

ARIZONA WATER BANKING AUTHORITY

WEDNESDAY, OCTOBER 15, 1997

ARIZONA DEPARTMENT OF WATER RESOURCES

PLEASE PRINT

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WEDNESDAY, OCTOBER 15, 1997

ARIZONA DEPARTMENT OF WATER RESOURCES

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Arizona Water Banking Authority
500 North Third Street, Phoenix, Arizona 85004
Telephone 602-417-2418
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FINAL AGENDA

Wednesday, October 15, 1997
9:30 a.m.

Arizona Department of Water Resources
Third floor conference room

- I. Welcome / Opening Remarks
- II. Adoption of Minutes of September 17 Meeting
- III. Update of 1997 Plan of Operation
- IV. AWBA/CAP Pricing Subcommittee
- V. Third Management Plan Overview
- VI. Update on Mohave County Discussions
- VII. Update on the AWBA Study Commission
- VIII. Innovations in American Government
- IX. Update on Interstate Discussions
- X. Call to the Public
- XI. Adjournment

Future Meeting Dates:

Wednesday, November 19, 1997

Wednesday, December 17, 1997

Persons with a disability may request a reasonable accommodation, such as a sign language interpreter, by contacting the Arizona Water Banking Authority at (602) 417-2418 or (602) 417-2455 (T.D.). Requests should be made as early as possible to allow time to arrange the accommodation.

ARIZONA WATER BANKING AUTHORITY
Draft Minutes

September 17, 1997
Arizona Department of Water Resources



AUTHORITY MEMBERS
Rita P. Pearson, Chairman
Tom Griffin, Vice-Chairman
Bill Chase, Secretary
Grady Gammage
Richard S. Walden

EX OFFICIO MEMBERS
Senator Pat Conner
Rep. Bill McGibbon

Welcome / Opening Remarks

Chairman Pearson opened the Arizona Water Banking Authority meeting at the Oro Valley Town Council Chambers with roll call of the Authority members. All members of the Authority were present with the exception of Grady Gammage, Jr., Senator Conner and Representative McGibbon.

Adoption of Minutes of August 20 Meeting

The August 20 meeting minutes were adopted as submitted with one word change to page 4, paragraph 2.

Update of 1997 Plan of Operation

Tim Henley stated that the Arizona Water Banking Authority (Bank) continues to recharge water mainly through the in lieu process. The Bank has recharged 250,000 af through August 1997 and would expect to increase to another 300,000 af by the end of September if GRUSP can be used for recharge. He felt that the Bank continues to move forward. There have been some requests for additional water from the in lieu partners. One of the requests required that the permit be amended, which has been done.

Larry Dozier of CAP stated that CAP water should be available for GRUSP by the end of September.

Tim Henley said that the Bank may have an exchange agreement with SRP that would allow the Bank to use GRUSP during times when there are CAP aqueduct constraints. SRP could deliver Salt and Verde water to the GRUSP project, and when the aqueduct constraint capacity was relieved the Bank would repay SRP with CAP water and SRP would deliver CAP water to their customers. The Bank will continue to work with SRP on this option.

After consulting the legal staff, the Bank feels that it is probably best to get some specific authority to hold an exchange permit. This may be pursued in the omnibus process. The Bank would look at modifying the language in the current statutory language that allows the Bank to hold exchange permits.

Chairman Pearson stated that changes to existing law in an omnibus bill can be substantive but cannot be controversial. ADWR is scheduled to have a meeting in early October for a discussion of items that could be in the 1998 omnibus bill, and the exchange authority for the Bank would be included in that discussion.

Tucson Regional Recharge Plan/Status of Tucson Recharge Sites

Kathy Jacobs, Area Director for the ADWR Tucson Active Management Area, gave a presentation of the process with the Tucson Regional Planning Process. The process was started in the Fall of 1995. About the same time that Proposition 200 passed. There have been some serious problems with direct delivery of CAP water, and the city had to turn off the CAP deliveries. Tucson AMA is looking at recharge more seriously than it had previously.

Ms. Jacobs discussed the Regional Recharge Plan including the following topics:

- o Providing the forum for regional cooperation regarding recharge activities
- o Maximizing the use of renewable water supplies in the Tucson AMA
- o Optimizing the sharing of recharge, pumping and transmission facilities
- o Expediting the selection, testing and constructing of groundwater recharge facilities
- o Facilitating equitable access to recharge capacity
- o Providing a background document for the facility's plan that will be required by the Bank

Chairman Pearson asked if the Regional Recharge report would be ready in the Summer of 1998. Ms. Jacobs stated that the complete recharge report should be completed by December 1997 or January 1998, but there should be a *draft* report to the Bank within the next two months, which will include the information that the committee feels the Bank needs for the facility's plan. The Regional Recharge report must be completed by December 1997.

Tucson Water Recharge Activity

Dennis Rule, of the Tucson Water District, gave a presentation discussing the progress of the City of Tucson's recharge of CAP water. Mr. Rule stated that one of the important things to know is the relationship between the location of the CAP canal and the City of Tucson where the central well field is. Mr. Rule stated there are two points where CAP water can be brought into the Tucson area. One is through the Treatment Plant and the other off the terminus located at Pima Mine Road.

Mr. Rule stated that the City of Tucson had plans for direct use and to convert their service area from groundwater to almost completely CAP water. Mr. Rule stated when Proposition 200 was passed in 1995, it basically shifted the emphasis from direct delivery recharge.

The City looks to Avra Valley in use of recharge and recovery and use of CAP water. There are plans to build a 60,000 - 100,000 af per year project in the region.

Pima Mine Road is another project of the City of Tucson and CAWCD, which is a 50/50 split. CAWCD's half is being built as a demonstration project. The City of Tucson is anticipating that the Bank will utilize CAP capacity in that project, at least on the short term. This project is under construction now. There is a pipeline that will be constructed from the terminus to the site, the basins are already under construction, and the current schedule for completion should be February or March 1998. This project is estimated to have a potential capacity of 10,000 af per year in the pilot phase and 30,000 af per year long term.

Mr. Rule reported that there are two other potential projects: Santa Vera Arroyos and the In-channel along the reservation on the Santa Cruz River. These sites could be included in the implementation of the SAWR settlement.

Tim Henley commented if the Bank is to be involved in the settlements Mr. Rule should get as much detail as possible to the Bank to determine if the Bank can play a role.

Mr. Henley also commented on the studies for the Green Valley area and asked if the potential capacity constraints have been recognized. He felt that there might be a situation created where there might be competition between Pima Mine Road direct recharge site and in lieu deliveries to Green Valley. Mr. Rule did not feel that there is a problem, that there are built-in flexibilities specifically to allow as much delivery of the terminus as its capable of delivering. There is a potential to modify the interconnect at the terminus and relieve what may be in the future a delivery capacity problem because of the down sizing.

Update on Mohave County Discussions

Tim Henley and Herb Dishlip traveled to Bullhead City and met with the Mohave County Water Authority. They discussed the Arizona Water Banking Study Commission and its potential recommendations and explained what the Bank has been working on.

The Mohave County Water Authority is not just looking to the Bank for future supplies but other potential providers.

Mr. Henley stated that the Bank continues to move along on the potential for a contract. The Bank will utilize ADWR's contracting process to select consultants to look at the recovery issues.

Update on the AWBA Study Commission

Herb Dishlip discussed the updates of the Study Commission and the current projects at hand.

- Indian Issues subcommittee - The subcommittee met in late August to review the interim draft report. The report is divided into four primary sections that the subcommittee is focusing on:
 - (1) Descriptions of the different tribes, their relationship to the CAP, their water rights, whether they have settlement rights, whether they are CAP contractors, whether they have access to the CAP delivery system, and whether they have adjudicated water rights through Arizona vs. California
 - (2) AWBA participation in settlement activities
 - (3) Marketing and Transfers of Indian water and whether the Bank could play a role in the future if it was authorized
 - (4) The challenges facing the Bank with respect to Indian community concerns about sovereignty, location, and other issues

The report will include a series of recommendations.

The Indian subcommittee continues to have meetings with different Indian tribes throughout Arizona. The subcommittee has met with the Hualapai community. They talked about water banking. Their issues were not really focused on water banking; the tribe was more interested in water rights and quantifications of their water rights. The subcommittee has met with representatives from the Gila River Indian community. The Gilas are one of the prime tribes that the Bank could interface with. They are located within the CAP service area, so they have access to the CAP. They do not have a settlement as of yet. They have the prime considerations for water banking activity. The Gila tribe took into advisement the kinds of discussions between the subcommittee and the tribes and invited the Study Commission to return and discuss issues in the future.

- Water Banking Services Outside CAP Service Area subcommittee - The subcommittee has also dealt with issues of providing water for environmental purposes, federal purposes, and looking at deliveries of water to entities that are not located within CAP with a focus in Mohave and La Paz Counties. Seven different issues have been identified and discussed in the report that has been prepared.
- Interstate and Intrastate Marketing subcommittee - The subcommittee has had good discussions with regard to other opportunities for the Bank. These opportunities include providing short-term and long-term water supplies for a variety of purposes and water management benefits throughout Arizona. The committee focused its issues in three primary areas:
 - (1) Development of a policy for water marketing of Colorado River water. There is currently a limited policy in effect that ADWR has developed with regard to exchanges and contractors who needed exchanges. The subcommittee focused more on general policy regarding transfers between willing buyers and willing sellers of Colorado River water
 - (2) Other activities and services the Bank could provide beyond the current level of services
 - (3) Are there other sources of supplies or other means of providing water banking benefits besides just recharge of excess CAP water
- Planning and Modeling Assumptions subcommittee - The committee is looking into shortages and how much water would need to be set aside to meet the primary purposes of helping firm up M&I shortages. The subcommittee has discussed a wide range of assumptions with regards to how to operate the River and Lake Mead, when surplus is declared, declaring shortages, how quickly the upper basin demands will build up, and other issues

The subcommittee looked at a range of results and made recommendations on what it felt was a good combination to look at for studies. The subcommittee will make a recommendation regarding the most reasonable assumption.

