres, p. 26-27, analysis of SRP/Federal relationships details this case.

55. Arizona Republic, articles appeared on March 18, 19, 22, 26, 30, 1969.

56. "Voting in Special Districts," p.660-661.

IRRIGATION WATER DELIVERY DISTRICTS

(ARS 45-1901 et seq.)

The purpose of irrigation water delivery districts (IWDD) is to provide for an organization to assure trouble free irrigation of residential lawns. A district is formed by petition to the County Board of Supervisors by a majority of owners of the land within an area requesting the districts approval. The formation of a district rests with the Board of Supervisors. In a 1950 court case, the Arizona Supreme Court ruled that, the Board of Supervisors, at its discretion, could refuse to organize an irrigation water delivery district even though statutory requirements for the district's formation had been met.(57)

IWDDs are governed by a Board of Directors who may: 1) borrow money and incur indebtedness, 2) levy taxes and impose service charges, and 3) exercise the power of eminent domain. To date, 27 irrigation water delivery districts have been formed in Maricopa County. Twelve of these districts remain active on the county's tax rolls, three districts are listed as officially dissolved and the remaining twelve districts no longer have legally active structures. Many districts have officers which are not bonded and mandatory meetings are not held. Other districts function similar to homeowner's associations.(58) Irrigation water delivery districts are an adaptation of the urban population to the changing patterns of land use and are of minor significance.(59)

The irrigation water delivery districts that are still active in Maricopa County are as follows:

- Los Olivos
- Woodlea
- Hoffman Terrace
- Patio Del Sol
- Tres Palmas
- McDowell Homes
- East Morningside
- Myrtle Park
- Southland
- Madison Park
- Cuatro Park
- Windsor Square

57. Peters v. Frye (1950) 71 Ariz. 30, 223 p.2d 176.

58. Torres, "Resource Allocating Special Districts in Metropolitan Phoenix," p. 45.

59. IBID.

IRRIGATION DISTRICTS

(ARS 45-1501 et seq.)

Irrigation districts may be formed for the express purpose of obtaining and distributing irrigation water. Districts may also generate or obtain electrical power for the pumping of irrigation water. All irrigation districts, under the laws of the state are considered municipal corporations.

Irrigation districts are formed by petition to the Board of Supervisors by a majority of the resident property owners in the area. The supervisors may approve or reject the petition and, if they approve, they must determine the lands to be included in the district.

Powers of the irrigation districts include the following:

1. Issue bonds, levy taxes and special assessments.
2. Construct works across any watercourse, street, or private property, and they may exercise the power of eminent domain. However, the State Land Department has supervisory powers over the plans, contracts, and works of the irrigation district.

It is also important to note that taxes may be imposed against the wishes of the minority and those persons who do not receive water from the district.

Irrigation districts have the option of maintaining a one-man-one-vote system of elections or an acreage system. If an acreage system is used no person may vote more than 160 acres. (This has been averted by individuals holding more than 160 acres, by placing titles in the names of relatives of lands over the 160-acre maximum.)

In Maricopa County there are 10 irrigation districts with a total of 225,637 acres within their boundaries. They are as follows:

Chandler Heights Citrus Irrigation District
(1,387 acres)

Harquahala Valley Irrigation District
(49,557 acres)

Maricopa Co. Municipal Water Conservation District
(33,395 acres)

McMicken Irrigation District
(40,449 acres)

New Magma Irrigation District
(1,141 acres)

Queen Creek Irrigation District
(18,348 acres)

Roosevelt Water Conservation District
(36,804 acres)

St. Johns Irrigation District
(2,008 acres)

San Tan Irrigation District
(3,560 acres)

ARIZONA PUBLIC SERVICE COMPANY (APS)

APS, a major power utility in central Arizona, has been designated the Project Manager and Operating Agent for the Palo Verde Nuclear Generating Station (PVNGS), currently under construction 45 miles west of Phoenix. When completed in 1983, the plant will use treated sewage effluent. The effluent will be purchased under contract from the City of Phoenix and 5 other Phoenix area communities and will be piped to the site from the 91st Avenue sewage treatment facility.

CHAPTER V

MARICOPA ASSOCIATION OF GOVERNMENTS AND MARICOPA COUNTY

The Maricopa Association of Governments (MAG) was created as a voluntary association in January 1967 by concurrent resolutions adopted by the local governments of Maricopa County. On October 24, 1967, MAG adopted articles of incorporation.

MAG is governed by a regional council consisting of an elected representative from the Maricopa County Board of Supervisors and an elected representative from each of the 19 incorporated cities and towns: the Cities of Avondale, Chandler, Gila Bend, Glendale, Mesa, Peoria, Phoenix, Scottsdale, Tempe, and Tolleson, and the towns of Buckeye, El Mirage, Gilbert, Goodyear, Guadalupe, Paradise Valley, Surprise, Wickenburg, and Youngtown. An ex-officio member from the Arizona Department of Transportation (ADOT) is also a member of the council. The regional council serves as the policy making body of MAG.

The original MAG boundaries were established to encompass the urban area of Maricopa County. In 1970, the MAG Regional Council voted to expand the boundaries of MAG to include all of Maricopa County. MAG consists of 19 incorporated cities and towns in Maricopa County and Maricopa County government itself.

As the designated wastewater management planning agency, MAG contracted with the Maricopa County Planning Department to coordinate all 208 studies with the EPA and the Corps, and to study the point and nonpoint source management aspects for the nonmetropolitan areas of Maricopa County. Financing of the approved work program was accomplished in part by funds contributed from MAG member agencies. In 1975-76, the MAG work program local cash assessment was \$75,000 and was apportioned on the basis of population of MAG member agencies. MAG financing also was assisted by Federal and state grants and by in-kind services from MAG member agencies in the form of direct participation in specific projects included in the overall work program.

Within MAG, several committees and subcommittees have been established to review and recommend actions to the MAG regional Council. The MAG Management Committee serves as a clearinghouse for items to be considered by the Regional Council. The Public Works Committee reviews the sewer system plans. It is the philosophy of the member agencies to keep the decision-making authority to the level closest to the people and to preserve the integrity of the local decision-making process. MAG does not have a paid staff but contracts for its administrative and coordinative staff with the League of Arizona Cities and Towns. In order to perform the specific planning activities necessary to meet regional, state and Federal requirements, MAG contracts

with the ADOT for its technical planning staff, the Corps of Engineers and Maricopa County Planning Department for the 208 program, and other agencies for its human resources planning.

Staffing and Manpower:

(Contracted through the League of Arizona Cities and Towns)

Secretary
Staff Coordinator
Fiscal Coordinator
Criminal Justice Coordinator
Housing and Resrouce Specialist
Environmental/Noise Pollution Specialist
Administrative Assistant
Administrative Assistant
Criminal Justice Researcher
Land Use Planner
Research Analysis
Waste Water Coordinator
Transit Coordinator
Transit Planner

MARICOPA COUNTY

Maricopa County's government is under the direction of the County Board of Supervisors. Counties in Arizona do not have home rule authority and therefore, their law-making powers are wholly derived from state legislation. The counties in the state have limited powers although the mandate from the legislature is broad, but in general terms. The discussion on Maricopa County is limited to a description of the Planning and Health Departments.

Maricopa County Planning Department

The growth of Phoenix and other settlements along the Salt River resulted in the formation of Maricopa County, adopting its name from the Maricopa Indians, on February 14, 1871. During the next 10 years the boundaries changed frequently, but were stabilized in 1881 and remain so to this day. The Roosevelt Dam, completed in 1911, assured the valley a reliable water supply, resulting in steady development and unheralded growth.

Today Maricopa County covers a total area of 9,226 square miles: 496 square miles incorporated and 8,730 square miles unincorporated, with a population of 1,230,000. Of that population 1,103,000 is in incorporated areas and 126,000 is in unincorporated areas.

