



0000070770

1 could fail to be in compliance in Casa Grande, and thus be
2 penalized by DWR, and pass those costs to our customers, I
3 thought was the question.

4 Q. I agree that is the question. Perhaps I phrased
5 my question wrong. Taking that question, could you not
6 tease out that portion that exceeds ADWR's limit, that
7 portion of the resolving excess and not levy that upon the
8 consumer?

9 A. We certainly maintain that data based on those
10 estimates of water loss. We do keep regular records of
11 what our percentage of unsold is, and what our percentage
12 of unaccounted for is, and if that percentage of
13 unaccounted for starts getting above 10 percent, then
14 generally it's time to do something about it, start to
15 expend some resources.

16 Q. Is there a national standard?

17 A. My experience says that that number should be
18 somewhere, the unaccounted for should be somewhere between
19 10 and 15 percent. The DWR has chosen 10. It really needs
20 to be looked at system by system. If you compare the
21 Bisbee system, which was largely installed in 1908, you
22 wouldn't expect it to be performing the same way Casa
23 Grande was, which was installed sometime in the last 20
24 years.

25 Q. Does AWWA, for example, publish anything that

EXHIBIT
S-4
Admitted

Sun City Water Company
(NAME OF COMPANY)

CANCELING

9th Revised

SHEET NO. 1

8th Revised

SHEET NO. 1, 1a & 1b

Sun City, Arizona and Vicinity
(NAME OF CITY)

ORIGINAL

Water Service

General Water Rate G-1

Availability

Available for all metered residential, commercial, industrial and public authority customers served by the Company.

Minimum Monthly Charge

Meter Size	Rate
5/8" x 3/4" (3/4")	\$5.00
1"	13.00
1.5"	28.00
2"	41.00
3"	70.00
4"	103.00
6"	141.00

Usage Charge

In addition to the minimum monthly charge above, the following usage charge will be made:

Meter Size	Usage	(per 1,000 gal.)	Usage	(per 1,000 gal.)
All meter sizes	First 8,000 gallons	\$0.73	Over 8,000 gallons	\$0.92

Terms and Conditions

Water service provided under this rate schedule is subject to the Company's Rules and Regulations applicable to Water Service and may be subject to the Company's Miscellaneous Service Charges set forth in Rate Schedule MISC-1.

Water service under this Schedule is for the exclusive use of the Customer and water shall not be resold or provided to others.

All rates in this Schedule shall be subject to their proportionate part of any taxes or other governmental imposts which are assessed directly or indirectly on the basis of revenues derived from service under this Schedule, or on the basis of the service provided or the volume of water produced, purchased or sold.

A 1-1/2% late payment penalty will be applied to account balances not paid within 25 days after the postmark date of the bill in accordance with Rule 8 (H).

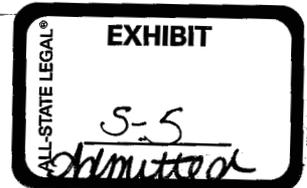
ISSUED May 7 1997 EFFECTIVE May 1 1997
MONTH DAY YEAR MONTH DAY YEAR

ISSUED BY Fred L. Kriess, Jr. Vice President and General Manager
NAME OF OFFICER TITLE

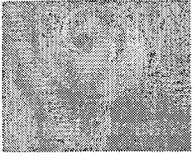
15626 North Del Webb Boulevard, Sun City, Arizona 85351
ADDRESS OF OFFICER



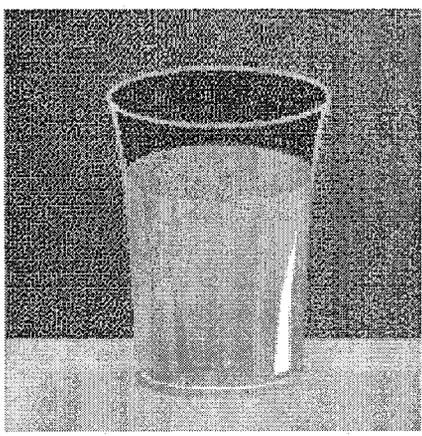
DECISION NO. 60172



MAYOR'S COUNCIL BY DEPARTMENT BY SERVICES EMPLOYMENT E-SERVICES PUBLIC MEETINGS WATER/SEWER/HT



Search



Water Billing And Rates

WATER BILLING

Most of your monthly water bill comes from charges for water, sewer and sanitation services. Phoenix water and sewer charges are among the lowest in the United States. For BILL PAYMENT OPTIONS, [click here](#). If you have questions about these services, please call our Customer Service Division at 602-262-6251, or send an e-mail by clicking on the following address: water.customer.service@phoenix.gov.

Questions about weekly garbage and quarterly trash collection should be directed to the [Public Works Department](#).

WATER RATES

Phoenix water rates have three main components, including service, volume and environmental charges. Volume charges vary with the seasons and are highest in summer, lowest in winter and in between during spring and fall. The current rates (effective March 3, 2003) are:

MONTHLY SERVICE CHARGE*		
Meter Size	Inside City	Outside City
5/8"	\$ 5.16	\$ 7.74
1"	5.61	8.42
1 1/2"	8.88	13.32
2"	9.78	14.67
3"	39.06	58.59

ALL-STATE LEGAL®
EXHIBIT
S-6
Admitted

4"	47.24	70.86
6"	51.33	77.00

VOLUME CHARGES Cost Per Unit (1 unit = 748 gallons)		
(In excess of use included with the monthly service charge)		
Months	Inside City	Outside City
Low Months: Dec., Jan., Feb., Mar.	\$1.26	\$1.89
Med Months Apr., May, Oct., Nov.	1.49	2.24
High Months Jun., Jul., Aug., Sep.	1.89	2.84

ENVIRONMENTAL CHARGES Cost Per Unit (1 unit = 748 gallons)		
Note	Inside City	Outside City
Applied to all usage	\$0.11	\$0.17

* The monthly service charge includes six (6) units of water for October - May and ten (10) units of water for June - September. All charges are subject to applicable sales taxes.

WATER BILL PAYMENT OPTIONS

Pay in Person at a Water Services Paystation - Bills can be paid in person at the following Water Services Department payment station locations:

- 305 W. Washington St.
- 10255 N. 23rd Ave. **
- 5036 W. Indian School Road **
- 26 E. Baseline Road **

The hours of those stations are **Monday through Friday, from 8 a.m. to 5 p.m.**, excluding city holidays.

** You can also make your payment 24-hours a day/ 7-days a week at these payment stations using a payment machine. When using the payment machine you will need your bill, and, you have the option of paying by check, money order, or cash (but no change is given).

Pay in Person at Bank One - Bills can be paid at any Bank One branch office throughout the Valley. When using this payment method you will need your bill. (Note: No delinquent bills or bills with final turnoff notices can be paid through this method).

Pay in Person at APS Customer Office - Bills can be paid at the APS North Valley Customer Office, located at 4612 E. Bell Road (west of Tatum Blvd). When using this payment method you will need your bill. **(Note: No delinquent bills or bills with final turnoff notices can be paid through this method).** Office Hours are 8:30 to 5 p.m., Monday through Friday.

Pay by Mail - You can mail your water bill to: **City of Phoenix Water Services Department; P.O. Box 29663; Phoenix, AZ 85038-9663** (Note: This address is for payments only. See bottom of this page for address used for inquiries and correspondence.)

Pay with Internet Online Bill Payment - The city currently offers the option to pay your current water bill online at no additional charge.

CONTACT INFORMATION

Address for Written Inquiries and Correspondence (Note: **DO NOT** send payments to this address)

Written inquiries or correspondence (only) should be sent to: City of Phoenix Water Services Department - Customer Services Division;
305 W. Washington Street; Suite 200; Phoenix, AZ 85003-2102

Customer Services Phone Number: (602) 262-6251

E-mail message link: water.customer.service@phoenix.gov

[Back](#) | [Contact Us](#) | [Accessibility](#) | [Privacy Policy](#)
© Copyright, 2003, City of Phoenix

Last Modified on 04/21/2003 08:47:39

City of Mesa
Mesa, Arizona

Water Schedule No. W1.1, W2.1, W1.2, W2.2, W1.3, W2.3
W1.4, W2.4, W1.5, W2.5, W1.6, W2.6, W1.7, W2.7
Effective 08/01/03
Ordinance No. 4082
Supersedes Schedule Adopted 08/01/02

RESIDENTIAL WATER SERVICE

WESTERN ZONE - Inside W1.1, Outside W2.1
RWCD ZONE - Inside W1.2, Outside W2.2
EASTERN ZONE - Inside W1.3, Outside W2.3
DESERT SAGE PRESSURE ZONE - Inside W1.4, Outside W2.4
COUNTY LINE PRESSURE ZONE - Inside W1.5, Outside W2.5
APACHE JUNCTION PRESSURE ZONE - Inside W1.6, Outside W2.6
RANGE RIDER PRESSURE ZONE - Inside W1.7, Outside W2.7

APPLICATION

Applicable to all residential water service inside and outside the City limits required for domestic purposes in individually metered dwelling units.

MONTHLY BILL

Rate: In addition to the service charge, the rate for water used shall be \$1.77 per 1,000 gallons for the first 12,000 gallons used and \$2.65 per 1,000 gallons for all additional use.

Service Charge:

\$8.82	-	¾" service
\$10.52	-	1" service
\$16.83	-	1½" service
\$23.73	-	2" service
\$52.23	-	3" service
\$85.83	-	4" service
\$169.23	-	6" service
\$253.19	-	8" service
\$344.91	-	10" service

Plus: For all water used in the upper pressure zones, the following pumping surcharges will apply:

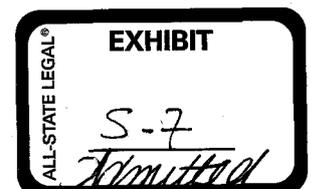
DESERT SAGE PRESSURE ZONE (W1.4, W2.4):	\$.05 per 1,000 gallons
COUNTY LINE PRESSURE ZONE (W1.5, W2.5):	\$.10 per 1,000 gallons
APACHE JUNCTION PRESSURE ZONE (W1.6, W2.6):	\$.15 per 1,000 gallons
RANGE RIDER PRESSURE ZONE (W1.7, W2.7):	\$.20 per 1,000 gallons

ADJUSTMENTS

Plus the applicable proportionate part of any taxes or governmental impositions that are assessed on the basis of the gross revenues of the City and/or the price or revenue from the energy or services sold hereunder.

TERMS AND CONDITIONS

See Terms and Conditions for the Sale of Utilities.



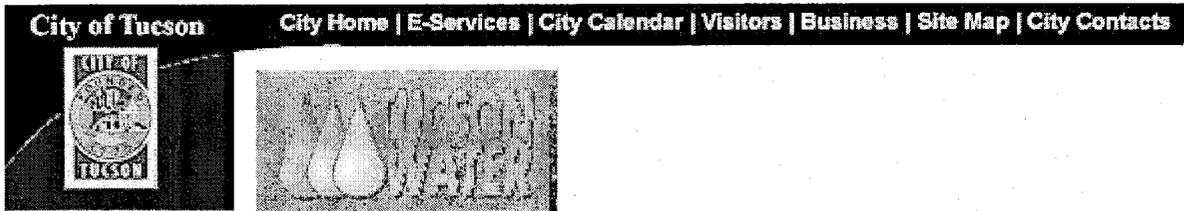


METERED WATER RATE SCHEDULE
Effective July 1, 2003

METER SIZE	BASE FEE	MONTHLY WATER USAGE FEE
5/8"	\$ 10.92	First 7,500 @ \$1.28/1000 gals Over 7,500 @ \$2.33/1000 gals
3/4"	\$ 15.06	First 8,300 @ \$1.28/1000 gals Over 8,300 @ \$2.33/1000 gals
1"	\$ 22.86	First 12,600 @ \$1.28/1000 gals Over 12,600 @ \$2.33/1000 gals
1 1/2"	\$ 41.99	First 23,100 @ \$1.28/1000 gals Over 23,100 @ \$2.33/1000 gals
2"	\$ 62.44	First 34,300 @ \$1.28/1000 gals Over 34,300 @ \$2.33/1000 gals
3"	\$108.96	First 60,000 @ \$1.28/1000 gals Over 60,000 @ \$2.33/1000 gals
4"	\$167.37	First 92,000 @ \$1.28/1000 gals Over 92,000 @ \$2.33/1000 gals
6"	\$311.42	First 171,000 @ \$1.28/1000 gals Over 171,000 @ \$2.33/1000 gals
8"	\$459.32	First 252,000 @ \$1.28/1000 gals Over 252,000 @ \$2.33/1000 gals
Water Haulers	\$ 6.48	First 3,800 @ \$1.28/1000 gals Over 3,800 @ \$2.33/1000 gals

Applicable taxes and environmental fees will be added.





Links

- Contact Info
- Conservation
- Customer Svcs
- Events
- Issues/Concerns
- Water Quality
- Water Resources



Current Water Rates

The current monthly water rates became effective October 14, 2002. Major rate elements are discussed below, followed by a listing of current r

Potable water charges have 1) a **monthly service charge** (based on meter size) whi the customer pays regardless of the amount of water used; 2) **usage charges**; and 3) **CAP charge**.

Navigation



The **monthly service charge** based on meter size is set to recover the costs of meter maintenance and replacement as well as meter reading and billing costs.

Residential customers are charged for **water usage** via an inclining block rate struc As the usage block increases, the unit price or rate for the block increases.

Communication

- Comments?
- Problems?

Other potable customers, with the exception of multifamily and construction wa customers, pay a base rate for water usage year round but are subject, in addition, to surcharges in the summer, should their monthly usage exceed their winter monthly u: There are two tiers of summer surcharges, and each has a different threshold: the fir applied to any monthly usage exceeding the average winter monthly usage and the se is applied to any monthly usage greater than 145% of average winter monthly usage. summer surcharges are added to the charge resulting from the base rate.

Multifamily and construction water customers are charged a year round rate with summer surcharges. For these customers, a higher year round rate replaces being sub to summer surcharges.

The **CAP charge**, a flat rate assessed on all potable usage, helps pay the cost of Cent Arizona Project (CAP) water which Tucson Water purchases from the Central Arizon Water Conservation District (CAWCD).

Reclaimed water charges have two basic components: a **monthly service charge** (l on meter size) which the customer pays regardless of the amount of water used; and : **usage charge**.



POTABLE RATES

Minimum Monthly Charge:

Meter Size	Current Rates
0.75 inch	\$5.35
1.00 inch	\$6.99
1.50 inch	\$10.73
2.00 inch	\$15.41
2.50 inch	\$21.73
3.00 inch	\$28.05
4.00 inch	\$45.84
6.00 inch	\$90.78
8.00 inch	\$135.71
10.00 inch	\$205.92
12.00 inch	\$338.39

Usage Charges:

Customer Class / Charge Categories	Current Charge per Ccf
<i>Residential Block Rates</i>	
Single Family	
1 – 15 Ccf	\$1.03
16 – 30 Ccf	\$3.50
31 – 45 Ccf	\$4.92
Over 45 Ccf	\$6.97
Duplex-Triplex	
1 – 20 Ccf	\$1.03
21 – 35 Ccf	\$3.50
36 – 50 Ccf	\$4.92
Over 50 Ccf	\$6.97
<i>Non-Residential Rates – Base Volume Rates</i>	

Multifamily	
All usage	\$1.59
Mobile Home Parks with Sub-meters	
All usage	\$1.08
Commercial	
All usage	\$1.48
Industrial	
All usage	\$1.47
Construction Water	
All usage	\$1.93
Non-Residential Summer Surcharges	
Tier 1, per Ccf	\$.95
Tier 2, per Ccf	\$.25

Note: 1 Ccf = 748 Gallons

CAP Charge:

Current Charge per Ccf
\$0.03

RECLAIMED WATER RATES

Monthly Service Charge:

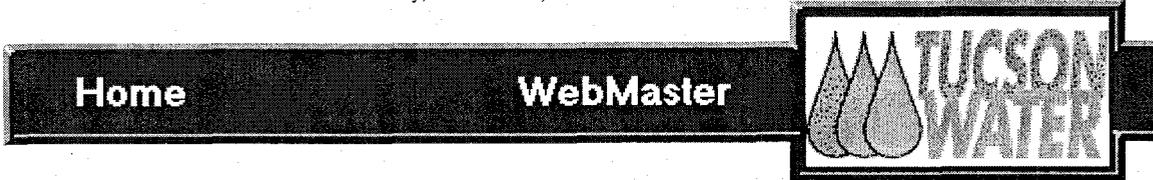
Meter Size	Current Rates
0.75 inch	\$5.35
1.00 inch	\$6.99
1.50 inch	\$10.73
2.00 inch	\$15.41
2.50 inch	\$21.73
3.00 inch	\$28.05

4.00 inch	\$45.84
6.00 inch	\$90.78
8.00 inch	\$135.71
10.00 inch	\$205.92
12.00 inch	\$338.39

Usage Charge:

Current Charge per Ccf
\$1.31

Source: City of Tucson
Last Revision: Thursday, December 05, 2002



[E-Services](#) | [City Calendar](#) | [Visitors](#) | [Business](#) | [Site Map](#) | [City Contacts](#)

Federal Reserve Statistical Release



H.15

Selected Interest Rates (Daily)

Release Date: September 17, 2003

Weekly release dates and announcements | [Historical data](#) | [About](#)
[Daily update](#) | *Other formats:* [Screen reader](#) | [ASCII](#)

FEDERAL RESERVE STATISTICAL RELEASE

H.15 (519)

SELECTED INTEREST RATES
 Yields in percent per annum

Instruments	2003 Sep 15	2003 Sep 16	2003 Sep 17	2003 Sep 18
Federal funds (effective) 1 2 3	1.11	0.97		
Commercial paper 3 4 5 6				
Nonfinancial				
1-month	1.01	1.03		
2-month	1.04	1.03		
3-month	1.03	1.04		
Financial				
1-month	1.04	1.04		
2-month	1.05	1.06		
3-month	1.06	1.06		
CDs (secondary market) 3 7				
1-month	1.07	1.07		
3-month	1.08	1.08		
6-month	1.12	1.12		
Eurodollar deposits (London) 3 8				
1-month	1.06	1.06		
3-month	1.09	1.08		
6-month	1.12	1.12		
Bank prime loan 2 3 9	4.00	4.00		
Discount window primary credit 2 10	2.00	2.00		
U.S. government securities				
Treasury bills (secondary market) 3 4				
4-week	0.89	0.89		
3-month	0.94	0.91		

ALL-STATE LEGAL®
EXHIBIT
S-11
Admitted

6-month	1.01	1.00		
Treasury constant maturities 11				
1-month	0.91	0.91		
3-month	0.96	0.93		
6-month	1.03	1.02		
1-year	1.20	1.22		
2-year	1.63	1.63		
3-year	2.17	2.16		
5-year	3.12	3.12		
7-year	3.71	3.72		
10-year	4.28	4.29		
20-year	5.24	5.26		
Treasury long-term average (25 years and above) 12 13	5.28	5.29		
Interest rate swaps 14				
1-year	1.32	1.32		
2-year	1.94	1.93		
3-year	2.59	2.57		
4-year	3.14	3.12		
5-year	3.58	3.56		
7-year	4.18	4.18		
10-year	4.73	4.74		
30-year	5.54	5.56		
Corporate bonds				
Moody's seasoned				
Aaa 15	5.76	5.80		
Baa	6.83	6.86		
State & local bonds 16				
Conventional mortgages 17				

FOOTNOTES

1. The daily effective federal funds rate is a weighted average of rates on broked.
2. Weekly figures are averages of 7 calendar days ending on Wednesday of the current month. Monthly figures include each calendar day in the month.
3. Annualized using a 360-day year or bank interest.
4. On a discount basis.
5. Interest rates interpolated from data on certain commercial paper trades settled by the Trust Company. The trades represent sales of commercial paper by dealers or direct investors (that is, the offer side). See Board's Commercial Paper Web pages (<http://www.federalreserve.gov/releases/cp>) for more information.
6. The 1-, 2-, and 3-month rates are equivalent to the 30-, 60-, and 90-day dates on Board's Commercial Paper Web page.
7. An average of dealer offering rates on nationally traded certificates of deposits.
8. Bid rates for Eurodollar deposits collected around 9:30 a.m. Eastern time.
9. Rate posted by a majority of top 25 (by assets in domestic offices) insured U.S. banks. Prime is one of several base rates used by banks to price short-term business.

10. The rate charged for discounts made and advances extended under the Federal Reserve discount window program, which became effective January 9, 2003. This rate represents credit, which was discontinued after January 8, 2003. For further information www.federalreserve.gov/boarddocs/press/bcreg/2002/200210312/default.htm. The rate reported is that for the Federal Reserve Bank of New York. Historical adjustment credit is available at www.federalreserve.gov/releases/h15/data.htm
11. Yields on actively traded issues adjusted to constant maturities. Source: U.S. Treasury
12. Based on the unweighted average of the bid yields for all Treasury fixed-coupon issues with remaining terms to maturity of 25 years and over.
13. A factor for adjusting the daily long-term average in order to estimate a 30-year yield. Source: <http://www.treas.gov/offices/domestic-finance/debt-management/interest-rate/lt-term/>
14. International Swaps and Derivatives Association (ISDA) mid-market par swap rate. Rate Payer in return for receiving three month LIBOR, and are based on rates of Garban Intercapital plc and published on Reuters Page ISDAFIX1. Source: Reuters
15. Moody's Aaa rates through December 6, 2001 are averages of Aaa utility and Aaa industrial bonds only. As of December 7, 2001, these rates are averages of Aaa industrial bonds only.
16. Bond Buyer Index, general obligation, 20 years to maturity, mixed quality; Source: Bond Buyer
17. Contract interest rates on commitments for fixed-rate first mortgages. Source: Freddie Mac

Note: Weekly and monthly figures are averages of business days unless otherwise noted.

Current and historical H.15 data are available on the Federal Reserve Board's website (<http://www.federalreserve.gov/>). For information about individual copies of H.15 Publications Services at the Federal Reserve Board (phone 202-452-3244, fax 202-452-3245). For paid electronic access to current and historical data, call STAT-USA at 202-482-1986.

DESCRIPTION OF THE TREASURY CONSTANT MATURITY SERIES

Yields on Treasury securities at "constant maturity" are interpolated by the U.S. Treasury yield curve. This curve, which relates the yield on a security to its time to maturity, is based on the closing market bid yields on actively traded Treasury securities in the market. These market yields are calculated from composites of quotations obtained by the Federal Reserve Bank of New York. The constant maturity yield values are read from the yield curve at the constant maturities, currently 1, 3 and 6 months and 1, 2, 3, 5, 7, 10 and 20 years. This method provides a yield for a 10-year maturity, for example, even if no outstanding security has exactly 10 years remaining to maturity.

[Weekly release dates and announcements](#) | [Historical data](#) | [About H.15](#)
[Daily update](#) | *Other formats:* [Screen reader](#) | [ASCII](#)

[Statistical releases](#)

[Home](#) | [Economic research and data](#)
[Accessibility](#) | [Contact Us](#)
Last update: September 17, 2003

Rate
Rate of interest in money and capital markets
Moody's Investor Service
Long-term or Capital Market
Private, all industries
BAA Rating
Not seasonally adjusted
Twelve months ending December

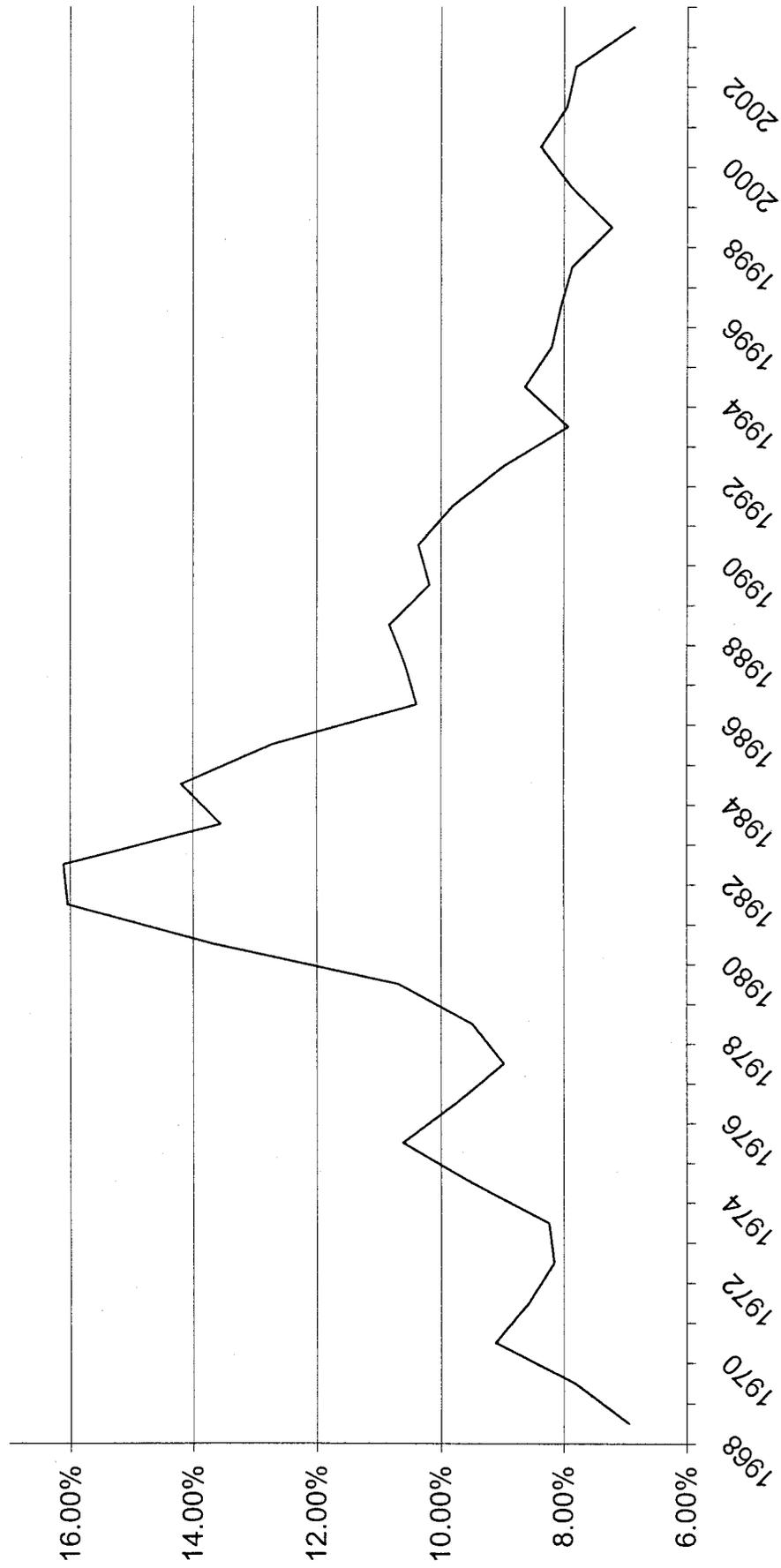
AVERAGE YIELD TO MATURITY ON SELECTED LONG-TERM BONDS.
AVERAGE OF MONTHLY AVERAGES.

Released on 09/15/2003

	baa

1976	9.75
1977	8.97
1978	9.49
1979	10.69
1980	13.67
1981	16.04
1982	16.11
1983	13.55
1984	14.19
1985	12.72
1986	10.39
1987	10.58
1988	10.83
1989	10.18
1990	10.36
1991	9.80
1992	8.98
1993	7.93
1994	8.63
1995	8.20
1996	8.05
1997	7.87
1998	7.22
1999	7.88
2000	8.37
2001	7.95
2002	7.80

Baa Rated Corporate Bond Yields - A Historical Perspective



"To the extent that changes in interest rates reflect changes in costs of equity for Arizona Water, Baa bond rates provide a better perspective than changes in rates for short-term bonds or Treasury securities."

-Zepp direct. P. 23 at 7 - 10.

Baa bond rates are at historic lows.

Rate
 Rate of interest in money and capital markets
 Moody's Investor Service
 Long-term or Capital Market
 Private, all industries
 BAA Rating
 Not seasonally adjusted
 Twelve months ending December

 AVERAGE YIELD TO MATURITY ON SELECTED LONG-TERM BONDS.
 AVERAGE OF MONTHLY AVERAGES.