The full Study Commission is scheduled to meet on September 25. The full committee will evaluate and review all four reports. It is expected that the study commission will either adopt or modify the recommendations so the committee will have some recommendations to include in the Interim Report due November 1.

Overall, the results of the Study Commission indicate that there are many opportunities to expand water banking activities beyond what the current legislation sets forth. Many questions remain, such as opportunity versus need, whether people really want these services from the Bank, and the costs (who will be paying for additional activities of the Bank).

Tim Henley asked if the Study Commission is anticipating having something to recommend at the October Water Banking meeting. Mr. Dishlip answered that the Authority meeting would precede the Study Commission meeting and he was hoping that at the October meeting that the full Study Commission would review the draft report. At the October Water Banking Authority meeting the Study Commission could report on the draft recommendations discussed at the September 25 meeting.

Update on Interstate Discussions

Chairman Pearson gave an overview discussion of the status of the seven-basin states. There was a meeting in Phoenix where the California representatives give an update of the status of their internal discussions regarding the California 4.4 Plan. Bob Johnson also attended the session and indicated that the federal draft interstate water banking regulations will be circulated for public review at the end of October.

CAP has been holding pricing discussions. Bill Chase and Tom Griffin are representatives on the AWBA/CAP pricing subcommittee. This subcommittee will be dealing with the future CAP pricing to the Bank.

Mr. Chase indicated that there has been one meeting of the subcommittee, and at the meeting Larry Dozier made a presentation giving background of some areas where there might be hidden subsidies. Mr. Chase commented that there were a number of apparent hidden subsidies in the current rate that were not adequately taken into account. If all the numbers were added up the cost that is being payed is less than half of the rate without subsidies. The numbers are not firm yet and need to be looked at carefully. The subcommittee has a lot of work ahead of it to figure out what the subsidies are.

Mr. Chase stated that he feels that the prices will go up in 1999.

Tom Griffin indicated that this is the time to put together information before the next CAWCD Board meeting. Larry Dozier stated that he has not had time to put together the quantifications of the subsidies in writing but will get them out to the committee before the October meeting.

Tim Henley commented that not just the Bank but other entities are paying the lower rate to CAWCD, and are getting a significant break if the Bank was not involved. They actually could be paying a higher rate. Anything the Bank adds is an improvement.

Mr. Henley stated that he feels that all issues need to be discussed with respect to the prices, and if there are subsidies, is it appropriate to continue the subsidies. He also felt that there would be an increase in rates but does not know the amount.

Chairman Pearson stated that the Bank has fixed revenues such as the pump tax, the \$.04 tax and the withdrawal pump tax. As costs increase the Bank would probably be buying less water.

Mr. Henley stated that a major portion of the Bank's revenue goes to the CAP. Currently most of the Bank's revenues are to pay the energy cost, and the Bank is getting water delivered because of that. If the Bank revenues are used to pay off other types of payments or other operating costs, it would subtract from the amount of water the Bank can deliver.

Mr. Henley updated the Authority on interstate banking and explained that the Bank staff had a fact-finding tour with a technical group from Nevada, which involved surveying recharge sites. The Bank has been assuring Nevada that Arizona has substantial capacity and ability to recharge water and probably has a substantial ability to do some recovery.

A meeting with the Colorado River Commission from Nevada focused on the rules. Mr. Henley felt that from that meeting Nevada is very close to the Bank's issues on the rules and supportive of the Bank's view points. Nevada realized that the State of Arizona must agree the rules have not hurt Arizona in order to have interstate banking authorized.

At a previous meeting Nevada discussed using a sales tax to fund interstate banking. Since that time there has been a lot of publicity in Nevada about the sales tax and whether it will be implemented. Nevada assured the Water Bank staff that regardless of the sales tax outcome they do have revenues available to be able to actively participate in the Water Bank and provide money to offset the cost of recharging their water.

Call to Public

Sharon Megdal, representing the MegEcon Consulting firm, wanted to give an update on the progress of the Lower Santa Cruz replenishment project. It was one of the sites that was included in the Water Bank's 1997 Plan of Operation. There was an ambitious goal set if that time line could be met, which at this time they have not been able to do.

The first phase is expected to be constructed in the first half of 1998, (basins 1-4), which are estimated to be able to handle about 12 - 13,000 af of recharge.

In June, CAWCD approved going forward with participation with the Lower Santa Cruz as a state demonstration recharge facility. They are in the process of developing an IGA between the Flood Control District, CAWCD, and the town of Marana.

Tim Henley asked that as the Flood Control District, CAWCD, and the Town of Marana develop a three-party IGA he hopes that they would identify one agency with responsibility for the project so the Bank would not have to go through more than one agency or organization to utilize the facility.

Ms. Megdal proposed that CAP take the role of operating the facility. It would make sense for CAP to assume that responsibility.

Dick Basee, with Concerned Citizens for the City of Tucson, commented that he had three points he wanted to address to the members of the Authority.

- o Why the City of Tucson is not given at least partial credit for the effluent that is bordering the Santa Cruz river. He stated that he felt it was a reality and it should be included to benefit the City of Tucson for its water use.
- o Regarding Las Vegas, he asked why an arrangement cannot be made to trade or sell up to 30,000 af with Nevada if they could provide Arizona with another source for 30,000 af. That other source could be 15,000 af that are lost to the Central City of Tucson well field by water that goes down the Reeder River each year and the 17,000 af that passes through Congress Street Bridge every year and is not utilized by Tucson's well field. Since Tucson does provide plenty of water to Marana through effluent, it would seem logical that they could take that water by recharging it through Crawford Dam and various dams that have been suggested by the Army Corps of Engineers as feasible.
- o It is illogical to the citizens to be recharging water in the desert. They should get in-lieu credit for the water put on the crops. (Referred to articles in the Tucson Weekly)

Bob McCain, representing AMWUA, made a few recommendations for a future Water Banking meeting agenda item:

- o To briefly review the impact of the Third Management Plan (TMP) on the operations of the Arizona Water Banking Authority. ADWR is in the process of developing a TMP for the year 2000 - 2010. This should be promulgated by the end of 1997. He stated that he felt that there are portions of that plan that could affect the Bank. In the augmentation chapter, the TMP may change storage site criteria. ADWR is considering a radical change in the recovery site criteria areas outside the area of hydrologic impact for recharge projects.

Mr. McCain felt that there was a plan to establish or set forth a process by which a new institution will be established called Critical Decline Management Areas. ADWR is talking about incentives to recharge in certain areas and within the areas there is talk about recovery prohibitions. Both are geared towards a goal of achieving groundwater level stabilization and about critical decline management areas as areas to protect against the sites that manage water quality, for environmental purposes and riparian protection. Mr. McCain urged the Bank to get involved in the process.

Chairman Pearson agreed to put the issue on the agenda of the Water Banking Authority.

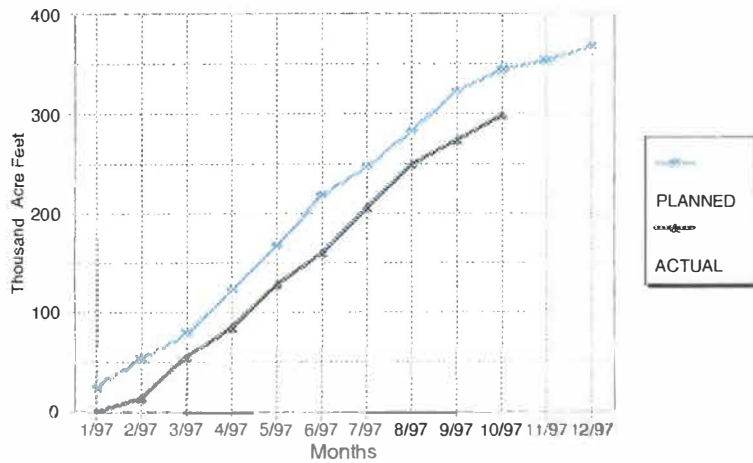
Chairman Pearson adjourned the meeting at 12:00 p.m.