The Maricopa County Planning Department is a department of the county and provides technical advice to the County Planning and Zoning Commission, Board of Adjustment and Board of Supervisors. The powers granted to the counties for planning and zoning activities are enumerated in the Arizona Revised Statutes, Section 11. The Planning Department is under the jurisdiction of the County Board of Supervisors. Any additional duties that may be given to the Planning Department are accomplished by contracts with other agencies. The Maricopa County Planning Department contracted with the Maricopa Association of Governments to coordinate the EPA 208 planning programs within the county and be responsible for carrying out the 208 planning of all nonmetropolitan areas of the county.

All unincorporated areas of the county are under the jurisdiction of the Planning Department. An incorporated area may request the county to develop a general plan for it.

The role of Maricopa County in the Section 208 planning is to coordinate all Section 208 planning within the county, to coordinate the activities of EPA and the Corps of Engineers Phoenix Urban Study, and to carry out the point and nonpoint source planning elements for the nonmetropolitan areas of the county.

Maricopa County Health Department
Division of Environmental Services

The Maricopa County Health Department (MCHD) is an agency of Maricopa County, a local government subdivision of the state of Arizona. The Department is administered by the County Health Director and has three principal divisions: 1) Environmental Service Division, 2) Community Health, and 3) Ambulatory Care.

Duties of the MCHD are set forth in the Arizona Revised Statutes. The Maricopa County Health Department and especially the Environmental Services Division is responsible for enforcing the minimum standards for the protection of the health of the people of Maricopa County as set forth in the County Health Code and the rules and regulations of the Arizona State Department of Health Services. The department has been delegated the authority to act as the agent of the Department of Health Services in the review, approval and/or disapproval and issuance of certificates to construct water and sewer systems for subdivisions, trailer parks, swimming pools, and bathing places within Maricopa County.

The MCHD has established detailed rules and regulations for water and sewerage facilities and operations and has published them in the "County Health Code." Its jurisdiction extends to the entire 9,226 square miles of the county with the exception of Indian reservation

lands. Some programs of the Health Department are not provided in the incorporated municipalities. The MCHD also is charged with enforcement of the "County Health Code" in unincorporated areas of the county. In addition the Department of Health Services has delegated the review, approval or disapproval of sewer systems within the entire county to the County Health Department.

The Environmental Services Division supervises 103 public and private sewage treatment plant facilities in Maricopa County. According to county officials, the number of small privately owned sewage treatment plants has grown rapidly in the past few years, primarily as the result of encouragement of Federal housing programs urging sewage treatment plants for groups of homes in excess of 25 units.

The County Health Department is participating in the development of areawide land use plans in conjunction with the Maricopa Association of Governments. At the present time, the Health Department does not use the Phoenix area local government land use plans in approval or disapproval of sewer systems. County legal counsel has indicated the Health Department cannot enforce land use plans in approval or disapproval of sewer systems. The Department contemplates no immediate change in the present operation or role of the agency.

The Maricopa County Health Department participates in the Maricopa Association of Governments and is active in many of the coordinative efforts. The County Health Department is not a member or participant in coordinative efforts of the Multi-City Sewer Agreement meetings. The Department also has not participated in preparation of subregional plans for area sewer systems.

CHAPTER VI

MUNICIPALITIES

Municipalities in Arizona are creatures of the state and exist specifically to serve the needs of their residents. The legislature has granted the right to those municipalities with a population of over 3,500 to frame and adopt a home-rule charter. A home-rule charter gives a municipality greater flexibility and independence from state control. In Handbook for Mayors and Councilmen, eight advantages of charter government over general law are listed, they are:

- 1 structure the government as they desire
- 2 adopt own property assessment system
- 3 sell or dispose of property without advertising
- 4 control own elections
- 5 levy revenue taxes, not expressly authorized
- 6 levy sales tax
- 7 give mayor and councilmen higher salaries
- 8 use public funds for advertising(60)

Municipalities, whether charter or general law, have the legislative power which usually lies with a city council. City councils are elected and consist of six members plus a mayor. Communities which have hired a city manager to act as administrator for the city are referred to as council/manager communities.

The municipalities which lie within the boundaries of the Phoenix Urban Study and their respective forms of government, appear on Figure VI-1. In addition to their government, the various departments which handle water resource management are listed. By comparing the divisions of government for each community, the size and level of involvement can be discerned.

60. David A. Bingham and Leonard E. Goodall. Handbook for Arizona Mayors and Councilmen, rev. ed. (Tempe Bureau of Government Research) ASU 1963.

MUNICIPAL GOVERNMENT DIVISIONS

	CHARTER	COUNCIL/ MAYOR	MANAGER	PLANNING DEPT.	PUBLIC WORKS/ ENGINEER	WATER & SEWERS	RECREATION DEPT.
AVONDALE	X	X	X	X			
BUCKEYE		X	X				
CHANDLER	X	X	X	X	X		
GILBERT		X	X		X		X
GLENDALE	X	X	X	X*	X		X
GOODYEAR		X	X				
GUADALUPE		X					
MESA	X	X	X	X	X		X
PARADISE VALLEY		X	X				
PEORIA		X	X				
PHOENIX	X	X	X	X	X	X	X
SCOTTSDALE	X	X	X	X	X		X
SURPRISE		X	X		X		
TEMPE	X	X	X	X	X		X
TOLLESON		X	X		X		

*Planning Dept. within Engineer's

Figure VI-1

CHAPTER VII

WATER LAW

An appraisal of the legal doctrines governing the appropriation, use and reuse of water is a vital element of the Corps of Engineers' institutional analysis process. In this section of the analysis process, the principles and precepts of water law are considered a separate and succinct institution because of the role the legal decisions have had in shaping the present-day use of water in Arizona.

Water law in Arizona can be described as a somewhat amorphous, somewhat uncertain body of principles, provisions, and precedents evolving out of specific conditions of the past - and being applied to problems of the present.

This institution is a blend of constitutional, statutory, administrative, and court made law. However, the deliberate emphasis in this section will be on statutory law (enacted by legislative bodies), and court law (the decisions rendered during the settlement of specific disputes over the provisions contained in any of the aforementioned legal categories).

The reader should note that any discussions of court decisions or legislation are not to be construed as legal interpretations, persons seeking such judicial interpretations should refer to the original document(s).

SURFACE WATER RIGHTS

Rights to the use of surface waters are generally classified into two doctrines - riparian rights and prior appropriation.

Riparian Rights - Briefly put, the doctrine of riparian rights holds that ownership of land through which a stream of water flows gives rise to certain rights to the waters of the stream. In practice, this means that the rights of all persons owning property along a watercourse are equal. Riparian rights are generally based on property ownership and are not severable from riparian land. Such water rights are not extinguished by nonuse.

This common law concept of water rights is believed to have been brought from England by colonial settlers, but settlers in the arid West found it necessary to reject this doctrine. The riparian rights doctrine was ill-suited for arid-land agriculture and would have led to monopoly of agriculture by a few strategically located landowners.

One of the earliest rejections by the court of this doctrine was in 1888 when the Arizona Territorial Supreme Court decided the case of Clough v. Wing, (2 Ariz. 371), which firmly established the doctrine of appropriative rights thus, rejecting the riparian doctrine. The Arizona Constitution also states that the riparian water rights doctrine shall not pertain to this state.(61)

Prior Appropriation - While there are many variations to the doctrine of prior appropriation as it is now applied to surface waters in different jurisdictions, its main feature is the priority of rights based upon actual use, that is, the rights of prior uses are superior to any rights of the subsequent uses. The aphorism "first in time, first in right"(62) is an accurate transcription of this doctrine.

The doctrine of prior appropriation received its greatest impetus from the customs developed by miners in the California Gold Rush of 1849 which formed the basis for early statutes in various territories and states in the Southwest. Miners, who were generally considered trespassers on the public domain, had no rights which would entitle them to assert riparian claims to flowing streams. In order to divert water for mining operations, the practice of prior appropriation spread. During territorial times this practice was not considered law, but later became the basis on which legal rights were founded.