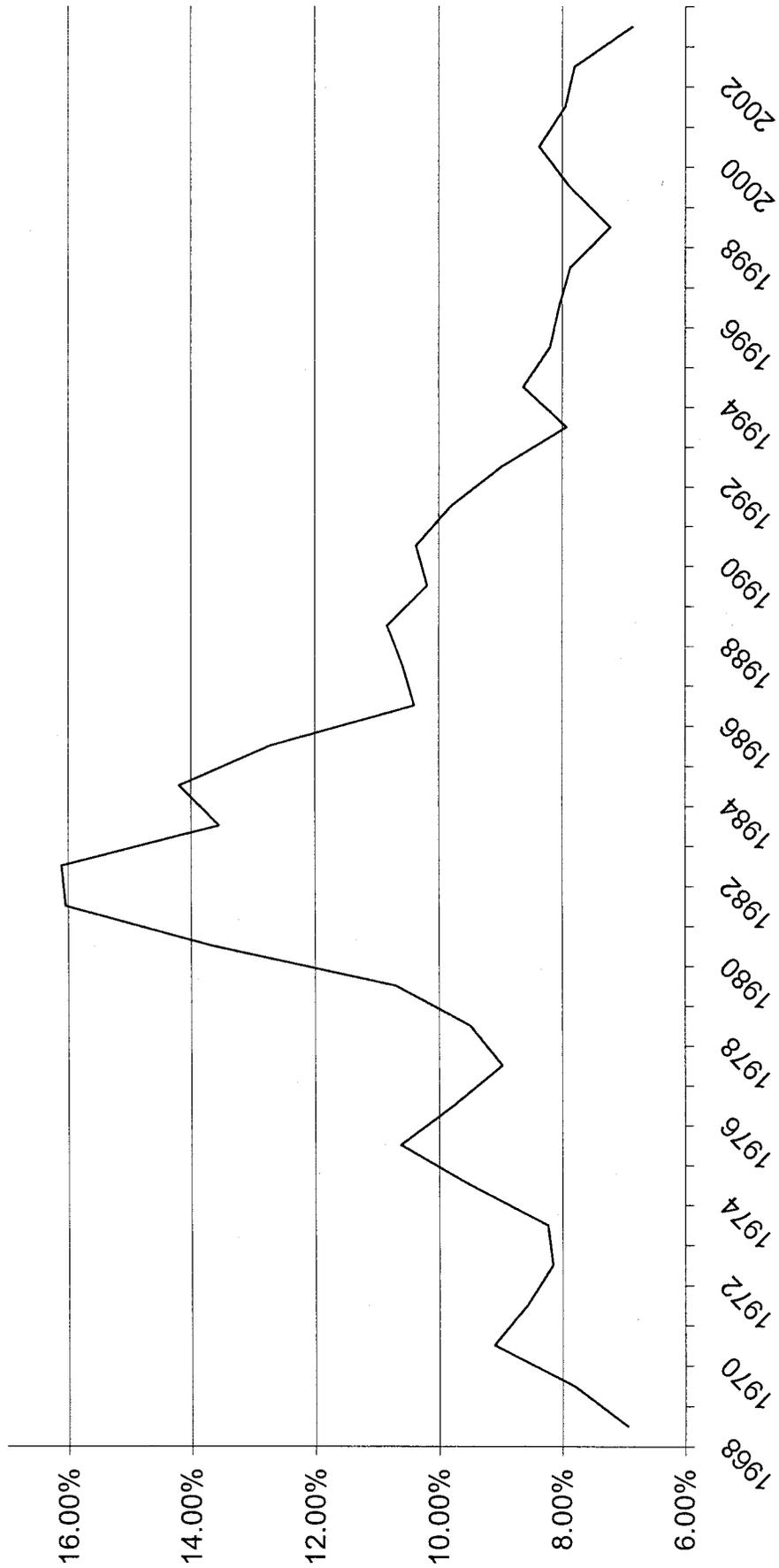
Released on 09/15/2003

	baa

1976	9.75
1977	8.97
1978	9.49
1979	10.69
1980	13.67
1981	16.04
1982	16.11
1983	13.55
1984	14.19
1985	12.72
1986	10.39
1987	10.58
1988	10.83
1989	10.18
1990	10.36
1991	9.80
1992	8.98
1993	7.93
1994	8.63
1995	8.20
1996	8.05
1997	7.87
1998	7.22
1999	7.88
2000	8.37
2001	7.95
2002	7.80



Baa Rated Corporate Bond Yields - A Historical Perspective



"To the extent that changes in interest rates reflect changes in costs of equity for Arizona Water, Baa bond rates provide a better perspective than changes in rates for short-term bonds or Treasury securities."

-Zepp direct. P. 23 at 7 - 10.

Baa bond rates are at historic lows.

FUNDAMENTALS OF INVESTMENTS

Gordon J. Alexander
University of Minnesota

William E. Sharpe
Stanford University
and Sharpe-Tint, Inc.



Prentice Hall, Inc., Englewood Cliffs, New Jersey 07632

EXHIBIT

ALL-STATE LEGAL®

8-15
Submitted

Author: J. G. Alexander, William F.

Form:

15-400627

Editor: J. Sharpe, William F. II, Title

1549 789

88-25870
CIP

Production Supervision: Santa Meyer
Design and Cover Design: Suzanne Behnke
Doris Charles Blecker
Printing Buyer: Ed O'Dougherty

© 1989 by Prentice-Hall, Inc.
A Division of Simon & Schuster
Englewood Cliffs, New Jersey 07632

All rights reserved. No part of this book may be
reproduced, stored in a retrieval system, or
transmitted in any form or by any means,
electronic, mechanical, photocopying, recording,
or by any information storage and retrieval
system, without permission in writing from the publisher.

Printed in the United States of America
8 7 6 5 4 3 2 1

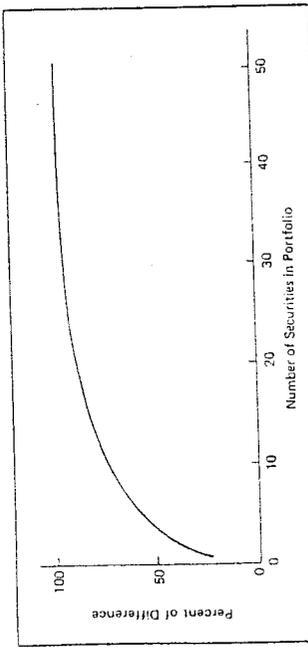
0-13-340167-7

Prentice-Hall International (UK) Limited, London
Prentice-Hall of Australia Pty. Limited, Sydney
Prentice-Hall Canada Inc., Toronto
Prentice-Hall Hispanoamericana, S.A., Mexico
Prentice-Hall of India Private Limited, New Delhi
Prentice-Hall of Japan, Inc., Tokyo
Prentice-Hall of Singapore Asia Pte. Ltd., Singapore
Prentice-Hall do Brasil, Ltda., Rio de Janeiro

To my parents
GJA

To Kathy
WFS

FIGURE 13-6
 Percent of Differences in
 Values Attributable
 to Differences in Prior
 Firms' Betas



Source: Robert A. Levy, "On the Short-Term Stationarity of Beta Coefficients," *Financial Analysts Journal*, 27, no. 6 (November/December 1971), p. 57.

Industry Beta Values

The beta of a firm depends on both the demand for the firm's products and the firm's operating costs. However, most firms have both debt and equity outstanding. This means that the beta of a firm's equity (that is, stock) depends on the beta of the firm and the firm's financial leverage. For example, imagine there are two firms that are identical in every way except that firm A has debt while firm B is free of debt. This means that even though they have the same earnings before interest and taxes (EBIT), they will have different earnings after taxes (EAT) because A, unlike B, has to make interest payments. In this situation, the firm betas for A and B are the same, but the stock beta for A will be greater than the stock beta for B. The difference in the debt is the reason for the difference in the stock betas. This is because the debt makes the earnings available to common stockholders more variable for A than B. Thus, the stock beta for A could be viewed as being equal to the stock beta it would have if it had no debt (that is, the beta of B) plus an adjustment for the amount of debt it actually has outstanding.

Firms in industries having highly cyclical demand or large fixed costs might be expected to have higher firm betas than those in industries with more stable demand or greater variable costs, since they will have greater variability in EBIT. Differences in financial leverage could wholly offset such factors, leaving few, if any, differences among the stock betas of firms in different industries. However, this does not seem to be the case. Firms in certain industries do tend to have higher stock betas than those in other industries, and, by and large, the classifications agree with prior expectations.

Table 13-5 shows the average values of beta for stocks in various industry classifications. Stock prices of firms whose products are termed "necessities" tend to respond less than the stock prices of most other firms when expectations about the future health of the economy are revised. That is, firms in necessities (such as utilities or food) tend to have low betas because they tend to have more stable earnings. On the other hand, stock prices of firms that manufacture "luxuries" tend to respond more than most others when expectations about the future health of the economy are revised. That is, firms in luxuries (such as travel or electronics) tend to have high betas because they tend to have cyclical earnings.

TABLE 13-5
 Average Values of Beta
 for Stocks in Selected
 Industries, 1966-1974

INDUSTRY	BETA VALUE	INDUSTRY	BETA VALUE
Air transport	1.80	Chemicals	1.22
Real property	1.70	Energy, raw materials	1.22
Travel, outdoor recreation	1.66	Tires, rubber goods	1.21
Electronics	1.60	Railroads, shipping	1.19
Miscellaneous finance	1.60	Forest products, paper	1.16
Nondurables, entertainment	1.47	Miscellaneous, conglomerate	1.14
Consumer durables	1.44	Drugs, medicine	1.14
Business machines	1.43	Domestic oil	1.12
Retail, general	1.43	Soaps, cosmetics	1.09
Media	1.39	Steel	1.02
Insurance	1.34	Containers	1.01
Trucking, freight	1.31	Nonferrous metals	.99
Producer goods	1.30	Agriculture, food	.99
Aerospace	1.30	Liquor	.89
Business services	1.28	International oil	.85
Apparel	1.27	Banks	.81
Construction	1.27	Tobacco	.80
Motor vehicles	1.27	Telephone	.75
Photographic, optical	1.24	Energy, utilities	.60
		Gold	.36

Source: Barr Rosenberg and James Guy, "Prediction of Beta from Investment Fundamentals," *Financial Analysts Journal*, 32, no. 4 (July/August 1976), p. 66.

Information of the type shown in Table 13-5 can be used to adjust historical betas. For example, the knowledge that a corporation is in the air transport industry suggests that a reasonable prior estimate of the beta of its stock is 1.8. Thus, it makes more sense to adjust its historical beta toward a value of 1.8 than to 1.0, the average for all stocks, as was suggested in equation (13.9).

Beta Prediction Equations

The procedure used to adjust historical betas involves an implicit prediction equation for future betas. Equation (13.9) can be written more generally as:

$$\beta_a = a + b\beta, \quad (13.10)$$

where a and b are constants. However, a stock's historical beta (β_a) is only one of several pieces of information that can be used to predict its future beta (β_f). For example, firms in the airline industry tend to have higher betas than those in the utility industry. This can be incorporated by including industry effects in the equation:³⁰

$$\beta_f = a + b\beta_a + (c_1 \times E_1) + (c_2 \times E_2) + \dots \quad (13.11)$$

where a , b , c_1 , and c_2 are constants. E_1 is the percentage of the firm's earnings that are from industry number 1 (perhaps the airline industry). E_2 is the percentage of the firm's earnings that are from industry number 2 (perhaps the utility industry), and so on.

³⁰ For a firm whose earnings are entirely in one industry, this is equivalent to adjusting the historical beta of its stock toward an industry average.

Arizona Water Company

Table 6: Small Firm Equity Cost Differential: Case Study
Based on Comparison of DCF Equity Costs for
Smaller and Larger California Class A Water Utilities
1987-1997^{a/}

	<u>Larger California Class A's^{b/}</u>		<u>Smaller California Class A's^{c/}</u>		Equity Cost Estimate ^{e/}	Small Minus Large Water Utilities
	Do/Po	Estimated Growth ^{d/}	Do/Po	Estimated Growth ^{d/}		
1987	6.60%	9.29%	5.38%	11.35%	17.34%	0.84%
1988	6.75%	6.58%	5.81%	9.66%	16.03%	2.25%
1989	7.10%	6.33%	6.47%	4.42%	11.18%	-2.69%
1990	7.24%	5.90%	6.96%	7.07%	14.52%	0.95%
1991	6.94%	6.95%	6.64%	5.78%	12.81%	-1.56%
1992	6.18%	5.25%	6.50%	6.21%	13.12%	1.37%
1993	5.32%	6.29%	5.49%	6.90%	12.77%	0.83%
1994	6.03%	4.22%	5.80%	6.32%	12.49%	1.99%
1995	6.44%	3.72%	6.44%	5.12%	11.89%	1.50%
1996	5.60%	3.37%	5.77%	6.70%	12.86%	3.70%
1997	4.93%	3.67%	4.52%	5.51%	10.28%	1.50%
						Average Difference:
						0.97%

Notes:

- ^{a/} Limited to the period for which Dominguez data were available. 1998 excluded due to pending buyout.
- ^{b/} American States and California Water Service.
- ^{c/} Dominguez Water Company and SJW Corp.
- ^{d/} For 1989-1997, past EPS, DPS and sustainable growth rates estimated for five-year and ten-year periods. For 1987 and 1988, growth rates were past DPS and EPS growth for five- and ten year periods.
- ^{e/} DCF equity cost as computed by California PUC staff: $k = (Do/Po) \times (1+g) + g$.



Phoenix Public Library

DEC 12 1988

SEVENTH
EDITION

INTRODUCTION TO
PROBABILITY AND
STATISTICS



William Mendenhall

3 1730 00338 4455

DUXBURY PRESS
Boston

PHOENIX PUBLIC LIBRARY

ALL-STATE LEGAL®
EXHIBIT
S-18
Admitted

Or, we could obtain $P(A | B)$ by substituting into the equation

$$P(A | B) = \frac{P(AB)}{P(B)} = \frac{1/3}{1/2} = 2/3.$$

Note that $P(A | B) = 2/3$ while $P(A) = 1/2$, indicating that A and B are dependent on each other. ♦

Definition Two events A and B are said to be **independent** if and only if either

$$P(A | B) = P(A)$$

or

$$P(B | A) = P(B).$$

Otherwise, the events are said to be **dependent**.

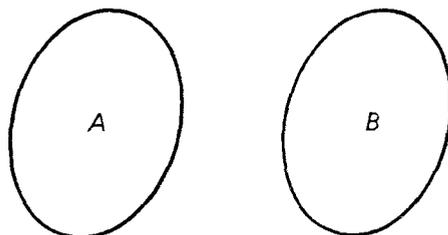
Translating this definition into words, two events are independent if the occurrence or nonoccurrence of one of the events does not change the probability of the occurrence of the other event. If $P(A | B) = P(A)$, then $P(B | A)$ will also equal $P(B)$. Similarly, if $P(A | B)$ and $P(A)$ are unequal, then $P(B | A)$ and $P(B)$ will also be unequal.

A third useful event relation was observed, but not specifically defined, in our discussion of simple events. Recall that an experiment could result in one and only one simple event. No two could occur at exactly the same time. Two events A and B are said to be **mutually exclusive**, if, when one occurs, it excludes the possibility of the occurrence of the other. Another way to say this is to state that the intersection AB will contain no sample points. It would then follow that $P(AB) = 0$.

Definition Two events A and B are said to be **mutually exclusive** if the event AB contains no sample points.

Mutually exclusive events have no overlapping area in a Venn diagram (see Figure 3.8).

Figure 3.8
Mutually exclusive
events



Stocks, Bonds, Bills,
and Inflation

Valuation Edition
2002 Yearbook

IbbotsonAssociates

3 1730 05140 4866

SBBI

© Ibbotson Associates, Inc. 2002



The overall increase in beta cannot be attributed to increases in the leverage of firms in the telecommunications industry. A rise in leverage causes more financial risk to be shouldered by a firm's equity holders and results in a higher levered beta. (Levered beta is the most commonly referred to measure of beta. It measures both business and financial risks.)¹

Table 6-5 demonstrates a slight fall in the debt-to-total-capital ratios of the same telecommunications firms. The lower debt-to-total-capital ratios indicate that there is less leverage and therefore less financial risk. All else held constant, one would expect the levered beta to fall, given a reduction in leverage. However, we observed the opposite for the telecommunications industry in the 1990s.

Table 6-5
Changes in Leverage of Telecommunication Companies

Ticker	Company	Debt to Debt Plus Market Equity			
		1992	1993	1994	1995
AINT	Aiant Communications	17.95%	12.29%	10.86%	14.43%
AIT	Ametech	25.83	24.19	22.18	16.94
BEL	Bell Atlantic	31.13	27.67	29.07	22.17
BLS	BellSouth Corp.	26.17	24.27	26.03	20.10
FPO	Frontier Corp.	33.99	25.21	28.07	12.12
GTE	GTE	34.43	30.84	32.77	25.83
NTN	NTNEX	32.72	37.83	38.91	29.65
PAC	Pacific Telesis Group	25.44	19.96	29.85	30.39
SBC	SBC Communications	23.97	24.56	23.41	17.41
SPG	Southern New England Telecom	33.46	35.59	32.20	35.34
USW	US West Communications	35.78	26.24	26.81	28.59
AT	Alltel	19.58	23.07	25.27	24.53
CTL	Century Telephone	23.59	29.21	30.44	25.86
	Average	28.08	25.99	27.37	23.33

Source: Direct testimony of Roger G. Ibbotson for Ametech Illinois, Illinois Commerce Commission Docket No. 96-0178.

Time Interval

The final element to select in the calculation of beta is the time interval over which excess returns are calculated. The choices are daily, weekly, monthly, quarterly, or annually.

In the previous section, we identified five years as the appropriate time period over which beta should be calculated in most cases. With such a short time period, annual or quarterly data produce too few data points; furthermore, a great deal can happen to a company during these time intervals that makes them inappropriate. Daily data, in addition to being cumbersome to work with, is also most likely to add noise to the regression equation. This is especially true for small companies whose securities may not trade everyday. The addition of noise reduces the statistical quality of the regression.

¹ Sometimes referred to as the equity beta, levered beta is measured from observable returns of a company and takes into account the financial risk or financial structure of the firm. The analysis contained in this chapter to this point has been with respect to the levered beta. For more information on levered and unlevered betas, see the sections titled Levered and Unlevered Beta later in this chapter.

This leaves weekly and monthly data as the logical alternatives. Most beta services have settled on using monthly interval data. If shorter time periods are used for the beta calculation (in cases such as a change in a company or an industry) then shorter interval data (i.e., weekly data) may be preferred to increase the number of observations. However, using weekly data may also add noise to the regression calculation.

Regression Statistics and Beta

While it is possible to calculate a beta statistic for any company having 60 months of data, not all betas are equal from a statistical standpoint. Because the beta is arrived at by regression, it may be necessary to examine, or at least consider, some common regression statistics when evaluating the statistical significance of any beta calculation.

t-Statistic

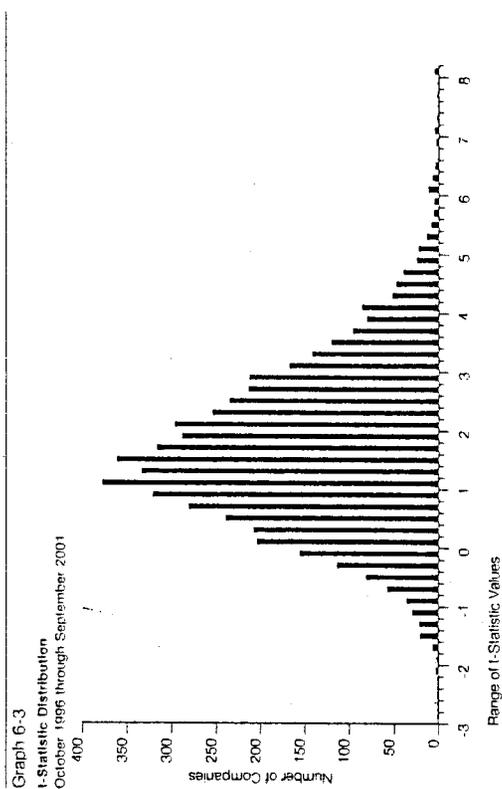
The first statistic that bears consideration is the t-statistic. The t-statistic indicates whether the beta coefficient is statistically different than zero at a certain confidence level. It is an important measure of the statistical significance of the beta that the regression produces. It is important to note, however, that the t-statistic does not measure the statistical accuracy of the numerical value found for the beta itself. The t-statistic only indicates if the beta coefficient is statistically different from zero. Other statistical tests can help determine the accuracy of the numerical value and will be discussed later in this chapter.

An illustration would help demonstrate the significance of the t-statistic with regard to beta. If a regression produces a beta of 0.90 for Company A and has a t-statistic of 3.05, then we can say that the beta coefficient is statistically different than zero. If a regression produces a beta of 0.90 for Company B with a t-statistic of 0.50, then we cannot say that the beta coefficient is statistically different than zero.

How do we know this? If the regression we are performing has 60 months of data, this gives us 59 degrees of freedom. The degrees of freedom provide a guide as to what the appropriate t-statistic should be. For a regression statistic with 59 degrees of freedom at an 90 percent confidence level, the critical t-statistic is approximately 1.67. What does this mean? Any regression statistic whose t-statistic is greater than 1.67 in absolute value would be considered statistically different from zero at the 90 percent confidence level. T-statistic critical values can be found in tables in most statistics textbooks. The appropriate critical value is that for the two-tailed test, as we are concerned with both the upper and lower extremes of the distribution. An abbreviated t-statistic distribution table for a two-tailed test is presented in Table 6-6.

thus, the beta of Company B is not statistically different than zero at that confidence level. If the regression provides a beta of 0.90 but is not statistically different than zero, then other measures of beta may need to be consulted (such as the company's peer betas or industry average betas).

To better illustrate the typical range of a beta's t-statistic, Graph 6-3 depicts the distribution of all t-statistics calculated with respect to the betas of over 5,600 companies included in Ibbotson's *Beta Book*. Since these beta calculations use 60 months of data, the critical value for the t-statistic is again 1.67 at the 90 percent confidence level. Recall that the absolute value is what is compared to the critical value; t-statistics above 1.67 or below -1.67 would therefore be considered statistically significant.



R-Squared
Another valuable regression statistic is the coefficient of determination, or R-squared. The R-squared is a statistic that measures the "goodness of fit" of the regression line and describes the percentage of variation in the dependent variable that is explained by the independent variable. The R-squared measure may vary from zero to one. An R-squared of 1.00 means that the independent variable explains 100 percent of the variation of the dependent variable. An R-squared of 0 indicates that the independent variable does not explain any of the variation of the dependent variable.

Table 6-6

Degrees of Freedom	Confidence Interval			
	90%	95%	97.5%	99%
1	6.314	12.706	26.452	63.656
2	2.920	4.303	6.205	9.925
3	2.353	3.182	4.177	5.841
4	2.132	2.776	3.495	4.604
5	2.015	2.571	3.163	4.032
6	1.943	2.447	2.969	3.707
7	1.895	2.365	2.841	3.499
8	1.860	2.306	2.752	3.355
9	1.833	2.262	2.685	3.250
10	1.812	2.228	2.634	3.169
11	1.796	2.201	2.593	3.106
12	1.782	2.179	2.560	3.055
13	1.771	2.160	2.533	3.012
14	1.761	2.145	2.510	2.977
15	1.753	2.131	2.490	2.947
16	1.746	2.120	2.473	2.921
17	1.740	2.110	2.458	2.898
18	1.734	2.101	2.445	2.878
19	1.729	2.093	2.433	2.861
20	1.725	2.086	2.423	2.845
21	1.721	2.080	2.414	2.831
22	1.717	2.074	2.405	2.819
23	1.714	2.069	2.398	2.807
24	1.711	2.064	2.391	2.797
25	1.709	2.060	2.385	2.787
26	1.706	2.056	2.379	2.779
27	1.703	2.052	2.373	2.771
28	1.701	2.048	2.368	2.763
29	1.699	2.045	2.364	2.756
30	1.697	2.042	2.360	2.750
40	1.684	2.021	2.329	2.704
50	1.676	2.009	2.311	2.678
60	1.671	2.000	2.299	2.660
70	1.667	1.994	2.291	2.648
80	1.664	1.990	2.284	2.639
90	1.662	1.987	2.280	2.632
100	1.660	1.984	2.276	2.626
110	1.659	1.982	2.272	2.621
120	1.658	1.980	2.270	2.617

Recalling the prior example, the beta regression for Company A produced a t-statistic of 3.05, which is greater than 1.67. Therefore, the beta of Company A is statistically different than zero at an 90 percent confidence level. The t-statistic for the beta regression of Company B is 0.50, which is less than 1.67;



INVESTMENT ANALYSIS AND PORTFOLIO MANAGEMENT

Seventh Edition

FRANK K. REILLY
University of Notre Dame

KEITH C. BROWN
University of Texas at Austin

THOMSON
—★—
SOUTH-WESTERN

Australia · Canada · Mexico · Singapore · Spain · United Kingdom · United States

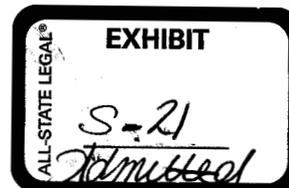


EXHIBIT 10.7**EXTENDED DUPONT SYSTEM ANALYSIS FOR WALGREENS: 1982-2000^a**

YEAR	1 EBIT/SALES (PERCENT)	2 SALES/TOTAL ASSETS (TIMES)	3 EBIT/TOTAL ASSETS (PERCENT) ^b	4 INTEREST EXPENSE/TOTAL ASSETS (PERCENT)	5 NET BEFORE TAX/TOTAL ASSETS EQUITY (PERCENT) ^c	6 TOTAL ASSETS/ COMMON EQUITY (TIMES)	7 NET BEFORE TAX/COMMON EQUITY (PERCENT) ^d	8 TAX RETENTION RATE	9 RETURN ON EQUITY (PERCENT) ^e
1982	4.32	3.31	14.30	(0.85)	15.15	2.06	31.20	0.60	18.75
1983	5.16	3.29	17.00	0.25	16.75	2.04	34.20	0.56	19.30
1984	5.57	3.26	18.20	(0.24)	18.44	2.03	37.40	0.55	20.65
1985	5.63	3.29	18.50	0.43	18.07	2.00	36.10	0.54	19.57
1986	5.37	3.06	16.40	0.74	15.66	2.16	33.90	0.55	18.63
1987	4.92	3.14	15.50	1.22	14.28	2.19	31.30	0.53	16.69
1988	4.59	3.23	14.80	1.01	13.79	2.12	29.30	0.62	18.10
1989	4.71	3.20	15.10	0.57	14.53	2.04	29.70	0.63	18.79
1990	4.70	3.16	14.90	0.17	14.73	2.02	29.80	0.62	18.52
1991	4.77	3.21	15.30	0.44	14.86	1.94	28.80	0.63	18.00
1992	4.80	3.15	15.10	0.23	14.87	1.92	28.60	0.62	17.87
1993	4.90	3.31	16.20	0.26	15.94	1.82	29.00	0.61	17.80
1994	4.93	3.21	15.90	(0.10)	16.00	1.83	29.20	0.62	17.96
1995	5.00	3.20	15.99	0.04	15.95	1.81	28.90	0.61	17.70
1996	5.13	3.24	16.62	0.06	16.56	1.78	29.50	0.61	18.07
1997	5.30	3.18	16.85	0.05	16.80	1.77	29.74	0.61	18.14
1998	5.46	3.12	17.04	0.02	17.02	1.72	29.28	0.61	17.93
1999	5.69	3.02	17.19	0.00	17.19	1.70	29.22	0.61	17.83
2000	5.77	2.99	17.25	0.00	17.25	1.68	28.98	0.61	17.78
2001	5.08	2.79	15.84	0.00	16.11	1.70	27.33	0.62	17.07

^aThe percents in this table may not be the same as in Exhibit 10.6 due to rounding.

^bColumn 3 is equal to Column 1 times Column 2.

^cColumn 5 is equal to Column 3 minus Column 4.

^dColumn 7 is equal to Column 5 times Column 6.

^eColumn 9 is equal to Column 7 times Column 8.

the major factors that cause a firm's income flows to vary. More volatile income flows mean greater risk (uncertainty) facing the investor.

The total risk of the firm has two internal components: business risk and financial risk. The next section discusses the concept of business risk: how you measure it, what causes it, and how you measure its individual causes. The following section discusses financial risk and the several ratios used to measure it. After we examine the firm's internal risk factors, we discuss an important external risk factor, external liquidity risk—that is, the ability to buy or sell the firm's stock in the secondary equity market.

Business Risk¹⁰

Recall that **business risk** is the uncertainty of income caused by the firm's industry. In turn, this uncertainty is due to the firm's variability of sales caused by its products, customers, and the way it produces its products. Specifically, a firm's operating earnings vary over time because its sales

¹⁰For a further discussion on this general topic, see Eugene Brigham and Louis C. Gapenski, *Financial Management: Theory and Practice*, 9th ed. (Fort Worth, Tex.: Dryden, 2000), Chapters 6 and 10.

and production costs vary. As an example, the earnings for a steel firm will probably vary more than those of a grocery chain because (1) over the business cycle, steel sales are more volatile than grocery sales; and (2) the steel firm's large fixed production costs (operating leverage) make its earnings vary more than its sales.

Business risk is generally measured by the variability of the firm's operating income over time. In turn, the earnings variability is measured by the standard deviation of the historical operating earnings series. You will recall from Chapter 1 that the standard deviation is influenced by the size of the numbers, so investors standardize this measure of volatility by dividing it by the mean value for the series (i.e., the average operating earnings). The resulting ratio of the standard deviation of operating earnings divided by the average operating earnings is the coefficient of variation (CV) of operating earnings:

$$\begin{aligned} \text{Business Risk} &= f(\text{Coefficient of Variation of Operating Earnings}) \\ &= \frac{\text{Standard Deviation of Operating Earnings (OE)}}{\text{Mean Operating Earnings}} \\ &= \frac{\sqrt{\sum_{i=1}^n (OE_i - \overline{OE})^2 / n}}{\sum_{i=1}^n OE_i / n} \end{aligned}$$

The CV of operating earnings allows comparisons between standardized measures of business risk for firms of different sizes. To compute the CV of operating earnings, you need a minimum of 5 years up to about 10 years. Less than 5 years is not very meaningful, and data more than 10 years old are typically out of date. We cannot compute the CV of operating earnings of Walgreens because we have data for only 3 years.

Besides measuring overall business risk, it is very insightful to examine the two factors that contribute to the variability of operating earnings: sales variability and operating leverage.

Sales Variability Sales variability is the prime determinant of earnings variability. In turn, the variability of sales is mainly caused by a firm's industry and is largely outside the control of management. For example, sales for a firm in a cyclical industry, such as automobiles or steel, will be quite volatile over the business cycle compared to sales of a firm in a noncyclical industry, such as retail food or hospital supplies. Like operating earnings, the variability of a firm's sales is typically measured by the CV of sales during the most recent 5 to 10 years. The CV of sales equals the standard deviation of sales divided by the mean sales for the period.¹¹

$$\text{Sales Volatility} = f(\text{Coefficient of Variation of Sales})$$

$$= \frac{\sqrt{\sum_{i=1}^n (S_i - \bar{S})^2 / n}}{\sum_{i=1}^n S_i / n}$$

¹¹Besides normalizing the standard deviation for size by computing the CV, it is also important to recognize that the standard deviation is measured relative to the mean value for the series—that is, it computes deviations from "expected value." The problem arises for firms that experience significant growth that will create very large deviations from the mean for the series even if it is constant growth. The way to avoid this bias is to measure deviations from the growth path of the series. For details see Appendix C of this chapter.