ctual deliveries updated 14-Oct-97

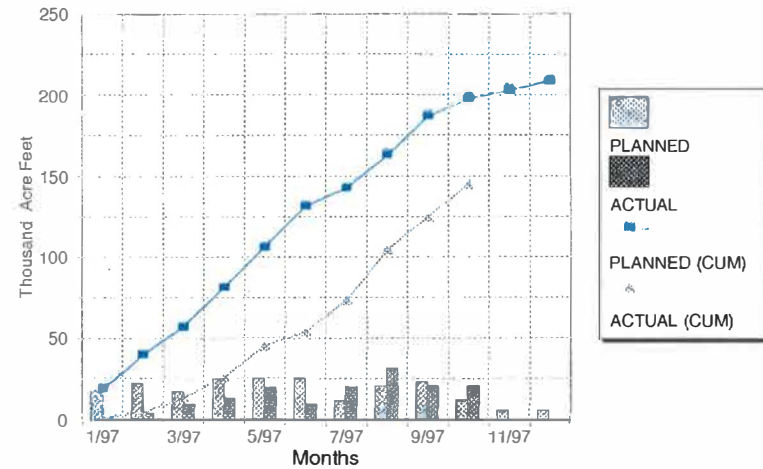
	jan	feb	mar	apr	may	jun	jul	aug	sep	oct	total	
Phoenix AMA												
GRUSP	0	0	1,961	0	8,302	727	0	0	4,448	10,000	25,438	GRUSP
RWCD	0	0	3,689	8,121	8,326	4,676	8,267	6,164	3,529	3,000	45,772	RWCD
NMIDD	0	3,310	3,490	4,400	2,100	3,700	6,992	15,590	7,618	1,700	48,900	NMIDD
QCID	0	0	0	0	0	0	3,566	7,263	3,719	2,000	16,548	QCID
MWD	0	0	0	0	0	0	578	2,171	904	3,800	7,453	MWD
CHCID	<u>0</u>	<u>100</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>50</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>350</u>	CHCID
Subtotal	0	3,410	9,190	12,571	18,778	9,153	19,453	31,188	20,218	20,500	144,461	
Pinal AMA												
CAIDD	0	6,825	19,967	8,208	10,000	0	0	0	0	0	45,000	CAIDD
MSIDD	0	2,446	8,422	5,402	8,923	12,780	10,940	3,838	1,496	2,700	56,947	MSIDD
HIDD	<u>0</u>	<u>1,400</u>	<u>3,300</u>	<u>3,300</u>	<u>5,015</u>	<u>9,575</u>	<u>13,485</u>	<u>9,423</u>	<u>2,667</u>	<u>750</u>	<u>48,915</u>	HIDD
Subtotal	0	10,671	31,689	16,910	23,938	22,355	24,425	13,261	4,163	3,450	150,862	
Tucson AMA												
Avra Vally	0	0	0	55	644	743	695	20	0	210	2,367	Avra Vally
CAVSRP	0	0	0	0	0	0	0	0	0	0	0	CAVSRP
Pima Mine	0	0	0	0	0	0	0	0	0	0	0	Pima Mine
Lower Santa Cruz	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	L. Santa C
Subtotal	0	0	0	55	644	743	695	20	0	0	2,157	
TOTAL	0	14,081	40,879	29,536	43,360	32,251	44,573	44,469	24,381	23,950	297,480	

1997 PLAN OF OPERATION

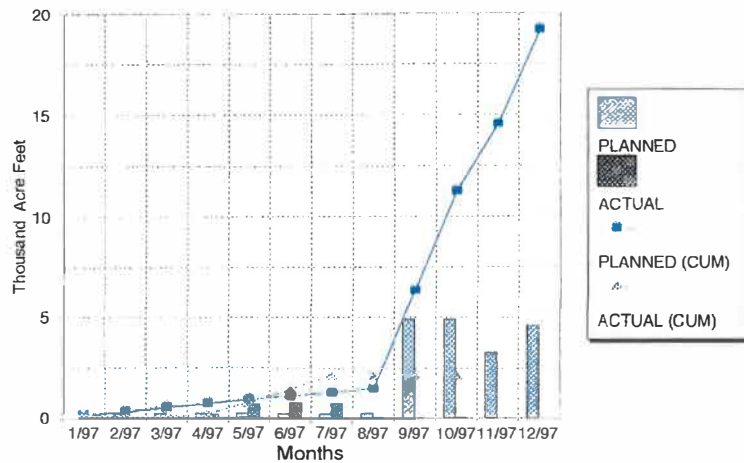
CUMULATIVE DELIVERIES (by Month)
Planned vs. Actual



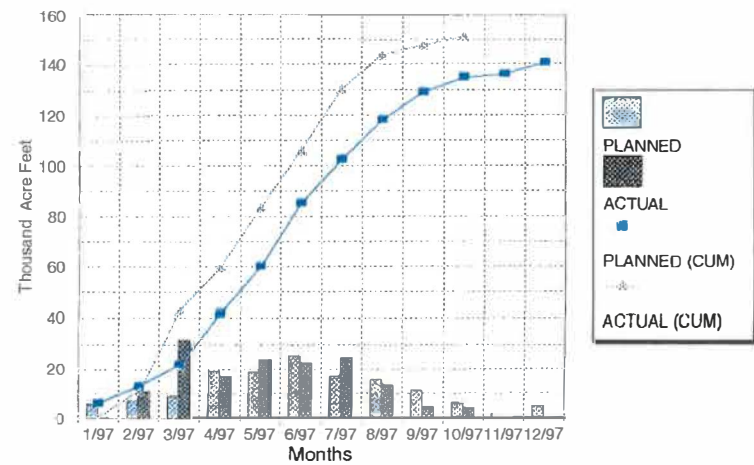
PHOENIX AMA DELIVERIES (by Month)
Planned vs. Actual



TUCSON AMA DELIVERIES (by Month)
Planned vs. Actual



PINAL AMA DELIVERIES (by Month)
Planned vs. Actual





**CENTRAL ARIZONA WATER CONSERVATION DISTRICT
(CENTRAL ARIZONA PROJECT)
PRICING POLICY COMMITTEE**

October 2, 1997 - 11:30 a.m.

**Central Arizona Project Headquarters Building
23636 North Seventh Street
Main Conference Room
Phoenix, Arizona**

FINAL AGENDA

1. Call to Order--Polen
2. Approval of Minutes of August 7, 1997 and September 4, 1997 Committee Meetings--Polen
3. Discussion and Formulation of Recommendation to the Board to Adopt a CAP Pricing Policy--Polen
4. Adjournment

In accordance with the Americans with Disabilities Act (ADA), if you need reasonable accommodations due to a disability, please contact the CAP office at (602) 869-2329 or TDD (602) 869-2170 at least seventy-two (72) hours in advance of the meeting. Assisted listening devices are available at the Security Desk.

S:\MEETINGS\ISPL10-2.FNL

Central Arizona Project Rate Setting Policy

1. Goals of Rate Setting

- 1.1. Cost Recovery. CAP is a government entity that manages a water resource for the benefit of its rate and tax payers. Water rates are set in order to recover costs, net of other revenue sources.
- 1.2. Encourage Use. The policy of the State is to encourage use of renewable water supplies such as CAP water. The adoption of rates which facilitate use of CAP water by those who need and are entitled to CAP water furthers this State policy.
- 1.3. Financial Stability. To reliably perform its services CAP must maintain a strong financial position and long term balanced cash flows. Setting rates at levels which on a long term stabilized basis are above cost is inconsistent with CAP's service responsibility. However, setting rates which on an overall basis are below cost would jeopardize the financial stability of the project. Measurement of cost is subject to uncertainty and relies on estimates. CAP will endeavor to accurately measure its cost and charge this amount to its users. CAP must also maintain reasonable levels of cash reserves as a financial buffer to avoid undue fluctuations in rates and to ensure its ability to meet its financial obligations in the event of higher than expected costs.
- 1.4. Price Stability and Predictability. Though the long run benefits of using renewable water supplies are self evident, in the short run switching from non-renewable supplies involves risks and sacrifices. CAP can mitigate those impacts by making an effort to maintain relatively stable and predictable rates. If changes are required, the changes should be announced well in advance and, if possible, phased in over a period of time.
- 1.5. Operational Efficiency. CAP owes a duty to its tax and rate payers to operate its facilities efficiently, maintaining rates as low as possible without

compromising service reliability. CAP is not subject to competition or regulation which in other forms of enterprise would provide an independently imposed constraint or discipline for cost containment. CAP nevertheless commits itself to a goal of operating its facilities at the lowest possible cost consistent with maintaining a highly reliable service capability.

- 1.6. Accountability. CAP is responsible for the sub-contracting and delivery of 1.5 million acre feet per year of water, the State's largest single source of renewable water, and therefore controls an asset of enormous importance to the state. The establishment of policies concerning availability and rates for this water is perhaps the most important responsibility of the CAP Board of Directors. Since rates charged to one user group indirectly affect rates charged to other users, rates should be considered as a package, and not in a piecemeal fashion. Water delivery policies and rates should be established in a highly public process only after due consideration and analysis of economic and financial impacts, and inviting comment from all affected parties.
- 1.7. Maximize Economic Benefit. In years when CAP sub-contractors accept delivery of less than their full contract entitlement at the contract price and after statutory replenishment obligations for the CAGRDR have been met, the remaining water ("excess water") may be delivered to the sub-contractors or other parties at rates established by the Board for such deliveries. CAP seeks to maximize the economic benefit from the use of water it supplies by making excess water available for delivery to direct uses and storage activities within the district. To that end, the Board may establish rates which differentiate among various user categories, taking into account the demand characteristics of such user categories and incremental costs of delivering water to them.