The law of prior appropriation, while maintaining the public character of all water, bases the right to the use of water on application of the water to some beneficial use. In Arizona, the statute simply declares: "Beneficial use shall be the basis, measure, and limit to the use of water." (ARS 45-101B.) The meaning of the words "measure" and "limit" is not defined, and no case exists in Arizona where the decision was based on a definition of "beneficial use."(63) Appropriation, however, is limited by beneficial use.

Since the right depends upon use, the surface water may be transported to land away from a stream even as far as another watershed.(64) Failure over a period of 5 years to use an appropriative water right or abandonment of a water right is cause for its forfeiture or termination. Nonuse of the water for this period does not cause a forfeiture if, because of natural causes, there is insufficient water in the stream to supply the appropriation.

61. Arizona Water Commission, "Phase I: Arizona State Water Plan Inventory of Resource and Uses," (July 1975) p. 63.

62. Dean E. Mann, "The Politics of Water in Arizona," (1963).

63. Fred C. Struckmeyer, "Water: A Review of Rights in Arizona," (1960), published by Arizona Weekly Gazette, p. 38.

64. Struckmeyer, "Water: A Review of Rights in Arizona," p.38.

One of the earliest statutory decisions establishing the prior appropriation doctrine of surface water was passed by the Territorial Legislature in 1864. The Howell Code, which served as Arizona's Territorial Constitution, declared that "all streams, lakes, and ponds of water capable of being used for the purpose of navigation or irrigation are hereby declared to be public property.(65) The Howell Code, however, completely ignored subsurface waters. Many of the features of this original Code appear in one form or another in the present State Water Code.

Up until 1962, appropriative rights were not considered transferable by their holder to land sites other than that specified in the original granting of the right. In 1962, the Legislature amended the Arizona Water Code and, among other things, specifically provided for a transfer of a water right subject to certain conditions. The statute authorized severance of a water right from the land to which it is appurtenant or from the site of its use. It authorized the transfer of the water rights to other lands for irrigation, municipal, stock watering, power and mining purposes, or to the state or its political subdivisions for recreation and wildlife uses without the loss of priority of the water right.(66) Unfortunately the holder of the right is discouraged from such a transfer of location due to the reduction in the quantity of water allowed subsequent to its transfer.

Another general rule, with no Arizona court decision or statute directly in point, is that diffused surface water may be captured and put to a beneficial use. This class of water (referred to as sheetflow) is not subject to appropriation. The landowner has a right to capture diffused surface water on his property, but does not have a vested right to have the waterflow to his land from bordering property. Following periods of heavy rain, it may not be easy to determine whether or not intermittent flow constitutes a surface stream or merely diffused surface runoff.(67)

GROUNDWATER RIGHTS

The Arizona Revised Statutes define groundwater as meaning "water under the surface of the earth regardless of the geological structure

65. Mann "The Politics of Water in Arizona," p. 31.

66. Arizona Revised Statutes, Chapter 113, Sec. 5 Laws 1962.

67. Lower Colorado Region Comprehensive Framework Study, Appendix III, Legal and Institutional Environment, (June 1971), p. 120.

in which it is standing or moving. It does not include water flowing in underground streams with ascertainable beds and banks."(68)

Subsurface waters are usually categorized and referred to either as "underground streams" or "percolating waters." The water rights as applied to each of these subsurface waters is different.

Underground Streams - If it can be determined that underground water is flowing in a definite and known channel - a highly technical and complicated task - the water is classified as an underground (or subterranean) stream, and the doctrine applicable to surface waters is normally used to determine the rights of usage. Thus, Arizona's doctrine of prior appropriation is applied to surface water and to definite underground channels. The origins of such a statutory application are traceable to common law distinctions between subterranean streams and percolating ground water sources. This distinction, however, has been criticized in scientific and legal studies and, as litigation has shown, proving the existence of underground stream channels is questionable.(69)

Percolating Waters - Generally, all underground waters not demonstrated to be underground streams are classified as percolating waters. Percolating waters are not subject to prior appropriation. Percolating ground water belongs to the owner of the soil. Such ownership is governed by a rule of private property said to be founded in early decisions of claims to water rights on the public domain.(70) The owners use of percolating water is limited only by a doctrine of reasonableness.

LEGAL AND HISTORICAL DEVELOPMENT

Distinguishing Appropriable Waters - The legal doctrines on which ownership and use of groundwater in Arizona are based received court sanction in the case of Howard v. Perrin, (1904). The State Supreme Court ruled (and was affirmed by the U.S. Supreme Court), (71) that percolating water was not subject to appropriation. The distinction

68. ARS 45-301.

69. Robert Emmet Clar, "Arizona Ground Water Law: the Need for Legislation," Arizona Law Review (1975), p.814.

70. Howard v. Perrin, 8 Ariz. 347, 76 Pac. 460 (1904).

71. Ground Water in Arizona, memorandum from Arizona Legislative Council, 18 January 1974.

is that the water which is being appropriated is from "subterranean streams, flowing in natural channels, between well-defined banks."(72)

In summary, this early decision held that the landowner owns the surface and everything underneath, but the percolating waters are not subject to appropriation. (Commencing with Howard v. Perrin (1904), this legal decision continued through the landmark Bristol v. Cheatham (1953) case, and stands today.)

In 1919, the State Legislature passed the first State Water Code which wrote into the legal structure of the state the principles which had governed the decisions of the courts for some time. The code made no radical departures from the practices already in existence, but did centralize the administration of the water laws with the State Water Commissioner (then the State Land Commissioner). The code also allowed for appropriation of water in "definite underground channels." Because of this provision it was assumed that there was legislative intent to distinguish between water flowing in such channels, and water that percolated through the soil into relatively unmoving reservoirs.(73)

The Code also outlined the procedure to be followed in acquiring a water right - a procedure that remains substantially unchanged, but now the Department of Water Resources takes responsibility for water rights. An application was filed with the State Land Department for a permit to appropriate interstate water. The State Land Commissioner was given broad discretionary powers in granting or rejecting applications for permits to appropriate water, although review by the courts was guaranteed. If the application was in order, a permit was issued which authorized construction of the necessary works. After the water was put to "beneficial use," a Certificate of Water Right was issued to the applicant. If conflicting applications for the use arose, the Commissioner gave preferences to certain water uses.(74) The statutes also provided that "the relative values to the public for the purposes of this section shall be: 1) domestic and municipal uses, 2) irrigation and stock watering, 3) power and mining uses, and 4) recreation and wildlife, including fish (as amended in 1962).(75)

72. Howard v. Perrin, (1904).

73. Groundwater in Arizona, (18 Jan. 1974).

74. Arizona Water Commission, "Phase I: State Water Plan," p.63.

75. ARS 45-147.

In the past the Water Code has not gone unchallenged by water users, but generally speaking the laws governing surface water are settled. In fact, nearly all surface water has been appropriated and what remains has not proven suitable for irrigation.(76)

GROUNDWATER CODES, CASES

In 1945, prompted by the warning that Arizona might not receive support for the Central Arizona Project from the Bureau of Reclamation unless the state took action to control its groundwater depletion problem, the Legislature passed the Ground Water Act of 1945. The act merely required owners and operators to report to the Land Commissioner data concerning the nature and extent of their wells, and to file a notice of intent before drilling wells for irrigation.(77) The act did nothing to govern the rate of groundwater depletion which had increased dramatically during the 1920s and 1930s.