9
RETURN
ON
EQUITY
(PERCENT)
18.75
19.30
20.65
19.57
18.63
16.69
18.10
18.79
18.52
18.00
17.87
17.80
17.96
17.70
18.07
18.14
17.93
17.83
17.78
17.07

ows mean
l risk. The
t, and how
he several
an impor-
rm's stock

turn, this
d the way
se its sales

management

Arizona Water Has Lower Business Risk Than Other Water Utilities

"Business risk is generally measured by the variability of the firm's operating income over time. In turn, the earnings variability is measured by the standard deviation of the historical operating earnings series. ... The standard deviation is influenced by the size of the numbers, so investors standardize this measure of volatility by dividing it by the mean value for the series (i.e., the average operating earnings). The resulting ratio of the standard deviation of operating earnings divided by the average operating earnings is the coefficient of variation (CV) of operating earnings."¹

Business Risk = Coefficient of Variation of Operating Earnings

$$= \frac{\text{Standard Deviation of Operating Earnings (OE)}}{\text{Mean Operating Earnings}}$$

$$= \frac{\sqrt{\sum_{i=1}^n (OE_i - \overline{OE})^2 / n}}{\sum_{j=1}^n OE_j / n}$$

	1998	1999	2000	2001	2002	Business Risk $\frac{\sqrt{\sum_{i=1}^n (OE_i - \overline{OE})^2 / n}}{\sum_{j=1}^n OE_j / n}$
	OE	OE	OE	OE	OE	
American States	35.2	41.7	47.6	52	50.6	0.137
California Water	40.6	42.8	44.7	34.9	43	0.083
Philadelphia Suburban	66.7	104.8	117.2	134.3	140.5	0.233
Connecticut Water	13.7	16	15.5	16.1	16.2	0.160
Middlesex Water	12.1	13.8	12.7	15.2	16.2	0.109
SJW Corp.	28.5	28.7	25.5	27.3	30.2	0.056
Average						0.113
Arizona Water	6.3 ⁻	6.2	7.1	6.0	7.7	0.096

Conclusion: "The [coefficient of variation] of operating earnings allows comparisons between standardized measures of business risk for firms of different sizes." (Reilly, 339) The above table suggests that Arizona Water has lower business risk than the sample water companies.

¹See Reilly, Frank K., and Keith C. Brown. Investment Analysis and Portfolio Management. 2003. South-Western. Mason, OH. Pp. 338-339. Source: MSN Money (data in millions) and annual reports filed with the Arizona Corporation Commission.

S-23-~~1~~

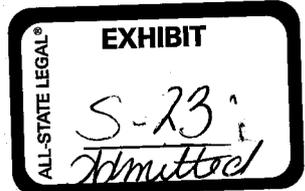
ARIZONA WATER COMPANY
RETIREMENTS FROM PLANT
MIAMI WELL ACCOUNT 314
FOR PERIOD 1955-2001

Response To TJS 13-8

Description	Installed	Year	Qty	Original Cost
Unspecified Retirement		1961	???	7,000
(Russel Gulch) 10" Casing	1953	1967	160	671
Well #3 Old Miami & 12" Casing	1948	1970	214	1,758
Well #3 Old Claypool & 12" Casing	1959	1970	175	2,625
Concrete Pump Bases	1943	1970	2	85
Well Central Hts & 8"-10" Casing	1941	1970	250	2,421
Well Central Hts & 8"-10" Casing	1943	1970	260	2,516
Well #3 Claypool (Miami) & 12" Casing	1948	1971	214	2,018
Well #3 Claypool (Citizens) & 12" Casing	1959	1971	175	2,625
Well #6 Central Hts & 8" Casing	1957	1971	560	6,720
Well #5 Central Hts & 8"-10" Casing	-	1971	250	2,400
Well #5 8" Casing	-	1971	150	
Well #1 to Plant Held for Future Use		1971	--	18,000
Well #2 to Plant Held for Future Use		1971	--	2,195
Well #15 & 12" Casing	1974	1978	580	4,068
Well #14 & 12" Casing	1974	1982	697	36,152
Total				<u><u>91,254</u></u>

S-23

It was decided
that this is not
confidential, even
though it's on
yellow paper



1 in service throughout the test year.

2 Q. But isn't the company asking that the post
3 test year plant be treated as if it were placed in
4 service during the test year?

5 A. Yes. As if it were placed in service on
6 January 1 of 1999.

7 Q. So you didn't follow the half-year convention?

8 A. We took a full year's depreciation. We
9 followed the half-year convention in our books, and we
10 make an adjustment in rate proceedings to pick up the
11 additional six months of depreciation on test year
12 plant additions.

13 Q. Right.

14 A. If the Commission would prefer that we not
15 make that adjustment, we will be certainly willing to
16 accept that position.

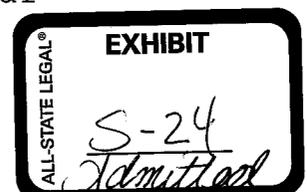
17 Q. Okay. If you go over to column 3, also under
18 line 2, less accumulated depreciation you show a figure
19 \$78,282?

20 A. Yes.

21 Q. And that footnote states: "Depreciation
22 expense six months additional on test year additions."

23 A. That's correct.

24 Q. Now, does that follow the half-year
25 convention?



1 A. As I just explained, we followed the half-year
2 convention for our financial reports and for income tax
3 purposes. For ratemaking purposes we have consistently
4 adjusted the test year additions to provide a full
5 year's depreciation.

6 However, if Staff proposes that we not do
7 that, we would agree with that adjustment.

8 Q. When would the company be investing in plant
9 that was added 15 months after the test year?

10 A. When would they be investing in it?

11 Q. When would the actual investment be made?

12 A. It probably was made some of it in 2000. Some
13 was made in 2001.

14 Q. It was not made January 1st, 1999, was it?

15 A. No.

16 Q. Would you agree that the purpose of a rate
17 base determination is to find the amount of
18 shareholders' investment, the amount that shareholders
19 can earn a return on?

20 A. I think the purpose is to determine the
21 shareholders' investment at the time the new rates are
22 going to go into effect. Yes.

23 Q. On page 19 of your rejoinder testimony you
24 state for the second time in your rejoinder that the
25 company does not record AFUDC. That's on lines 20 and

ARIZONA WATER COMPANY

Eastern Group

Docket No. U-1445A-02-0619

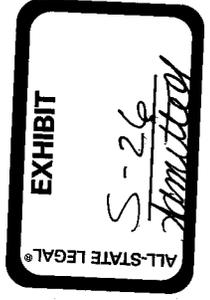
Witness (es) Hubbard

Data Request No. REL 7-6

Please provide CAP amortization schedules or work paper supporting the Company's CAP water book entries.

Response To Data Request No. REL 7-6

Attached is the CAP amortization schedule.



**Arizona Water Company
Amortization CAP**

	Year	Decision No. 58120 Authorized Amount	Accumulated Amortization	Yearly Amortization
Beg. Bal.		60,000		
1	1993	60,000	1,380	1,380
2	1994	60,000	2,760	1,380
3	1995	60,000	4,140	1,380
4	1996	60,000	5,520	1,380
5	1997	60,000	6,900	1,380
6	1998	60,000	8,280	1,380
7	1999	60,000	9,660	1,380
8	2000	60,000	11,040	1,380
9	2001	60,000	12,420	1,380
10	2002	60,000	13,800	1,380
11	2003	60,000	15,180	1,380
12	2004	60,000	16,560	1,380
13	2005	60,000	17,940	1,380
14	2006	60,000	19,320	1,380
15	2007	60,000	20,700	1,380
16	2008	60,000	22,080	1,380
17	2009	60,000	23,460	1,380
18	2010	60,000	24,840	1,380
19	2011	60,000	26,220	1,380
20	2012	60,000	27,600	1,380
21	2013	60,000	28,980	1,380
22	2014	60,000	30,360	1,380
23	2015	60,000	31,740	1,380
24	2016	60,000	33,120	1,380
25	2017	60,000	34,500	1,380
26	2018	60,000	35,880	1,380
27	2019	60,000	37,260	1,380
28	2020	60,000	38,640	1,380
29	2021	60,000	40,020	1,380
30	2022	60,000	41,400	1,380
31	2023	60,000	42,780	1,380
32	2024	60,000	44,160	1,380
33	2025	60,000	45,540	1,380
34	2026	60,000	46,920	1,380
35	2027	60,000	48,300	1,380
36	2028	60,000	49,680	1,380
37	2029	60,000	51,060	1,380
38	2030	60,000	52,440	1,380
39	2031	60,000	53,820	1,380
40	2032	60,000	55,200	1,380
41	2033	60,000	56,580	1,380
42	2034	60,000	57,960	1,380
43	2035	60,000	59,340	1,380
44	2036	60,000	60,000	660

1 A. Not that I see.

2 Q. Is there anywhere in Mr. Byrne's direct testimony
3 that addresses the June through December 1991 additions?

4 A. No.

5 Q. I'd like to move on to the deferred CAP charges.
6 Mr. Kennedy, did the company use CAP water in the test
7 year?

8 A. Yes, it did.

9 Q. In what system?

10 A. In the Apache Junction system.

11 Q. Presently is the company using CAP water in any
12 system besides Apache Junction?

13 A. Only in the Apache Junction system.

14 Q. Now, some day when the company uses its CAP
15 allocation in each of these areas, the deferred payments
16 that it has already made will be applied to whatever it's
17 eventually charged for the water; is that correct?

18 A. What did you say about the deferred payment?

19 Q. That some day, when the company uses the CAP
20 water in all of the various systems for which it is
21 currently making those deferred payments, that those
22 payments will then be applied to what the company would be
23 charged for the water; is that correct?

24 A. In essence, yes.

25 Q. And the company currently accumulates interest

EXHIBIT
8-27
Notice

ARIZONA WATER COMPANY
Eastern Group
Docket No. W-1445A-02-0619
Witness(es) Hubbard

Data Request No. REL 1-6

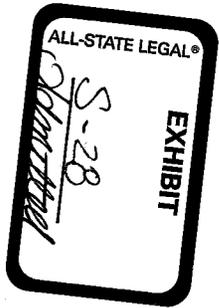
Central Arizona Project (CAP) Costs – For each system of the Eastern Group, please provide the following information:

- a. A copy of the CAP contract.
- b. CAP invoices paid during the year 2001.
- c. CAP invoices paid during the year 2002.

Response To Data Request No. REL 1-6

Within the Eastern Group of systems, Apache Junction is the only system that incurs Central Arizona Project costs.

- a. Attached is a copy of the CAP contract dated October 24 1985.
- b. Attached are the CAP invoices paid during the year 2001.
- c. Attached are the CAP invoice paid during the year 2002.



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

SUBCONTRACT AMONG THE UNITED STATES,
THE CENTRAL ARIZONA WATER CONSERVATION DISTRICT,
AND THE Arizona Water Company (Apache Junction)
PROVIDING FOR WATER SERVICE

CENTRAL ARIZONA PROJECT

1. PREAMBLE:

THIS SUBCONTRACT, made this 24th day of October,
1985, in pursuance generally of the Act of June 17, 1902 (32
Stat. 388), and acts amendatory thereof or supplementary thereto,
including but not limited to the Boulder Canyon Project Act of
December 21, 1928 (45 Stat. 1057), as amended, the Reclamation
Project Act of August 4, 1939 (53 Stat. 1187), as amended, the
Reclamation Reform Act of October 12, 1982 (96 Stat. 1263), and
particularly the Colorado River Basin Project Act of September
30, 1968 (82 Stat. 885), as amended, all collectively hereinafter
referred to as the "Federal Reclamation Laws," among the UNITED
STATES OF AMERICA, hereinafter referred to as the "United States"
acting through the Secretary of the Interior, the CENTRAL ARIZONA
WATER CONSERVATION DISTRICT, hereinafter referred to as the
"Contractor," a water conservation district organized under the
laws of Arizona, with its principal place of business in Phoenix,
Arizona, and the Arizona Water Company, hereinafter

1 referred to as the "Subcontractor," with its principal place of
2 business in Phoenix, Arizona;

3 WITNESSETH, THAT:

4 2. EXPLANATORY RECITALS:

5 WHEREAS, the Colorado River Basin Project Act provides,
6 among other things, that for the purposes of furnishing
7 irrigation and municipal and industrial water supplies to water
8 deficient areas of Arizona and western New Mexico through direct
9 diversion or exchange of water, control of floods, conservation
10 and development of fish and wildlife resources, enhancement of
11 recreation opportunities, and for other purposes, the Secretary
12 of the Interior shall construct, operate, and maintain the
13 Central Arizona Project; and

14 WHEREAS, pursuant to the provisions of Arizona Revised
15 Statutes §§ 45-2601 et seq., the Contractor has been organized
16 with the power to enter into a contract or contracts with the
17 Secretary of the Interior to accomplish the purposes of Arizona
18 Revised Statutes, §§ 45-2601 et seq.; and

19 WHEREAS, pursuant to Section 304(b)(1) of the Colorado
20 River Basin Project Act, the Secretary of the Interior has
21 determined that it is necessary to effect repayment of the cost
22 of constructing the Central Arizona Project pursuant to a master
23 contract and that the United States, together with the
24 Contractor, shall be a party to contracts that are in conformity
25 with and subsidiary to the master contract; and

26 WHEREAS, the United States and the Contractor entered
27 into Contract No. 14-06-W-245 dated December 15, 1972, herein-
28 after referred to as the "Repayment Contract," a copy of which is

1 attached hereto as Exhibit "A" and by this reference made a part
2 hereof, whereby the Contractor agrees to repay to the United
3 States the reimbursable costs of the Central Arizona Project
4 allocated to the Contractor; and

5 WHEREAS, the Subcontractor is in need of a water supply
6 and desires to subcontract with the United States and the
7 Contractor for water service from water supplies available under
8 the Central Arizona Project; and

9 WHEREAS, upon completion of the Central Arizona
10 Project, water shall be available for delivery to the
11 Subcontractor;

12 NOW THEREFORE, in consideration of the mutual and
13 dependent covenants herein contained, it is agreed as follows:

14 3. DEFINITIONS:

15 Definitions included in the Repayment Contract are
16 applicable to this subcontract; Provided, however, That the
17 terms "Agricultural Water" or "Irrigation Water" shall mean water
18 used for the purposes defined in the Repayment Contract on tracts
19 of land operated in units of more than 5 acres. The first
20 letters of terms so defined are capitalized herein. As
21 heretofore indicated, a copy of the Repayment Contract is
22 attached as Exhibit "A."

23 4. DELIVERY OF WATER:

24 4.1 Obligations of the United States. Subject to the
25 terms, conditions, and provisions set forth herein and in the
26 Repayment Contract, during such periods as it operates and
27 maintains the Project Works, the United States shall deliver
28 Project Water for M&I use by the Subcontractor. The United

1 States shall use all reasonable diligence to make available to
2 the Subcontractor the quantity of Project Water specified in the
3 schedule submitted by the Subcontractor in accordance with
4 Article 4.4. After transfer of OM&R to the Operating Agency,
5 the United States shall make deliveries of Project Water to the
6 Operating Agency which shall make subsequent delivery to the
7 Subcontractor as provided herein.

8 4.2 Term of Subcontract. This subcontract shall
9 become effective upon its confirmation as provided for in Article
10 6.12 and shall remain in effect for a period of 50 years
11 beginning with the January 1 of the Year following that in which
12 the Secretary issues the Notice of Completion of the Water Supply
13 System; Provided, That this subcontract may be renewed upon
14 written request by the Subcontractor upon terms and conditions of
15 renewal to be agreed upon not later than 1 year prior to the
16 expiration of this subcontract; and Provided, further, That such
17 terms and conditions shall be consistent with Article 9.9 of the
18 Repayment Contract.

19 4.3 Conditions Relating to Delivery and Use.
20 Delivery and use of water under this subcontract is conditioned
21 on the following, and the Subcontractor hereby agrees that:

22 (a) All uses of Project Water and Return Flow
23 shall be consistent with Arizona water law unless such law is
24 inconsistent with the Congressional directives applicable to the
25 Central Arizona Project.

26 (b) The system or systems through which water for
27 Agricultural, M&I, and Miscellaneous (including ground water
28 recharge) purposes is conveyed after delivery to the

1 Subcontractor shall consist of pipelines, canals, distribution
2 systems, or other conduits provided and maintained with linings
3 adequate in the Contracting Officer's judgment to prevent
4 excessive conveyance losses.

5 (c) The Subcontractor shall not pump, or within
6 its legal authority, permit others to pump ground water from
7 within the exterior boundaries of the Subcontractor's service
8 area, which has been delineated on a map filed with the
9 Contractor and approved by the Contractor and the Contracting
10 Officer, for use outside of said service area unless such pumping
11 is permitted under Title 45, Chapter 2, Arizona Revised Statutes,
12 as it may be amended from time to time, and the Contracting
13 Officer, the Contractor, and the Subcontractor shall agree, or
14 shall have previously agreed, that a surplus of ground water
15 exists and drainage is or was required; Provided, however, That
16 such pumping may be approved by the Contracting Officer and the
17 Contractor, and approval shall not be unreasonably withheld, if
18 such pumping is in accord with the Basin Project Act and upon
19 submittal by the Subcontractor of a written certification from
20 the Arizona Department of Water Resources or its successor agency
21 that the pumping and transportation of ground water is in accord
22 with Title 45, Chapter 2, Arizona Revised Statutes, as it may be
23 amended from time to time.

24 (d) The Subcontractor shall not sell or otherwise
25 dispose of or permit the sale or other disposition of any Project
26 Water for use outside of Maricopa, Pinal, and Pima Counties;
27 Provided, however, That this does not prohibit exchanges of
28 Project Water covered by separate agreements; and Provided,

1 further, That this does not prohibit effluent exchanges with
2 Indian tribes pursuant to Article 6.2.

3 (e) (i) Project Water scheduled for delivery in
4 any Year under this subcontract may be used by the Subcontractor
5 or resold or exchanged by the Subcontractor pursuant to
6 appropriate agreements approved by the Contracting Officer and
7 the Contractor. If said water is resold or exchanged by the
8 Subcontractor for an amount in excess of that which the Subcon-
9 tractor is obligated to pay under this subcontract, the excess
10 amount shall be paid forthwith by the Subcontractor to the
11 Contractor for application against the Contractor's Repayment
12 Obligation to the United States; Provided, however, That the
13 Subcontractor shall be entitled to recover actual costs of
14 transportation, treatment, and distribution, including but not
15 limited to capital costs and OM&R costs.

16 (ii) Project Water scheduled for delivery in
17 any Year under this subcontract that cannot be used, resold, or
18 exchanged by the Subcontractor may be made available by the
19 Contracting Officer and Contractor to other users. If such
20 Project Water is sold to or exchanged with other users, the
21 Subcontractor shall be relieved of its payments hereunder only to
22 the extent of the amount paid to the Contractor by such other
23 users, but not to exceed the amount the Subcontractor is
24 obligated to pay under this subcontract for said water.

25 (iii) In the event the Subcontractor or the
26 Contracting Officer and the Contractor are unable to sell any
27 portion of the Subcontractor's Project Water scheduled for
28 delivery and not required by the Subcontractor, the Subcontractor

1 shall be relieved of the pumping energy portion of the OM&R
2 charges associated with the undelivered water as determined by
3 the Contractor.

4 4.4 Procedure for Ordering Water.

5 (a) At least 15 months prior to the date the
6 Secretary expects to issue the Notice of Completion of the Water
7 Supply System, or as soon thereafter as is practicable, the
8 Contracting Officer shall announce by written notice to the
9 Contractor the amount of Project Water available for delivery
10 during the Year in which said Notice of Completion is issued
11 (initial Year of water delivery) and during the following Year.
12 Within 30 days of receiving such notice, the Contractor shall
13 issue a notice of availability of Project Water to the Subcon-
14 tractor. The Subcontractor shall, within a reasonable period of
15 time as determined by the Contractor, submit a written schedule
16 to the Contractor and the Contracting Officer showing the
17 quantity of water desired by the Subcontractor during each month
18 of said initial Year and the following Year. The Contractor
19 shall notify the Subcontractor by written notice of the
20 Contractor's action on the requested schedule within 2 months of
21 the date of receipt of such request.

22 (b) The amounts, times, and rates of delivery of
23 Project Water to the Subcontractor during each Year subsequent to
24 the Year following said initial Year of water delivery shall be
25 in accordance with a water delivery schedule for that Year. Such
26 schedule shall be determined in the following manner:

27 (i) On or before June 1 of each Year
28 beginning with the Year following the initial Year of water

1 delivery pursuant to this subcontract, the Contracting Officer
2 shall announce the amount of Project Water available for delivery
3 during the following Year in a written notice to the Contractor.
4 In arriving at this determination, the Contracting Officer,
5 subject to the provisions of the Repayment Contract, shall use
6 his best efforts to maximize the availability and delivery of
7 Arizona's full entitlement of Colorado River water over the term
8 of this subcontract. Within 30 days of receiving said notice,
9 the Contractor shall issue a notice of availability of Project
10 Water to the Subcontractor.

11 (ii) On or before October 1 of each Year
12 beginning with the Year following said initial Year of water
13 delivery, the Subcontractor shall submit in writing to the
14 Contractor and the Contracting Officer a water delivery schedule
15 indicating the amounts of Project Water desired by the
16 Subcontractor during each month of the following Year along with
17 a preliminary estimate of Project Water desired for the
18 succeeding 2 years.

19 (iii) Upon receipt of the schedule, the
20 Contractor and the Contracting Officer shall review it and, after
21 consultation with the Subcontractor, shall make only such
22 modifications to the schedule as are necessary to ensure that the
23 amounts, times, and rates of delivery to the Subcontractor are
24 consistent with the delivery capability of the Project,
25 considering, among other things, the availability of water and
26 the delivery schedules of all subcontractors; Provided, That
27 this provision shall not be construed to reduce annual deliveries
28 to the Subcontractor.

1 (iv) On or before November 15 of each Year
2 beginning with the Year following said initial Year of water
3 delivery, the Contractor shall determine and furnish to the
4 Subcontractor and the Contracting Officer the water delivery
5 schedule for the following Year which shall show the amount of
6 water to be delivered to the Subcontractor during each month of
7 that Year, contingent upon the Subcontractor remaining eligible
8 to receive water under all terms contained herein.

9 (c) The monthly water delivery schedules may be
10 amended upon the Subcontractor's written request to the
11 Contractor. Proposed amendments shall be submitted by the
12 Subcontractor to the Contractor no later than 15 days before the
13 desired change is to become effective, and shall be subject to
14 review and modification in like manner as the schedule. The
15 Contractor shall notify the Subcontractor and the Contracting
16 Officer of its action on the Subcontractor's requested schedule
17 modification within 10 days of the Contractor's receipt of such
18 request.

19 (d) The Contractor and the Subcontractor shall
20 hold the United States, its officers, agents, and employees,
21 harmless on account of damage or claim of damage of any nature
22 whatsoever arising out of or connected with the actions of the
23 Contractor regarding water delivery schedules furnished to the
24 Subcontractor.

25 (e) In no event shall the Contracting Officer or
26 the Contractor be required to deliver to the Subcontractor from
27 the Water Supply System in any one month a total amount of
28 Project Water greater than 11 percent of the Subcontractor's

1 maximum entitlement; Provided, however, That the Contracting
2 Officer may deliver a greater percentage in any month if such
3 increased delivery is compatible with the overall delivery of
4 Project Water to other subcontractors as determined by the
5 Contracting Officer and the Contractor and if the Subcontractor
6 agrees to accept such increased deliveries.

7 4.5 Points of Delivery--Measurement and Responsibility
8 for Distribution of Water.

9 (a) The water to be furnished to the
10 Subcontractor pursuant to this subcontract shall be delivered at
11 turnouts to be constructed by the United States at such point(s)
12 on the Water Supply System as may be agreed upon in writing by
13 the Contracting Officer and the Contractor, after consultation
14 with the Subcontractor.

15 (b) Unless the United States and the
16 Subcontractor agree by contract to the contrary, the
17 Subcontractor shall construct and install, at its sole cost and
18 expense, connection facilities required to take and convey the
19 water from the turnouts to the Subcontractor's service area. The
20 Subcontractor shall furnish, for approval of the Contracting
21 Officer, drawings showing the construction to be performed by the
22 Subcontractor within the Water Supply System right-of-way 6
23 months before starting said construction. The facilities may be
24 installed, operated, and maintained on the Water Supply System
25 right-of-way subject to such reasonable restrictions and
26 regulations as to type, location, method of installation,
27 operation, and maintenance as may be prescribed by the
28 Contracting Officer.

1 (c) All water delivered from the Water Supply
2 System shall be measured with equipment furnished and installed
3 by the United States and operated and maintained by the United
4 States or the Operating Agency. Upon the request of the
5 Subcontractor or the Contractor, the accuracy of such
6 measurements shall be investigated by the Contracting Officer or
7 the Operating Agency, Contractor, and Subcontractor, and any
8 errors which may be mutually determined to have occurred therein
9 shall be adjusted; Provided, That in the event the parties cannot
10 agree on the required adjustment, the Contracting Officer's
11 determination shall be conclusive.

12 (d) Neither the United States, the Contractor,
13 nor the Operating Agency shall be responsible for the control,
14 carriage, handling, use, disposal, or distribution of Project
15 Water beyond the delivery point(s) agreed to pursuant to
16 Subarticle 4.5(a). The Subcontractor shall hold the United
17 States, the Contractor, and the Operating Agency harmless on
18 account of damage or claim of damage of any nature whatsoever for
19 which there is legal responsibility, including property damage,
20 personal injury, or death arising out of or connected with the
21 Subcontractor's control, carriage, handling, use, disposal, or
22 distribution of such water beyond said delivery point(s).

23 4.6 Temporary Reductions. In addition to the right
24 of the United States under Subarticle 8.3(a)(iv) of the Repayment
25 Contract temporarily to discontinue or reduce the amount of water
26 to be delivered, the United States or the Operating Agency may,
27 after consultation with the Contractor, temporarily discontinue
28 or reduce the quantity of water to be furnished to the

1 Subcontractor as herein provided for the purposes of
2 investigation, inspection, maintenance, repair, or replacement of
3 any of the Project facilities or any part thereof necessary for
4 the furnishing of water to the Subcontractor, but so far as
5 feasible the United States or the Operating Agency shall
6 coordinate any such discontinuance or reduction with the
7 Subcontractor and shall give the Subcontractor due notice in
8 advance of such temporary discontinuance or reduction, except in
9 case of emergency, in which case no notice need be given.
10 Neither the United States, its officers, agents, and employees,
11 nor the Operating Agency, its officers, agents, and employees,
12 shall be liable for damages when, for any reason whatsoever, any
13 such temporary discontinuance or reduction in delivery of water
14 occurs. If any such discontinuance or temporary reduction
15 results in deliveries to the Subcontractor of less water than
16 what has been paid for in advance, the Subcontractor shall be
17 entitled to be reimbursed for the appropriate proportion of such
18 advance payments prior to the date of the Subcontractor's next
19 payment of water service charges or the Subcontractor may be
20 given credit toward the next payment of water charges if the
21 Subcontractor should so desire.

22 4.7 Priority in Case of Shortage. Subject to the
23 provisions of Section 304(e) of the Basin Project Act, any
24 Project Water furnished for non-Indians through Project
25 facilities shall, in the event of shortage thereof, as determined
26 by the Contracting Officer after consultation with the
27 Contractor, be reduced pro rata until exhausted, first for
28 Miscellaneous Water uses and next for Agricultural Water uses

1 before water furnished for non-Indian M&I use is reduced.
2 Thereafter, water for M&I uses shall be reduced pro rata among
3 all non-Indian M&I users. All Project Water converted from
4 agricultural to M&I use shall be delivered with the same priority
5 as other Project M&I Water. Pursuant to the authority vested in
6 the Secretary by the Reclamation Act of 1902 (32 Stat. 388), as
7 amended and supplemented, the Basin Project Act, the Regulations
8 for Implementing the Procedural Provisions of the National
9 Environmental Policy Act (40 CFR Part 1505), and the Implementing
10 Procedures of the U. S. Department of the Interior (516 DM
11 5.4), the relative priorities between Indian and non-Indian uses
12 will be determined by the Secretary consistent with the
13 allocations published in the Federal Register on March 24, 1983.

14 4.8 Secretarial Control of Return Flow.

15 (a) The Secretary reserves the right to capture
16 all Return Flow flowing from the exterior boundaries of the
17 Contractor's Service Area as a source of supply and for
18 distribution to and use of the Central Arizona Project to the
19 fullest extent practicable. The Secretary also reserves the
20 right to capture for Project use Return Flow which originates or
21 results from water contracted for from the Central Arizona
22 Project within the boundaries of the Contractor's Service Area
23 if, in his judgment, such Return Flow is not being put to a
24 beneficial use. The Subcontractor may recapture and reuse or
25 sell its Return Flow; Provided, however, That such Return Flow
26 may not be sold for use outside Maricopa, Pinal, and Pima
27 Counties; and Provided, further, That this does not prohibit
28 effluent exchanges with Indian tribes pursuant to Article 6.2.

1 The Subcontractor shall, at least 60 days in advance of any
2 proposed sale of such water, furnish the following information in
3 writing to the Contracting Officer and the Contractor:

4 (i) The name and address of the prospective buyer.

5 (ii) The location and proposed use of the Return Flow.

6 (iii) The price to be charged for the Return Flow.