- 1.8. Legal Compliance. Any rate making processes and policies must be accomplished in accordance with statutory and contractual requirements
2. Cost Measurement
 - 2.1. CAP will periodically conduct cost of service studies to determine long term cost structure of the operation and maintenance of its facilities.
 - 2.2. Such studies will analyze the operating components of the system and estimate annual costs in the future for operations, repair and replacement, and convert those costs to an “equivalent annual” amount. This amount will be calculated so as to be sufficient to cover the estimated annual costs taking into account time value of money and the establishment and maintenance of reasonable financial reserves for operational contingencies and self insurance. Such studies may also consider energy costs associated with certain deliveries.
 - 2.3. The costs determined in these studies will be utilized in establishing water rates.
 - 2.4. Cost of service studies will be conducted as needed, not less often than once every five years.
3. Subcontract Water Delivery Charges
 - 3.1. Water deliveries to subcontractors will be charged in accordance with subcontract requirements.
4. Capital Charges
 - 4.1. Capital charges under long term M&I sub-contracts will be set in accordance with contract requirements taking into account additional revenue sources for repayment. Agricultural deliveries are assessed a \$2/af capital charge.
 - 4.2. Additional sources of repayment include ad valorem taxes, electric revenue from CAP’s power resources, “4.5 mil” charges on hydroelectric power,

capital charges on other water deliveries, and other miscellaneous revenues.

5. Excess Water

5.1. Water delivery charges for excess water will be established. CAP may establish a separate capital charge for excess water deliveries.

5.2. Differential rates for multiple user categories may be established by the excess water rate setting process. The goal of establishing a differential rate is to induce utilization that would not exist otherwise. The formulation of prices by agricultural pools, water bank water, and other customer groups is an example of this approach.

5.3. In general, preference will be given to customers within the district that are willing to pay more for water, limited to full cost recovery. This approach may be modified by the establishment of pre-determined delivery amounts in certain price categories ("pools") to provide greater certainty for planning purposes by customer groups in lower price categories.

5.4. Water delivery charges for excess water may be priced below the M&I water delivery price, provided that the reduced price covers the incremental costs of such excess water deliveries, and the establishment of a reduced price does not result in an increase in the amount that would otherwise have been charged as the M&I water delivery charge, taking into account incremental costs of the increased deliveries, the benefit of spreading fixed costs over increased delivery amounts, and interest savings which result from increased deliveries to agricultural uses which qualify for capital payment without interest under the master repayment contract.

6. Forward announcement of prices, pools and price stability

6.1. CAP will announce prices annually, providing prices for the coming year in accordance with contract requirements, and providing non-binding estimates of prices for the succeeding four years.

- 6.2. The first year of the rate schedule will be considered “firm” pricing, subject to change only in emergency circumstances and if a change would be permitted under the water delivery contract. The succeeding years in the price schedule are advisory for customer planning purposes, but subject to change.
- 6.3. If pool concepts are employed establishing delivery amounts for particular price categories, then the size of the pools will also be forecast, on a 10 year rolling basis with the first 5 years of the forecast being firm, subject to change only in emergency circumstances and if a change would be permitted under applicable contract requirements.
- 6.4. CAP will endeavor to avoid “rate shock.” If financially feasible, it will phase in required rate increases over a reasonable period of time.

7. Rate Setting Process

- 7.1. A public rate setting process will be conducted annually. This process will define customer groups and rates to be charged to each group. If then applicable, the size of “pools” of water available to each group will also be established.
- 7.2. Rates will be set only after being publicly announced and providing adequate time for public comment. The suggested calendar for the annual rate setting process is as follows:
 - 7.2.1. February-- staff delivers proposed rate schedule and analysis to board for study;
 - 7.2.2. March -- Board adopts preliminary rate package which is then mailed to all sub-contractors and interested parties who are invited to submit written comments;
 - 7.2.3. April/May -- public comments are analyzed and reviewed by staff and final rate recommendation disseminated to Board and interested parties;

- 7.2.4. June -- adption of rate schedule.
- 7.3. Following adoption of rates, the following procedure will be followed:
 - 7.3.1. June 1 -- expected receipt of notice from Bureau of Reclamation of water availability for following year;
 - 7.3.2. July 1 -- CAP notifies customers of availability and price for following year;
 - 7.3.3. Oct. 1 -- Customers submit in writing a schedule showing desired monthly deliveries for following year and preliminary estimates for succeeding 2 years;
 - 7.3.4. Nov. 15 -- CAP furnishes customers a monthly delivery schedule for following year;
 - 7.3.5. Nov. 20 -- first billing for following year's deliveries is sent to customers.
- 7.4. In general, rates will be considered as a package, and not individually. In an exceptional circumstance (such as a "declaration of surplus" by the Secretary of Interior), the Board may establish a new rate or user category in an interim rate action. In any such action, the Board shall consider the financial impacts to the project and affects on other customers.
- 7.5. The Board retains its authority permitted under water delivery subcontracts to adjust rates during the year if rates prove inadequate to cover cost, and the Board determines that an interim adjustment of rates is in the best interest of the project.
- 8. Implementation
 - 8.1. Staff will conduct analysis and obtain studies necessary for the implementation of this rate setting process.
 - 8.2. The first rate setting in accordance with this process will be conducted in calendar year 1998, to the extent feasible, and cost studies will be

completed and full implementation of this policy will be accomplished by 1999.

- 8.3. The Board retains the right to establish and modify rates during this implementation phase.



**CENTRAL ARIZONA WATER CONSERVATION DISTRICT
(CENTRAL ARIZONA PROJECT)**

ARIZONA WATER BANK PRICING COMMITTEE

October 2, 1997 - 3:00 p.m.

**Central Arizona Project Headquarters Building
23636 North Seventh Street
Main Conference Room
Phoenix, Arizona**

FINAL AGENDA

1. Call to Order--Weatherspoon
2. Approval of Minutes of September 4, 1997 Committee Meeting--Weatherspoon
3. Review of Policy Issues--Dozier
4. Review of Possible Areas of Subsidy--Dozier
5. Review of AWBA Funds by Source and Impacts of Price on Water Delivery Amounts--Henley, AWBA
6. Discussion of Future Activities--Weatherspoon
7. Adjournment

In accordance with the Americans with Disabilities Act (ADA), if you need reasonable accommodations due to a disability, please contact the CAP office at (602) 869-2329 or TDD (602) 869-2170 at least seventy-two (72) hours in advance of the meeting. Assisted listening devices are available at the Security Desk.

S:MEETINGS\AWB10-2.FNL

Policy Questions

- I. Should CAWCD provide water for recharge at subsidized rates?
 - A. To the AWBA
 - B. To M&I subcontractors
 - C. To other Arizona customers

- II. AWBA Funding Source
 - A. The 4¢ Ad valorem tax within CAP service area
 - B. The groundwater withdrawal fee in the Active Management Areas (Phoenix, Pinal and Tucson) that are part of the CAP service area.
 - C. General Fund Appropriations which provide benefits for cities along the river outside of the CAP service (tax) area, for Indian settlement and for the CAP service area.


- III. M&I Subcontractors Subsidized Recharge Rate
 - A. They pay capital charges and taxes which are the source of our reserve funds which are used for the subsidies.
 - B. There are complicating AMA management plans and assured water supply rules that impact each subcontractor's recharge plan.

- IV. Other Arizona Customers Want Subsidized Recharge Rates
 - A. In the CAP service area, they also contribute taxes to our reserves.

- V. Priority for Recharge Water
 - A. Legislation provides for the AWBA to be the lowest priority CAP customer.
 - B. M&I subcontractors and others will compete with the AWBA for available, lower cost in-lieu recharge capacity.



Central Arizona Project MEMO

DATE: September 30, 1997
TO: AWBA Pricing Subcommittee
FROM: Larry Dozier 
SUBJECT: Policy Issues and Subsidy Cost

3 & 4

Attached is a discussion paper with summary outlines and illustrative examples that attempt to break out the primary policy issues and quantify the range of possible subsidies. As you will note, these are not simple, straight forward issues.

Good luck.

ljd
S:\DOZIER\MEMOS\AWBASUB.COM

DISCUSSION PAPER

Policy and Subsidy Issues Considered in CAP Water Pricing for the Arizona Water Banking Authority

The basic question is, "Is it sound public policy to subsidize the cost of excess CAP water delivered to the AWBA?" There are certainly broad benefits to CAP customers to store water to use during future shortages and to protect against California's use of CAP water supplies by using that water in Arizona and forcing California to develop other alternatives. The AWBA has certain specific and limited sources of funds. Lower prices will allow more water to be recharged with those limited funds; however, recharge capacity and available water supply also become limiting factors. A second primary issue is, "What is the funding source used for subsidizing the water rate and who is the beneficiary of the subsidy?" A more complete discussion of these issues is included in the staff Discussion Paper dated September 5, 1996.

There are related questions regarding rate subsidies for recharge for M&I subcontractors and for contractors for excess M&I water. Attachment 1 is a summary outline of the policy questions.

The policy issues are more easily discussed if the costs of the subsidies are known. Subsidies can occur in the fixed OM&R rate, the pumping energy rate and the cost of federal debt repayment. Attachment 2 is a summary outline of the range of these subsidies. Attachment 3 is a short discussion and an example of how each category of subsidy is calculated.

Subsidy Costs

- I. Fixed OM&R Cost Subsidy
 - A. To recover revenue lost from lower rate to all M&I and Indian users who pay full OM&R rates; about \$12/AF
 - B. To recover only revenues lost from Indian sales that pay full OM&R rates; about \$3/AF

- II. Pumping Energy Cost Subsidy
 - A. To account for deliveries above the Navajo Sales Contract threshold; about \$38/AF instead of \$31/AF postage stamp. Incremental increase of \$7/AF
 - B. In considering the point of delivery, the incremental increase ranges from \$6 - \$35/AF

- III. Capital Cost Increase
 - A. To account for a greater percentage of the federal repayment becoming interest bearing, the water service capital cost might increase from \$3/AF - \$6.70/AF.