Between 1945 and 1948 several attempts were made to enact a restrictive groundwater code. On April 1, 1948, the Arizona Legislature passed the first state groundwater code.(78) The code designated the rules and regulations for administration of groundwater development, with administrative powers given to the State Land Department. Most notably, the code established procedures for the designation of critical groundwater to provide a reasonably safe supply for irrigation of the cultivated lands in the basin at the then current rates of withdrawal."(79) The code did not provide for the control of the extent of groundwater pumpage or apportionment of the pumpage among the landowners of irrigated land, nor did it prohibit the development of new wells for purposes other than irrigation. (Since 1968 notices of intent to drill have been required on all wells.) According to Dr. Dean Mann,(80) the act attempted to prevent expansion of agriculture by means of limiting groundwater, but did nothing to reduce existing overdrafts or to prevent similar critical water situations in other parts of the state. He further states that one of the act's serious shortcomings was that no restriction was imposed on "pumping of

76. Mann, p. 41.

77. Mann, p. 49.

78. ARS 45-301 et seq.

79. ARS 45-301 et seq.

80. Dr. Dean E. Mann, a former University of Arizona faculty member published "The Politics of Water in Arizona," in 1963.

water on land having a five-year-old history of cultivation prior to the effective date of the act."(81)

Between 1949 and 1965 the State Land Department designated nine critical groundwater areas in the State, and the boundaries of some of these areas have been extended. In December 1974, a tenth critical groundwater area was designated. (See Figure VII-1)

Soon after the passage of the State Ground Water Code in 1948, a legal battle began that added confusion to the already unsettled nature of Arizona's ground-water law. Another attack was made on the theory of private ownership of percolating water in the case of *Bristor v. Cheatham*, (1952). This time the State Supreme Court took the position that previous decisions of the court in distinguishing between percolating and underground stream waters were erroneous. By a 3-2 decision the court declared all underground water public property and subject to the rule of prior appropriation.(82)

In brief, the case involved two landowners who pumped from a common underground water supply. *Bristor* had pumped water for domestic purposes since 1916. *Cheatham* in 1948-49 sank irrigation wells and began to transport the water to land 3 miles away. As a result, *Bristor's* wells went dry.(83)

The Court's decision did not end here however. The following year the State Supreme Court granted a rehearing on the case and reversed its position to declare again percolating waters not subject to appropriation.

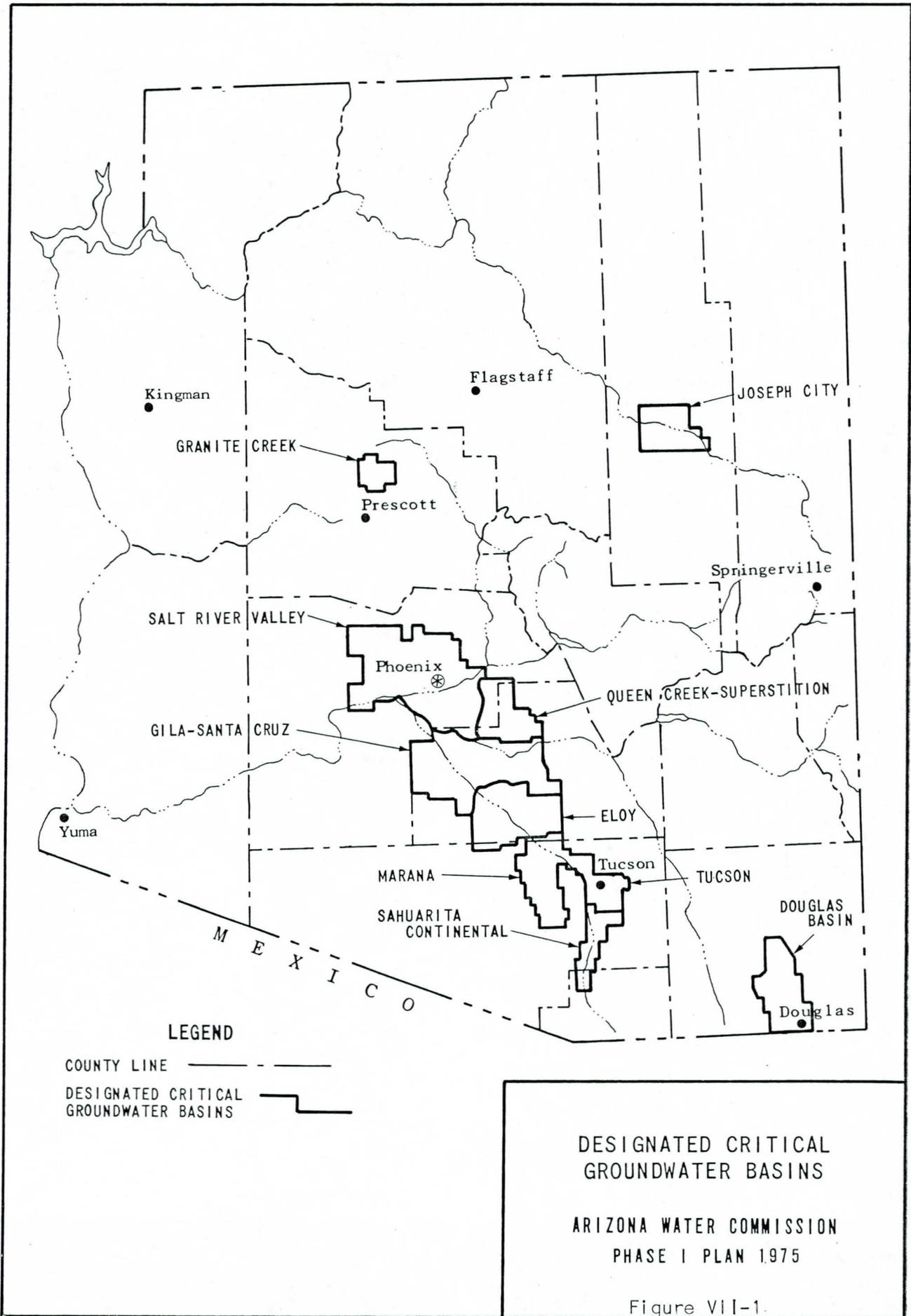
This second, and final decision, contained some significant points: 1) The Court preserved the rule that percolating waters belong to the landowner, 2) The burden falls upon an appropriator of ground water to rebut the presumption that the water is percolating, 3) The doctrine of reasonable use was explicitly imposed as the test of a landowner's right to use water, and 4) The Court specifically rejected the doctrine of "correlative rights" in favor of reasonable use.(84) (The Correlative Rights Doctrine was formulated in California as an alternative to the reasonable use rule. Under this doctrine the rights of landowners to percolating groundwater are coequal

81. Mann, "The Politics of Water in Arizona," p. 53.

82. *Bristor v. Cheatham*, 73 Ariz. 228 p. 2d 185 (1952) rev.

83. Struckmeyer, "Water: A Review of Rights in Arizona," p. 29.

84. Ground Water in Arizona, memorandum from Arizona Legislative Council (18 Jan 1974).



and proportionate to their overlying ownership. Each landowner may not extract more than his share when such action would injure the rights of another overlying landowner, irrespective of whether or not the water would be put to beneficial use.)(85) There have been four recent Arizona Supreme Court decisions involving the City of Tucson groundwater rights. These decisions, Jarvis I, II, III, and FICO, have statewide implications as they relate to transfer of groundwater from critical groundwater areas.

Following is a brief history of these four decisions. In the early 1960s, the City of Tucson elected to construct a well field in the Avra Valley east of the city to implement its water supply acquisition program. The construction of this field required the installation of a major pumping and delivery system to transport these waters into metropolitan Tucson. In accordance with ARS 45-303, the Avra Valley and Tucson Basin were established as two ground-water subdivisions by the State Land Department. Implementation of the aforementioned plan required that the city pump water from Avra Valley subdivision to the Tucson subdivision.

After initiation of operation, a suit was filed by agricultural interests in the Avra Valley to enjoin the city from transporting these waters across the subdivision boundary. The Arizona doctrine of reasonable use was cited, in which ground-water may not be transported for use on lands which do not overlie the common groundwater supply and where after use the water does not return to the common supply, if others whose lands overlie the common supply are thereby injured. The Supreme Court of the State of Arizona found for the plaintiff and Tucson was enjoined from further use of the system. This is now commonly referred to as "Jarvis I."