7 (b) The price charged for the Return Flow may
8 cover the cost incurred by the Subcontractor for Project Water
9 plus the cost required to make the Return Flow usable. If the
10 price received for the Return Flow is greater than the costs
11 incurred by the Subcontractor, as described above, the excess
12 amount shall be forthwith returned by the Subcontractor to the
13 Contractor for application against the Contractor's Repayment
14 Obligation to the United States. Costs required to make Return
15 Flow usable shall include but not be limited to capital costs and
16 OM&R costs including transportation, treatment, and distribution,
17 and the portion thereof which may be retained by the
18 Subcontractor shall be subject to the advance approval of the
19 Contractor and the Contracting Officer.

20 (c) Any Return Flow captured by the United States
21 and determined by the Contracting Officer and the Contractor to
22 be suitable and available for use by the Subcontractor may be
23 delivered by the United States or Operating Agency to the
24 Subcontractor as a part of the water supply for which the
25 Subcontractor subcontracts hereunder and such water shall be
26 accounted and paid for pursuant to the provisions hereof.

27 (d) All capture, recapture, use, reuse, and sale
28 of Return Flow under this article shall be in accord with Arizona

1 water law unless such law is inconsistent with the Congressional
2 directives applicable to the Central Arizona Project.

3 4.9 Water and Air Pollution Control. The Subcontractor,
4 in carrying out this subcontract, shall comply with all
5 applicable water and air pollution laws and regulations of the
6 United States and the State of Arizona and shall obtain all
7 required permits or licenses from the appropriate Federal, State,
8 or local authorities.

9 4.10 Quality of Water. The operation and maintenance
10 of Project facilities shall be performed in such manner as is
11 practicable to maintain the quality of water made available
12 through such facilities at the highest level reasonably
13 attainable as determined by the Contracting Officer. Neither the
14 United States, the Contractor, nor the Operating Agency warrants
15 the quality of water and is under no obligation to construct or
16 furnish water treatment facilities to maintain or better the
17 quality of water. The Subcontractor waives its right to make a
18 claim against the United States, the Operating Agency, the
19 Contractor, or another subcontractor because of changes in water
20 quality caused by the commingling of Project water with other
21 water.

22 4.11 Exchange Water.

23 (a) Where the Contracting Officer determines the
24 Subcontractor is physically able to receive Colorado River main-
25 stream water in exchange for or in replacement of existing
26 supplies of water from surface sources other than the Colorado
27 River, the Contracting Officer may require that the Subcontractor
28 accept said mainstream water in exchange for or in replacement of
said existing supplies pursuant to the provisions of Section
304(d) of the Basin Project Act; Provided, however, That a

1 subcontractor on the Project aqueduct shall not be required to
2 enter into exchanges in which existing supplies of water from
3 surface sources are diverted for use by other subcontractors
4 downstream on the Project aqueduct.

5 (b) If, in the event of shortages, the
6 Subcontractor has yielded water from other surface water sources
7 in exchange for Colorado River mainstream water supplied by the
8 Contractor or the Operating Agency, the Subcontractor shall have
9 first priority against other users supplied with Project Water
10 that have not yielded water from other surface water sources but
11 only in quantities adequate to replace the water so yielded.

12 4.12 Entitlement to Project M&I Water.

13 (a) For the Year in which the Secretary issues
14 the Notice of Completion of the Water Supply System, the
15 Subcontractor's entitlement to Project Water for M&I uses shall
16 be determined by the Contractor after consultation with the
17 Subcontractor and the Contracting Officer. Commencing with the
18 Year following that in which the Secretary issues the Notice of
19 Completion of the Water Supply System, the Subcontractor is
20 entitled to take a maximum of 6,000 acre-feet of
21 Project Water for M&I uses including but not limited to ground
22 water recharge.

23 (b) If at anytime during the term of this
24 subcontract there is available for allocation additional M&I
25 Project Water, or Agricultural Water converted to M&I use, it
26 shall be delivered to the Subcontractor at the same water service
27 charge per acre-foot and with the same priority as other M&I
28 Water, upon execution or amendment of an appropriate subcontract

1 among the United States, the Contractor, and the Subcontractor
2 and payment of an amount equal to the acre-foot charges pre-
3 viously paid by other subcontractors pursuant to Article 5.2
4 hereof plus interest. In the case of Agricultural Water
5 conversions, the payment shall be reduced by all previous
6 payments of agricultural capital charges for each acre-foot of
7 water converted. The interest due shall be calculated for the
8 period between issuance of the Notice of Completion of the Water
9 Supply System and execution or amendment of the subcontract using
10 the weighted interest rate received by the Contractor on all
11 investments during that period.

12 4.13 Delivery of Project Water Prior to Completion of
13 Project Works. Prior to the date of issuance of the Notice of
14 Completion of the Water Supply System by the Secretary, water may
15 be made available for delivery by the Secretary on a "when
16 available" basis at a water rate and other terms to be determined
17 by the Secretary after consultation with the Contractor.

18 5. PAYMENTS:

19 5.1 Water Service Charges for Payment of Operation,
20 Maintenance, and Replacement Costs. Subject to the provisions of
21 Article 5.4 hereof, the Subcontractor shall pay in advance for
22 Project OM&R costs estimated to be incurred by the United States
23 or the Operating Agency. At least 15 months prior to first
24 delivery of Project Water, or as soon thereafter as is
25 practicable, the Contractor shall furnish the Subcontractor with
26 an estimate of the Subcontractor's share of OM&R costs to the end
27 of the initial Year of water delivery and an estimate of such
28 costs for the following Year. Within a reasonable time of the

1 receipt of said estimates, as determined by the Contractor, but
2 prior to the delivery of water, the Subcontractor shall advance
3 to the Contractor its share of such estimated costs to the end of
4 the initial month of water delivery and without further notice or
5 demand shall on or before the first day of each succeeding month
6 of the initial Year of water delivery and the following Year
7 advance to the Contractor in equal monthly installments the
8 Subcontractor's share of such estimated costs. Advances of
9 monthly payments for each subsequent Year shall be made by the
10 Subcontractor to the Contractor on the basis of annual estimates
11 to be furnished by the Contractor on or before June 1 preceding
12 each said subsequent Year and the advances of payments for said
13 estimated costs shall be due and payable in equal monthly
14 payments on or before the first day of each month of the
15 subsequent Year. Differences between actual OM&R costs and
16 estimated OM&R costs shall be determined by the Contractor and
17 shall be adjusted in the next succeeding annual estimates;
18 Provided, however, That if in the opinion of the Contractor the
19 amount of any annual OM&R estimate is likely to be insufficient
20 to cover the above-mentioned costs during such period, the
21 Contractor may increase the annual estimate of the Subcon-
22 tractor's OM&R costs by written notice thereof to the
23 Subcontractor, and the Subcontractor shall forthwith increase
24 its remaining monthly payments in such Year to the Contractor by
25 the amount necessary to cover the insufficiency. All estimates
26 of OM&R costs shall be accompanied by data and computations
27 relied on by the Contractor in determining the amounts of the
28 estimated OM&R costs and shall be subject to joint review by the
Subcontractor and the Contractor.

1 (b) The M&I Water service capital charge may be
2 adjusted periodically by the Contractor as a result of repayment
3 determinations provided for in the Repayment Contract and to
4 reflect all sources of revenue, but said charge per acre-foot
5 shall not be greater than the amount required to amortize Project
6 capital costs allocated to the M&I function and determined by the
7 Contracting Officer to be a part of the Contractor's Repayment
8 Obligation. Such amortization shall include interest at 3.342
9 percent per annum. If any adjustment is made in the M&I Water
10 service capital charge, notice thereof shall be given by the
11 Contractor to the United States and to the Subcontractor on or
12 before June 1 of the Year preceding the Year the adjusted charge
13 becomes effective. The M&I Water service capital charge payment
14 for the initial Year shall be advanced to the Contractor in
15 equal semiannual installments on or before December 1 preceding
16 the initial Year and June 1 of said initial Year; Provided,
17 however, That the payment of the initial M&I Water service
18 capital charge shall not be due until the Year in which Project
19 Water is available to the Subcontractor after Notice of
20 Completion of the Water Supply System is issued. Thereafter, for
21 each subsequent Year, payments by the Subcontractor in accordance
22 with the foregoing provisions shall be made in equal semiannual
23 installments on or before the December 1 preceding said
24 subsequent Year and the June 1 of said subsequent Year as may be
25 specified by the Contractor in written notices to the
26 Subcontractor.

27 (c) On or before the first anniversary of
28 execution of this subcontract and on or before each succeeding

1 anniversary, the Subcontractor shall pay, in addition to all
2 other payments required herein, an M&I subcontract charge. The
3 subcontract charge shall be \$2.00 per acre-foot for 6,000
4 acre-feet of M&I Water. Prior to the date of issuance of the
5 Notice of Completion of the Water Supply System, the subcontract
6 charge shall be paid each Year by the Subcontractor to the United
7 States. The Contracting Officer shall advise the Contractor of
8 the amounts and dates of the Subcontractor's payments. After the
9 date of issuance of the Notice of Completion of the Water Supply
10 System, the subcontract charge shall be paid each Year to the
11 Contractor by the Subcontractor and the Contractor shall credit
12 the revenues obtained from the subcontract charge against the
13 Subcontractor's water service charges payable to the Contractor
14 that Year.

15 (d) Funds advanced to the United States by the
16 Subcontractor pursuant to Article 5.2 (c) as a subcontracting
17 charge shall be credited by the Contractor against the
18 Subcontractor's initial capital charges for water deliveries
19 under this subcontract. Credit provided to the Subcontractor
20 shall include interest from the date the Subcontractor's funds
21 are transferred to the United States through the effective date
22 of credit for payment of capital costs as recorded in the
23 Contractor's records. Interest credited to the Subcontractor
24 shall be at an annual rate of 1 (one) percent less than the
25 weighted rate received by the Contractor on all investments
26 during the period for which the Subcontractor's payments earn an
27 interest credit.

1 (e) Payment of all M&I Water service capital and
2 corresponding OM&R charges becoming due hereunder prior to or on
3 the dates stipulated in Articles 5.1 and 5.2 is a condition
4 precedent to receiving M&I Water under this subcontract.

5 5.3 Loss of Entitlement. The Subcontractor shall have
6 no right to delivery of water from Project facilities during any
7 period in which the Subcontractor may be in arrears in the
8 payment of any charges due the Contractor. The Contractor may
9 sell to another entity any water determined to be available under
10 the Subcontractor's entitlement for which payment is in arrears;
11 Provided, however, That the Subcontractor may regain the right
12 to use any unsold portion of the water determined to be available
13 under the original entitlement upon payment of all delinquent
14 charges plus any difference between the subcontractual obligation
15 and the price received in the sale of the water by the
16 Contractor and payment of charges for the current period.

17 5.4 Refusal to Accept Delivery. In the event the
18 Subcontractor fails or refuses in any Year to accept delivery of
19 the quantity of water available for delivery to and required to
20 be accepted by it pursuant to this subcontract, or in the event
21 the Subcontractor in any Year fails to submit a schedule for
22 delivery as provided in Article 4.4 hereof, said failure or
23 refusal shall not relieve the Subcontractor of its obligation to
24 make the payments required in this subcontract.

25 5.5 Charge for Late Payments. The Subcontractor shall
26 pay a late payment charge on installments or charges which are
27 received after the due date. The late payment charge percentage
28 rate calculated by the Department of the Treasury and published
quarterly in the Federal Register shall be used; Provided, That
the late payment charge percentage rate shall not be less than

1 0.5 percent per month. The late payment charge percentage rate
2 applied on an overdue payment shall remain in effect until
3 payment is received. The late payment rate for a 30-day period
4 shall be determined on the day immediately following the due date
5 and shall be applied to the overdue payment for any portion of
6 the 30-day period of delinquency. In the case of partial late
7 payments, the amount received shall first be applied to the late
8 charge on the overdue payment and then to the overdue payment.

6 6. GENERAL PROVISIONS:

7 6.1 Repayment Contract Controlling. Pursuant to the
8 Repayment Contract, the United States has agreed to construct
9 and, in the absence of an approved Operating Agency, to operate
10 and maintain the works of the Central Arizona Project and to
11 deliver Project Water to the various subcontractors within the
12 Project Service Area; and the Contractor has obligated itself for
13 the payment of various costs, expenses, and other amounts
14 allocated to the Contractor pursuant to Article 9 of the
15 Repayment Contract. The Subcontractor expressly approves and
16 agrees to all the terms presently set out in the Repayment
17 Contract including Subarticle 8.8(b)(viii) thereof, or as such
18 terms may be hereafter amended, and agrees to be bound by the
19 actions to be taken and the determinations to be made under that
20 Repayment Contract, except as otherwise provided herein.

21 6.2 Effluent Exchanges. The Subcontractor may enter
22 into direct effluent exchange agreements with Indian entities
23 which have received an allocation of Project Water and receive
24 all benefits from the exchange. If the Subcontractor chooses
25 to exchange directly with the Indians, then the Subcontractor's
26 entitlement to Project Water shall be reduced by the amount of
27 Project Water received in exchange by the Subcontractor. The
28

1 Subcontractor may also offer raw sewage or effluent to the
2 Contractor for the purpose of exchanging such sewage or effluent
3 for the benefit of all subcontractors. If such an exchange is
4 consummated, the Subcontractor's entitlement to Project Water
5 shall remain at the level specified in Article 4.12. A copy of
6 the above referenced agreements shall be filed with the
7 Contractor and the Contracting Officer.

8 6.3 Notices. Any notice, demand or request
9 authorized or required by this subcontract shall be deemed to
10 have been given when mailed, postage prepaid, or delivered to the
11 Regional Director, Lower Colorado Region, Bureau of Reclamation,
12 P. O. Box 427, Boulder City, Nevada 89005, on behalf of the
13 Contractor or Subcontractor; to the Central Arizona Water
14 Conservation District, 23636 North 7th Street, Phoenix, Arizona
15 85024, on behalf of the United States or Subcontractor; and to
16 the Arizona Water Company, P. O. Box 5396, Phoenix,
17 Arizona, 85010 on behalf of the United
18 States or Contractor. The designation of the addressee or the
19 address may be changed by notice given in the same manner as
20 provided in this Article for other notices.

21 6.4 Water Conservation Program.

22 (a) While the contents and standards of a given
23 water conservation program are primarily matters of State and
24 local determination, there is a strong Federal interest in
25 developing an effective water conservation program because of
26 this subcontract. The Subcontractor shall develop and implement
27 an effective water conservation program for all uses of water
28 which is provided from or conveyed through Federally constructed
or Federally financed facilities. That water conservation
program shall contain definite goals, appropriate water
conservation measures, and time schedules for meeting the water
conservation objectives.

 (b) A water conservation program, acceptable to
the Contractor and the Contracting Officer, shall be in existence
prior to one or all of the following: (1) service of Federally
stored/conveyed water; (2) transfer of operation and maintenance
of the Project facilities to the Contractor or Operating Agency;
or (3) transfer of the Project to an operation and maintenance
status. The distribution and use of Federally stored/conveyed

1 water and/or the operation of Project facilities transferred to
2 the Contractor shall be consistent with the adopted water
3 conservation program. Following execution of this subcontract,
4 and at subsequent 5-year intervals, the Subcontractor shall
5 resubmit the water conservation plan to the Contractor and the
6 Contracting Officer for review and approval. After review of the
7 results of the previous 5 years and after consultation with the
8 Contractor, the Subcontractor, and the Arizona Department of
9 Water Resources or its successor, the Contracting Officer may
10 require modifications in the water conservation program to better
11 achieve program goals.

12 6.5 Rules, Regulations, and Determinations.

13 (a) The Contracting Officer shall have the right
14 to make, after an opportunity has been offered to the Contractor
15 and Subcontractor for consultation, rules and regulations
16 consistent with the provisions of this subcontract, the laws of
17 the United States and the State of Arizona, to add to or to
18 modify them as may be deemed proper and necessary to carry out
19 this subcontract, and to supply necessary details of its
20 administration which are not covered by express provisions of
21 this subcontract. The Contractor and Subcontractor shall observe
22 such rules and regulations.

23 (b) Where the terms of this subcontract provide
24 for action to be based upon the opinion or determination of any
25 party to this subcontract, whether or not stated to be
26 conclusive, said terms shall not be construed as permitting such
27 action to be predicated upon arbitrary, capricious, or
28 unreasonable opinions or determinations. In the event that the
Contractor or Subcontractor questions any factual determination
made by the Contracting Officer, the findings as to the facts
shall be made by the Secretary only after consultation with the
Contractor or Subcontractor and shall be conclusive upon the
parties.

25 6.6 Officials Not to Benefit.

26 (a) No Member of or Delegate to Congress or
27 Resident Commissioner shall be admitted to any share or part of
28 this subcontract or to any benefit that may arise herefrom. This
restriction shall not be construed to extend to this subcontract
if made with a corporation or company for its general benefit.

1 (b) No official of the Subcontractor shall
2 receive any benefit that may arise by reason of this subcontract
3 other than as a water user within the Project and in the same
4 manner as other water users within the Project.

5 6.7 Assignment Limited--Successors and Assigns
6 Obligated. The provisions of this subcontract shall apply to and
7 bind the successors and assigns of the parties hereto, but no
8 assignment or transfer of this subcontract or any part or
9 interest therein shall be valid until approved by the Contracting
10 Officer.

11 6.8 Judicial Remedies Not Foreclosed. Nothing herein
12 shall be construed (a) as depriving any party from pursuing and
13 prosecuting any remedy in any appropriate court of the United
14 States or the State of Arizona which would otherwise be available
15 to such parties even though provisions herein may declare that
16 determinations or decisions of the Secretary or other persons are
17 conclusive or (b) as depriving any party of any defense thereto
18 which would otherwise be available.

19 6.9 Books, Records, and Reports. The Subcontractor
20 shall establish and maintain accounts and other books and records
21 pertaining to its financial transactions, land use and crop
22 census, water supply, water use, changes of Project works, and to
23 other matters as the Contracting Officer may require. Reports
24 thereon shall be furnished to the Contracting Officer in such
25 form and on such date or dates as he may require. Subject to
26 applicable Federal laws and regulations, each party shall have
27 the right during office hours to examine and make copies of each
28 other's books and records relating to matters covered by this
subcontract.

6.10 Equal Opportunity. During the performance of
this subcontract, the Subcontractor agrees as follows:

(a) The Subcontractor shall not discriminate
against any employee or applicant for employment because of race,
color, religion, sex, or national origin. The Subcontractor
shall take affirmative action to ensure that applicants are
employed, and that employees are treated during employment
without regard to their race, color, religion, sex, or national
origin. Such action shall include, but not be limited to the
following: Employment, upgrading, demotion, or transfer;
recruitment or recruitment advertising; layoff or termination;
rates of pay or other forms of compensation; and selection for

1 training, including apprenticeship. The Subcontractor agrees to
2 post in conspicuous places, available to employees and applicants
3 for employment, notices to be provided setting forth the
4 provisions of this nondiscrimination clause.

5 (b) The Subcontractor shall, in all solicita-
6 tions or advertisements for employees placed by or on behalf of
7 the Subcontractor, state that all qualified applicants shall
8 receive consideration for employment without discrimination
9 because of race, color, religion, sex, or national origin.

10 (c) The Subcontractor shall send to each labor
11 union or representative of workers with which it has a collective
12 bargaining agreement or other contract or understanding, a
13 notice, to be provided by the Contracting Officer, advising said
14 labor union or workers' representative of the Subcontractor's
15 commitments under Section 202 of Executive Order 11246 of
16 September 24, 1965, and shall post copies of the notice in
17 conspicuous places available to employees and applicants for
18 employment.

19 (d) The Subcontractor shall comply with all
20 provisions of Executive Order No. 11246 of September 24, 1965, as
21 amended, and of the rules, regulations, and relevant orders of
22 the Secretary of Labor.

23 (e) The Subcontractor shall furnish all
24 information and reports required by said amended Executive Order
25 and by the rules, regulations, and orders of the Secretary of
26 Labor, or pursuant thereto, and shall permit access to its books,
27 records, and accounts by the Contracting Officer and the
28 Secretary of Labor for purposes of investigation to ascertain
compliance with such rules, regulations, and orders.

(f) In the event of the Subcontractor's
noncompliance with the nondiscrimination clauses of this
subcontract or with any of the such rules, regulations, or
orders, this subcontract may be canceled, terminated, or
suspended, in whole or in part, and the Subcontractor may be
declared ineligible for further Government contracts in
accordance with procedures authorized in said amended Executive
Order and such other sanctions may be imposed and remedies
invoked as provided in said amended Executive Order, or by rule,
regulation, or order of the Secretary of Labor, or as otherwise
provided by law.

(g) The Subcontractor shall include the
provisions of paragraphs (a) through (g) in every subcontract or
purchase order unless exempted by the rules, regulations, or
orders of the Secretary of Labor issued pursuant to Section 204
of said amended Executive Order, so that such provisions shall be
binding upon each subcontractor or vendor. The Subcontractor
shall take such action with respect to any subcontract or
purchase order as may be directed by the Secretary of Labor as a
means of enforcing such provisions, including sanctions for

1 noncompliance; Provided, however, That in the event a
2 Subcontractor becomes involved in, or is threatened with,
3 litigation with a subcontractor or vendor as a result of such
4 direction, the Subcontractor may request the United States to
5 enter into such litigation to protect the interest of the United
6 States.

6.11 Title VI, Civil Rights Act of 1964.

7 (a) The Subcontractor agrees that it shall
8 comply with Title VI of the Civil Rights Act of July 2, 1964 (78
9 Stat. 241), and all requirements imposed by or pursuant to the
10 Department of the Interior Regulation (43 CFR 17) issued pursuant
11 to that title to the end that, in accordance with Title VI of
12 that Act and the Regulation, no person in the United States
13 shall, on the grounds of race, color, or national origin be
14 excluded from participation in, be denied the benefits of, or be
15 otherwise subjected to discrimination under any program or
16 activity for which the Subcontractor receives financial
17 assistance from the United States and hereby gives assurance that
18 it shall immediately take any measures to effectuate this
19 agreement.

20 (b) If any real property or structure thereon is
21 provided or improved with the aid of Federal financial assistance
22 extended to the Subcontractor by the United States, this
23 assurance obligates the Subcontractor, or in the case of any
24 transfer of such property, any transferee for the period during
25 which the real property or structure is used for a purpose
26 involving the provision of similar services or benefits. If any
27 personal property is so provided, this assurance obligates the
28 Subcontractor for the period during which it retains ownership or
possession of the property. In all other cases, this assurance
obligates the Subcontractor for the period during which the
Federal financial assistance is extended to it by the United
States.

(c) This assurance is given in consideration of
and for the purpose of obtaining any and all Federal grants,
loans, contracts, property, discounts, or other Federal financial
assistance extended after the date hereof to the Subcontractor by
the United States, including installment payments after such date
on account of arrangements for Federal financial assistance
which were approved before such date. The Subcontractor
recognizes and agrees that such Federal financial assistance
shall be extended in reliance on the representations and
agreements made in this assurance, and that the United States
shall reserve the right to seek judicial enforcement of this
assurance. This assurance is binding on the Subcontractor, its
successors, transferees, and assignees.

6.12 Confirmation of Subcontract. The Subcontractor
shall promptly seek a final decree of the proper court of the
State of Arizona approving and confirming the subcontract and

1 decreeing and adjudging it to be lawful, valid, and binding on
2 the Subcontractor. The Subcontractor shall furnish to the United
3 States a certified copy of such decree and of all pertinent
4 supporting records. This subcontract shall not be binding on the
5 United States, the Contractor, or the Subcontractor until such
6 final decree has been entered.

7 6.13 Contingent on Appropriation or Allotment of
8 Funds. The expenditure or advance of any money or the
9 performance of any work by the United States hereunder which may
10 require appropriation of money by the Congress or the allotment
11 of funds shall be contingent upon such appropriation or allotment
12 being made. The failure of the Congress to appropriate funds or
the absence of any allotment of funds shall not relieve the
Subcontractor from any obligation under this subcontract. No
liability shall accrue to the United States in case such funds
are not appropriated or allotted.

13 IN WITNESS WHEREOF, the parties hereto have executed
14 this subcontract No. 6-07-30-W0109 the day and year first
15 above-written.

16 Legal Review and Approval
17
18 By: *William H. Green*
19 Field Solicitor
20 Phoenix, Arizona

THE UNITED STATES OF
AMERICA
By: *E. H. [Signature]*
ACTING Regional Director
Lower Colorado Region
Bureau of Reclamation

21
22
23 Attest: *J. P. [Signature]*
24 Title: Secretary

CENTRAL ARIZONA WATER
CONSERVATION DISTRICT
By: *Joseph [Signature]*
Title: President

25
26
27 Attest: *D. L. [Signature]*
28 Title: Vice President & General Counsel

ARIZONA WATER COMPANY
By: *L. E. [Signature]*
Title: President

ARIZONA WATER COMPANY

Eastern Group

Docket No. W-1445A-02-0619

Witness(es) Hubbard

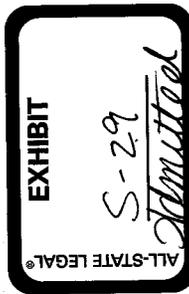
Data Request No. REL 1-26

Rate Case Expense - Please provide a detailed listing along with documentation to support the rate case expense amount reported in the application. Also, please state whether or not bids were obtained for the cost of capital study. If so, please provide copies of the bid proposals.

Response To Data Request No. REL 1-26

The estimated rate case expense of \$257,550 is based on a projection developed from the actual expense incurred in the Company's 1999 Northern Group Rate Case. Attached is a breakdown by category of both the estimated expense for the Eastern Group Rate Case and the actual expenses from the 1999 rate case.

Bids for a cost of capital study were not solicited. Company chose to use Utility Resources Inc., the same firm that prepared this study for its 1999 rate case. Attached is a letter from Utility Resources estimating the cost of the study for the 2001 Eastern Group Rate Case.



**Arizona Water Company
Rate Case Expense**

In the 2001 Rate Hearing Exhibit, the Company proposed to amortize rate case expense of \$257,500 over a three-year period. This amount is based on projections developed from the actual expenses incurred for Company's 1999 Northern Group Rate Case. Following is a breakdown of the projected 2001 expense, as well as the actual expense from the 1999 rate case:

Projected 2001 Rate Case Expense

Attorney Fees	\$148,000
Payroll and Payroll Overheads	48,000
Utility Resources (Cost of Capital Study)	49,000
Temporary Help	1,500
Reproduction Costs	4,000
Computer Setup Charges	600
Phone Charges	200
Shipping Charges	5,000
Publication Notices	350
Bill Inserts	900
Total	\$257,550

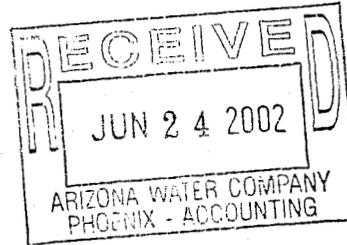
Actual 1999 Rate Case Expense

Attorney Fees	\$162,965
Payroll and Payroll Overheads	47,376
Utility Resources (Cost of Capital Study)	48,558
Temporary Help	1,368
Reproduction Costs	3,593
Computer Setup Charges	554
Phone Charges	133
Shipping Charges	4,881
Publication Notices	118
Total	\$269,546

URI

UTILITY
RESOURCES, INC.

CONSULTANTS on ECONOMIC and REGULATORY MATTERS



June 17, 2002

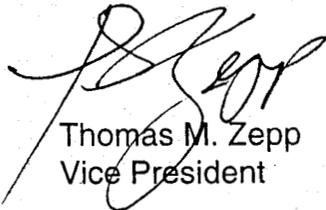
Mr. Ralph J. Kennedy
Arizona Water Company
P.O. Box 29006
Phoenix, AZ 85038-9006

Dear Ralph:

Based on the work we have done to date and the cost of participation in the 2000-2001 Arizona Water rate case, I estimate the cost to prepare direct and rebuttal testimony and to attend a hearing in the 2002-2003 case will be \$50,000.

I am looking forward to working with you again.

Sincerely,



Thomas M. Zepp
Vice President

ARIZONA WATER COMPANY

Eastern Group

Docket No. U-1445A-02-0619

Witness (es) Hubbard

Data Request No. REL 18-3

Please estimate the cost of outside services through the final disposition of the rate case. Please provide work papers of how the estimate was made.

Response To Data Request No. REL 18-3

Charges for outside services through the final disposition of this rate case are estimated to be \$274,550. See attachment for calculation of the estimate.



**Arizona Water Company
Rate Case Expenses**

RESPONSE TO DATA REQUEST NO. REL 18-3

In its 2002 Rate Hearing Exhibit filed August 14, 2002, the Company proposed to amortize rate case expenses of \$257,550 over a three-year period. Due to Staff's motion to extend the procedural deadlines and future depositions discussed by Staff's attorney, estimated attorney fees have been increased by 10% (from \$148,000 to \$163,000). Due to the increase in the number of copies required and the extent of data requests, reproduction costs have also been increased. Following is a breakdown of the revised rate case expense of \$274,550.

Attorney Fees*	\$163,000
Payroll and Payroll Overheads	48,000
Utility Resources (Cost of Capital Study)	49,000
Temporary Help	1,500
Reproduction Costs	6,000
Computer Setup Charges	600
Phone Charges	200
Shipping Charges	5,000
Publication Notices	350
Bill Inserts	900
Total	<u><u>\$274,550</u></u>

*Original estimate increased by 10% due to delays resulting from Staffs' motion to continue procedural deadlines.

ARIZONA WATER COMPANY

Eastern Group
Docket No. U-1445A-02-0619
Witness (es) Hubbard

Data Request No. REL 25-2

Please estimate the cost of outside services through the final disposition of the rate case and update this estimate biweekly from this date forward. Please provide work papers of how the estimate was made.

Response To Data Request No. REL 25-2, 2nd Supplement

The Company has revised its estimate of the cost of outside service expenses to be incurred through the final disposition of the Eastern Group rate case previously provided in Response to Data Request No. REL 18-2. Based upon our current analysis, the cost of outside services should be increased by \$36,000 for legal fees and \$19,000 for cost of capital study expenses to \$199,000 and \$68,000, respectively. The Company is also seeking recovery of Arsenic Cost Recovery Mechanism ("ACRM") legal costs of \$71,000 that have been allocated to the Eastern Group systems requiring arsenic treatment as set forth in rejoinder testimony and the sixth page of this 2nd Supplement. The Company's revised Eastern Group rate case expense including the ACRM legal costs is \$400,550. Work papers in support of the revised outside service expenses and the proposed allocation of rate case expenses including ACRM legal costs are attached.