IV. Summary

	<u>Range \$/AF</u>	<u>Reasonable Estimate \$/AF</u>
Fixed OM&R	\$3 - \$12	\$5
Pumping Energy	\$6 - \$35	\$7
Capital	\$3 - \$6.70	\$4

Subsidy Discussions and Examples

Fixed OM&R Cost Subsidy

The fixed OM&R cost subsidy results from lost revenues due to the way the fixed OM&R rate is determined and collected. The budgeted total cost is divided by the projected deliveries to determine a cost per acre-foot. This full cost recovery rate is currently charged to the Ak-Chin Indian deliveries paid by the USBR and to our M&I direct use customers. The following example illustrates the potential subsidy cost.

Assumptions:

- Fixed OM&R costs are \$45 million
- | Deliveries for Direct Use | For Recharge |
|----------------------------|-----------------------|
| M&I 250,000 AF | AWBA 400,000 AF |
| Ag 550,000 AF | M&I <u>100,000 AF</u> |
| <u>Indian</u> 100,000 AF | |
| Subtotal 900,000 AF | 500,000 AF |
| Total | 1,400,000 AF |

OM&R - \$/AF:

Based on Total deliveries	$\$45 \text{ million} \div 1,400,000 \text{ AF} \approx \32 AF
Based on Direct deliveries	$\$45 \text{ million} \div 900,000 \text{ AF} \approx \50 AF
Difference	$\$50 - \$32 = \$18 \text{ AF}$

Revenues lost from using the rate calculated by including recharge deliveries:

250,000 AF M&I X \$18 =	\$4,500,000
75,000 AF Ak-Chin X \$18 =	<u>\$1,350,000</u>
Total	\$5,850,000

Incremental OM&R rates need on 500,000 AF of recharge:

To recover all lost revenues	$\$5,850,000 \div 500,000 = \11.70 AF
To recover only Ak-Chin losses	$\$1,350,000 \div 500,000 = \2.70 AF

Pumping Energy Cost Subsidy

To determine the "postage stamp" pumping energy component, we divide the total energy cost by the total water deliveries. This process takes into account: 1) water losses, i.e., water pumped but not delivered; and 2) power losses, i.e., pumping plant station service

energy and transmission line losses. The "postage stamp" rate averages the energy use to point of delivery. Water pumped into the Phoenix area require about 1500 kWh/AF while another 1600 kWh/AF is needed to reach the Tucson area. The "postage stamp" rate includes the smaller amounts of lower cost energy from New Waddell generation and our Hoover energy purchase, as well as the high priced energy from the Navajo Generating Station (NGS). The incremental cost to deliver additional water is determined by the energy required to the point of delivery and by the cost of the energy.

An additional complication is that our contract with Salt River Project (SRP) for sale of surplus NGS Power contains limits on the amount of energy reserved for CAP pumping. This threshold pumping starts at approximately 1,000,000 AF in 1995 and increases to 1,500,000 AF by 2010 depending on the point of delivery. Additional energy used for pumping above this level will be assessed a surcharge. The current base rate is approximately \$.0195/kWh with the surcharge rate estimated at \$.0294/kWh.

The following examples will illustrate the effect on the pumping rate if we deliver 500,000 AF of recharge water.

Assumptions: Current "postage stamp" rate \$31/AF
 900,000 AF of direct use deliveries
 500,000 AF of recharge deliveries
 Contract threshold allows 1,150,000 AF
 NGS rate is \$.0195 kWh
 Surcharge rate is \$.0294 kWh
 1500 kWh/AF use rate to Phoenix area
 1850 kWh/AF use rate to central Pinal County
 3100 kWh/AF use rate to Tucson area

About ½ (250,000 AF) can be delivered at the basic contract rate.

$$.0195 \text{ kWh} \times 1500 \text{ kWh/AF} = \29.25	$.0294 \times 1500 = \$44.10$
$$.0195 \text{ kWh} \times 1850 \text{ kWh/AF} \approx \36.10	$.0294 \times 1850 = \$54.40$
$$.0195 \text{ kWh} \times 3100 \text{ kWh/AF} = \60.45	$.0294 \times 3100 \approx \91.15

Average cost per acre-foot for additional 500,000 AF of recharge

- to Phoenix - \$36.70
- to central Pinal County - \$45.25
- to Tucson area - \$75.80

Average "postage stamp" rate increase: Av 1550 kWh/AF

900,000 at \$31/AF	= \$27,900,000
250,000 x .0195 x 1550 kWh/AF	≈ \$7,500,000
250,000 x .0294 x 1550 kWh/AF	≈ \$11,400,000
Total	= \$46,800,000
÷ 1,400,000	≈ \$33.50 vs \$31 AF

Incremental Cost AF, Average 1550 kWh/AF

$\$18,900,000 \div 500,000 \text{ AF}$	= \$37.80 AF vs \$31 AF
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The Capital Cost Subsidy

The repayment of the Federal loan for CAP is based on an interest bearing portion of debt for costs associated with commercial power sales and water delivered for M&I use and a non-interest debt associated with costs for agricultural water.

An increase in deliveries for M&I use resulting from large deliveries for recharge purposes, such as deliveries to the AWBA, would increase the relative portion of the debt that is interest bearing. Current cost allocations assume a total water supply over the 50 year repayment period of approximately 65,000,000 AF with 20,400,000 AF for Indians, 31,800 AF for M&I and 13,200,000 AF for Ag use. The M&I use includes about 10,000,000 AF of recharge; 8,000,000 AF by the AWBA and 2,000,000 by M&I subcontractors.

The CAWCD is currently in litigation with the USBR over issues including the cost allocation and repayment amount. The incremental capital cost increase per acre-foot when substantial additional M&I water is delivered is difficult to determine accurately.

We attempted to evaluate the present worth of the marginal debt service cost of delivering additional M&I water with different levels of Ag delivery. We assumed a repayment obligation of less than \$2.0 billion. Considering the 10 MAF of recharge caused the long-term average M&I delivery to vary from 400,000 AF/year to 600,000 AF/year. Ag deliveries varied from 150,000 AF/year to 400,000 AF/year. The present worth ranged from \$3/AF to \$6.70/AF. A reasonable assumption is about \$4/AF.

CAP / AWBA PRICING ANALYSIS

FUNDING SOURCE	AVAILABLE FUNDS (1998 base)	ANNUAL DELIVERY AMOUNT			TOTAL DELIVERY AMOUNT		
		@ \$36/af	@ \$51/af	@ \$67/af	@ \$36/af	@ \$51/af	@ \$67/af
FOUR CENT TAX							
Maricopa County	\$5,000,000	210,000	180,000	109,000	4,200,000	3,600,000	2,180,000
Pinal County	\$240,000	16,000	8,000	5,000	320,000	160,000	100,000
Pima County	\$1,100,000	20,000	15,000	13,000	400,000	300,000	260,000
WITHDRAWAL FEE							
Phoenix AMA	\$2,000,000	40,000	30,000	42,000	800,000	600,000	840,000
Pinal AMA	\$1,000,000	67,000	33,000	22,000	1,340,000	660,000	440,000
Tucson AMA	\$750,000	13,000	11,000	9,000	260,000	220,000	180,000
GENERAL FUND	\$2,000,000	120,000	60,000	39,000	2,400,000	1,200,000	780,000
BANK TOTAL	\$12,090,000	486,000	337,000	239,000	9,720,000	6,740,000	4,780,000
CAP DELIVERIES		1,336,000	1,187,000	1,089,000			
ARIZONA CONSUMPTIVE USE		2,736,000	2,587,000	2,489,000			
INTERSTATE	(Cost Recovery)		100,000	100,000	0	1,200,000	1,200,000
			\$14,000,000	\$14,000,000	\$0	\$168,000,000	\$168,000,000
TOTAL CONSUMPTIVE USE		2,736,000	2,687,000	2,589,000			
ARIZONA UNUSED		64,000	113,000	211,000			

- Assumptions:
- 1 Funding source available for twenty years
 - 2 \$200,000 administration cost from general fund
 - 3 CAP deliveries (Indian (100,000af) + M&I (250,000af) + Ag (500,000af) + Bank)
 - 4 In-lieu partners contribute \$21/af
 - 5 150,000 af in-lieu recharge Maricopa County
 - 6 Variable direct recharge Maricopa County and Phoenix AMA @ \$11/af (100,000 af, 60,000 af, 2,000 af)
 - 7 Pima County and Tucson AMA all direct recharge @ \$ 20/af
 - 8 Pinal County and AMA all in-lieu with partner contribution
 - 9 General fund all in-lieu with partner contribution
 - 10 Interstate full cost at \$140/af - (Nevada interest 1,200,000 af)
 - 11 Shortage requirement CAP M&I approximately 3,000,000 af
(Maricopa @ 72% = 2,160,000 af)
(Pinal @ 3% = 90,000 af)
(Pima @ 25% = 750,000 af)
Other Priority 4 approximately 400,000 af

CAP / AWBA PRICING ANALYSIS
(In-lieu Recharge Alternative)