Subsequently, the City of Tucson appealed to the court for injunctive relief. The Court found that the City of Tucson could pump water into its system to the extent that it purchased active farms and retired these farms from agriculture. This ruling came to be known as "Jarvis II." The question then arose as to how much water the city might pump when retiring such agriculture. It was found that the city could pump and export to the maximum extent that the farm had historically utilized the groundwater in irrigated agriculture. This water use was to be determined by the Arizona Supreme Court. This decision has come to be known as "Jarvis III" and is current operating procedure for the city.

The most recent decision was FICO (Farmers Investment Company v. State Land Department et al., 1976) in which the Court held that the city was not entitled to pump water from a critical groundwater

85. Summary of Water Rights Doctrines, memorandum from Arizona Legislative Council, 9 March 1970.

basin to the detriment of the overlying users dependent on that supply.

The FICO decision prompted the Arizona State Legislature to enact legislation which was signed into law by Governor in May 1977. This law allowed interests in critical groundwater areas to continue to draw the same amount of water they now draw. The law provided a future basis for water management. It prohibited taking additional groundwater from critical areas without first retiring agricultural land from use. It further allowed cities to buy outlying water companies and shift water from one section to another. The law also met a stipulation of President Carter that Arizona establish a groundwater program in exchange for his approval of Federal funds for the Central Arizona Project.

The 23-member water commission established under the bill would devise an overall water management plan for the State before 1981. Failure of the legislature to act on the commission's recommendations would automatically put the commission plan into effect.

WATER RIGHTS REGISTRATION

In 1974, the Arizona Legislature passed the Water Rights Registration Act.(86) The intent of the Act was to identify existing water rights by requiring that every person claiming an appropriative water right file a detailed written notice with the State Land Department (now the State Water Commission).

However, as has been previously discussed, the appropriation doctrine does not apply to all waters in the State. (It is limited to surface waters and water in definite underground channels.) The "definite underground channels" provision indicates some conflicts under the Registration Act. These conflicts are most apparent along streams such as the Santa Cruz and the San Pedro, where the underflow is being tapped. Professor Clark, a widely published authority on western water law, concludes that this category of underground water will be difficult to prove and probably will have to be reexamined by the courts, despite the fact that past litigation has concluded such a source was public resource.(87)

The Land Department analyzed the intent of the Act and concluded that a water right substantiated by "a permit or certificate issued

86. ARS 45-180 et seq.

87. Robert Emmet Clar, "Arizona Ground Water Law: The Need for Legislation," Arizona Law Review (1975), p. 814.

by the Arizona Land Department or its predecessors, rights acquired to the use of the mainstream waters of the Colorado River or the rights acquired or validated by contract with the United States of America, court decree or other adjudication" (ARS 45-181B) is excluded from the need to be registered. Persons using "public water" with a water right, but who could not prove that right by the above means, had to register that water right by June 30, 1977 or lose it.(88)

Prior to the effective date of the State Water Code (June 12, 1919), water rights were established merely by putting the water to beneficial use. These early appropriation rights did not have to be recorded anywhere. A right established that early probably cannot be proven by any of the aforementioned methods (i.e. ARS 45-181B) but should be registered by 1977.(89)

SURFACE AND GROUNDWATER CRITIQUE

Groundwater and surface water rights are quite different in the sense of the institutional restraints and opportunities attached to them relative to their development, allocation, and use. Adding to the complexities of ground and surface water rights is the fact that some water using-systems rely on 1) surface-water supplies and rights only, 2) some on groundwater only, and 3) some on combinations of ground water and surface water in widely differing proportions. Another thread in the complex institutional structure is the fact that extensive group involvement has taken place in the development of surface water supplies. In contrast, extensive individual user investment has taken place in the development of groundwater supplies. Some exceptions to this individual development have occurred when irrigation districts (such as the Roosevelt District), and municipalities developed primary or supplemental groundwater supplies.

Realizing the institutional constraints attached to water rights, it is readily seen that this 1960 conclusion to a water rights review still holds true today. "It is safe to conclude that both in the fields of prior appropriation as applicable to surface water and of reasonable use for groundwater, there are still many problems for which no solution has yet been found and which will be a fertile source of litigation for a long time to come."(90)

88. "An Analysis of the 1974 Water Registration Act," from the office of Andrew L. Bettwy, State Land Commissioner, p. 1.

89. IBID, p. 2.

90. Struckmeyer, "Water: A Review of Rights in Arizona," p. 44.

ARIZONA WATER DECREES

The Kent Decree(91)

The passage of the National Reclamation Act in 1902 (92) provided for the construction of water storage facilities for the west, but it also provided its share of legal problems in regard to the distribution of the stored waters. It was necessary to establish a basis for water rights to the floodwaters and to settle the titles to the waters.

Act of June 19, 1902 and is codified as 43 USC Sec. 371 et seq.

This need led to the case of Hurley v. Abbott et al (93) in which Hurley, an early appropriator, brought suit against a large number of landowners in the Salt River Valley in order to claim title to the water which was his from early appropriation. The result was the Kent Decree which determined the water rights dating from 1869 to 1909 on the Salt and Verde Rivers for about 4,800 early irrigators in the Salt River Valley.(94)

The court followed the doctrine of prior appropriation in giving priority of normal streamflow and, after extensive testimony regarding the historical development of water use, determined the standard amount that should be allotted to each plot of land of equal size. The adjudicated waters consisted of normal river flow supplemented by storage waters from Roosevelt Dam. The Kent Decree gave first priority in normal river flows to those lands designated Class A which had been farmed and irrigated continuously or nearly so since their reclamation. Second priority was given to those lands designated Class B, which had been brought into cultivation during periods of above-normal streamflow prior to 1903, but had been discontinued for lack of water. The third class of lands, Class C, had no established surface water rights, but were located in the areas served by the canal system. Class C lands were given the right to apply for a

91. Much of the material in this section was included in the "Legal and Institutional Appendix" of the Lower Colorado Region Comprehensive Frame Work Study, in Phase I of the State Water Plan, and other histories of water development.

92. The Theodore Roosevelt Dam was the first project to utilize the National Reclamation Act funds. The Act was formally passed as the National Reclamation

93. Hurley v. Abbott et al, No. 4564 Decree. In Federal District Court in and for County of Maricopa (March 1, 1910).

94. IBID.

proportionate share of the stored waters from Roosevelt Dam, providing such waters were available after the satisfaction of the senior rights. The Salt River Indian Reservation Water Rights were increased and the Fort McDowell Indian Reservation water uses were recognized. Water rights of the upper Verde River lands and the pumpage of groundwater in the Salt River Valley were not covered by this Decree.

Other Water Decrees

Numerous other water decrees have been established in the state, most of which pertain to a particular situation or problems. Other important decrees include: 1) the Norviel Decree (1918) in which the court ordered that the acres under cultivation listed in the Decree were entitled to water for irrigation from the Little Colorado River and its tributaries in order of priority established by the time of application and use, and 2) the Gila Decree (1935) established rights and priorities for 147,992 acres of land along the Gila River, in areas such as Safford Valley, the Duncan-Virden Valleys, the Winkelman Valley, and the Indian lands of the Gila River Indian Reservation.

1980 GROUNDWATER MANAGEMENT ACT

In 1980, the Arizona State Legislature enacted the Groundwater Management Act which establishes the groundwater code for Arizona. The Act places the responsibility for administration of the groundwater code with the Department of Water Resources.