The Company will submit two additional updated estimates. The first estimate will be based on actual legal and cost of capital fees incurred through the hearing. The second estimate will update the legal estimate with actual costs incurred through the briefing process.



Arizona Water Company
 Eastern Group
 Rate Case Expense
 2001 Test Year

Response to Data Request No. REL 25-2, 2nd Supplement

In its 2002 Rate Hearing Exhibit filed August 14, 2002, the Company proposed to amortize rate case expenses of \$257,550 over a three-year period. In Response to Data Request REL 18-3, the Company revised its rate case expenses to \$274,550. Based upon more current actual expense information, the Company is revising its estimated rate case expenses to \$400,550 which includes \$36,000 of additional legal fees, an additional \$19,000 related to cost of capital study, and \$71,000 for legal fees associated with AWC's request for an Arsenic Cost Recovery Mechanism. Following is a breakdown of the revised rate case expense of \$400,550 and the individual system allocations.

	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior	Total Eastern Group
Attorney Fees									
Payroll and Payroll Overheads									
Utility Resources (Cost of Capital Study)									
Temporary Help									
Reproduction Costs									
Computer Setup Charges									
Phone Charges									
Shipping Charges									
Publication Notices									
Bill Inserts									
Total Excluding ACRM Legal Costs	171,392	38,191	26,252	38,838	15,895	18,700	2,230	18,053	329,550
ACRM Legal Costs	56,769				7,007			7,224	71,000
Total Rate Case Expenses	228,161	38,191	26,252	38,838	22,902	18,700	2,230	25,277	400,550
Three-Year Amortization	76,054	12,730	8,751	12,946	7,634	6,233	743	8,426	133,517

Arizona Water Company
 1999 Northern Group Rate Case
 Legal Expense - Excludes ACRM

Response to Data Request No. REL 25-2, 2nd Supplement

Line	Vendor	Vendor #	Invoice #	A/P Run	Amount	Source	Service Month
1	Fennemore Craig	20719	91366	08/21/00	520.48	JV 5	Jul-00
2	Fennemore Craig	20719	120508	12/06/00	3,778.33	JV 5	Oct-00
3	Fennemore Craig	20719	11131	01/16/01	9,592.90	JV 5	Nov-00
4	Fennemore Craig	20719	30504	03/07/01	938.35	JV 5	Jan-01
5	Fennemore Craig	20719	40601	04/06/01	195.20	JV 5	Feb-01
6	Fennemore Craig	20719	50403	05/09/01	456.55	JV 5	Mar-01
7	Fennemore Craig	20719	60507	06/06/01	978.25	JV 5	Apr-01
8	Fennemore Craig	20719	62606	07/06/01	2,503.40	JV 5	May-01
9	Fennemore Craig	20719	344761	08/22/01	3,280.15	JV 5	Jun-01
10	Fennemore Craig	20719	82102	08/22/01	22,827.46	JV 5	Jul-01
11	Subtotal Northern Group ("NG") Rate Case Legal Expenses-2 Months Prior to Hearing				<u>45,071.07</u>		
12	Fennemore Craig	20719	101105	10/23/01	23,118.72	JV 5	Aug-01
13	Fennemore Craig	20719	110604	11/08/01	28,400.41	JV 5	Sep-01
14	Fennemore Craig	20719	121223	12/20/01	20,163.56	JV 5	Oct-01
15	Fennemore Craig	20719	21401	02/21/02	7,224.90	JV 27	Dec-01
16	Fennemore Craig	20719	30404	03/06/02	261.00	JV 20	Jan-02
17	Total Northern Group Rate Case Legal Expenses				<u><u>124,239.66</u></u>		
18	Total Eastern Group Rate Case Legal Expenses-2 Months Prior to Hearing				72,324.52		
19	Ratio of NG Rate Case Legal Expenses-2 Months Prior to Hearing to Total NG Rate Case Legal Expenses (Line 11/Line 17)				36.3%		
20	Total Estimated Eastern Group Rate Case Legal Expenses (Line 18/Line 19)				<u><u>199,364.55</u></u>		
21	Total Estimated 2001 Eastern Group Rate Case Legal Expenses-Excludes ACRM				199,000.00		
22	REL 18-3 Estimate				163,000.00		
23	Difference				<u><u>36,000.00</u></u>		

Arizona Water Company
1999 Northern Group Rate Case
Legal Expense - ACRM

Response to Data Request No. REL 25-2, 2nd Supplement

Line	Vendor	Vendor #	Invoice #	A/P Run	Amount	Source	Service Month
1	Fennemore Craig	20719	101105	10/23/01	8,143.65	JV 20	Aug-01
2	Fennemore Craig	20719	110604	11/08/01	1,349.73	JV 20	Sep-01
3	Fennemore Craig	20719	121223	12/20/01	2,915.55	JV 20	Oct-01
4	Fennemore Craig* (To be JV'd)	20719	10905	01/12/02	8,113.33	JV 20	Nov-01
5	Fennemore Craig	20719	21401	02/21/02	10,775.75	JV 20	Dec-01
6	Fennemore Craig	20719	30404	03/06/02	6,919.57	JV 20	Jan-02
7	Fennemore Craig	20719	70201	07/08/02	4,910.45	JV 20	Feb-02
8	Fennemore Craig	20719	51904	05/22/02	4,418.26	JV 20	Mar-02
9	Fennemore Craig	20719	62002	06/21/02	1,856.00	JV 20	Apr-02
10	Fennemore Craig	20719	72203	06/27/02	4,666.24	JV 20	May-02
11	Fennemore Craig	20719	8060	06/30/02	291.17	JV 20	Jun-02
12	Fennemore Craig	20719	91001	07/31/02	1,516.35	JV 20	Jul-02
13	Fennemore Craig	20719	101802	10/23/02	377.00	JV 20	Aug-02
14	Fennemore Craig	20719	110403	11/06/02	3,589.92	JV 20	Sep-02
15	Fennemore Craig	20719	121211	12/18/02	8,455.45	JV 20	Oct-02
16	Fennemore Craig	20719	11303	12/24/02	8,171.40	JV 20	Nov-02
17	Fennemore Craig	20719	21302	02/21/03	4,581.37	JV 20	Dec-02
18	Fennemore Craig	20719	60504	06/06/03	8,017.71	JV 5	Apr-03
19	Fennemore Craig	20719	072202	07/23/03	3,598.50	JV 5	May-03
20	Fennemore Craig	20719	81405	08/22/03	7,630.36	JV 5	Jun-03
21	Fennemore Craig	20719	90505	09/09/03	280.75	JV 5	Jul-03
22	Total Legal Expenses-ACRM				<u>100,578.51</u>		
23	Allocable to Northern Group Rate Case Legal Expenses				29,575.55		
24	Allocable to Eastern Group Rate Case Legal Expenses				71,002.96		
25	Total Estimated 2001 Eastern Group Rate Case Legal Expenses-ACRM				71,000.00		
26	REL 18-3 Estimate				0.00		
27	Difference				<u>71,000.00</u>		

Arizona Water Company
 1999 Northern Group Rate Case
 Cost of Capital Study Expense

Response to Data Request No. REL 25-2, 2nd Supplement

Line	Vendor	Vendor #	Invoice #	A/P Run	Amount	Source	Month of Service
1	Utility Resources Inc	44900	110968	07/24/00	682.50	JV 5	Jun-00
2	Utility Resources Inc	44900	111080	08/23/00	7,728.12	JV 5	Jul-00
3	Utility Resources Inc	44900	111440	10/24/00	3,243.12	JV 5	Sep-00
4	Utility Resources Inc	44900	111687	12/06/00	7,189.46	JV 5	Oct-00
5	Utility Resources Inc	44900	112563	04/23/01	459.84	JV 5	Mar-01
6	Utility Resources Inc	44900	112912	06/22/01	1,235.02	JV 5	May-01
7	Utility Resources Inc	44900	113078	07/23/01	975.00	JV 5	Jun-01
8	Utility Resources Inc	44900	113241	08/22/01	14,762.62	JV 5	Jul-01
9	Utility Resources Inc	44900	113440	10/09/01	5,977.28	JV 5	Aug-01
10	Subtotal Northern Group ("NG") Rate Case Cost of Capital ("COC")-1 Month Prior to Hearing				42,252.96		
11	Utility Resources Inc	44900	113617	10/23/01	6,305.25	JV 5	Sep-01
12	Total NG Rate Case COC Expense				48,558.21		
13	Total Eastern Group Rate Case COC Expenses-1 Month Prior to Hearing				59,175.29		
14	Ratio of NG Rate Case COC Expenses-1 Month Prior to Hearing to Total NG Rate Case COC Expense (Line 10/Line 12)				87.0%		
15	Total Estimated Eastern Group Rate Case COC Expense (Line 13/Line 14)				68,005.80		
16	Total Estimated 2001 Eastern Group Rate Case Cost of Capital Expenses				68,000.00		
17	REL 18-3 Estimate				49,000.00		
18	Difference				19,000.00		

ARIZONA WATER COMPANY
 DISTRIBUTION OF ARSENIC LEGAL COSTS
 EASTERN GROUP AND NORTHERN GROUP

Response to Data Request No. REL 25-2, 2nd Supplement

SYSTEM COMPUTED 3-FACTOR

LINE SYSTEM	1999 3-Factor Ratio	3-Factor	Total Arsenic Legal Cost Allocated
1 Apache Jct	0.2098	0.5644	\$ 56,769.90
2 Bisbee			-
3 Miami			-
4 Oracle			-
5 San Manuel	0.0267	0.0718	7,224.77
6 Sierra Vista			-
7 Superior	0.0259	0.0697	7,008.30
8 Winkelman			-
9 Eastern Group	0.2624	0.7059	\$ 71,002.96
10 Lakeside			-
11 Overgaard			-
12 Pinewood			-
13 Rimrock	0.0157	0.0422	4,248.27
14 Sedona	0.0936	0.2518	25,327.28
15 Northern Group	0.1093	0.2941	29,575.55
16 Total Eastern & Northern Group	0.3717	1.0000	\$ 100,578.51

1 on the Sedona customers would be greater than on the
2 Pinewood customers?

3 A. Well, the Sedona customers use 9,300 gallons
4 of water a month on average. The Pinewood customers
5 use 2,000 gallons a month on average. So yes. Any
6 rate increase will impact the Sedona system more
7 heavily.

8 Q. So are you saying that the reason for this is
9 that the Sedona system is subsidizing the Pinewood
10 revenue requirements?

11 A. I'm not saying that, no.

12 Q. Would that be a true statement?

13 A. What do you mean by subsidizing?

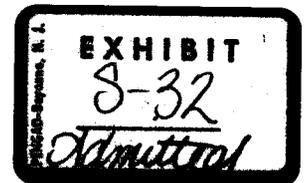
14 Q. What I mean is that the revenue requirements
15 -- the Pinewood customers would pay rates which were
16 based in part on subsidization from the Sedona system
17 as a result of the consolidation.

18 Would that be a fair statement?

19 A. Yes.

20 Q. Okay. Now, looking at schedule A-1, the
21 percentage dollar increase for the Lakeside system is
22 43.9 percent and the percentage dollar increase for the
23 Overgaard system is 32 percent. 32.7 percent. Is that
24 is correct?

25 A. Yes.



1 Q. Looking at that; correct?

2 A. Yes.

3 Q. And from the company's projections,
4 Mr. Kennedy, would it be fair to say that the Sedona
5 system is subsidizing more than the Overgaard system
6 based on those projections?

7 A. Yes.

8 Q. Wouldn't it also be fair to say that the
9 transition to the higher percentage revenue increases
10 would be less gradual for the Sedona system than it
11 would be for the Overgaard system?

12 A. Yes.

13 Q. Significantly less gradual?

14 A. It would be less gradual.

15 Q. Isn't it also true that the dollar percentage
16 increases that would result from using the standalone
17 basis would be more comparable between the five
18 systems?

19 A. Yes.

20 MR. POZEFSKY: Thank you. That's all, Your
21 Honor.

22 ALJ GIBELLI: Let's take just a brief five
23 minute break, and I mean five minutes, and then we'll
24 come right back.

25 (A recess was taken from 11:15 a.m. to

1 11:26 a.m.)

2 ALJ GIBELLI: Okay. Back on the record.

3 Staff?

4 MS. WOLFE: Thank you, Your Honor.

5

6

CROSS EXAMINATION

7

8 Q. (BY MS. WOLFE) Good morning, Mr. Kennedy.

9 A. Good morning.

10 Q. Would you say that for each of the systems in
11 your northern system, Northern Group, that the cost of
12 service is exactly the same for each system?

13 A. No. If you mean is the cost of service for
14 each customer exactly the same, I would say no. And
15 the cost of service for each system is similarly
16 different.

17 Q. And are the usage and system requirements the
18 same in those systems, specifically for the Sedona,
19 Rimrock, and Pinewood systems, are the usage and system
20 requirements the same for those separate water systems?

21 A. The usages are different. I'm not sure I know
22 what you mean by system requirements.

23 Q. The capacity, booster pumps, all of the plant
24 items that are necessary to get the water to the
25 customers.



1 A. They would each have a different set of
2 facilities.

3 Q. And I would like to ask the same question in
4 regard to the Lakeside and Overgaard systems.

5 Are the usages the same for those two water
6 systems?

7 A. No, they're not.

8 Q. And are the system requirements, the same as
9 the last question, the same for those two systems?

10 A. No, they're not.

11 Q. Would you agree, then, that the cost of
12 service can differ for the different systems that
13 you're asking consolidation for?

14 A. It does differ by customer, by ADEQ water
15 system, and by organizational system.

16 Q. Does the company anticipate that cost
17 reductions to the customers will result from the
18 consolidation that you propose?

19 A. It's possible. The Pennsylvania Commission in
20 talking about and approving rate consolidation
21 indicated that the reduction of the number of
22 accounting units and the number of individual rate
23 filings may result in administrative efficiency with
24 potential to reduce costs to ratepayers.

25 Q. Mr. Kennedy, has the company provided evidence

ARIZONA WATER COMPANY
Eastern Group
Docket No. W-1445A-02-0619
Witness(es) Kennedy

Data Request No. REL 1-27

Rate Consolidation – Please quantify the total savings that the Company anticipates will result from rate consolidation.

Response To Data Request No. REL 1-27

The Apache Junction and Superior systems have already achieved operational, management, financing and cost of capital savings through a common management, centralized administration and Company-wide financial operations. In the first year following the accounting consolidation it is expected that there will be one-time expense increases as the historical accounting information is merged, existing reports are reformatted and operating procedures are reviewed and modified. Longer term, the accounting consolidation and physical interconnection will help simplify future rate proceedings, achieve economies of scale and enhance service reliability. However, at this time the initial costs of the accounting consolidation and additional future savings cannot be specifically identified and quantified.

More importantly, the customers of the interconnected system should have a single set of rates. Adopting a gradual phase-in in a two step process, beginning now and extending over two rate cases, avoids more drastic rate impacts that would otherwise occur in the next Eastern Group rate case.

EXHIBIT

S-33

ALL-STATE LEGAL®

Admittal

ARIZONA WATER COMPANY

Eastern Group

Docket No. U-1445A-02-0619

Witness (es) Kennedy

Data Request No. REL 8-5

Please describe the Company's methodology and basic philosophy in determining the rate design for each of the eight systems in the Eastern Division. Please provide the work papers supporting the rate design for each of the systems.

Response To Data Request No. REL 8-5

The Company's Eastern Group rate design considered the following objectives:

- ▶ Continuity in rate philosophy
- ▶ Revenue stability and sufficiency
- ▶ Feasibility
- ▶ Customer acceptance and understanding
- ▶ Cost-based
- ▶ Simplicity
- ▶ Conservation-efficient usage

The rate design for Apache Junction and Superior was previously explained and supported by the Company's response to REL 1-16. The rates for the six remaining Eastern Group systems were developed in the following manner. Once the revenue deficiency was determined for each system, the required percentage increase was applied to the 5/8" x 3/4" minimum charge. The minimums for the larger meter sizes were then developed as a multiple of the 5/8" x 3/4" charge. The multiples used were the average of the existing actual minimum charge multiples and the actual meter capacity multiples, as illustrated on the attached Schedule Analysis of Present & Proposed Rates. The amount of revenue needed from the commodity charge was determined by subtracting the revenue produced by the proposed minimums from total revenue deficiency. A commodity charge was then developed for each system to produce this amount of revenue, as shown on the attached schedule Present And Proposed Tariffs By Meter Size.



**PRESENT AND PROPOSED TARIFFS
BY METER SIZE
TEST YEAR 2001**

Meter Size	APACHE JUNCTION				SUPERIOR			
	Present Rates ¹	From G-10	Adjusted	To %K-2	Present Rates ¹	From G-10	Adjusted	To %K-2
5/8"	12.43	0.00	143.85%	18.13	18.13	0.00	100.00%	18.13
1"	24.86	0.00	40.79	40.79	38.84	0.00	117.85	40.79
2"	62.15	0.00	117.85	117.85	103.58	0.00	117.85	117.85
3"	103.58	0.00	211.58	211.58	155.37	0.00	211.58	211.58
4"	207.16	0.00	377.65	377.65	207.16	0.00	377.65	377.65
6"	362.53	0.00	717.59	717.59	362.53	0.00	717.59	717.59
8"	673.27	0.00	989.54	989.54	673.27	0.00	989.54	989.54
10"			1,624.09	1,624.09			1,624.09	1,624.09
Gallons/minimum	1,000	1,000		0.2525	1,000	1,000		0.4060
Quantity Used (M Gal)								
In Minimum	172,678.80	7.88%	0.00	0.00%	14,095.60	12.81%	0.00	0.00%
Total Billable	2,018,171.10	92.12%	2,190,849.90	100.00%	93,905.00	87.19%	110,000.60	100.00%
Total Used	2,190,849.90	100.00%			110,000.60	100.00%	110,000.60	100.00%
Revenue From Minimum & Commodity								
Minimum	2,649,130.30	33.82%	1,388,104.20	79.99%	299,033.80	43.44%	3,834.42	6.28%
Commodity	5,184,681.56	56.18%	347,214.44	20.01%	389,374.30	56.56%	57,228.14	93.72%
Total	7,833,811.86	100.00%	(429,674.92)	100.00%	688,408.10	100.00%	430,294.91	100.00%
Proposed Under (Over) Required By:								
Required Change In Revenue								
Total				16.67%				71.38%
Per 100 Gallons				1,305,643.73				491,357.46
Required Commodity Cost - Actual				0.05960	Su Commod incl			0.44669
Required Commodity Cost - Rounded				0.31210	Add needed			0.85269
Adjust Manually ? (1 if Yes)				0.31210	Su Minimums			0.85270
				1	AI Commodity +			1
Commodity Cost (Per 100 Gal)	0.2569	0.2087	Manual 0.2525	0.2525	0.4060	0.3666	Manual 0.4060	0.4060
1st Block		0.0000		0.0000		0.0000		0.0000
2nd Block		0.0000		0.0000		0.0000		0.0000
3rd Block		0.0000		0.0000		0.0000		0.0000
4th Block		0.0000		0.0000		0.0000		0.0000

1 Decision No. 62755, effective 8/1/00
 2 Decision No. 58120, effective 1/1/93
 3 Decision No. 58293, effective 5/1/93
 4 Decision No. 61676, effective 6/1/99
 5 Decision No. 59859, effective 11/1/96
 6 Decision No. 58790, effective 10/1/94

**PRESENT AND PROPOSED TARIFFS
BY METER SIZE
TEST YEAR 2001**

Meter Size	BISBEE				SIERRA VISTA			
	Present Rates ¹	From G-10	Adjusted	To %K-2	Present Rates ²	From G-10	Adjusted	To %K-2
5/8"	13.47	0.00	149,324	20.11	12.43	0.00	146,824	18.25
1"	24.86	0.00	20.11	43.64	24.86	0.00	41.06	41.06
2"	62.15	0.00	126.89	126.89	62.15	0.00	118.63	118.63
3"	155.37	0.00	266.86	266.86	103.58	0.00	212.98	212.98
4"	207.16	0.00	406.02	406.02	207.16	0.00	380.15	380.15
6"	362.53	0.00	773.43	773.43	362.53	0.00	722.34	722.34
8"	362.53	0.00	1,075.08	1,075.08	362.53	0.00	996.09	996.09
10"	673.27	0.00	1,759.42	1,759.42	673.27	0.00	1,634.84	1,634.84
Gallons/minimum	1,000	1,000		0.316	1,000	1,000		0.2113
Quantity Used (M Gal)								
In Minimum	36,676.00	12.27%	0.00	0.00%	26,620.10	7.74%	0.00	0.00%
Total Billable	262,341.30	87.73%	299,017.30	100.00%	317,372.90	92.26%	343,948.00	100.00%
Total Used	299,017.30	100.00%			343,948.00	100.00%		
Revenue From Minimum & Commodity								
Minimum	589,902.86	47.49%	319,828.68	52.21%	372,949.56	42.42%	191,130.38	46.42%
Commodity	652,180.47	52.51%	292,714.20	47.79%	506,138.00	57.58%	220,624.12	53.58%
Total	1,242,083.33	100.00%	612,542.88	100.00%	879,087.56	100.00%	411,754.50	100.00%
Proposed Under (Over) Required By:			105.69				(162.63)	
Required Change In Revenue			49.32%				46.82%	
Total			612,648.57		0.20489		411,591.88	
Per 100 Gallons			0.52089		0.52089		0.33097	
Required Commodity Cost - Actual			0.52090		1		0.33100	
Required Commodity Cost - Rounded			1				1	
Adjust Manually? (1 if Yes)								
Commodity Cost (Per 100 Gal)								
1st Block	0.2486	0.2322	Manual 0.3160	0.3160	0.1595	0.1338	Manual 0.2113	0.2113
2nd Block		0.0000		0.0000		0.0000		0.0000
3rd Block		0.0000		0.0000		0.0000		0.0000
4th Block		0.0000		0.0000		0.0000		0.0000

¹ Decision No. 62755, effective 8/1/00
² Decision No. 58120, effective 1/1/93
³ Decision No. 58293, effective 5/1/93
⁴ Decision No. 61676, effective 6/1/99
⁵ Decision No. 59859, effective 11/1/96
⁶ Decision No. 58790, effective 10/1/94

**PRESENT AND PROPOSED TARIFFS
BY METER SIZE
TEST YEAR 2001**

ARIZONA WATER COMPANY

Meter Size	MIAMI				SAN MANUEL			
	Present Rates ¹	From G-10	Adjusted	To %K-2	Present Rates ¹	From G-10	Adjusted	To %K-2
5/8"	13.47	0.00	150.11%	20.22	13.98	0.00	196.51%	27.47
1"	24.86	0.00	20.22	43.88	31.07	0.00	64.83	64.83
2"	62.15	0.00	127.59	127.59	93.22	0.00	201.36	201.36
3"	103.58	0.00	229.29	229.29	155.37	0.00	358.76	358.76
4"	207.16	0.00	408.24	408.24	269.31	0.00	607.91	607.91
6"	362.53	0.00	777.66	777.66	362.53	0.00	1,043.04	1,043.04
8"	362.53	0.00	1,080.96	1,080.96	362.53	0.00	1,455.09	1,455.09
10"	673.27	0.00	1,769.05	1,769.05	673.27	0.00	2,378.35	2,378.35
Gallons/minimum	1000	1000		0.4330	1,000	1000		0.1622
Quantity Used (M Gal)	33,445.20	10,809%	0.00	0.00%	17,694.80	8.30%	0.00	0.00%
In Minimum	276,216.40	89.20%	309,661.60	100.00%	195,446.10	91.70%	213,140.90	100.00%
Total Billable	309,661.60	100.00%	309,661.60	100.00%	213,140.90	100.00%	213,140.90	100.00%
Total Used								
Revenue From Minimum & Commodity	529,525.68	36.72%	294,603.80	40.76%	282,823.80	61.08%	281,427.28	62.97%
Minimum	912,618.92	63.28%	428,215.74	59.24%	180,201.30	38.92%	185,513.24	37.03%
Commodity	1,442,144.67	100.00%	722,819.54	100.00%	463,025.10	100.00%	446,940.52	100.00%
Total			(102.10)				(69.50)	
Proposed Under (Over) Required By:			722,717.45				446,871.01	
Required Change In Revenue			0.23339				0.20966	
Total			50.11%				96.51%	
Per 100 Gallons			49.60%				0.37186	
Required Commodity Cost - Actual			31.05%				0.37190	
Required Commodity Cost - Rounded							1	
Adjust Manually? (1 if Yes)			1				1	
Commodity Cost (Per 100 Gal)	0.3304	0.3038	Manual 0.4330	0.4330	0.0922	0.1105	Manual 0.1622	0.1622
1st Block		0.0000		0.0000		0.0000		0.0000
2nd Block		0.0000		0.0000		0.0000		0.0000
3rd Block		0.0000		0.0000		0.0000		0.0000
4th Block		0.0000		0.0000		0.0000		0.0000

¹ Decision No. 62755, effective 8/1/00
² Decision No. 58120, effective 1/1/93
³ Decision No. 58293, effective 5/1/93
⁴ Decision No. 61676, effective 6/1/99
⁵ Decision No. 59859, effective 11/1/96
⁶ Decision No. 58790, effective 10/1/94

**PRESENT AND PROPOSED TARIFFS
BY METER SIZE
TEST YEAR 2001**

Meter Size	ORACLE				WINKELMAN			
	Present Rates ¹	From G-10	Adjusted	To %K-2	Present Rates ¹	From G-10	Adjusted	To %K-2
5/8"	15.54	0.00	20.05	20.05	12.95	0.00	17.30	17.30
1"	38.84	0.00	50.13	50.13	24.86	0.00	38.23	38.23
2"	103.58	0.00	146.97	146.97	62.15	0.00	110.72	110.72
3"	155.37	0.00	250.63	250.63	103.58	0.00	198.95	198.95
4"	207.16	0.00	384.36	384.36	207.16	0.00	354.65	354.65
6"	492.01	0.00	818.64	818.64	362.53	0.00	674.70	674.70
8"	621.48	0.00	1,203.00	1,203.00	362.53	0.00	934.20	934.20
10"	673.27	0.00	1,687.41	1,687.41	673.27	0.00	1,530.88	1,530.88
Gallons/minimum	1,000	1000		0.6298	1,000	1000		0.1491
Quantity Used (M Gall)								
In Minimum	15,404.60	14.66%	0.00	0.00%	2,089.50	4.21%	0.00	0.00%
Total Billable	89,656.00	85.34%	105,060.60	100.00%	47,523.00	95.79%	49,612.50	100.00%
Total Used	105,060.60	100.00%	105,060.60	100.00%	49,612.50	100.00%	49,612.50	100.00%
Revenue From Minimum & Commodity Minimum	288,652.56	35.90%	87,112.35	37.33%	37,754.63	39.18%	16,848.87	52.28%
Commodity	515,432.34	64.10%	146,239.31	62.67%	58,595.86	60.82%	15,376.38	47.72%
Total	804,084.90	100.00%	233,351.66	100.00%	96,350.49	100.00%	32,225.25	100.00%
Proposed Under (Over) Required By:			(25.39)				115.55	
Required Change In Revenue			29.02%				33.57%	
Total			233,326.27				32,340.80	
Per 100 Gallons			0.22209				0.06519	
Required Commodity Cost - Actual			0.85189				0.21429	
Required Commodity Cost - Rounded			0.85190				0.21430	
Adjust Manually? (1 if Yes)			1				1	
Commodity Cost (Per 100 Gal)								
1st Block	0.5749	0.5286	1.1913	0.6298	0.1233	0.1269	0.1491	0.1491
2nd Block		0.0000		0.0000		0.0000		0.0000
3rd Block		0.0000		0.0000		0.0000		0.0000
4th Block		0.0000		0.0000		0.0000		0.0000

¹ Decision No. 62755, effective 8/1/00
² Decision No. 58120, effective 1/1/93
³ Decision No. 58293, effective 5/1/93
⁴ Decision No. 61676, effective 6/1/99
⁵ Decision No. 59859, effective 11/1/96
⁶ Decision No. 58790, effective 10/1/94

Analysis Of Present & Proposed Rates

Meter	Capacity-GPM		# Meters	Apache Junction			Superior						
	Actual	Multiple		Actual	Multiple	Average	Proposed	# Meters	Actual	Multiple	SS Average	AJ's AVG	Proposed
5/8"	20		14,427	12.43	2.00	2.25	18.13	1,262	18.13	2.14	2.32	2.25	18.13
1"	50	2.50	692	24.86	5.00	6.50	40.79	9	38.84	5.71	6.86	6.50	40.79
2"	160	8.00	175	62.15	8.33	11.67	117.85	13	103.58	8.57	11.78	11.67	117.85
3"	300	15.00	21	103.58	16.67	20.83	211.58	2	155.37	11.43	18.21	20.83	211.58
4"	500	25.00	17	207.16	29.17	39.58	377.65	0	207.16	20.00	35	39.58	377.65
6"	1000	50.00	21	362.53	29.17	54.58	717.59	0	362.53	20.00	50	54.58	717.59
8"	1600	80.00	0	362.53	54.16	89.58	989.54	0	362.53	37.14	81.07	89.58	989.54
10"	2500	125.00	0	673.27			1,624.09	0	673.27				1,624.09
Commodity				0.2569			0.2525		0.4060				0.4060

Formula
modified to
use AJ
average
multiplier

Analysis Of Present & Proposed Rates

Meter	Capacity-GPM		# Meters	Bisbee			Sierra Vista				
	Actual	Multiple		Actual	Multiple	Average	Proposed	Actual	Multiple	Average	Proposed
5/8"	20	2.50	3,235	13.47	1.85	2.17	20.11	12.43	2.00	2.25	18.25
1"	50	8.00	83	24.86	4.61	6.31	43.64	24.86	5.00	6.5	41.06
2"	160	15.00	47	62.15	11.53	13.27	126.89	62.15	8.33	11.67	118.63
3"	300	25.00	0	155.37	15.38	20.19	266.86	103.58	16.67	20.83	212.98
4"	500	50.00	3	207.16	26.91	38.46	406.02	207.16	29.17	39.58	380.15
6"	1000	80.00	0	362.53	26.91	53.46	773.43	362.53	29.17	54.58	722.34
8"	1600	125.00	0	673.27	49.98	87.49	1,075.08	362.53	54.16	89.58	996.09
10"	2500		0	673.27			1,759.42	673.27			1,634.84
Commodity				0.2486			0.316	0.1595			0.2113

ARIZONA WATER COMPANY

Analysis Of Present & Proposed Rates

Meter	Capacity-GPM		# Meters	Miami				San Manuel				
	Actual	Multiple		Actual	Multiple	Average	Proposed	# Meters	Actual	Multiple	Average	Proposed
5/8"	20	2.50	2,895	13.47	1.85	2.17	20.22	1,521	13.98	2.22	2.36	27.47
1"	50	8.00	64	24.86	4.61	6.31	43.88	22	31.07	6.67	7.33	64.83
2"	160	15.00	43	62.15	7.69	11.34	127.59	9	93.22	11.11	13.06	201.36
3"	300	25.00	3	103.58	15.38	20.19	229.29	1	155.37	19.26	22.13	358.76
4"	500	50.00	1	207.16	26.91	38.46	408.24	1	269.31	25.93	37.97	607.91
6"	1000	80.00	1	362.53	26.91	53.46	777.66	0	362.53	25.93	52.97	1,043.04
8"	1600	125.00	0	362.53	49.98	87.49	1,080.96	0	362.53	48.16	86.58	1,455.09
10"	2500		0	673.27			1,769.05	0	673.27			2,378.35
Commodity				0.3304			0.433		0.0922			0.1622

Analysis Of Present & Proposed Rates

Meter	Capacity-GPM		# Meters	Oracle		# Meters	Winkelman			
	Actual	Multiple		Actual	Multiple		Actual	Multiple	Average	Proposed
5/8"	20	2.50	1,304	15.54	2.50	176	12.95	1.92	2.21	17.30
1"	50	8.00	66	38.84	6.67	4	24.86	4.80	6.4	38.23
2"	160	15.00	7	103.58	10.00	4	62.15	8.00	11.5	110.72
3"	300	25.00	0	155.37	13.33	1	103.58	16.00	20.5	198.95
4"	500	50.00	0	207.16	31.66	2	207.16	27.99	39	354.65
6"	1000	80.00	1	492.01	39.99	0	362.53	27.99	54	674.70
8"	1600	125.00	0	621.48	43.32	0	362.53	51.99	88.49	934.20
10"	2500		0	673.27		0	673.27			1,530.88
Commodity				0.5749			0.6298			0.1491

ARIZONA WATER COMPANY

Eastern Group

Docket No. U-1445A-02-0619

Witness (es) Kennedy

Data Request No. TJS 19-13

Describe the accounting treatment and ratemaking impact of the \$5 million referred to in TJS 19-9. Were these expenses capitalized? Are they included in rate base?