FUNDING SOURCE	AVAILABLE FUNDS (1998 base)	ANNUAL DELIVERY AMOUNT			TOTAL DELIVERY AMOUNT		
		@ \$36/af	@ \$51/af	@ \$67/af	@ \$36/af	@ \$51/af	@ \$67/af
FOUR CENT TAX							
Maricopa County	\$5,000,000	210,000	180,000	109,000	4,200,000	3,600,000	2,180,000
Pinal County	\$240,000	16,000	8,000	5,000	320,000	160,000	100,000
Pima County	\$1,100,000	20,000	15,000	13,000	400,000	300,000	260,000
WITHDRAWAL FEE							
Phoenix AMA	\$2,000,000	43,000	32,000	42,000	860,000	640,000	840,000
Pinal AMA	\$1,000,000	67,000	33,000	22,000	1,340,000	660,000	440,000
Tucson AMA	\$750,000	13,000	11,000	9,000	260,000	220,000	180,000
GENERAL FUND	\$2,000,000	120,000	60,000	39,000	2,400,000	1,200,000	780,000
BANK TOTAL	\$12,090,000	489,000	339,000	239,000	9,780,000	6,780,000	4,780,000
CAP DELIVERIES		1,339,000	1,189,000	1,089,000			
ARIZONA CONSUMPTIVE USE		2,739,000	2,589,000	2,489,000			
INTERSTATE	(Cost Recovery)		100,000	100,000	0	1,200,000	1,200,000
			\$14,000,000	\$14,000,000	\$0	\$168,000,000	\$168,000,000
TOTAL CONSUMPTIVE USE		2,739,000	2,689,000	2,589,000			
ARIZONA UNUSED		61,000	111,000	211,000			

- Assumptions:
- 1 Funding source available for twenty years
 - 2 \$200,000 administration cost from general fund
 - 3 CAP deliveries (Indian (100,000af) + M&I (250,000af) + Ag (500,000af) + Bank)
 - 4 In-lieu partners contribute \$21/af
 - 5 Maricopa County : 150,000 af in-lieu recharge available, variable direct recharge (60,000 af, 30,000 af, 0 af)
 - 6 Phoenix AMA : Variable direct recharge (43,000 af, 32,000 af, 1,000,af)
 - 7 Direct recharge Maricopa County and Phoenix AMA @ an additional \$11/af
 - 8 Pima County and Tucson AMA all direct recharge @ an additional \$ 20/af
 - 9 Pinal County and AMA all in-lieu with partner contribution
 - 10 General fund all in-lieu with partner contribution
 - 11 Interstate full cost at \$140/af - (Nevada interest 1,200,000 af)
 - 12 Shortage requirement (ESTIMATE) :
 - CAP M&I approximately 3,000,000 af
 - (Maricopa @ 72% = 2,160,000 af)
 - (Pinal @ 3% = 90,000 af)
 - (Pima @ 25% = 750,000 af)
 - Other Priority 4 approximately 400,000 af

AWBA 10/6/97

CAP / AWBA PRICING ANALYSIS
(Direct Recharge Alternative)

FUNDING SOURCE	AVAILABLE FUNDS (1998 base)	ANNUAL DELIVERY AMOUNT			TOTAL DELIVERY AMOUNT		
		@ \$36/af	@ \$61/af	@ \$67/af	@ \$36/af	@ \$51/af	@ \$67/af
FOUR CENT TAX							
Maricopa County	\$5,000,000	106,000	81,000	64,000	2,120,000	1,620,000	1,280,000
Pinal County	\$240,000	16,000	8,000	5,000	320,000	160,000	100,000
Pima County	\$1,100,000	20,000	15,000	13,000	400,000	300,000	260,000
WITHDRAWAL FEE							
Phoenix AMA	\$2,000,000	43,000	32,000	26,000	860,000	640,000	520,000
Pinal AMA	\$1,000,000	67,000	33,000	22,000	1,340,000	660,000	440,000
Tucson AMA	\$750,000	13,000	11,000	9,000	260,000	220,000	180,000
GENERAL FUND	\$2,000,000	97,000	29,000	23,000	1,940,000	580,000	460,000
BANK TOTAL	\$12,090,000	362,000	209,000	162,000	7,240,000	4,180,000	3,240,000
CAP DELIVERIES		1,212,000	1,059,000	1,012,000			
ARIZONA CONSUMPTIVE USE		2,612,000	2,459,000	2,412,000			
INTERSTATE	(Cost Recovery)	100,000	100,000	100,000	1,200,000	1,200,000	1,200,000
		\$14,000,000	\$14,000,000	\$14,000,000	\$168,000,000	\$168,000,000	\$168,000,000
TOTAL CONSUMPTIVE USE		2,712,000	2,559,000	2,512,000			
ARIZONA UNUSED		88,000	241,000	288,000			

- Assumptions:
- 1 Funding source available for twenty years
 - 2 \$200,000 administration cost from general fund
 - 3 CAP deliveries (Indian (100,000 af) + M&I (250,000 af) + Ag (500,000 af) + Bank)
 - 4 In-lieu partners contribute \$21/af
 - 5 Maricopa County and Phoenix AMA : 160,000 af direct recharge available @ an additional \$ 11/af
 - 6 Pima County and Tucson AMA all direct recharge @ an additional \$ 20/af
 - 7 Pinal County and AMA all in-lieu with partner contribution
 - 8 General fund : Variable direct recharge (11,000 af, 29,000 af, 23,000 af)
 - 9 Interstate full cost at \$140/af - (Nevada interest 1,200,000 af)
 - 10 Shortage requirement (ESTIMATE) :
 - CAP M&I approximately 3,000,000 af
 - (Maricopa @ 72% = 2,160,000 af)
 - (Pinal @ 3% = 90,000 af)
 - (Pima @ 25% = 750,000 af)
 - Other Priority 4 approximately 400,000 af

AWBA 10/6/97

Outline of TMP Overview
Presented by Mark Frank and Sheila Ehlers
Phoenix AMA

- | | | |
|----|--|---------------|
| 1. | Introduction | Mark Frank |
| 2. | Characteristics of the Third Management Plan (TMP) | “ |
| 3. | Importance of Storage and Recovery siting criteria | “ |
| 4. | TMP activities to date/Augmentation chapter (Phoenix emphasis) | Sheila Ehlers |
| 5. | SMP vs. TMP storage and recovery siting criteria | “ |
| 6. | Future water management direction and role of AWBA | “ |
| 7. | Proposed AMA differences in criteria | Mark Frank |

ARIZONA WATER BANKING AUTHORITY

GROUNDWATER RECOVERY BASELINE DATA COLLECTION AND BOUNDING ANALYSIS

PREPARED BY: WESTLAND RESOURCES, INC.

PROJECT BACKGROUND

The goals of the project are to:

- collect baseline data in support of the preparation of a recovery plan
- compile said data in a format that facilitates presentation to the public, integrates into planning activities, and support future management decisions.
- provides a platform for economic decision making for recovery options.

An effective recovery plan for the Arizona Water Banking Authority (AWBA) will have to be workable under three different sets of conditions and possibly some combination of those conditions. First, the plan must work under conditions of a supply emergency brought about by shutdown of the CAP aqueduct. Second, the plan must function under conditions of long-term shortage or drought that reduces the availability of Colorado River water to CAP M&I users. Third, the plan should be able to accommodate any recovery of water on behalf of Nevada.

Initially the WestLand Resources, Inc. (WRI) team will review ADWR recovery requirements at some future date, we propose a methodology below that will allow the evaluation of additional recovery options for incremental increases in annual recovery goal. The team will also compile recharge capacity information during the data collection phase.

The primary focus of this study will be accessing or developing groundwater pumping capacity to meet the recovery needs. However, we are proposing, as a supplemental service to conceptually explore the potential for land fallowing agreements with agricultural users of surface and groundwater, and standby supply agreements with Indian tribes that might be important future components of a cost-effective recovery plan. Because these tools are not available to AWBA under current law, they will not be included in the initial recovery plan options. However, a rough estimate of their expected cost relative to other alternatives will be included for comparison purposes

Particularly in the Phoenix area, pumping capacity may well be strained during drought or emergency by combination of overall demand and ground water quality concerns. Therefore, the WRI team will also look at available information relating to water quality concerns and trends at a reconnaissance level to qualitatively evaluate the potential and relative cost of recovering and treating poor quality groundwater to a level acceptable for AWBA customers.

SCOPE OF WORK

TASK 1. PROJECT MANAGEMENT

The two goals of this task are to: (1) keep the project on time and on budget, (2) keep the AWBA's Director and staff briefed on the progress of the project. The Project Manager will prepare monthly reports regarding project progress and meet with AWBA Director monthly. The monthly meetings can be on the same day as AWBA meetings, in which case a presentation will also be made to the AWBA's Board. The project manager will also be available for briefings. The proposed budget assumes a 6 month project time and includes 3 briefing meetings in addition to the monthly update meetings.

TASK 2. DATA COLLECTION AND REVIEW

The goal of this task is to obtain and assimilate data for the recovery plan. The first task will be to collect existing written material and prepare a bibliography. The written material will assist with identifying entities that need to be interviewed and preparing a standard interview form for meeting with representatives of the cities and organizations. The bibliography will be reviewed with the AWBA prior to commencement of interviews.

Our interview budget was prepared using entities identified in Tables 1 and 2. All of these entities are CAP sub-contractors. The interview form will focus on three categories of water: readily available, available, and developable. These categories are defined as:

Readily Available	Wells that could be utilized "as is" at minimal cost to the AWBA.
Available	Existing wells that require minimal modifications for use, or require construction of delivery systems for beneficial use by the AWBA.
Developable	Retired well fields or developable well fields that could be utilized in the event of long-term water shortages.