Four Active Management Areas (AMAs) were established in Arizona by the 1980 Act. In these AMAs, development and use of groundwater will be managed to reduce or eliminate groundwater overdraft. (See Figure VII-2) The Phoenix Urban Study area lies in one of these AMAs.(See Figure VII-3)

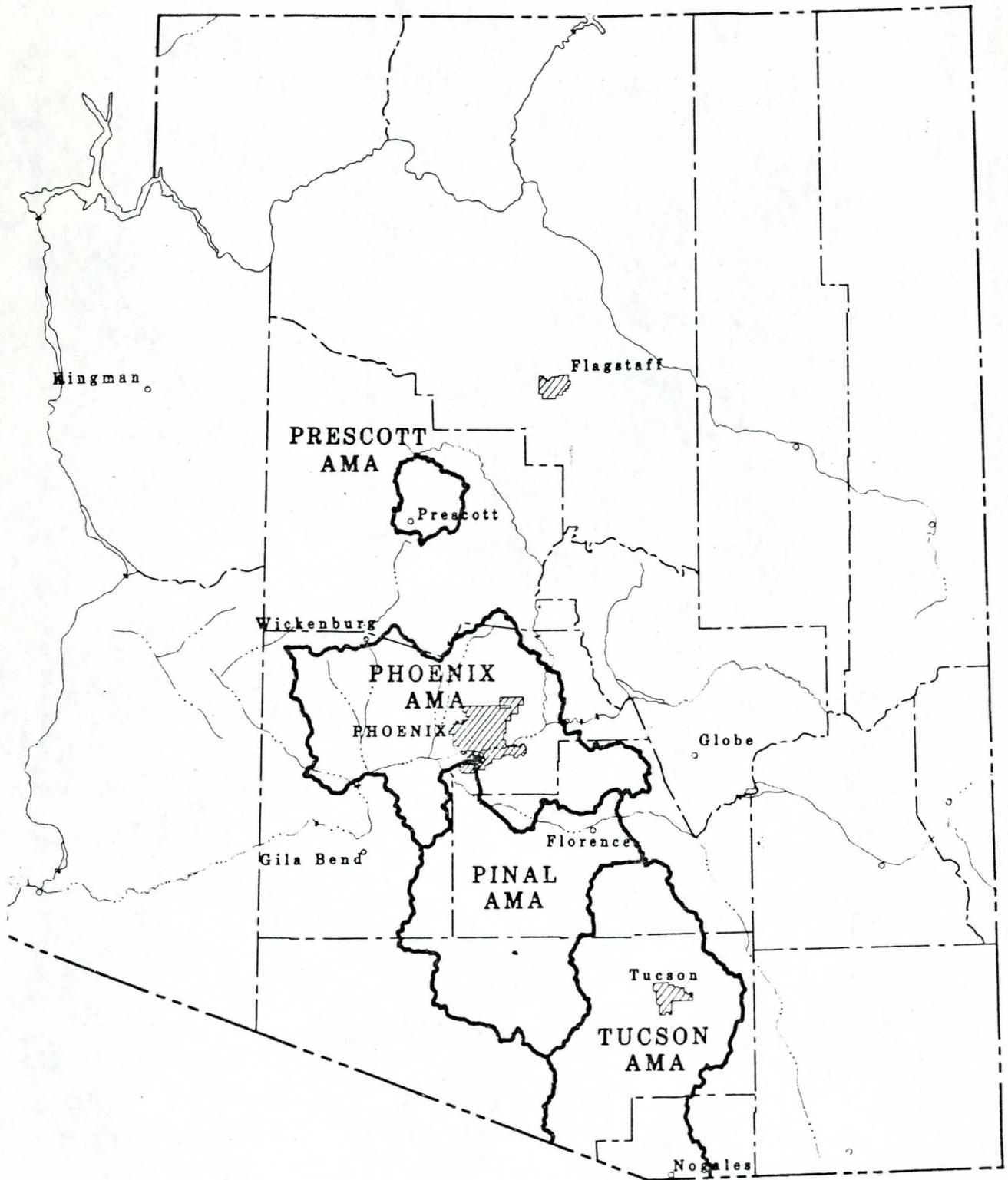
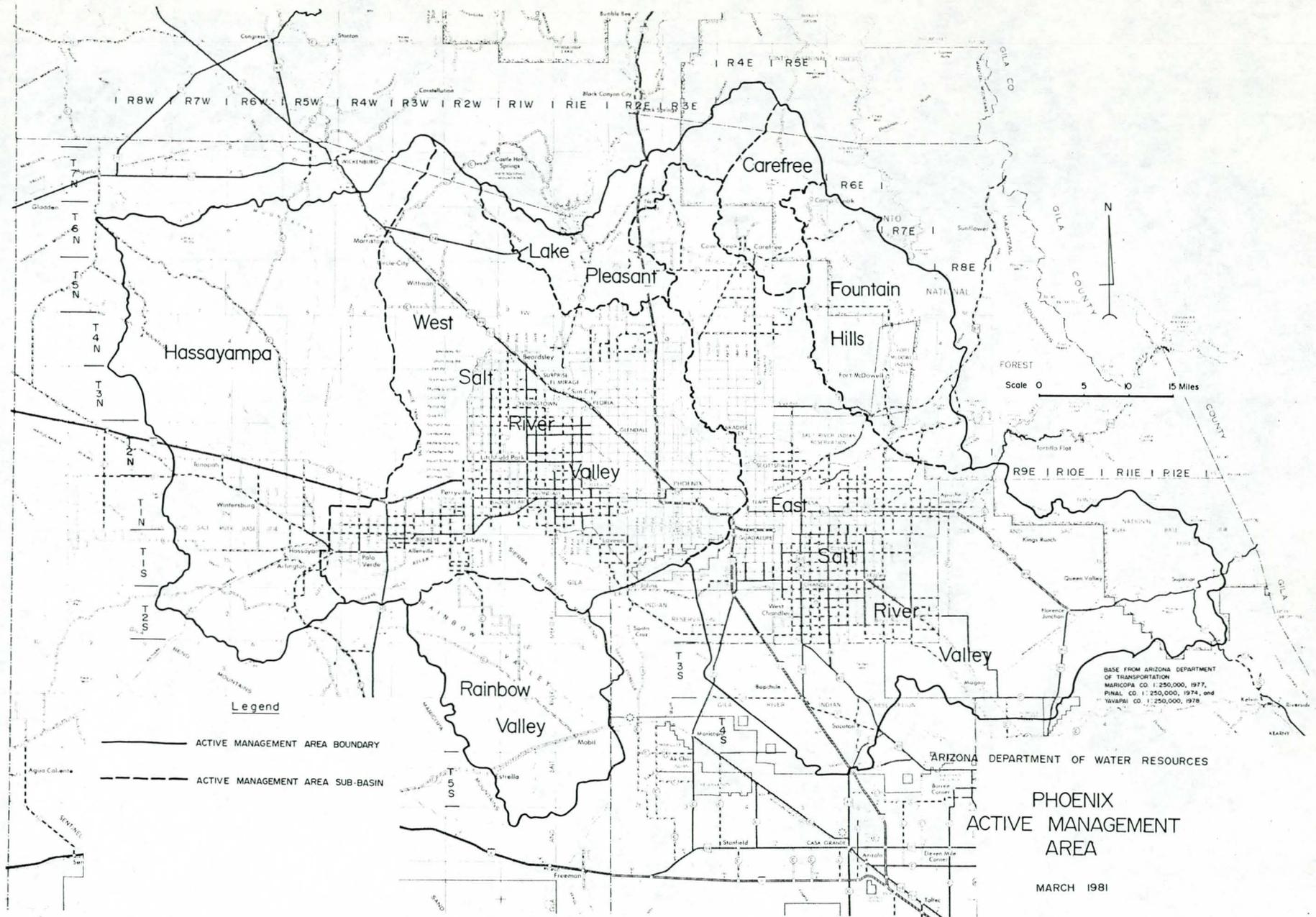


FIGURE VII-2

ACTIVE MANAGEMENT AREAS



ARIZONA DEPARTMENT OF WATER RESOURCES
 PHOENIX ACTIVE MANAGEMENT AREA
 MARCH 1981

FIGURE VII-3

CHAPTER VIII

ANALYSIS RESULTS

The institutional analysis is an integral part of the Urban Study planning procedure whereby institutions directly or indirectly related to water resource planning and management are identified, and their capabilities to implement alternative plans are assessed.