Response To Data Request No. TJS 19-13

As stated in the Company's Response to Data Request No. TJS 19-9, the \$5 million amount was based on two past and future potential estimated cost components: the construction costs for all new wells and all other source-related plant facilities plus incremental O&M pumping costs associated with water produced from deeper Gila Conglomerate wells. These estimates were only an inventory of potential response costs. Actual response costs were never determined. All Miami wells and related plant facilities actually constructed from 1955 through 2001 would have been included in utility plant in service upon completion. All operating expenses actually incurred during this period would have been charged against utility operating revenue. The Company filed a number of rate cases for its Miami system between 1959 and 1990. If plant was in service and operating expenses were incurred during a test year this would be reflected in the rate cases. In none of the Commission Decisions were any unusual circumstances identified that would require special accounting or rate making adjustments.



1 questions regarding your rate design.

2

3 EXAMINATION

4

5 Q. (BY ALJ GIBELLI) Hasn't RUCO in the past

6 advocated tiered rates?

7 A. In certain circumstances, yes.

8 Q. In certain circumstances. Okay.

9 And the reason for that is -- the reason they

10 advocated tiered rates is to promote conservation?

11 A. Generally, yes.

12 Q. And is the reason that RUCO is not proposing

13 tiered rates here because RUCO doesn't feel that they

14 would promote conservation?

15 A. I think it's basically what we were getting at

16 before that we don't -- that, you know, this company

17 isn't in an AMA. That there aren't any water shortage

18 problems and that they're not subject to some of the

19 strict rules of water consumption that will be found

20 like in Phoenix here where it is an AMA and you have

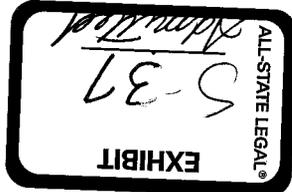
21 water shortage problems.

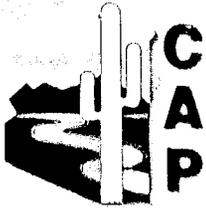
22 Q. Okay. And one other thing I just wanted to

23 touch on.

24 The Commission traditionally has included post

25 test year plant in service when that plant is serving





CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

b. 2001

RECEIVED

AUG 21 2000

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

REVISED

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDENT
P O BOX 29006
PHOENIX, AZ 85038-9006

INVOICE NO. 00008204
BILL DATE: 08/15/2000
DUE DATE: 10/15/2000

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-Capital Chgs
Fund-Org: 01000
Object Code: 2888
Division: CTAX CAP/TAX-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	2001 Annual Tax Pursuant to Arizona Revised Statutes 48-3715.04 Note: Amounts paid by the subcontractor pursuant to this tax levy will be used by CAWCD to defray capital charges owed under the CAP subcontractor.	6,000.00	43.00	258,000.00

TOTAL BALANCE DUE \$ 258,000.00

129,000.00



CENTRAL ARIZONA PROJECT
 P.O. Box 42447
 Phoenix, AZ 85080-2447

Invoice

b. 2001
RECEIVED

OCT 19 2001

ARIZONA WATER COMPANY
 PHOENIX - EXECUTIVE

BILL TO: Attn: Accounts Payable
 ARIZONA WATER COMPANY
 APACHE JUNCTION SYSTEM
 MR JAMES R LIVINGSTON
 PRESIDENT
 PO BOX 29006
 PHOENIX AZ 85038-9006

NUMBER 10361
 BILL DATE 15-OCT-01
 DUE DATE 20-NOV-01

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
1ST HALF SEMIANNUAL 2002 CAPITAL CHARGE	6,000	A/F	21.50	129,000.00
TOTAL DUE				\$129,000.00

SPECIAL INSTRUCTIONS
 SEMIANNUAL M&I WATER SERVICE CAPITAL CHARGE

Refer questions to Financial Services 623-869-2149 • inquiries@cap-az.com

b. 2001



CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

RECEIVED

JAN 22 2000

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDEN
P O BOX 29006
PHOENIX, AZ 85038-9006

INVOICE NO. 00008864
BILL DATE: 01/20/2001
DUE DATE: 02/20/2001

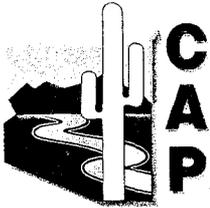
REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for March, 2001.	1.00	22,765.00	22,765.00

TOTAL BALANCE DUE \$ 22,765.00

b. 2001



CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

RECEIVED

FEB 26 2000

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDENT
P O BOX 29006
PHOENIX, AZ 85038-9006

INVOICE NO. 00009026
BILL DATE: 02/20/2001
DUE DATE: 03/20/2001

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for April, 2001	1.00	22,765.00	22,765.00
2	2000 Water Reconciliation	1.00	33,264.00	33,264.00

TOTAL BALANCE DUE \$ 56,029.00

b. 2001



CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

RECEIVED

MAR 19 2000

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDEN
P O BOX 29006
PHOENIX, AZ 85038-9006

INVOICE NO. 00009178
BILL DATE: 03/20/2001
DUE DATE: 04/20/2001

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for May, 2001.	1.00	22,765.00	22,765.00

TOTAL BALANCE DUE \$ 22,765.00

b. 2001



CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDEN
P O BOX 29006
PHOENIX, AZ 85038-9006

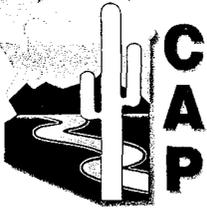
INVOICE NO. 00009369
BILL DATE: 04/20/2001
DUE DATE: 05/20/2001

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for June, 2001.	1.00	21,339.86	21,339.86

TOTAL BALANCE DUE \$ 21,339.86



b. 7001

CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDENT
P O BOX 29006
PHOENIX, AZ 85038-9006

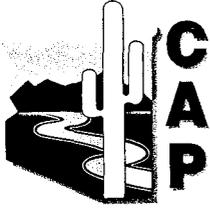
INVOICE NO. 00009483
BILL DATE: 05/20/2001
DUE DATE: 06/20/2001

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for July, 2001	1.00	21,339.86	21,339.86

TOTAL BALANCE DUE \$ 21,339.86



b. 2001

CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

RECEIVED

JUN 18 2001

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDENT
P O BOX 29006
PHOENIX, AZ 85038-9006

INVOICE NO. 00009656
BILL DATE: 06/20/2001
DUE DATE: 07/20/2001

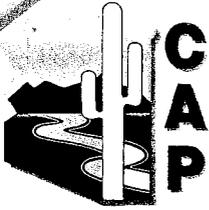
REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for August, 2001	1.00	21,339.86	21,339.86

TOTAL BALANCE DUE \$ 21,339.86

b. 2001



CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

RECEIVED

JUL 18 2001

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDENT
P O BOX 29006
PHOENIX, AZ 85038-9006

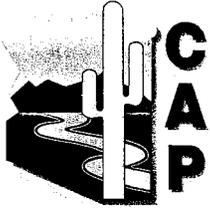
INVOICE NO. 00009809
BILL DATE: 07/20/2001
DUE DATE: 08/20/2001

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for September, 2001	1.00	21,339.86	21,339.86

TOTAL BALANCE DUE \$ 21,339.86



CENTRAL ARIZONA PROJECT

P.O. Box 43020 • Phoenix, Arizona 85080-3020 • 23636 North Seventh Street (85024)
(623) 869-2333 • www.cap-az.com

b. 2001

RECEIVED

AUG 14 2001

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

INVOICE

BILLED TO: ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
ATTN: JAMES R. LIVINGSTON/PRESIDEN
P O BOX 29006
PHOENIX, AZ 85038-9006

INVOICE NO. 00009971
BILL DATE: 08/20/2001
DUE DATE: 09/20/2001

REMIT TO: Central Arizona Project
Attention: Financial Services
Post Office Box 42447
Phoenix, AZ 85080-2447

FOR INTERNAL USE ONLY
PEID: 17766
Reference: Deferred Revenue-M&I Water
Fund-Org: 01000
Object Code: 2881
Division: WMI WATER OM&R-M&I

ITEM	Description	QTY	Unit Cost	TOTAL
1	Water service charge prepayment for October, 2001	1.00	21,339.86	21,339.86

TOTAL BALANCE DUE \$ 21,339.86



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

b. 2001

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10096
BILL DATE 20-SEP-01
DUE DATE 20-OCT-01

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	21,339.86	21,339.86
TOTAL DUE				\$21,339.86

RECEIVED

SEP 24 2001

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR NOVEMBER, 2001

Refer questions to Financial Services 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

b. 2001

RECEIVED

OCT 19 2001

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10273
BILL DATE 15-OCT-01 PHOENIX - EXECUTIVE
DUE DATE 20-NOV-01

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	21,339.86	21,339.86
			TOTAL DUE	\$21,339.86

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR DECEMBER, 2001

Refer questions to Financial Services 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

b. 2001

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
~~APACHE JUNCTION SYSTEM~~
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

RECEIVED

NOV 19 2001

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

NUMBER 10554
BILL DATE 20-NOV-01
DUE DATE 20-DEC-01

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR JANUARY, 2002



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

b. 2001

RECEIVED

DEC 26 2001

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

NUMBER 10836

BILLDATE 20-DEC-01

DUE DATE 20-JAN-02

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
			TOTAL DUE	\$24,515.83

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR FEBRUARY, 2002

Refer questions to Financial Services 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002
RECEIVED

OCT 15 2002

BILL TO: JIM LIVINGSTON
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 14366

BILL DATE 15-OCT-02

DUE DATE 20-NOV-02

CUSTOMER NUMBER 1075

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
2003 CAPITAL CHARGE; 1ST HALF	6,000	A/F	21.50	129,000.00
TOTAL DUE				\$129,000.00

SPECIAL INSTRUCTIONS
2003 SEMIANNUAL M&I WATER SERVICE CAPITAL CHARGE

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002
RECEIVED

OCT 19 2001

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10361
BILL DATE 15-OCT-01
DUE DATE 20-NOV-01

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
1ST HALF SEMIANNUAL 2002 CAPITAL CHARGE	6,000	A/F	21.50	129,000.00
TOTAL DUE				\$129,000.00

SUBMITTED
JUN 6 2002

SPECIAL INSTRUCTIONS

SEMIANNUAL M&I WATER SERVICE CAPITAL CHARGE

Refer questions to Financial Services 623-869-2149 • inquiries@cap-az.com

REMIT TO:
CENTRAL ARIZONA PROJECT
FINANCIAL SERVICES
PO BOX 42447
PHOENIX, AZ 85080-2447

NUMBER 10361
BILL DATE 15-OCT-01
DUE DATE 20-NOV-01

CUSTOMER NUMBER 1075

AMOUNT DUE: \$129,000.00

PAYMENT:

If you have made any changes on the back of this stub please check this box.

PLEASE RETURN THIS PORTION WHEN MAILING YOUR PAYMENT

C. 2002

Central Arizona Water Conservation District
2001 OM&R Cost Reconciliation

Customer Payment Election Form

Pay the highlighted amounts to CAWCD as of 6/28/02.

Customer Name: Arizona Water Company (Apache Junction)

\$ 42,360.92 Lump-Sum Payment (interest calculated through 12/31/2001)

Six Equal Installment Payments (interest calculated through 06/30/2001)
due the first business day of the month as follows:

\$	7,178.51	July 1, 2002
	7,178.51	August 1, 2002
	7,178.51	September 1, 2002
	7,178.51	October 1, 2002
	7,178.51	November 1, 2002
	7,178.51	December 1, 2002
\$	<u>43,071.06</u>	TOTAL

RALPH J. KENNEDY

Name (please print)

VP + Treasurer

Title

Ralph J Kennedy

Signature

5/9/02

Date



CENTRAL ARIZONA PROJECT
 P.O. Box 42447
 Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO: Attn: Accounts Payable
 ARIZONA WATER COMPANY
 APACHE JUNCTION SYSTEM
 MR JAMES R LIVINGSTON
 PRESIDENT
 PO BOX 29006
 PHOENIX AZ 85038-9006

NUMBER 10837
 BILLDATE 20-JAN-02
 DUE DATE 20-FEB-02

RECEIVED
 JAN 15 2002
 ARIZONA WATER COMPANY
 PHOENIX - EXECUTIVE

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR MARCH, 2002

Refer questions to Financial Services 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

2. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 12271
BILL DATE 15-FEB-02
DUE DATE 20-MAR-02
CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
2001 WATER RECONCILIATION	1	EA	36,250.00	36,250.00
TOTAL DUE				\$36,250.00

SPECIAL INSTRUCTIONS

2001 WATER RECONCILIATION

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com

September	505	610
October	505	718
November	160	211
<u>December</u>	<u>190</u>	<u>218</u>
Total	4,538 ✓	5,163 ✓

Based on the above totals, and as outlined in your contract, you were billed \$58/AF for deliveries exceeding your schedule or credited \$29/AF (pump energy) for water not delivered. Your CY01 water reconciliation was calculated as follows:

$4,538 - 5,163 = 625 \times \$58.00 = \$36,250.00$

Refer invoice questions to Tina Brown at (623)869-2149.



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10838
BILL DATE 20-FEB-02
DUE DATE 20-MAR-02
CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR APRIL, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com

September	505	610
October	505	718
November	160	211
December	190	218
Total	4,538 ✓	5,163 ✓

Based on the above totals, and as outlined in your contract, you were billed \$58/AF for deliveries exceeding your schedule or credited \$29/AF (pump energy) for water not delivered. Your CY01 water reconciliation was calculated as follows:

$4,538 - 5,163 = 625 \times \$58.00 = \$36,250.00$

Refer invoice questions to Tina Brown at (623)869-2149.



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

2. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

RECEIVED

MAR 12 2002

NUMBER 10839
BILL DATE 20-MAR-02 ARIZONA WATER COMPANY
DUE DATE 20-APR-02 PHOENIX - EXECUTIVE

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS
WATER SERVICE CHARGE PREPAYMENT FOR MAY, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10840
BILL DATE 15-APR-02
DUE DATE 20-MAY-02

RECEIVED
APR 15 2002
ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS
WATER SERVICE CHARGE PREPAYMENT FOR JUNE, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT
P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10841
BILL DATE 15-MAY-02
DUE DATE 20-JUN-02
CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS
WATER SERVICE CHARGE PREPAYMENT FOR JULY, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10842
BILL DATE 20-JUN-02
DUE DATE 20-JUL-02
CUSTOMER NUMBER 1075

RECEIVED
JUN 14 2002
ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS
WATER SERVICE CHARGE PREPAYMENT FOR AUGUST, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT
P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10843
BILL DATE 01-JUL-02
DUE DATE 20-AUG-02

RECEIVED

JUL 15 2002

ARIZONA WATER COMPANY
PHOENIX - EXECUTIVE

CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS

WATER SERVICE CHARGE PREPAYMENT FOR SEPTEMBER, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com



CENTRAL ARIZONA PROJECT

P.O. Box 42447
Phoenix, AZ 85080-2447

Invoice

C. 2002

BILL TO: Attn: Accounts Payable
ARIZONA WATER COMPANY
APACHE JUNCTION SYSTEM
MR JAMES R LIVINGSTON
PRESIDENT
PO BOX 29006
PHOENIX AZ 85038-9006

NUMBER 10844
BILL DATE 03-AUG-02
DUE DATE 20-SEP-02
CUSTOMER NUMBER 1075

DESCRIPTION	QTY	UOM	UNIT COST	TOTAL
M&I; SUBCONTRACT WATER	1	LEV	24,515.83	24,515.83
TOTAL DUE				\$24,515.83

SPECIAL INSTRUCTIONS
WATER SERVICE CHARGE PREPAYMENT FOR OCTOBER, 2002

Refer questions to Financial Services: 623-869-2149 • inquiries@cap-az.com

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER
Chairman
JIM IRVIN
Commissioner
WILLIAM A. MUNDELL
Commissioner
JEFF HATCH-MILLER
Commissioner
MIKE GLEASON
Commissioner

IN THE MATTER OF THE APPLICAATION OF)
ARIZONA WATER COMPANY, AN ARIZONA)
CORPORATION, FOR ADJUSTMENTS TO)
ITS RATES AND CHARGES FOR UTILITY)
SERVICE FURNISHED BY ITS EASTERN)
GROUP AND FOR CERTAIN RELATED)
APPROVALS)
_____)

DOCKET NO. W-01445A-02-0619

DIRECT
TESTIMONY
OF
JOEL M. REIKER
PUBLIC UTILITIES ANALYST V
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

JULY 8, 2003

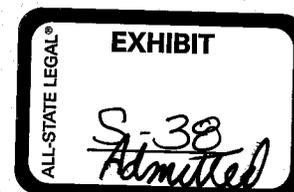


TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
SUMMARY OF TESTIMONY AND RECOMMENDATIONS	2
I. ARIZONA WATER'S CAPITAL STRUCTURE	3
II. THE COST OF DEBT	4
III. THE COST OF EQUITY	5
Comment on Capital Costs in General	5
Capital Structure and Risk	7
Fair and Reasonable Return on Equity	9
Discounted Cash Flow Model Analysis	10
<i>The Constant-Growth DCF</i>	11
<i>The Multi-Stage DCF</i>	19
Capital Asset Pricing Model	21
IV. FINAL COST OF EQUITY ESTIMATES FOR ARIZONA WATER	25
The Effect of Arizona Water's Capital Structure on its Cost of Equity	26
V. RATE OF RETURN RECOMMENDATION	30
Financial Integrity	30
VI. COMMENT ON THE DIRECT TESTIMONY OF COMPANY WITNESS THOMAS M. ZEPP	31
Dr. Zepp's DCF Estimates	31
<i>Sample Selection Problems</i>	32
<i>Risk Comparison Problem</i>	34
<i>Miscalculated Price Problem</i>	35
<i>Growth Calculation Problem</i>	37
<i>Forecasted Growth Problem</i>	39
Dr. Zepp's Risk Premium Estimates	46
<i>Dr. Zepp's First Risk Premium Study</i>	50
<i>Dr. Zepp's Second Risk Premium Study</i>	50
<i>Dr. Zepp's Third Risk Premium Study</i>	51
Dr. Zepp's Testimony on Baa Corporate Bond Rates	52
Dr. Zepp's Testimony on the Market-to-Book Ratio	54
Dr. Zepp's 100 to 150 Basis Point Risk Addition	55
<i>Bond Placement</i>	55
<i>Historical Test Year</i>	56
<i>EPA Requirements</i>	57
<i>Potential Disallowances</i>	58
<i>Size</i>	59
Capital Structure Adjustment	68
VII. CONCLUSION	68

SCHEDULES

Capital Structures of Sample Water Companies	JMR-1
Growth in Earnings & Dividends of Sample Water Companies	JMR-2

Intrinsic Growth for Sample Water Companies.....	JMR-3
Expected Infinite Annual Growth in Dividends for Sample Water Companies.....	JMR-4
Selected Financial Data of Sample Water Companies	JMR-5
Multi-Stage DCF Estimates for Sample Water Companies.....	JMR-6
Final Cost of Equity Estimates for Sample Water Companies	JMR-7
Capital Structure and Weighted Average Cost of Capital for Arizona Water.....	JMR-8
Calculation of Unlevered Beta for Sample Water Companies	JMR-9
Calculation of Relevered Beta for Arizona Water.....	JMR-10
Capital Structure Adjustment to the Cost of Equity	JMR-11
Capital Structures of Sample Gas Companies	JMR-12
Growth in Earnings and Dividends of Sample Gas Companies	JMR-13
Calculation of Intrinsic Growth for Sample Gas Companies	JMR-14
Expected Infinite Annual Growth in Dividends for Sample Gas Companies	JMR-15
Selected Financial Data of Sample Gas Companies	JMR-16
Multi-Stage DCF Estimates for Sample Gas Companies	JMR-17
Final Cost of Equity Estimates for Sample Gas Companies.....	JMR-18
Actual Baa Rated Public Utility and Corporate Bond Rates	JMR-19

EXHIBITS

Construction of Confidence Interval for Current Zepp Study	JMR-1
Comparison of 2000 Zepp Study with Current Zepp Study	JMR-2

EXECUTIVE SUMMARY
ARIZONA WATER COMPANY
DOCKET NO. W-01445A-02-0619

The direct testimony of Staff witness Joel M. Reiker addresses the following issues:

Capital Structure – Staff recommends the Commission adopt a capital structure consisting of 28.2 percent long-term debt, 5.6 percent short-term debt, and 66.1 percent equity.

Cost of Debt – Staff recommends the Commission adopt an 8.46 percent cost of long-term debt and a 4.00 percent cost of short-term debt.

Cost of Equity – Staff recommends the Commission adopt a 9.0 percent return on equity (“ROE”). Staff bases its ROE recommendation on its discounted cash flow (“DCF”) and capital asset pricing model (“CAPM”) analyses. Staff’s recommended ROE range is 7.7 percent to 11.1 percent.

Overall Rate of Return - Staff recommends the Commission adopt an overall rate of return (“ROR”) of 8.6 percent. Staff’s ROR recommendation results in a pre-tax interest coverage ratio of 4.7. This represents a fair and reasonable rate of return on Arizona Water’s rate base and is evidence that the Company will maintain financial integrity.

Comment on the Direct Testimony of Company Witness Thomas M. Zepp – The Commission should reject Dr. Zepp’s proposed 12.4 percent ROE for the following reasons:

1. There are several problems associated with Dr. Zepp’s DCF estimates including; sample selection, inappropriate calculation of the expected dividend yield, mismatching, exclusive reliance on analysts’ forecasts, and failure to consider dividends per share growth.
2. Dr. Zepp’s “risk premium” analysis should be rejected because (1) it relies on analysts’ forecasts of future interest rates, (2) it is based on a general rule of thumb rather than theory developed in the financial literature, and (3) the yield to maturity on corporate bonds cannot be meaningfully compared to the cost of equity.
3. Dr. Zepp’s testimony on the Baa corporate bond rate is incorrect, and when corrected supports a cost of equity *below* Staff’s recommended 9.0 percent when considered with his overall analysis.
4. Dr. Zepp’s proposed 100 to 150 basis point small company premium should be rejected because it is (1) inconsistent with financial theory, and (2) contrary to utility industry-specific studies. Further, the Commission has previously rejected a small-firm size risk premium in rate proceedings.
5. Dr. Zepp fails to make a capital structure adjustment to account for decreased financial risk.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Joel M. Reiker. I am a Senior Regulatory Analyst employed by the Arizona
4 Corporation Commission ("ACC" or "Commission") in the Utilities Division ("Staff").
5 My business address is 1200 West Washington Street, Phoenix, Arizona 85007.
6

7 **Q. Briefly describe your responsibilities as a Senior Regulatory Analyst.**

8 A. In my capacity as a Senior Regulatory Analyst, I provide recommendations to the
9 Commission on mergers, acquisitions, financings, and sales of assets. I also perform
10 studies to estimate the cost of capital for utilities that are seeking rate relief, and I
11 occasionally act as arbitrator in disputes brought before the Utilities Division.
12

13 **Q. Please describe your educational background and professional experience.**

14 A. In 1998, I graduated cum laude from Arizona State University, receiving a Bachelor of
15 Science degree in Global Business with a specialization in finance. My course of studies
16 included classes in corporate and international finance, investments, accounting, statistics,
17 and economics. In 1999, I was employed by the Commission as an Auditor III in the
18 Accounting & Rates Section's Financial Analysis Unit. Since that time, I have attended
19 various seminars and classes on general regulatory and business issues, including the cost
20 of capital and the use of energy derivatives. I was promoted to a Senior Rate Analyst in
21 December 2000.
22

23 **Q. What is the scope of your testimony in this case?**

1 A. I provide Staff's recommended rate of return in this case. I address the appropriate capital
2 structure, as well as the appropriate costs of debt and equity for setting rates for Arizona
3 Water Company ("Arizona Water" or "Company").
4

5 **SUMMARY OF TESTIMONY AND RECOMMENDATIONS**

6 **Q. Briefly summarize how Staff's cost of capital testimony is organized.**

7 A. Staff's cost of capital testimony is organized into six sections. Section I discusses the
8 Company's capital structure. Section II discusses Arizona Water's cost of debt. Section
9 III discusses risk and presents the findings of Staff's cost of equity capital analysis in
10 which I used the discounted cash flow ("DCF") model and the capital asset pricing model
11 ("CAPM"). In section IV, I present Staff's recommended return on equity ("ROE") for
12 Arizona Water. In section V, I present Staff's overall rate of return ("ROR")
13 recommendation. Finally, I provide Staff's comments on the Company's proposed ROE
14 in section VI.
15

16 **Q. Have you prepared any exhibits to your testimony?**

17 A. Yes. I prepared nineteen schedules and two exhibits that support Staff's cost of capital
18 analysis.
19

20 **Q. Please summarize Staff's ROR recommendations.**

21 A. Staff's ROR recommendation is summarized in the following table:
22

Table 1

	Weight	Cost	Weighted Cost
Long-term Debt	28.2%	8.5%	2.39%
Short-term Debt	5.6%	4.0%	0.22%
Common Equity	66.1%	9.0%	5.95%
Cost of Capital/ROR			8.6%

I. ARIZONA WATER'S CAPITAL STRUCTURE

Q. What is Staff's recommended capital structure?

A. Staff recommends the following capital structure:

Table 2

Capital Source	Percentage
Long-term Debt	28.2%
Short-term Debt	5.6%
Common Equity	66.1%
	100.0%

Q. Is this the same capital structure proposed by the Company?

A. No, it is not. The Company proposes the following capital structure in its application:

Table 3

Capital Source	Percentage
Long-term Debt	30.6%
Short-term Debt	3.8%
Common Equity	65.7%
	100.0%

Q. How does Staff's proposed capital structure differ from the Company's proposed capital structure?

1 A. The Company's proposed capital structure reflects its actual capital structure as of
2 December 31, 2001. Staff's proposed capital structure reflects the Company's actual
3 capital structure as of December 31, 2002. Staff's proposed capital structure reflects the
4 most recent known information available concerning the Company's capital structure and
5 is therefore a more appropriate capital structure to use in order to calculate the cost of
6 capital on a going-forward basis.