The information to be obtained during the interview will include:

- background data on distribution system,
- well field data, including water quality and quantity data on individual wells,
- water system operation (water acquisition costs, treatment costs, distribution costs),
- recharge capacity,
- policy/institutional constraints, and
- names of other personnel within organization that we should contact.

Team members have recently completed a similar exercise, and therefore are familiar with the representatives of most entities. Past experience has shown that we can conduct an average of 4 effective interviews per day. We will utilize Phoenix and Tucson based personnel to conduct the survey. Because we will be meeting with heads of utilities interviewers will be senior personnel, including: Peter Livingston, Craig Tinney, Mark Myers, and Dale Pontius.

We have listed the top 13 holders of CAP subcontracts in the Phoenix AMA and top 4 holders in the Tucson AMA. Another medium sized right holder that will be interviewed is the State Land Department with 38,476 af. This volume is called out separately as its delivery point is not specified. We will also interview the Salt River Project and Gila River Indian Community to obtain an indication of willingness to participate in a recovery plan. We understand that they do not hold any CAP subcontracts, however they do control vast quantities of wet water in the Phoenix area. We will also arrange for a meeting with AMUA, and the West Valley Water Coalition as we feel valuable information can be obtained from these organizations.

Table 1. Phoenix AMA

City	CAP Sub-Contract Volume (af/yr)
Phoenix	113,882
Scottsdale	41,197
Mesa	34,888
Peoria	18,709
Sun City	15,835
Glendale	14,183
Surprise	7,373
Gilbert	7,235
Apache Junction	6,000
Lichfield Park	5,580
Avondale	4,746
Tempe	4,315
Chandler	3,668

Table 2. Tucson AMA

City	CAP Sub-Contract Volume (af)
Tucson	148,420
Flowing Wells	4,354
Marana	2,000
Oro Valley	1,652

The deliverable from this task will be completed interview forms and a cover letter summarizing the process.

TASK 3. DATA REVIEW/ANALYSIS

The purpose of this task is to determine the adequacy of the data obtained and analyze the data with respect to meeting your delivery requirements, including engineering constraints, treatment capabilities, and reliability. WRI will review, analyze, and prepare a memorandum summarizing the data collection task. The memorandum will also address gaps in the data, and recommend additional efforts to collect data. We anticipate that the data gaps will be in the form of hydrogeologic data. Our scope includes characterizing the geology in a general manner, pointing out risk factors as apposed to additional data collection.

The Tucson AMA has developed a detailed technical report on recharge capacity in the region. The most important table is the recharge facility description summary, as illustrated below. WestLand will attempt to prepare a similar table for the Phoenix area.

Site Name	Annual Recharge Volume	Capital Cost	Recharge Cost (\$/af)		Recovery Cost (\$/af)		Total Unit Cost
			Capital	O&M	Capital	O&M	

TASK 4. PREPARE GENERAL CAPACITY MAP

The purpose of this task is to compile data into a working database that can also be displayed visually. WRI will prepare a Geographical Information System (GIS) map that will visually display available water resources that could meet your demand. The basis for the data base will be obtained from ADWR. The resources will be divided into the following categories: readily available, available, and developable, as defined above. GIS maps are not simply exhibits, they consist of a database of information. All or part of the data base can be plotted on the figure, printed in tabular form from a spreadsheet, or inserted into a word processing document. This GIS system will be compatible with the States information. We will utilize the State's GIS system for maps. Our data base will include: well location, ADWR registration number, well

owner, depth to groundwater, pump characteristics (pumping rate and pressure), and treatment points, main transition lines. Large capacity wells (greater than 1,000 gpm) will be evaluated for delivery to a CAP subcontractor or direct delivery to the CAP canal.

The deliverable for this task will be a 22 by 34 inch color map displaying data collected. We will also provide 10 copies of an 11 by 17 inch version of the map.

TASK 5. MARGINAL ANALYSIS

The purpose of this task is to present costs on a well field by well field basis for the delivery of 100,000 af of water per year. WRI choose a marginal analysis because it results in an economic ranking of wells. This task involves preparation of engineering cost opinions for the beneficial use of the water by the AWBA. The alternative water supplies will be arrayed by cost, reliability and policy/institutional constraints.

The cost opinions will include pumping costs, but will not include estimates of payments to right holders for the use of their water, however an initial estimate will be requested during the interview process. The marginal analysis will rank and order alternative water sources. Costs and constraints, when paired with water demand volume, will indicate implementation direction for contracts and/or construction. The model will be available to the AWBA for update with respect to cost, reliability, and policy. This information will be presented in the final report

TASK 6. REPORT

WRI will prepare a draft report documenting the findings of the project. Following presentation to the AWBA's Board and receipt of comments, a final report will be prepared. WRI will submit 10 copies of the draft report and 20 copies of the final report to the AWBA.

SUPPLEMENTAL SERVICES A. DEMAND SUBSTITUTION

The agricultural sector is the largest water user in Arizona. Fallowing could include mainstem and interior farming entities. Short-term fallowing could be a viable option that would not have a long-term effect on the agricultural industry. WRI will review land fallowing possibilities, including third party impacts. Our analysis will look at the policy implications rather than specific farms. A white paper will be prepared for presentation to the AWBA Board. Agricultural irrigation districts to be reviewed could include districts located adjacent to the canal system in the Phoenix and Tucson area in addition to Yuma area districts.

SUPPLEMENTAL SERVICES B. NATIVE AMERICAN PARTICIPATION

Native American Tribes control over 57,000 af of water with a Tribal Homeland priority. This priority is similar to M&I water. Tribes considered will include mainstem and interior Tribes. We understand that the AWBA does not currently have the ability to interact with Tribes, however we feel that this option should be investigated further. Our analysis will look at the policy implications rather than specific Tribes. A white paper will be prepared for presentation to the AWBA Board.

ESTIMATED FEE

The fee estimation was done assuming that the Tucson AMA was done as a stand alone project, and the addition of the Phoenix AMA. The cost to complete the Phoenix work alone was not estimated. Cost savings are realized with items like project management (can only charge once for any given meeting) and report preparation, where the basic information and figures prepared for reports do not need to be repeated. The fee estimation includes labor and expenses.

Task	TAMA Cost	PAMA Cost	Total Cost
1. Project Management	13,718		13,718
2. Data Collection and Review	10,480	20,410	30,890
3. Data Review/Analysis	9,252	17,578	26,830
4. General Capacity Map	12,062	16,204	28,266
5. Marginal Analysis	7,680	9,524	17,204
6. Report	12,332	11,444	23,776
TOTAL	65,524	75,160	140,684
Supplemental Services A - Demand Substitution	8,252	4,474	12,726
Supplemental Services B - Native American Participation	5,580	4,849	10,429

ARIZONA WATER BANKING AUTHORITY
STUDY COMMISSION
SUBCOMMITTEE REPORT SUMMARY

Subcommittee on Planning and Modeling Assumptions

Description of Modeling Process

1. Colorado River Operations
2. CAP and Priority 4 Shortage Impact Analysis

Issue 1: What assumptions should the AWBA make with respect to planning and modeling the Colorado River operations?

1. Upper Colorado River Basin Water Demand Build-up
2. Reservoir Protect Levels or Shortage Strategy
3. Surplus Strategy
4. Water Demand Reduction-Shortage Strategy
5. Yuma Desalter
6. Other Model Variables

*Issue 2: How much water should be stored by the AWBA to protect against projected shortages?
Summary of Results and Recommendations*

Technical Appendix

Description of Modeling Data

1. Hydrology and Water Demand

Description of Modeling Assumptions for Hydrology and Water Demand Data

1. Hydrologic Data Assumptions
2. Demand Data Assumptions

Description of System Operating Criteria Assumptions

1. Shortage Strategies Assumptions
2. Reservoir Protection Levels Assumptions
3. Shortage Deliveries Assumptions
4. Minimum Mead Elevation Assumptions
5. Yuma Desalter Assumptions
6. Surplus Strategy Assumptions

7. Shortage Protection Strategies

Results of Modeling Studies

1. Base Case Alternative
2. Alternative Test Cases
3. Upper Basin Demand Schedule Test
4. Shortage Strategy and Reservoir Protect Level Tests
5. Shortage Delivery Amount Tests
6. Discussion of Results -- Shortage Delivery Amount
7. Surplus Strategy Tests
8. Other Assumptions
9. Minimum Lake Mead Elevation (Modified Base Case) Tests
10. M&I Protection Level Tests

Recommended Modeling Assumptions

Subcommittee on Interstate and Intrastate Banking and Marketing Issues

Issue 1: Arizona and the Bureau of Reclamation should develop a policy and process for transferring entitlements between parties in Arizona (including transfers with Indian nations) and for leasing Colorado River water supply for more than one year. The policy should consider temporary and permanent agricultural land fallowing and marketing of water that is made available through Indian water rights and contracts.

Issue 2: Should the benefits and services provided by the AWBA be expanded, and if so, which services are most useful and appropriate?

- A. Short-term or interim supply services
 - 1. Drought and storage protection
 - 2. Non-permanent uses
 - 3. Interim supplies
- B. Long-term or 100-year assured water supply services
 - 1. Long-term storage credit averaging
 - 2. Water supply supplementation
 - 3. Water transfers and CAP allocations

Issue 3: Should the AWBA be authorized to meet future needs for water supply by using techniques other than the long-term storage credit system?

- A. Storage of supplies other than excess Colorado River water
- B. Surface water storage
- C. Land-fallowing of senior agricultural rights
- D. Return Flow Credit Development

Attachments

Subcommittee on Water Banking Benefits Outside the CAP Service Area

Issue 1: Determine the frequency and magnitude of potential shortages to M&I water users of Colorado River water who are not CAP subcontract holders.