The analysis procedure consists of these four steps:

- a. Data Collection - A study of the organizational structure, legal authorities, financial capabilities, and interdependencies of institutions that influence the study area. This has been presented in the preceding chapters.
- b. Analysis and Evaluation - An examination of institutional requirements imposed by the alternative plans and the capability of existing institutions to meet these requirements are analyzed.
- c. Impact Analysis - The conditions discovered during the previous two steps are applied against the technical water resource alternatives being developed.
- d. Presentation of Institutional Arrangements - Institutional arrangements for each alternative water resource plan are developed as part of the final implementation program.

During the course of the Phoenix Urban Study, institutional analysis progressed through the Presentation of Institutional Arrangements stage for the water quality portion and into the Analysis and Evaluation Stage for the sections on Flood Control and Water Conservation. It is expected that future studies of Flood Control and Water Conservation to be carried out under authorities separate from the Urban Study will examine how existing institutions will be utilized or modified, new institutions created, or existing institutions abandoned in order to facilitate implementation of the selected plans.

WATER QUALITY

Planning for water quality involved analyzation of a number of existing and proposed institutions to insure public acceptability and implementability of the selected plan. Each alternative was examined in light of public acceptability, community cohesiveness land ownership, jurisdictional issues, property values, and conflicts with existing institutions or agreements.

Public Acceptability and Potential Conflicts

During the course of the Urban Study's analysis of point source alternatives, it was determined that all of the project alternatives would meet the demand for areawide wastewater treatment. The public acceptability issues, therefore, focused on the choice of sites for treatment and potential reuses of effluent. Significant local objection was probable in the areas around sites for the north Gilbert plant (common to all alternatives) and the Northeast conventional plant (Alternatives 3 and 4) because of new urbanization of these areas. Reaction to expansion of the 91st Avenue plant by the Gila River Indian Community will depend upon the extent to which the proposed upgrading of the existing facility reduces existing odor and insect problems.

Serious institutional conflicts involving reuse of treated sewage effluent for nuclear power plant operation were viewed as being possible. The Arizona Public Service Company has been designated Project Manager and Operating Agent for the Palo Verde Nuclear Generating Station (PVNGS) of the Arizona Nuclear Power Project (ANPP) currently under construction 45 miles west of Phoenix. When completed in 1983, the plant will use treated sewage effluent for condenser cooling. The effluent will be purchased under a contract from the City of Phoenix and 5 other Phoenix area communities and will be piped to the PVNGS site from the 91st Avenue sewage treatment facility. If flows from 91st Avenue prove insufficient to meet the demands of ANPP, then flows from the 23rd Avenue sewage treatment facility would be diverted to the generating station. Under terms of the above mentioned contract, ANPP has prior rights to effluent from the treatment plants over all other users.

Alternatives that reduced the flows at the 91st Avenue and 23rd Avenue treatment plants were opposed by the ANPP. The northeast plant, a feature of alternatives 3 and 4, would have reduced flows at the 91st and 23rd Avenue plants by approximately 9 million gallons daily by the year 2000. The 48th Street plant, considered early in water quality and Rio Salado planning, also would have reduced flows to the 91st and 23rd Avenue facilities. Both of these plants, and any other proposals that might be developed relating to wastewater treatment at points upstream of 23rd Avenue and 91st Avenue, would impair the ability of the contracting cities to meet the agreement with ANPP for supply of up to 140,000 acre feet per year of treated effluent. Careful and detailed analysis will be necessary to ensure that the terms of the agreement are not violated in future water quality planning.

A series of complex legal issues and negotiations will have to be resolved in order to implement the proposed water quality plans. Serious jurisdictional issues also are raised by the trust status

of Indian lands. These issues must be resolved in order to ensure that access to, and operation of, the plants can be satisfactorily carried out. Owners of property expected to use effluent for irrigation must commit to use the effluent through the end of the study period, regardless of prevailing market conditions for crops or possible future interest in converting the land to urban uses.

These negotiations would be required under all the project alternatives. Under Alternatives 3 and 4, negotiations were further complicated by siting of the Northeast facility on Indian tribal lands and siting the effluent reuse fields on allotted Indian lands. Contractual agreements for effluent uses, therefore, would have to involve numerous allottees.

Institutional Arrangements

In June of 1977, a subcommittee of the Maricopa Association of Governments Management Committee was formed to investigate optional methods for developing institutional mechanisms to meet the requirements of Section 208 of Public Law 92-500. The Management Subcommittee reviewed the requirements of Section 208 and considered three major management system alternatives.

- o A combined planning and operating agency
- o Separate planning agency and separate operating agency
- o Separate planning agency and multiple operating agencies

Combined Planning and Operating Agency: Optional arrangements for combining planning and operating agencies include:

- o Organization of a regional sanitary district. This would require modification of state statutes since a sanitary district is not allowed at present to be formed with the boundaries of an incorporated city.
- o Creation of a Maricopa County Sanitation Department. This also would require a change of state statutes since the only county presently allowed to provide sewer service in Arizona is Pima County.
- o Expansion of the existing multi-city agreement in which a single agency would provide planning and operating functions for the entire Phoenix urban area. This option would not require state statutory change and could be effected through intergovernmental agreements.

Separate Planning and Separate Operating Agency. Under this concept, the following options are possible and could be combined with one another as desired:

<u>Planning</u>	<u>Operating</u>
MAG	Sanitary District
Maricopa County Planning Department	Maricopa County Sanitation Department
Maricopa County Health Department	Expanded Multi-city Agreement

An advantage to the separate planning agency-separate operating agency concept is that it allows the planning to be conducted with a broad perspective and not be constrained by the functional activities of the operating agency. Section 208 regulations require the integration and coordination of the Water Quality Management Plan with thirteen other Federal programs such as the Clean Air Act, Solid Waste Disposal Act, Safe Drinking Water Act, Land and Water Conservation Act and Transportation Planning of the U.S. Department of Transportation. The separate planning and separate operating option provides planning by MAG, the Maricopa County Planning Department, or the Maricopa County Health Department and for operation by a Regional Sanitary District, a Maricopa County Sanitation Department, or an expanded multi-city agreement for a single operator within the region.

Separate Planning Agency - Multiple Operating Agencies.

<u>Planning</u>	<u>Operating</u>
MAG	Subregional Operators
Maricopa County Planning Dept.	Multiple Operators
Maricopa County Health Dept.	

Under this concept, the planning function would involve the same options identified previously, i.e., MAG, the Maricopa Planning Department, or the Maricopa County Health Department. The subregional operator concept would include a series of geographically spaced combinations of cities, towns, special districts, and private agencies similar to the present multi-city system. The multiple operator option would allow any and all cities, towns, and sanitary districts to be designated at local discretion. The multiple operator option could cause coordination difficulties and would require a major commitment of staff at the planning agency to carry out EPA mandates.

Other possible management arrangements, such as sanitary districts which would bring about a significant governmental change, were considered but were determined not to be applicable to the Phoenix

area. Wastewater treatment management in Arizona has been a traditional function of local government, and while there are problems in the existing system, the Arizona system of local government is simple in concept and avoids proliferation and fractionalization common in most urban metropolitan areas.

Alternative Management System Evaluation

The Management Subcommittee considered the following criteria for evaluating the institutional arrangements for alternative wastewater treatment management proposals:

Economic Efficiency in the System. The agencies designated to achieve the water quality goals established by Public Law 92-500 will accomplish the tasks at a minimum cost to the area citizens.

Equity. The benefits and costs of the wastewater treatment management plan will be reasonably and fairly distributed over the affected population. EPA requirements on User Charge and Industrial Cost Recovery (Public Law 92-500, Section 204) add further emphasis to the concept of equity within a wastewater treatment management plan.

Political Accountability. The agencies will be accessible, accountable, and controlled by their affected residents.

Political Acceptability. The existing elected and appointed officials, as well as the public, will accept the management system and provide necessary support.