7
8 **II. THE COST OF DEBT**

9 **Q. What is Staff's recommended cost of debt?**

10 A. Staff recommends an 8.46 percent cost of long-term debt and a 4.00 percent cost of short-
11 term debt.

12
13 **Q. What is the Company's proposed cost of debt?**

14 A. The Company proposes an 8.46 percent cost of long-term debt and a 7.37 percent cost of
15 short-term debt.

16
17 **Q. How does Staff's recommended cost of short-term debt differ from the Company's
18 proposed cost of short-term debt?**

19 A. The Company's proposed cost of short-term debt is a historical average of its cost of
20 short-term borrowing during 2001. Staff's recommended cost of short-term debt is the
21 Company's actual cost going-forward. According to the Business Loan Agreement
22 between Bank of America, N. A. ("B of A") and Arizona Water, the applicable interest
23 rate on the Company's line of credit is B of A's prime rate minus one-quarter (0.25) of a

1 percentage point.¹ Therefore, Arizona Water's cost of short-term debt is 4.00 percent
2 (4.25% - 0.25%).
3

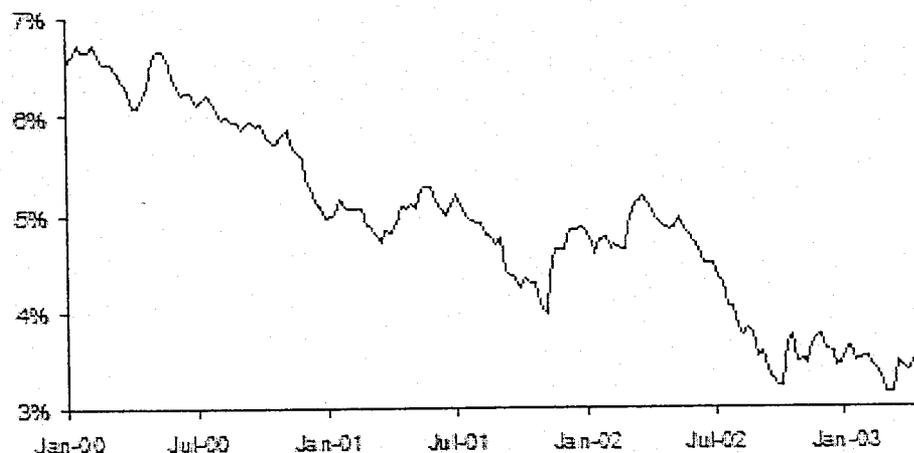
4 III. THE COST OF EQUITY

5 Comment on Capital Costs in General

6 Q. What has been the general trend of capital costs in recent years?

7 A. Interest rates have declined in recent years. Chart 1 graphs intermediate-term U.S.
8 Treasury rates from June 1998 to May 2003.

9
10 Chart 1: Average Yield on 5-, 7-, & 10-Year Treasuries



11
12
13
14
15
16
17
18 The following graph puts interest rates and capital costs in general, into historical
19 perspective. Interest rates have declined significantly in the past twenty years and are
20 currently at their lowest level since the 1950's.

21
22

¹ According to the Company's response to Staff data request JMR 9-3, the Bank Reference Rate as of January 24, 2003 is 4.25%.

Chart 2: History of 5- and 10-Year Treasury Yields



According to the capital asset pricing model, the cost of equity moves in the same direction as interest rates. Chart 2 suggests that capital costs, including the cost of equity, are lower than they have been in decades.

Q. What have historical returns been for average risk securities?

A. Wharton School finance professor Jeremy Siegel published his finding that the average compound and arithmetic annual returns on U.S. equities have been 8.3 percent and 9.7 percent, respectively, using 199 years of data from 1802 through 2001.²

One should keep in mind that the above returns are actual returns, not expected returns. However, any request for an allowed ROE at or above 10.0 percent exceeds the compound and arithmetic average historical return on U.S. equities for the period mentioned above. The risk of a regulated water utility, as measured by the capital asset pricing model beta, is significantly below the theoretical average beta of 1.0. I discuss the average beta (.59) of

² Siegel, Jeremy J. *Stocks for the Long Run*, third edition. McGraw-Hill, New York. 2002. p.13.

1 the water utility industry later. Therefore, the required return on an investment in the
2 water utility industry is significantly below the average required return on the market.
3

4 **Capital Structure and Risk**

5 **Q. How is risk defined?**

6 A. Risk is defined in modern portfolio theory as the sensitivity of an investment's returns to
7 market returns. The most prevalent measure of risk is "beta." Beta is the measurement of
8 an investment's market risk, and it reflects both the business risk and financial risk of a
9 firm.³

10
11 Unique risk, or microeconomic risk, is risk that can be eliminated by portfolio
12 diversification, i.e. buying securities in portfolios. Unique risk is not measured by beta
13 nor does it factor into the cost of equity because it can be eliminated through simple
14 shareholder diversification. Unique risks are peculiar to an individual company or
15 investment project. Investors who hold diversified portfolios do not worry about unique
16 risk; therefore, it does not affect the cost of capital. Additionally, investors who choose to
17 be less than fully diversified will not expect to be compensated for unique risk.⁴
18

19 **Q. What is market risk?**

³ Brealey, Richard, A. Stewart Myers. *Principles of Corporate Finance*. McGraw-Hill, New York. 1988. p. 134.

⁴ Harrington, Diana R. *Modern Portfolio Theory, the Capital Asset Pricing Model, and Arbitrage Pricing Theory: A User's Guide*. Prentice-Hall, Inc., Englewood Cliffs, New Jersey. 1987. p. 16.

1 A. Market risk, also known as systematic risk, is the risk related to economy-wide perils that
2 threaten all businesses such as changes in interest rates, inflation, and general business
3 cycles. Market risk cannot be avoided regardless of how diversified a portfolio is. Market
4 risk is the only risk that affects the cost of equity. Market risk includes business risk and
5 financial risk.

6
7 **Q. Please distinguish between business risk and financial risk.**

8 A. Business risk is the risk associated with the fluctuation in earnings due to the basic nature
9 of a firm's business. Financial risk is the risk to shareholders caused by a firm's reliance
10 on debt financing. Both business risk and financial risk affect the cost of capital.

11
12 **Q. What is the relationship between the capital structure and financial risk?**

13 A. A greater percentage of debt in a capital structure results in a higher level of financial risk.

14
15 **Q. How does Arizona Water's capital structure compare to capital structures of
16 publicly traded water companies?**

17 A. Arizona Water's capital structure has a greater percentage of equity than the average
18 capital structure of publicly traded water companies; therefore, Arizona Water has a lower
19 level of financial risk. Schedule JMR-1 shows the capital structures of six publicly traded
20 water companies ("sample water companies") as of 2002, as well as Arizona Water's
21 capital structure. As of December 2002, the sample water companies were capitalized
22 with approximately 50 percent equity while Arizona Water's capital structure consists of
23 approximately 70 percent equity.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

Q. How does a lower level of financial risk affect a firm's cost of equity?

A. A lower level of financial risk results in a lower cost of equity.

Fair and Reasonable Return on Equity

Q. Define the term "cost of equity."

A. A firm's cost of equity is that rate of return that investors *expect* to earn on their equity investment given the risk of the firm. An investor's expected return is equally defined as the return on equity that they expect on other investments of similar risk.

Q. What models did Staff use to estimate Arizona Water's cost of equity?

A. Staff used two market-based models: the discounted cash flow ("DCF") model and the capital asset pricing model ("CAPM"). Staff applied these two models to publicly traded stocks to estimate Arizona Water's cost of equity.

Q. Did Staff apply the DCF model and the CAPM to Arizona Water directly?

A. No, Staff did not apply the models directly to Arizona Water because it does not have publicly traded stock and therefore lacks the information necessary to apply the market-based models. Staff used a sample of publicly traded water companies as a proxy. In addition to examining the sample water companies, Staff conducted an analysis of the cost of equity to a sample of publicly traded gas distribution companies ("sample gas companies"). Because the sample gas companies are riskier than the sample water companies, one can expect them to have a higher cost of equity on average. Therefore, Staff's estimate of the cost of equity to the sample gas companies requires a *downward adjustment* to be relied upon in this proceeding.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26

Q. What companies did Staff select as proxies or comparables for Arizona Water?

A. Staff selected the six sample water companies previously discussed in the capital structure section of this testimony. These companies represent all of the water companies currently followed by *The Value Line Investment Survey* ("Value Line") and *The Value Line Investment Survey Small and Mid Cap Edition* ("Value Line Small Cap") who have a significant percentage of revenues derived from regulated water utility operations. These companies include: American States Water, California Water, Connecticut Water Services, Middlesex Water, Philadelphia Suburban, and SJW Corp.

Discounted Cash Flow Model Analysis

Q. Please provide a brief summary of the theory upon which the DCF method of estimating the cost of equity is based.

A. The DCF method of estimating the cost of equity is based upon the theory that the market price of a stock is equal to the present value of all expected future dividends. Through a mathematical restatement, the discount rate, or cost of capital, can be derived from the expected dividends, the stock price, and a dividend growth rate. The formula is generally applied to a sample of companies that exhibit similar risk to the company in question and the resulting estimates for the discount rates (or costs of equity) are then averaged.

Use of the DCF method for estimating the cost of equity capital to a public utility was pioneered by Professor Myron Gordon in the 1960's, and it has become the most widely used model. In 1998, Professor Gordon said the following about the simplicity of his model when he gave the keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts:

1 On its simplicity, the model made it extremely difficult, if not
2 impossible, for a banker from Goldman Sachs or some other Wall
3 Street firm, or for a finance professor from a prestige university to
4 use the authority of his/her position to make extravagant claims
5 before a regulatory agency. An independent expert or a member of
6 a commission staff with far less impressive credentials could
7 politely, firmly and effectively deflate any bombast in their
8 testimony.⁵

9

10 **Q. How did Staff apply the DCF Model?**

11 **A.** Staff applied the DCF model using two different approaches. Staff's first approach used
12 the constant-growth DCF model. Staff's second approach was to use a non-constant
13 growth, or multi-stage DCF. The advantage of the multi-stage DCF is that it does not
14 assume that dividends grow at a constant rate over time.

15

16 *The Constant-Growth DCF*

17 **Q. What is the constant-growth DCF formula used in Staff's analysis?**

18 **A.** The constant-growth DCF formula used in Staff's analysis is:

19

Equation 1:

$$K = \frac{D_1}{P_0} + g$$

where: **K** = the cost of equity
 D₁ = the expected annual dividend
 P₀ = the current stock price
 g = the expected infinite annual growth rate of dividends

20

⁵ Gordon, M. J. Keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts. May 8, 1998. Transparency 2.

1 The constant-growth DCF model shown in Equation 1 assumes that a company has a
2 constant payout ratio and that its earnings are expected to grow at a constant rate. Thus, if
3 a stock has a market price of \$10 per share, an expected annual dividend of \$1 per share,
4 and if its dividends were expected to grow 3 percent per year, then the cost of equity for
5 the company would be 13.0 percent (the 10 percent dividend yield plus the growth rate of
6 3 percent per year).

7
8 **Q. How did Staff calculate the dividend yield component (D_1/P_0) of the constant-growth**
9 **DCF formula?**

10 A. Staff calculated the yield component of the DCF formula by dividing the expected annual
11 dividend by the spot stock price after the close of the market on May 6, 2003, as reported
12 by *Yahoo Finance*.

13
14 Staff used the spot stock price because it reflects all publicly available information.
15 According to the efficient markets hypothesis, the current stock price includes investors'
16 expectations of future returns and is the best indicator of these expectations.

17
18 **Q. How did Staff estimate the dividend growth (g) component of the DCF model?**

19 A. Because the DCF model is predicated on dividend growth, Staff examined historical and
20 projected growth in dividends per share ("DPS"). Staff also examined growth in earnings
21 per share ("EPS") as well as intrinsic growth.

22
23 **Q. How did Staff estimate DPS growth?**

1 A. Staff estimated DPS growth by calculating the average rate of growth in dividends per
2 share of the sample water companies for the period 1992 to 2002. The results of the
3 analysis are shown in Schedule JMR-2. Staff's analysis indicates an average historical
4 DPS growth rate of 2.5 percent for the sample water companies.

5
6 **Q. What DPS growth rate does *Value Line* project for the sample water companies?**

7 A. *Value Line* projects an average DPS growth rate of 2.9 percent over the next five years for
8 the sample water companies it follows, as shown in Schedule JMR-2. This average rate is
9 higher than the 10-year average historical rate that Staff calculated.

10
11 **Q. Why did Staff examine EPS growth to estimate the dividend growth component of
12 the constant-growth DCF model?**

13 A. Staff examined EPS growth because dividend growth does not occur independently of
14 earnings. It would be virtually impossible for dividend growth to exceed earnings growth
15 over the long run, as it would ultimately lead to payout ratios in excess of 100 percent,
16 which simply are not sustainable. Therefore, Staff considered historical growth in EPS in
17 estimating dividend growth.

18
19 **Q. What is Staff's historical EPS growth rate?**

20 A. Schedule JMR-2 shows the average historical rate of growth in EPS for the sample water
21 companies. Staff's average historical EPS growth rate is 3.2 percent for the sample water
22 companies.

23
24 **Q. What EPS growth rate did *Value Line* project for the sample water companies it
25 follows?**

1 A. Schedule JMR-2 shows the average of the projected EPS growth rates to be 8.7 percent,
2 higher than the 10-year historical EPS growth rate. One should note that analysts'
3 projections of future earnings are generally high,⁶ and vary widely depending on the
4 source. For example, as of May 2003, Zacks Investment Research projected an average
5 five-year earnings growth rate of 5.35 percent for the sample water companies.

6
7 **Q. What is retention growth?**

8 A. Retention growth is simply the product of the percentage of earnings retained by the
9 company ("retention ratio") and the book/accounting return on equity. This concept is
10 based upon the theory that dividend growth can only be achieved if a company retains and
11 reinvests a portion of its earnings in itself to earn a return.

12
13 **Q. What is the formula for the retention growth rate?**

14 A. The retention growth rate formula is:

15 Equation 2 :

$$g = br$$

where : g = retention growth
 b = the retention ratio (1 - dividend payout ratio)
 r = the accounting return on common equity

16
17 **Q. What retention (br) growth rate did Staff calculate for the sample water companies?**

⁶ See Seigel, Jeremy J. Stocks for the Long Run. 2002. McGraw-Hill. New York. p. 100. Malkiel, Burton G. A Random Walk Down Wall Street. 1999. W.W. Norton & Co. New York. p. 169. Dreman, David. Contrarian Investment Strategies: The Next Generation. 1998. Simon & Schuster. New York. pp. 97-98. Testimony of Professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier Bureau), FCC Docket 79-63, p. 95.

1 A. Staff calculated an average retention (br) growth rate of 3.1 percent for the sample water
2 companies, as shown on Schedule JMR-3. Staff calculated the rate by multiplying the
3 accounting return on equity (r) by the retention ratio (b) for the years 1993 through 2002,
4 and then averaging the results.

5
6 **Q. Under what circumstances is the br growth rate method a reasonable estimate of**
7 **future dividend growth?**

8 A. The br growth rate is a reasonable estimate of future dividend growth if the retention ratio
9 is fairly constant and if the market price to book value ("market-to-book") ratio is
10 expected to equal 1.0. The retention ratio for the sample water companies used in Staff's
11 analysis has remained relatively stable over the past several years. However, the average
12 market-to-book ratio of the sample water companies is 2.2. (See Schedule JMR-5.) Staff
13 assumes that investors expect the market-to-book ratio to remain above 1.0.

14
15 **Q. What is the financial implication of a market-to-book ratio greater than 1.0?**

16 A. The implication is that investors expect the sample water companies to earn
17 book/accounting returns on equity greater than the companies' costs of equity.

18
19 **Q. How has Staff accounted for the assumption that investors expect the average**
20 **market-to-book ratio of the sample water companies to remain above 1.0?**

21 A. Staff accounted for the assumption that investors expect the average market-to-book ratio
22 of the sample water companies to remain above 1.0 by adding a second growth term to its
23 br growth rate to arrive at the intrinsic growth rate.
24

1 Q. What is the second growth term Staff used to account for the assumption that
2 investors expect the average market-to-book ratio of the sample water companies to
3 remain above 1.0?

4 A. The second growth term, derived by Myron Gordon in his book, *The Cost of Capital to a*
5 *Public Utility*⁷, is found by multiplying a variable, v by another variable, s. Staff will refer
6 to the product of v and s as the vs, or stock financing growth term. The vs growth term
7 represents the company's dividend growth through the sale of stock.

8
9 Q. What does the variable v represent and how is it calculated?

10 A. The variable v represents the fraction of the funds raised from common stock sales that
11 accrues to existing shareholders. It is calculated as follows:

12 Equation 3:

$$v = 1 - \left(\frac{\text{book value}}{\text{market value}} \right)$$

13 For example, if a share of stock with a \$10 book value is selling for \$13, the v term would
14 equal .23 (1-[\$10/\$13]). Schedule JMR-3 shows Staff's calculation of v for each of the
15 sample water companies.

16
17 Q. What does the variable s represent and how is it calculated?

18 A. The variable s represents the expected rate of increase in common equity from stock sales.
19 For example, if a company has \$100 in equity and it sells \$10 of stock then s would equal
20 10 percent (\$10/\$100). Staff used historical accounting data to calculate an average s
21 value for the sample water companies of 2.9 percent.

22
⁷ Gordon, Myron J. *The Cost of Capital to a Public Utility*. MSU Public Utilities Studies, Michigan, 1974. pp 31-35.

1 **Q. How does the v_s term work?**

2 A. When a utility is expected to earn a book/accounting return equal to its cost of equity then
3 its market price will equal its book value and v will be equal to 0.0 ($1 - (\$10/\$10)$). If a
4 utility is expected to earn more than its cost of equity then its market-to-book ratio will be
5 greater than 1.0. If the market-to-book ratio is greater than 1.0 and v is positive when new
6 shares are sold, then the book value per share of outstanding stock is less than the per
7 share contributions of new shareholders. The per-share contribution in excess of book
8 value per share accrues to the old shareholders in the form of a higher book value. The
9 resulting higher book value leads to higher expected earnings and dividends. Thus, the
10 growth term in the basic DCF model should include the v_s growth term when the market-
11 to-book ratio is not expected to equal 1.0.

12
13 **Q. Shouldn't utilities' market-to-book ratios fall to 1.0 if their authorized ROEs are set
14 equal to their costs of equity?**

15 A. In theory, yes. Utilities' market-to-book ratios should fall to 1.0, in theory, making the v_s
16 term unnecessary. Setting the authorized return on equity for a utility equal to its cost of
17 equity should eventually force the utility's market price down to equal its book value. In
18 principle, then, the v_s term is unnecessary in the long run. In reality, rate orders do not
19 force market-to-book ratios to 1.0 for a variety of reasons. For example, regulatory
20 commissions do not issue orders simultaneously for multijurisdictional utilities, and a
21 company may have earnings that are unregulated. Therefore, Staff included the v_s growth
22 term in its DCF analysis, even though the resulting growth rate estimate might be too high.
23 Staff's resulting estimates are too high to the extent that investors expect the sample's
24 average market-to-book ratio to fall to 1.0 because of falling authorized ROEs.

1 Q. What is Staff's intrinsic growth rate and how was it calculated?

2 A. Staff's intrinsic growth rate is 4.8 percent for the sample water companies. It was
3 calculated by averaging the sum of Staff's br and vs growth rates for each of the sample
4 water companies. (See Schedule JMR-3.)

5
6 Q. Did Staff consider *Value Line* forecasts to estimate intrinsic growth?

7 A. Yes. Staff considered *Value Line's* b and r projections to calculate projected intrinsic
8 growth rates for the sample water companies. The average intrinsic growth rate calculated
9 under this approach is 7.8 percent. Schedule JMR-3 shows Staff's calculations of intrinsic
10 growth based on *Value Line's* projections.

11
12 Q. What is Staff's expected infinite annual growth rate in dividends?

13 A. Schedule JMR-4 shows Staff's calculation of expected dividend growth. Staff's expected
14 annual dividend growth rate is also shown in the following table:

15
16 Table 4

Growth Rate	g
10-Year EPS Growth	3.2%
Projected EPS Growth	8.7%
10-Year DPS Growth	2.5%
Projected DPS Growth	2.9%
10-Year Intrinsic Growth	4.8%
Projected Intrinsic Growth	7.8%
Average	4.98%

17
18 Q. What is the result of Staff's constant-growth DCF analysis?

19 A. Schedule JMR-7 shows the result of Staff's constant-growth DCF analysis. Staff's
20 constant-growth DCF cost of equity estimate is also shown below:

Table 5

D_1/P_0	+	g	=	k
3.47%	+	4.98%	=	8.5%

The Multi-Stage DCF

Q. What is the multi-stage DCF formula?

A. The multi-stage DCF formula is shown in the following equation:

Equation 4:

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)} \right]^n$$

Where: P_0 = current stock price
 D_t = dividends expected during stage 1
 K = cost of equity
 n = years of non - constant growth
 D_n = dividend expected in year n
 g_n = constant rate of growth expected after year n

The multi-stage DCF model shown above incorporates at least two growth rates. It assumes that investors expect a certain rate of non-constant dividend growth in the near term known as "stage-1 growth", as well as a longer-term constant rate of growth known as "stage-2 growth."

Q. How did Staff implement the multi-stage DCF model?

1 A. Staff forecasted a stream of dividends and found the cost of equity that equates the present
2 value of the stream to the current stock price for each of the sample water companies,
3 consistent with Equation 4.

4
5 **Q. How did Staff calculate stage-1 growth?**

6 A. Staff forecasted dividends five years out for each of the sample water companies followed
7 by *Value Line* using *Value Line's* estimate of the projected dividend for the next twelve
8 months and the five-year projected DPS growth rate. For the sample water companies
9 followed by *Value Line Small Cap*, Staff forecasted the dividends expected over the next
10 twelve months, and forecasted dividends five years out using the average projected DPS
11 growth rate.

12
13 **Q. How did Staff estimate stage-2 growth?**

14 A. For stage-2 growth, or constant growth, Staff used the rate of growth in gross domestic
15 product ("GDP") from 1929 to 2002, which is 6.5 percent. Historical growth in GDP is
16 appropriate because it ultimately assumes that the water utility industry will neither grow
17 faster, nor slower, than the overall economy.

18
19 **Q. What is the result of Staff's multi-stage DCF analysis?**

20 A. Schedule JMR-6 shows the result of Staff's multi-stage DCF analysis. The average of
21 Staff's multi-stage DCF estimates is 9.6 percent.
22

1 **Capital Asset Pricing Model**

2 **Q. Please describe the capital asset pricing model.**

3 A. The CAPM is the best-known model of risk and return.⁸ The CAPM is the work of Nobel
4 prize-winning economists and provides a method to estimate the risk and expected return
5 on a risky asset. The model concludes that the expected return on a risky asset is equal to
6 the sum of the prevailing risk-free interest rate and the market risk premium adjusted for
7 the riskiness of the investment relative to the market. The critical assumptions of the
8 CAPM can be summed up in the following quote from the book, *The Stock Market:
9 Theories and Evidence*:⁹

10
11 The [CAPM] model presents a simple and intuitively appealing
12 picture of financial markets. All investors hold efficient portfolios
13 and all such portfolios move in perfect lockstep with the market.
14 Portfolios differ only in their sensitivity to the market. Prices of all
15 risky assets adjust so that their returns are appropriate, in terms of
16 the model, to their riskiness. This riskiness is measured by a
17 simple statistic, beta, which indicates the sensitivity of the asset to
18 market movements.

19
20 According to a 2001 study published in the *Journal of Financial Economics*, among CFOs
21 the CAPM is by far the most popular method of estimating the cost of equity.¹⁰

22
23 **Q. What is the CAPM formula?**

⁸ Brealey, Richard, Stewart C. Myers. *Principles of Corporate Finance*. 1988. McGraw-Hill. New York. p. 165.

⁹ Lorie, James, Mary T. Hamilton. *The Stock Market: Theories and Evidence*. Richard D. Irwin, Inc. Homewood, Illinois. 1973. p. 202.

¹⁰ Graham, John R., Campbell R. Harvey. "The Theory and Practice of Corporate Finance: Evidence from the Field." *Journal of Financial Economics*. 60 (2001) pp. 187-243.

1 A. The CAPM formula is shown in the following equation:

Equation 5 :

$$K = R_f + \beta (R_m - R_f)$$

where : R_f = risk free rate
 R_m = return on market
 β = beta
 $R_m - R_f$ = market risk premium

2

3 Q. How was the CAPM implemented to estimate Arizona Water's cost of equity?

4 A. Staff implemented the CAPM on the same sample water companies to which it applied the
5 DCF model.

6

7 Q. What risk-free rate of interest did Staff estimate?

8 A. Staff estimated the risk-free rate to be 3.3 percent. The estimate is based upon an average
9 of intermediate-term U.S. Treasury securities' spot rates published in *The Wall Street*
10 *Journal*. Published rates, as determined by the capital markets, are objective, verifiable,
11 and readily available, as opposed to rates published by a forecasting service which are not
12 necessarily objective, and are certainly not necessarily verifiable or readily available.
13 Staff averaged the yields-to-maturity of three intermediate-term¹¹ (five-, seven-, and ten-
14 year) U.S. Treasury securities quoted in the May 7, 2003, edition of *The Wall Street*
15 *Journal*. Intermediate-term rates averaged 3.3 percent.¹²

¹¹ The use of intermediate-term securities is based on the theoretical specification that the time to maturity approximates the investor's holding period, and assumes that most investors consider the intermediate time frame (5-10 years) a more appropriate investment horizon. See Reilly, Frank K., and Keith C. Brown. Investment Analysis and Portfolio Management. 2003. South-Western. Mason, OH. pp. 438 - 439.

¹² Average yield on 5-, 7-, and 10-year Treasury notes according to the May 7, 2003, edition of *The Wall Street Journal*: 2.74%, 3.38%, and 3.80%, respectively.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

Q. What beta (β) did Staff use?

A. Staff used the average of the *Value Line* betas for the six sample water companies in its analysis as a proxy for Arizona Water's beta. Column 'F' of Schedule JMR-5 shows that the average *Value Line* beta is .59 for the sample water companies.

Q. Please describe the expected market risk premium ($R_m - R_f$).

A. The expected market risk premium is the amount of additional return that investors expect from investing in the market (or an average-risk security) over the risk-free asset.

Q. What is Staff's range of market risk premium estimates?

A. Staff's range of estimates for the market risk premium is 7.4 percent to 13.1 percent.

Q. How did you calculate your market risk premium range?

A. Two approaches were used. The first approach is an estimate of the historical market risk premium. The second approach is an estimate of the current market risk premium.

Q. Please describe Staff's first approach to estimating the market risk premium: estimating the historical market risk premium.

A. For the first approach, Staff assumed that the average historical market risk premium is a reasonable estimate of the expected market risk premium. If one consistently uses the long-run average market risk premium to estimate the expected market risk premium, one should, on average, be correct.

1 Staff used the historical intermediate-term market risk premium published in Ibbotson
2 Associates' *Stocks, Bonds, Bills and Inflation 2003 Yearbook* for the 77-year period from
3 1926 to 2002. Ibbotson Associates' calculation is the arithmetic average difference
4 between S&P 500 returns and intermediate-term government bond income returns. The
5 77-year period is used to eliminate shorter-term biases while at the same time including
6 unexpected past events including business cycles. Staff's market risk premium estimate
7 using this approach is 7.4 percent.

8
9 **Q. Please describe the second approach to estimating the market risk premium:
10 estimating the current market risk premium.**

11 **A.** Staff's second approach essentially boils down to inserting a DCF-derived ROE into the
12 CAPM equation, along with a beta and long-term risk-free rate, and solving the CAPM
13 equation for the implied market risk premium. *Value Line* projects the expected dividend
14 yield (next 12 months) and growth for all dividend-paying stocks under its review.
15 According to the May 2, 2003, edition of *Value Line*, the expected dividend yield is 2.1
16 percent and the expected annual growth in share price is 15.83 percent.¹³ Therefore, the
17 constant-growth DCF estimate of the cost of equity to all dividend-paying stocks followed
18 by *Value Line* is 17.9 percent. Using a beta of 1.00 and the current long-term risk-free
19 rate of 4.76 percent, the implied current market risk premium is 13.1 percent.¹⁴

20
21 **Q. What are the results of Staff's CAPM analysis?**

¹³ 3 to 5 year price appreciation potential is 80%. $1.80^{1/4} - 1 = 15.83\%$

¹⁴ $17.9\% = 4.76\% + 1.00 \times (\text{current market risk premium})$; $13.1\% = \text{current market risk premium}$.

A long-term rate is used here because the constant-growth DCF model does not assume a holding period other than infinity, which is a very long time. Therefore, a long-term risk-free rate is used for consistency.

1 A. Schedule JMR-7 shows the results of Staff's CAPM analysis. Staff's CAPM cost of
2 equity estimates are also shown in the following table:

3 **Table 6**

CAPM	Resulting Cost of Equity Estimate
Historical Market Risk Premium	7.7
Current Market Risk Premium	11.1
Average	9.4

4
5 **IV. FINAL COST OF EQUITY ESTIMATES FOR ARIZONA WATER**

6 **Q. Please summarize the results of Staff's cost of equity analysis.**

7 **A. The following table shows the results of Staff's cost of equity analysis:**

8
9 **Table 7**

Method	Estimate
Constant Growth DCF	8.5%
Multi-Stage DCF	9.6%
Average DCF Estimate	9.0%
Historical MRP CAPM	7.7%
Current MRP CAPM	11.1%
Average CAPM Estimate	9.4%
Average	9.2%

10
11 Based on the results shown in Table 7, Staff would conclude that the cost of equity to the
12 water utility industry is somewhere in the range of 7.7 percent to 11.1 percent. The
13 average of Staff's DCF and CAPM estimates are 9.0 percent and 9.4 percent, respectively.

14
15 **Q. What are Staff's cost of equity estimates for the sample gas companies?**

16 **A. Staff's cost of equity analysis for the sample gas companies is shown on Schedules JMR-**

1 12 through JMR-18. The average of Staff's DCF and CAPM estimates of the cost of
2 equity to the sample gas companies is 10.3 percent.