Numerous graphs and tables showing various levels of shortages, etc.

Issue 2: Should the AWBA be empowered to obtain and make available water supplies to new Colorado River M&I water providers or to supplement the supplies and allocations of existing Colorado River M&I water providers in areas located outside of the CAP service area?

Issue 3: Should the AWBA be empowered to store water at recharge sites that do not have direct access to excess water delivered through the CAP?

Issue 4: Identify the needs and opportunities for the AWBA to provide assistance for water supply enhancement or drought protection for M&I water users who are neither located within the CAP service area nor located along the Colorado River.

Issue 5: Should the AWBA be empowered to provide water supply enhancement assistance for non-M&I uses within Arizona, such as environmental enhancement projects?

Issue 6: Study and determine the mechanisms for forbearance and exchange which may be used to deliver Water Bank-developed supplies to water users outside of the CAP service area.

Issue 7: Should M&I water users located outside of the CAWCD service area who receive credits from the Water Banking Authority to offset a water shortage be required to pay to have those credits replaced? Should the reimbursement rate be equal to what the bank originally paid for the credits or should it be at the rate in effect at the time the purchase of replacement water is needed?

Subcommittee on Indian Issues

Overview of the AWBA

Issue 1: What are the respective water rights and supplies of the Arizona Indian tribes and how will they interact with the Arizona Water Banking Authority?

- A. Tribes with CAP Allocation and an Implemented Settlement
- B. Tribes with CAP Allocation and Full or Partially but not yet Implemented Settlements
- C. Tribes with CAP Allocation but no Indian Water Rights Settlement
- D. Tribes with Adjudicated Water Rights but no CAP Allocation
- E. Tribes with Adjudicated Water Rights, Settlements, or CAP Allocations

Issue 2: How can the AWBA assist in achieving implementation of Indian water rights settlements?

- A. Provide partial water supply
 - 1. Shortage protection
 - 2. Storage accounts
 - 3. Supplementing other supplies
 - 4. Alternate sources of water for use on reservation
- B. Mitigate impacts of off-reservation groundwater overdraft
- C. On-Reservation storage techniques

Issue 3: How the AWBA provide additional water supply or marketing services to Indian communities?

- A. Store unused Indian water for the tribe's benefit at off-reservation locations
- B. Purchase water from Indian tribes as a supply source for recharge
- C. Serve as intermediary or facilitator in marketing Indian water to non-Indian water users
- D. Arrange land-fallowing agreements

Issue 4: What are some of the challenges facing Indian community participation in the water bank?

- A. Lack of delivery infrastructure or exchange capability
- B. Difficult for Bank to participate in settlement discussions
- C. Funding limitations
- D. Legal questions about marketing
- E. Low demand for short-term water supplies
- F. Wheeling agreements through the CAP
- G. Sovereignty, trust, and regulatory issues
- H. Federal Participation

1. Describe the program. Please emphasize its creative and novel elements. What is the innovation?

Arizona's entitlement to 2.8 million acre feet¹ of Colorado River water per year stems from early interstate compacts that created the Colorado River Basin, a United States Supreme Court decision (*Arizona vs. California*, 373 U.S. 546 (1963)), and a 1968 Act of Congress that authorized the construction of a 336-mile long system of aqueducts, tunnels, pumping plants and pipelines known as the Central Arizona Project. Under normal conditions, water deliveries to Arizona users on the Colorado River will be 1.3 million acre feet, and Central Arizona Project deliveries will be 1.5 million acre feet, totaling 2.8 million acre feet. Arizona is not likely to fully utilize its share of Colorado River water until the year 2030. Between now and then, the accumulated amount of water left in the Colorado River could be as high as 14 million acre feet, most of which is consumed by California without compensation to Arizona.

In 1996, the Arizona legislature created the Arizona Water Banking Authority to help remedy this loss of a valuable resource and to secure the dependable water supplies necessary to ensure Arizona's long-term prosperity. The Authority purchases and stores some of Arizona's unused Arizona Colorado River water entitlement for future needs. Those needs include (1) assuring adequate water supply to municipal and industrial water users in times of shortages or disruptions of the Central Arizona Project system; (2) meeting the management plan objectives of Arizona's Groundwater Code; (3) assisting in the settlement of Indian water rights claims; and (4) exchanging water to assist Colorado River communities.

The excess Colorado River water that the water bank purchases is put back into the ground (recharged), and the water bank earns "credits" that enable it to withdraw groundwater from any location within the Active Management Area at a later time. These credits can be sold or transferred when necessary.

The water bank recharges water by two types of underground water storage. The most common process is the use of "groundwater savings facilities" or "in lieu" recharge projects. Entities with an excess supply of renewable water (such as a water provider) deliver this excess water to a facility (such as a farm) that would otherwise have pumped groundwater. The recipient then uses the renewable water in lieu of groundwater, thereby preventing a condition known as groundwater overdraft (occurs when more groundwater is used than replaced). The supplier of the renewable water then earns credits to "recover" this water at a later date from any location within the Active Management Area that meets Arizona Department of Water Resources criteria.

The water bank also uses Underground Storage Facilities, where water is physically added to an aquifer by a number of different means. Some examples of Underground Storage Facilities include constructed shallow spreading basins (like shallow artificially constructed ponds that allow

¹One acre foot of water equals 325,851 gallons, the amount used by a family of four in one year

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Essay Questions
Arizona Water Banking Authority

water to seep into the underground aquifers), specially designed wells (inject water at or below the water table), and managed channels (natural stream channels).

Since the mid-1900's, Arizona has been at the forefront of developing sound water management policy, implementing water conservation measures, and effectively planning for the future.

2. What problems does your innovative program address?

The water bank assures adequate water supply to municipal and industrial water users in times of shortages or disruptions of the Central Arizona Project system (a 336-mile long system of aqueducts, tunnels, pumping plants and pipelines that delivers water from the Colorado River). . . [Summary of likelihood of shortage and description of priority system].

The water bank helps the state meet the management plan objectives of Arizona's Groundwater Code . . . [Brief overview]

The water bank can assist in the settlement of Indian water rights claims . . . [Background on litigation]

The water bank facilitates water exchanges to assist Colorado River communities. [Brief background on special needs of Colorado River communities]

3. Who are the current and potential beneficiaries of your program? What are the direct or indirect benefits to citizens?

Current beneficiaries of the AWBA include

All municipal and industrial users, Indian tribes, irrigation districts

Potential beneficiaries of the AWBA include

Other states

Other Indian tribes

People living in areas outside the CAP service area

The indirect benefits to citizens include

Knowing that Arizona government is at the forefront of a massive water conservation program [describe uniqueness of Arizona's water bank]

The direct benefits to citizens include

A guaranteed water supply in times of shortage

Firm supplies

4. What are the most significant achievements of the program?

No other state has a water bank like the AWBA. Rather than focusing on water transfers and water marketing, the AWBA accomplishes primarily conservation purposes. The AWBA enables

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Arizona to protect itself against future water shortages without taking more than its share of Colorado River water, and at the same time, performs an invaluable conservation function by protecting against overuse of Arizona's increasingly scarce groundwater supplies.

To date, the AWBA has purchased and stored xxx kaf of CAP water.

Other information . . .

5. How replicable is the program? What obstacles might others encounter?

The program is replicable to the extent that any entity may purchase water and store that water in a manner that facilitates groundwater replenishment and assures a water supply for a later point in time. Other private entities are permitted to engage in water banking if they meet all requirements in the groundwater code and other relevant laws. Entities outside of Arizona (whether private or government) can engage in similar water banking activities, but they obviously cannot purchase CAP water unless they are located in Arizona. The achievements of the AWBA, however, can be successfully replicated using other sources of water in other locations.

Other info . . .

6. List all current funding sources, with dollar and percentage contributions, for each for your current operating budget. If applicable, include separate subtotals for public and private funds and sources. Provide details of any unusual financial features not describes elsewhere.

Much of the funding for the AWBA comes from existing revenue sources and from fees that are charged to those benefiting directly from the stored water. Sources of money include:

- (1) Fees for groundwater pumping currently collected within the Phoenix, Pinal and Tucson Active Management Areas. In the Phoenix AMA, Tucson AMA, and most areas of the Pinal AMA pumping fees for water banking purposes is \$2.50 per acre foot. For groundwater pumping in areas of the Pinal AMA not served by the CAP, the \$2.50 fee would phase-in over seven years. Money from this source will be used to benefit the area in which it was collected.

The amount of pumping fees collected to date for the Phoenix AMA is . . .

The amount of pumping fees collected to date for the Tucson AMA is . . .

The amount of pumping fees collected to date for the Pinal AMA is . . .

- (2) The Central Arizona Water Conservation District (which administers the Central Arizona Project) is authorized to levy a four cent ad valorem property tax in the CAP service area to pay for water storage beginning in 1997. To help finance the AWBA's efforts, the tax was

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initiated in 1996, extended through 2016 and revenues are deposited in the Fund. The amount collected from this source to date is \$xx

- (3) A general fund appropriation based on the level of water storage the legislature and governor believe to be appropriate. This year, the legislature appropriated \$2 million to the effort.
- (4) Fees collected from the sale of stored water credits used for drought protection. Fees are charged only if the credits were originally paid for with general fund money. The amount collected from this source to date is \$xx.