The selected management system calls for the MAG Regional Council, with the assistance of a Water Quality Policy Advisory Committee and MAG Management Committee to be responsible for ongoing areawide wastewater management planning, plan implementation, and coordination of municipalities and private agencies in meeting the requirements of Public Law 92-500. Subregional operating groups (SROGS), composed of local governments and private agencies served by a facility have been created and have coordination, detailed planning, grants management, and operation responsibilities. Each SROG with the approval of the MAG Regional Council, has designated a Lead Agency to carry out the day-to-day operation of the system.

The concept of subregional operating groups was developed by the MAG Management Committee to take advantage of the experience gained through intergovernmental cooperation by the local governments of Phoenix, Youngtown, Scottsdale, Mesa, Tempe, and Glendale. These local governments for the past decade have participated in a cooperative endeavor to provide wastewater management services. The concept has involved the designation of a Lead Agency and participation

by various entities, jointly, to provide sewage collection and treatment facilities for the majority of the Phoenix Metropolitan Area. The adopted Point Source Management System expands the Multi-city Agreement concept by creating a series of new intergovernmental cooperative arrangements. Several refinements have been made to the present Multi-city Agreement to provide for improved management and planning functions.

The SROG's have been determined by the MAG Regional Council using two criteria:

- o Waste treatment service areas
- o Common spheres of interest

The subregional operating group concept has been designed to provide flexibility. Several governmental agencies of an area can participate jointly (multiple member SROG), and the concept is also applicable for other single entity areas (single member SROG). A local government may also be a member of more than one SROG.

The governing body of each participating city and town has adopted a resolution establishing the SROG and agreeing to be a SROG member and requested, by letter, MAG designation of the SROG and its Lead Agency. MAG, in turn, adopted a resolution on January 17, 1979, designating each SROG and Lead Agency, with the exception of the Avondale-Goodyear SROG. At the time, resolutions from the two cities and a determination of Lead Agency were still pending. The cities of Avondale and Goodyear have since adopted resolutions and, in turn, MAG adopted a resolution on April 4, 1979, designating the Avondale-Goodyear SROG and Lead Agency.

Resolutions have been received from the Towns of El Mirage, Guadalupe, Paradise Valley, and Surprise agreeing to the adopted management system. These towns, however, have not requested nor been designated by MAG as SROG's. The Towns of El Mirage and Surprise do not presently provide sewer service within their corporate limits and have no immediate plans to do so. In the future when a decision is made to provide sewer service, El Mirage and Surprise will be designated as members of a multiple member SROG or as single member SROG's.

For a summary of water quality management responsibilities, see Figure VIII-1.

FLOOD CONTROL

During the course of the Phoenix Urban Study, the analysis of flood control alternatives and their interaction with existing or proposed institutions was conducted at a preliminary level. Contacts were

	MAG	Multiple Member SROG			Single Member SROG	Arizona BWQ	County Planning Department	County Health Department	EPA
		SROG Board	Lead Agency	City, Town, Sanitary District, Private Sewer Agency					
Areawide Planning (208)	●						●*		
Adopt Plan and Annual Update	●								
Assure Compliance with adopted 208 Plan	●	●			●				
Assure Effective Management of Waste Treatment Works Under Conformance with 208 Plan	●	●	●	●	●				
Arbitrate Disagreements among Local Governments	●								
Establish Construction Priorities for Waste Treatment Facilities for Region	●								
Coordinate SROG Activities	●								
Facility Planning (201)		●	●	●	●				
Administer EPA Construction Grants		●	●	●	●	●			●
Refuse to Receive Wastes for Non-compliance		●	●	●	●				
Operate and Maintain Sewer Treatment Plants			●	●	●				
Construct Treatment Plants			●	●	●				
Construct Sewer Lines			●	●	●				
Industrial Discharge Monitoring			●	●	●				
Plant Monitoring and Regulation			●	●	●	●		●	●
Operate and Maintain Sewer Lines				●	●				
Administer Monthly Service Charges				●	●				
Collect Connection Fees				●	●				
Incur Bonded Indebtedness				●	●				

* Contractor to MAG

WATER QUALITY MANAGEMENT SYSTEM - RESPONSIBILITIES

Figure VIII-1

made with representatives of the federal, state, regional, and local governmental and quasi-governmental agencies concerned with water resources development. No serious institutional conflicts appeared during this process, although a more detailed analysis of the capability of local entities to implement and maintain facilities contained in the alternative plans would be required if more detailed studies are made. When it became apparent that none of the alternatives examined by the Urban Study, with the exception of those for control of flooding along the Salt River through metropolitan Phoenix, would progress beyond the survey stage, further institutional analysis was suspended.

The institutional analysis for the Salt River flood control alternatives drew on the data base assembled for the flood control portion of the Phoenix Urban Study. Institutional differences between agencies and organizations concerned with flood control and protection and those concerned with environmental issues were surveyed. It must be remembered, however, that this analysis was preliminary, and that it will be pursued in greater detail by the Bureau of Reclamation with the assistance of the Corps of Engineers as a part of their Central Arizona Water Control Study. This effort will continue to rely on the inventory developed by the Phoenix Urban Study and presented in the Final Report. It will produce a detailed analysis of institutional concerns and impacts related to Salt River flood control.

WATER CONSERVATION

Artificial Groundwater Recharge

The concept of achieving water conservation through artificial groundwater recharge is both innovative and controversial. While support for the idea has been voiced, some of the institutions contacted during the course of the Urban Study expressed reservations with regard to the feasibility of a recharge project, which may constrain its implementation. Primary concerns involve questions of ownership and beneficiaries, economic feasibility, management, water quality, technical feasibility, and engineering design.

In regard to the demonstration project, three major recommendations for further institutional study are offered: 1) to complete and expand the institutional study, 2) to form a technical advisory committee to monitor the progress of a demonstration project and to advise the managers on matters which may affect artificial recharge, and 3) to create a citizen participation program related to the recharge projects.

Recommendations for implementing a full-scale project include: 1) continuing the activities of the technical advisory committee and the citizen participation program, 2) analyzing the institutional variables which have affected recharge projects in other geographical areas, and 3) determining the institutional requirements for operating and managing a full-scale project.

Artificial recharge has four legal aspects: 1) the right to utilize storage space, 2) the right to recharge the space procured water, 3) the right to retain ownership during storage, and 4) the right to recapture the co-mingled stored water. None of these rights are presently recognized in Arizona. Under Arizona law, the overlying owner can essentially pump all the water lying beneath the surface. If a sponsoring institution were to recharge a groundwater basin, it would neither receive the full benefit nor apportion the benefits of such a program. The benefits would accrue to all overlying owners who have the ability to pump.

California and Washington provide legal models on groundwater recharge that might be readily adopted by Arizona. One of the following approaches may provide either a full or interim solution: 1) modification of enabling legislation of an existing entity to allow recharge in its service area, 2) statutory recognition of the recharge rights, 3) multi-entity contracts in the dispersion area, 4) unilateral institutional action, and 5) appointment of a water master. The options will be reduced when a recharge program moves from the demonstration phase to a full scale project.

Another essential institutional consideration is that water allocation and distribution in the Salt River Project area is subject to the water rights provisions of the Kent Decree, which established a well-defined structure of water rights in the Salt River Valley. Any full-scale recharge project would have to be operated in conformity Salt River Project activities under the Decree.

New River Diversion Measure

Little formal institutional analysis was performed for the New River Diversion Measure. Work on the project was suspended indefinitely before intensive institutional studies could be performed. During the initial survey, however, there appeared to be no significant institutional conflicts associated with the New River Diversion Measure. Arrangements would have to be made with the community of New River, as well as with Maricopa County Municipal Water Conservation District No. 1, the operators of Lake Pleasant, and the Arizona Department of Transportation, operating agency for the I-17 Black Canyon Highway. It is assumed that should the project be reconsidered for implementation in the future, a more thorough institutional analysis will be conducted.

INSTITUTIONAL ANALYSIS

PHOENIX URBAN STUDY

Appendix A

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