3
4 **Q. Are the sample gas companies riskier than the sample water companies?**

5 A. Yes. The average beta of the sample water companies is .59 (Schedule JMR-5). The
6 average beta of the sample gas companies is .69 (Schedule JMR-16). Based on Staff's
7 CAPM analysis, the cost of equity to the sample gas companies is approximately 100 basis
8 points *higher* than the cost of equity to the sample water companies based on the
9 difference in risk. Therefore, Staff's estimate of the cost of equity to the sample gas
10 companies would require a *significant downward adjustment*, in addition to a capital
11 structure adjustment (discussed later), in order to be applied to Arizona Water.

12
13 **Q. What is Staff's ROE recommendation for Arizona Water?**

14 A. Staff's ROE recommendation for Arizona Water is 9.0 percent. This is at the lower end of
15 Staff's average DCF and CAPM cost of equity cost estimates. Staff is recommending a
16 ROE lower than its average estimate of 9.2 percent because Arizona Water's capital
17 structure reflects lower financial risk than that of the sample water companies. The
18 business risks associated with the nature of water utility operations have been accounted
19 for through Staff's selection of proxy companies.

20
21 **The Effect of Arizona Water's Capital Structure on its Cost of Equity**

22 **Q. Is there an accepted formula by which the effect of Arizona Water's capital structure**
23 **on its cost of equity can be estimated?**

24 A. Yes. The effect that a company's capital structure has on its cost of equity can be
25 estimated by adjusting beta to reflect an increase or decrease in leverage. The *Value Line*

1 betas for the sample water companies are “levered” betas – they reflect investors’
2 perceptions of both the business risks and the financial risks of the firm. In other words,
3 one portion of the *Value Line* beta is related to the business risk of the firm and one
4 portion of the *Value Line* beta is related to the financial risk of that firm. We already
5 know the capital structures and beta for each of the sample water companies followed by
6 *Value Line*. Therefore, if we remove from each firm’s beta that portion of risk related to
7 the use of debt, we can estimate what the firm’s beta would be if it were financed entirely
8 with equity capital. This is known as the “unlevered” beta.¹⁵ The following equation is
9 used to estimate the unlevered beta for a firm:

10
Equation 6 :

$$\beta_{UL} = \frac{\beta_L}{1 + BD \div EC (1 - t)}$$

Where :

β_{UL} = unlevered beta
 β_L = levered beta
 BD = book debt
 EC = equity capital
 t = tax rate

11
12 **Q. Did Staff calculate unlevered betas for the sample water companies?**

13 A. Yes. Schedule JMR-9 shows how Staff calculated the unlevered beta for each of the
14 sample water companies. The following table shows that the average raw beta¹⁶ of the

¹⁵ Unlevered betas are discussed on page 38 of *Cost of Capital: 2002 Yearbook*, published by Ibbotson Associates. Pp. 37-38.

¹⁶ Betas published by *Value Line* have been “adjusted” for their presumed long-term tendency to converge toward 1.0. The adjustment process pushes high betas down toward 1.0 and low betas up toward 1.0. For purposes of calculating the capital structure adjustment to the cost of equity, Staff first “unadjusted” the *Value Line* betas to arrive

1 sample water companies decreases from .36 to .22 with the removal of all risk related to
2 the use of debt. Therefore, a raw beta of .22 represents investors' perceptions of the
3 business risks associated with the sample companies. Additionally, .22 represents what
4 the sample companies' raw beta would be if they were financed entirely with equity.

6 **Table 7**

Company	Value Line (levered) Raw Beta	Unlevered Raw Beta
American States Water	.37	.22
California Water Service	.37	.21
Connecticut Water Service	.37	.24
Middlesex Water	.30	.17
Philadelphia Suburban	.52	.30
SJW Corp.	.22	.16
Average	.36	.22

7
8 **Q. Is there a method by which the unlevered beta can be "relevered" using the capital**
9 **structure of Arizona Water to arrive at a beta that is more representative of Arizona**
10 **Water's financial risk?**

11 **A. Yes.** On average, the capital structures of the sample water companies are more
12 leveraged, and reflect greater financial risk than Arizona Water's capital structure in this
13 proceeding. In order to calculate a beta that is more representative of Arizona Water's
14 financial risk, the unlevered beta discussed above can be relevered using Arizona Water's
15 capital structure. The following formula is used to calculate the relevered beta:

at the "raw" beta, then "readjusted" the raw beta consistent with the method used by *Value Line*. The *Value Line* adjustment formula is [(raw beta x 0.67) + 0.35].

Equation 7:

$$\beta_{RL} = \beta_{UL} (1 + (1-t)BD \div EC)$$

Where:

β_{RL} = relevered beta

β_{UL} = unlevered beta

t = tax rate

BD = book debt

EC = equity capital

1

2

Schedule JMR-10 shows Staff's calculation of the relevered beta. Staff has calculated the relevered raw beta to be .28. When adjusted, the relevered raw beta becomes .53.

3

4

5

Q. Can the relevered beta be used to estimate the effect of Arizona Water's capital structure on its cost of equity?

6

7

A. Yes. Once the relevered beta has been determined, the CAPM can be used to estimate the impact of the Company's capital structure on its cost of equity. Schedule JMR-11 shows Staff's CAPM estimates of the cost of equity using the *Value Line* levered beta (lines 1 – 3) as well as the relevered beta of .53 (lines 6 – 8). Column E of the same schedule shows the required capital structure adjustment to the cost of equity, this is the simple difference between the cost of equity estimates derived from the *Value Line* levered beta and the estimates derived from the relevered beta. On average, Arizona Water's cost of equity is approximately 60 basis points *lower* than the cost of equity to the sample water companies.

8

9

10

11

12

13

14

15

16

1 Q. How does this reconcile with Staff's final ROE recommendation of 9.0 percent?

2 A. Staff concludes that the cost of equity to the water utility industry is somewhere in the
3 range of 7.7 percent to 11.1 percent. Staff's recommended ROE of 9.0 percent is at the
4 lower end of Staff's average of DCF and CAPM estimates, and is therefore reasonable.

5
6 **V. RATE OF RETURN RECOMMENDATION**

7 Q. What is Staff's rate of return recommendation for Arizona Water?

8 A. Staff recommends a ROR of 8.6 percent for Arizona Water, as shown in Schedule JMR-8
9 and the following table:

10
11 **Table 8**

	Weight	Cost	Weighted Cost
Long-term Debt	28.2%	8.46%	2.39%
Short-term Debt	5.6%	4.0%	0.22%
Common Equity	66.1%	9.0%	5.95%
Cost of Capital/ROR			8.6%

12
13 **Financial Integrity**

14 Q. Will Staff's recommendation allow Arizona Water to maintain its financial integrity?

15 A. Yes. Staff's ROR recommendation results in a pre-tax interest coverage ratio of 4.7,
16 calculated in column F of Schedule JMR-8. Interest coverage is one of the determinants
17 of a company's bond rating – a higher ratio of earnings to interest results in a higher bond
18 rating.¹⁷ According to Standard & Poors 2002 Corporate Ratings Criteria, the median
19 interest coverage ratio for an 'A' rated U.S. electric utility (Staff's most available proxy
20 for a water company) is 3.4.¹⁸

¹⁷ Brealey, Richard, Stewart C. Myers. *Principles of Corporate Finance*. 1995. McGraw-Hill. New York. p. 671.

¹⁸ Standard & Poors 2002 Corporate Ratings Criteria. P. 54.

1
2 **VI. COMMENT ON THE DIRECT TESTIMONY OF COMPANY WITNESS THOMAS**

3 **M. ZEPP**

4 **Q. Please summarize Dr. Zepp's ROE recommendations, analyses, and estimates.**

5 A. Dr. Zepp recommends a 12.4 percent ROE. He calculates DCF estimates for a sample of
6 water utilities and a sample of gas utilities. He also conducts three risk premium analyses
7 based on water utilities and gas utilities. The average of all his equity cost estimates is
8 11.2 percent.¹⁹ He argues that Arizona Water faces additional risk compared to larger,
9 publicly traded utilities, so he recommends adding a 100 to 150 basis point risk premium
10 to his results to arrive at his final recommendation of 12.4 percent.

11
12 **Dr. Zepp's DCF Estimates**

13 **Q. Does Staff have any comments on Dr. Zepp's DCF estimates?**

14 A. Yes, Staff has seven comments on Dr. Zepp's DCF estimates:

- 15 1. Staff disagrees with Dr. Zepp's exclusion of Connecticut Water and Middlesex Water
16 from his sample of water utilities.
- 17 2. Staff disagrees with Dr. Zepp's exclusion of Cascade Natural Gas and Southwest Gas
18 from his sample of gas distribution utilities.
- 19 3. Dr. Zepp's conclusion that gas utilities and water utilities have approximately the same
20 level of risk is incorrect.
- 21 4. The use of a historical average dividend yield in the constant growth DCF formula is
22 inappropriate and should not be given weight by the Commission.
- 23 5. Dr. Zepp's calculation of projected near-term earnings growth contains two errors.

¹⁹ Direct testimony of Thomas M. Zepp, Table 25.

1 6. Dr. Zepp's sole reliance on analysts' forecasts of future growth is inappropriate and
2 results in inflated cost of equity estimates.

3 7. Dr. Zepp did not consider DPS growth in his DCF analysis. However, DPS growth is a
4 fundamental component of a constant-growth DCF method such as Dr. Zepp uses.

5
6 I discuss these seven points below.

7
8 *Sample Selection Problems*

9 **Q. Explain how Dr. Zepp's exclusion of Connecticut Water and Middlesex Water from**
10 **his sample of water utilities is inappropriate.**

11 A. Dr. Zepp's exclusion of Connecticut Water and Middlesex Water from his sample of
12 water utilities is inappropriate because he provides no sound basis for excluding them.
13 According to Dr. Zepp, Connecticut Water and Middlesex Water "have experienced
14 increases in common stock prices that are substantially above the increases in prices for
15 other water utility stocks and thus appear to be acquisition or merger candidates." (See
16 direct testimony of Thomas M. Zepp, p. 10 at 19-21.)

17
18 **Q. Why would it be difficult to estimate the cost of equity using the DCF method if**
19 **acquisition targets were included in the sample?**

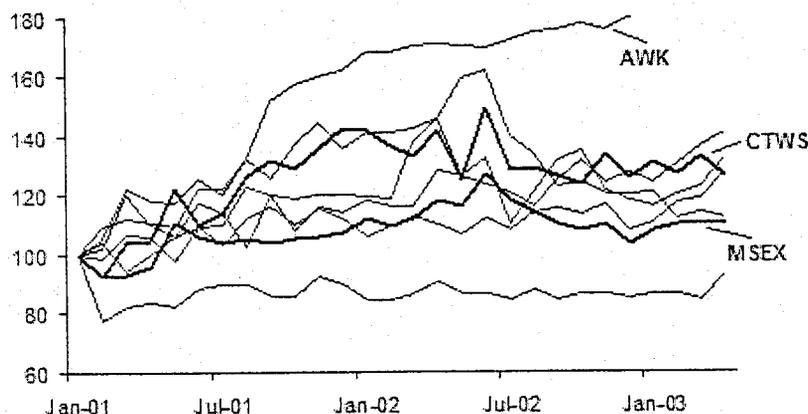
20 A. If a company is expected to be acquired at a premium, investors will bid the price of its
21 stock up (and its dividend yield down) and the DCF method could understate the cost of
22 equity.

23

1 Q. Have Connecticut Water and Middlesex Water experienced increases in common
2 stock prices that are substantially above the increases in prices for the other *Value*
3 *Line* water utilities?

4 A. No. In Chart 3 I have indexed the stock prices of the *Value Line* water utilities for
5 January 2001 through April 2003. As Chart 3 shows, one cannot reasonably draw the
6 conclusion that Connecticut Water (CTWS) and Middlesex Water (MSEX) are acquisition
7 targets based solely on their stock prices.²⁰ By contrast, American Water Works (AWK)
8 experienced substantial increases in its stock price in anticipation of its acquisition in
9 January 2003, by RWE, AG, a German conglomerate.

10
11 Chart 3: Indexed Returns for *Value Line* Water Utilities



19 Q. Does Dr. Zepp offer any evidence such as press releases, announcements, or news
20 articles that would suggest Connecticut Water and Middlesex Water, specifically, are
21 acquisition targets?

22 A. No. Dr. Zepp only offers his opinion. Regardless of such information, stock prices do not
23 appear to have been bid up to make DCF estimates underestimate the cost of equity.

²⁰ Chart 3 shows what \$100 invested in each of the *Value Line* water utilities in January 2001 would be worth as of April 2003.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19

Q. Why does Staff disagree with Dr. Zepp's exclusion of Cascade Natural Gas and Southwest Gas from his sample of gas distribution utilities?

A. Staff disagrees with Dr. Zepp's exclusion of Cascade Natural Gas and Southwest Gas from his sample of gas utilities based on their medium-grade bond ratings. Bonds rated Baa (medium-grade) or above, are known as investment-grade securities,²¹ and are therefore included in Staff's sample of gas utilities.

Risk Comparison Problem

Q. Why is Dr. Zepp's conclusion that gas utilities and water utilities have approximately the same level of risk incorrect?

A. Dr. Zepp's conclusion that gas utilities and water utilities have approximately the same level of risk is incorrect because the average beta for the sample gas companies is .69, whereas the average beta for the sample water companies is .59.²² Looking at the more relevant unadjusted betas, the difference is even more pronounced.²³ The average unadjusted beta for the sample gas companies is .51, while the average unadjusted beta for the sample water companies is .36.²⁴ Therefore, according to standard corporate finance principles, the sample gas companies are riskier in terms of market risk. Based on Staff's CAPM analysis, the cost of equity to the sample gas companies is approximately 100 basis

²¹ Brealey, Richard A., Stewart C. Myers. Principles of Corporate Finance. 1988. McGraw-Hill. New York. P. 563.

²² See Column F of Schedule JMR-5 and Column F of Schedule JMR-16.

²³ Betas published by *Value Line* have been "adjusted" for their long-term tendency to converge toward 1.00. The adjustment process pushes high betas down toward 1.0 and low betas up toward 1.0.

²⁴ See Column G of Schedule JMR-5 and Column G of Schedule JMR-16.

1 points higher than the cost of equity to the sample water companies, based on the
2 difference in market risk.

3
4 Q. Are Dr. Zepp's final cost of equity estimates consistent with his testimony that "the
5 average risk for the gas utilities sample is approximately the same as the average risk
6 for the water utilities sample?" (See direct testimony of Thomas M. Zepp. P. 35 at 7
7 - 9.)

8 A. No. First, Dr. Zepp *assumes* that "the average risk for the gas utilities sample is
9 approximately the same as the average risk for the water utilities sample." (See direct
10 testimony of Thomas M. Zepp. P. 35 at 7 - 9.) Then, he implicitly assumes that gas
11 utilities are riskier than water utilities by adjusting his estimates of the cost of equity to the
12 gas utilities downward by 50 basis points. However, his adjustment is too small and
13 appears to be arbitrary. As I stated previously, based on Staff's CAPM analysis, the cost
14 of equity to the sample gas companies is approximately 100 basis points higher than the
15 cost of equity to the sample water companies, based on the difference in market risk.

16
17 *Miscalculated Price Problem*

18 Q. Explain how Dr. Zepp's DCF estimates based on 3-month and 12-month average
19 stock prices are inappropriate.

20 A. Dr. Zepp's DCF estimates based on 3-month and 12-month average stock prices are
21 inappropriate because only the most recent spot stock price is relevant. The expected
22 dividend yield requires the most recent spot stock price in the denominator of the
23 calculation (D_1/P_0). Professor Myron Gordon, the father of modern DCF analysis advises:
24

1 The term for dividend yield in the Eq. [1] expression for a share's
2 yield is the forecast dividend for the coming period, D_1 , divided by
3 the current price, P_0 . The value assigned to P_0 should be the price
4 of the share at the time the share yield is being estimated. The
5 rationale for using the current price is that at each point in time it
6 reflects all the information available to a company's investors
7 regarding future dividends.²⁵

8 The most recent stock price is the only appropriate price to use in the denominator of the
9 DCF equation in order to maintain consistency with the efficient markets hypothesis, a
10 crux of modern corporate finance theory.

11
12 **Q. Can Staff cite any further support for the use of a spot yield rather than a historical**
13 **average?**

14 A. Yes. The tendency of some analysts to violate financial principles and use a historical
15 average dividend yield was the focus of a February 1, 1996, article in *Public Utilities*
16 *Fortnightly*:

17
18 To the extent that prior yields form a reference point for
19 expectations of future yields, the information content of historic
20 yields is already included in the current spot yield. Thus, to average
21 the historic yield with the spot yield simply double counts any
22 relevant historic information and leads us away from rather than
23 toward the actual future yield.

24
25 Note also that by averaging historical data we introduce more
26 distant data into the analysis. This forces us to put less weight on
27 the current spot yield, so that we can consider yields estimated in a
28 period where market participants knew less about next year than
29 they do today. This simply does not make sense.²⁶

30

²⁵ Testimony of professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier Bureau), FCC Docket 79-63, p. 63.

²⁶ Kihm, Steven G. "The Superiority of Spot Yields in Estimating Cost of Capital." *Public Utilities Fortnightly*. February 1, 1996. pp. 42-45.

1 Q. Has the Commission ruled on the use of spot market data in estimating the cost of
2 capital?

3 A. Yes. In Decision No. 64727, dated April 17, 2002, the Commission agreed with Staff's
4 use of spot market data in estimating the cost of debt and equity.²⁷

5
6 *Growth Calculation Problem*

7 Q. Are there any errors in Dr. Zepp's calculation of projected near-term earnings
8 growth?

9 A. Yes, there are two errors. First, according to his Table 15, Dr. Zepp relies on *First Call's*
10 near-term earnings growth forecast for the entire water utility industry rather than
11 averaging the available *First Call* near-term earnings growth forecasts for each firm in his
12 sample. Dr. Zepp's second error is the omission of Philadelphia Suburban Corporation
13 from his average of *Value Line* projected near-term earnings growth.

14
15 Q. Explain how relying on the near-term earnings growth forecast for the entire water
16 utility industry instead of averaging the available near-term earnings growth
17 forecasts for each firm in the sample is inappropriate.

18 A. Relying on the near-term earnings growth forecast for the entire water utility industry
19 instead of averaging the available near-term earnings growth forecasts for each firm in the
20 sample is inappropriate because it creates a mismatch between the expected dividend
21 growth rate and the expected dividend yield. Applying the expected dividend growth rate
22 for one group of companies to the expected dividend yield of another group when the first
23 group may have increased its retention rate (reduced its payout ratio) will result in a

²⁷ Application of Black Mountain Gas Company. Docket No. G-03703A-01-0263.

1 The term for dividend yield in the Eq. [1] expression for a share's
2 yield is the forecast dividend for the coming period, D_1 , divided by
3 the current price, P_0 . The value assigned to P_0 should be the price
4 of the share at the time the share yield is being estimated. The
5 rationale for using the current price is that at each point in time it
6 reflects all the information available to a company's investors
7 regarding future dividends.²⁵

8 The most recent stock price is the only appropriate price to use in the denominator of the
9 DCF equation in order to maintain consistency with the efficient markets hypothesis, a
10 crux of modern corporate finance theory.

11
12 **Q. Can Staff cite any further support for the use of a spot yield rather than a historical**
13 **average?**

14 **A. Yes.** The tendency of some analysts to violate financial principles and use a historical
15 average dividend yield was the focus of a February 1, 1996, article in *Public Utilities*
16 *Fortnightly*:

17
18 To the extent that prior yields form a reference point for
19 expectations of future yields, the information content of historic
20 yields is already included in the current spot yield. Thus, to average
21 the historic yield with the spot yield simply double counts any
22 relevant historic information and leads us away from rather than
23 toward the actual future yield.

24
25 Note also that by averaging historical data we introduce more
26 distant data into the analysis. This forces us to put less weight on
27 the current spot yield, so that we can consider yields estimated in a
28 period where market participants knew less about next year than
29 they do today. This simply does not make sense.²⁶

30

²⁵ Testimony of professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier Bureau), FCC Docket 79-63, p. 63.

²⁶ Kihm, Steven G. "The Superiority of Spot Yields in Estimating Cost of Capital." *Public Utilities Fortnightly*. February 1, 1996. pp. 42-45.

1 Q. Has the Commission ruled on the use of spot market data in estimating the cost of
2 capital?

3 A. Yes. In Decision No. 64727, dated April 17, 2002, the Commission agreed with Staff's
4 use of spot market data in estimating the cost of debt and equity.²⁷

5
6 *Growth Calculation Problem*

7 Q. Are there any errors in Dr. Zepp's calculation of projected near-term earnings
8 growth?

9 A. Yes, there are two errors. First, according to his Table 15, Dr. Zepp relies on *First Call's*
10 near-term earnings growth forecast for the entire water utility industry rather than
11 averaging the available *First Call* near-term earnings growth forecasts for each firm in his
12 sample. Dr. Zepp's second error is the omission of Philadelphia Suburban Corporation
13 from his average of *Value Line* projected near-term earnings growth.

14
15 Q. Explain how relying on the near-term earnings growth forecast for the entire water
16 utility industry instead of averaging the available near-term earnings growth
17 forecasts for each firm in the sample is inappropriate.

18 A. Relying on the near-term earnings growth forecast for the entire water utility industry
19 instead of averaging the available near-term earnings growth forecasts for each firm in the
20 sample is inappropriate because it creates a mismatch between the expected dividend
21 growth rate and the expected dividend yield. Applying the expected dividend growth rate
22 for one group of companies to the expected dividend yield of another group when the first
23 group may have increased its retention rate (reduced its payout ratio) will result in a

²⁷ Application of Black Mountain Gas Company. Docket No. G-03703A-01-0263.

1 meaningless cost of equity estimate. The following figure shows how a mismatch of this
 2 type can result in a meaningless cost of equity estimate:

3
 4
 5 **Figure 1**
 6 **Result of Mismatching Expected Growth and Expected Dividend Yield**

	Expected Dividend Yield $\frac{D_1}{P_0}$	Expected Dividend Growth g	Retention Ratio b	Equity Cost Estimate k
Company A	5%	5%	50%	10%
Company B	2.5%	7.5%	75%	10%
				12.5%

7
 8
 9
 10
 11
 12 Figure 1 shows cost of equity estimates for two companies. The cost of equity estimate is
 13 10 percent for each company. However, as shown in the diagram, Company B has
 14 increased its growth rate by increasing its retention ratio (and reducing its payout ratio,
 15 hence the lower dividend yield).²⁸ As shown in Figure 1, even though both companies
 16 may be in the same industry and have the same required return, adding the expected
 17 dividend growth rate of Company B to the expected dividend yield of Company A will
 18 result in a meaningless cost of equity estimate.

19
 20 In order to match his estimate of the expected dividend yield with his estimate of expected
 21 dividend growth, Dr. Zepp should have used an average of the available *First Call* near-

²⁸ Reilly, Frank K., Keith C. Brown. Investment Analysis and Portfolio Management. South-Western. 2003. Mason, OH. pp. 399-400.

1 term earnings growth forecasts for each firm in his sample when estimating projected
2 near-term earnings growth. This growth rate is lower than *First Call's* near-term earnings
3 growth forecast for the entire water utility industry.

4
5 *Forecasted Growth Problem*

6 **Q. Explain how Dr. Zepp's exclusive reliance on analysts' forecasts of near-term**
7 **earnings growth is inappropriate to forecast DPS growth and results in inflated cost**
8 **of equity estimates.**

9 **A. Dr. Zepp's exclusive reliance on analysts' forecasts of near-term earnings growth in his**
10 **DCF analysis is inappropriate because it assumes that investors do not look at other**
11 **information such as past dividend growth.**

12
13 **Q. Is there a problem with relying exclusively on analysts' forecasts of near-term**
14 **earnings growth in a DCF analysis.**

15 **A. Yes. Analysts' forecasts of near-term earnings growth are known to be overly optimistic.**

16
17 **Q. How do you respond to Dr. Zepp's statement that, "To the extent that past DPS and**
18 **EPS growth provide an indication of future growth prospects, I assume analysts have**
19 **taken such past information into account when they formed their forecasts of the**
20 **future?" (See direct testimony of Thomas M. Zepp. Page 28 at 7-9.)**

1 A. While I agree that professional analysts may have considered past growth in their
2 forecasts, the appropriate growth rate to use in the DCF formula is the dividend growth
3 rate expected by *investors*, not analysts. Therefore, the reasonable assumption that
4 investors rely, to some extent, on past growth in addition to analysts' forecasts, warrants
5 consideration of both.

6

7 Q. On page 28, footnote 5, of his direct testimony Dr. Zepp cites a study conducted by
8 David A. Gordon, Myron J. Gordon and Lawrence I. Gould²⁹ ("GG&G"), which he
9 claims supports the exclusive use of analysts forecasts in the DCF model. How do
10 you respond?

11 A. I have reviewed the article and found that GG&G do not conclude that investors ignore
12 past growth when pricing stocks. Therefore, the GG&G article does not support the
13 exclusive use of analysts' forecasts in the DCF model.

14

15 Q. In light of his participation in the GG&G study, does Professor Myron Gordon
16 advocate the exclusive reliance on analysts' forecasts in his DCF model?

17 A. No. Subsequent to the GG&G study, Professor Gordon provided the keynote address at
18 the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts, in
19 which he stated:

20 I understand that companies coming before regulatory agencies
21 liked and advocated the high growth rates in security analyst

²⁹ Gordon, David A., Myron J. Gordon, Lawrence I. Gould. "Choice Among Methods of Estimating Share Yield." *The Journal of Portfolio Management*. Spring 1989. pp. 50-55.

1 forecasts for arriving at their cost of equity capital. Instead of
2 rejecting these forecasts, I understand that FERC and other
3 regulatory agencies have decided to compromise with them. In
4 particular, in arriving at the cost of equity for company X, the
5 FERC has decided to arrive at the growth rate in my dividend
6 growth model by using an average of two growth rates. One is
7 security analysts forecast of the short-term growth rate in earnings
8 provided by IBES or Value Line and the other a more long run and
9 typically lower figure such as the past growth in GNP.

10
11 Such an average can be questioned on various grounds. However,
12 my judgement is that between the short-term forecast alone and its
13 average with the past growth rate in GNP, *the latter may be a more*
14 *reasonable figure.*³⁰ (emphasis added)

15
16 **Q. How does Dr. Zepp's exclusive reliance on analysts' earnings forecasts result in**
17 **inflated cost of equity estimates?**

18 A. Dr. Zepp's exclusive reliance on analysts' earnings forecasts results in inflated cost of
19 equity estimates because analysts' earnings forecasts are known to be overly optimistic.
20 To the extent that investors are aware of the bias in analysts' projections of future
21 earnings, they will make appropriate adjustments.

22
23 **Q. Can you provide evidence to support your testimony that analysts' forecasts of**
24 **future earnings are high?**

³⁰ Gordon, M. J. Keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts. May 8, 1998. Transparency 3.

1 A. Yes. Many experts in the financial community have commented on bias/over-optimism in
2 analysts' forecasts of future earnings.³¹ A study cited by David Dreman in his book
3 Contrarian Investment Strategies: The Next Generation found that *Value Line* analysts
4 were optimistic in their forecasts by 9 percent annually, on average for the 1987 – 1989
5 period. Another study conducted by David Dreman found that between 1982 and 1997,
6 analysts overestimated the growth of earnings of companies in the S&P 500 by 188
7 percent.

8
9 Burton Malkiel of Princeton University studied the one-year and five-year earnings
10 forecasts made by some of the most respected names in the investment business. The
11 results showed that when compared with actual earnings growth rates, the five-year
12 estimates of professional analysts were worse than the predictions from several naïve
13 forecasting models, such as the long-run rate of growth of national income. Professor
14 Malkiel discusses the results of his study in the following quote from his book A Random
15 Walk Down Wall Street:

16 When confronted with the poor record of their five-year growth
17 estimates, *the security analysts honestly, if sheepishly, admitted*
18 *that five years ahead is really too far in advance to make reliable*
19 *projections.* They protested that although long-term projections
20 are admittedly important, they really ought to be judged on their
21 ability to project earnings changes one year ahead.

22 Believe it or not, it turned out that their one-year forecasts were
23 even worse than their five-year projections. It was actually harder

³¹ See Seigel, Jeremy J. Stocks for the Long Run. 2002. McGraw-Hill. New York. p. 100. Malkiel, Burton G. A Random Walk Down Wall Street. 1999. W.W. Norton & Co. New York. p. 169. Dreman, David. Contrarian Investment Strategies: The Next Generation. 1998. Simon & Schuster. New York. pp. 97-98. Testimony of Professors Myron J. Gordon and Lawrence I. Gould, consultant to the Trial Staff (Common Carrier Bureau), FCC Docket 79-63, p. 95.

1 for them to forecast one year ahead than to estimate long-run
2 changes.

3 The analysts fought back gamely. They complained that it was
4 unfair to judge their performance on a wide cross section of
5 industries, because earnings for electronics firms and various
6 "cyclical" companies are notoriously hard to forecast. "Try us on
7 utilities," one analyst confidently asserted. So we tried it and they
8 didn't like it. Even the forecasts for the stable utilities were far off
9 the mark. Those the analysts confidently touted as high growers
10 turned out to perform much the same as the utilities for which only
11 low or moderate growth was predicted.³² (emphasis added)

12
13 **Q. Are investors aware of the problems associated with analysts' forecasts?**

14 **A.** Yes. In addition to books, numerous articles appearing in *The Wall Street Journal* and
15 other publications have cast a negative light on research analysts and their forecasts.³³
16 One such article, entitled "Analysts: Still Coming Up Rosy" appeared in the January 27th,
17 2003, edition of *The Wall Street Journal*. According to the article, "stock analysts are
18 unshaken in their optimistic, if delusional, belief that most of the companies they cover
19 will have above average, double-digit growth rates during the next several years. That is,
20 of course, highly unlikely."³⁴ As stated previously, to the extent that investors are aware
21 of the bias in analysts' projections of future earnings, they will make appropriate
22 adjustments.

23

³² Malkiel. pp. 168-169.

³³ See Brown, Ken. "Analysts: Still Coming Up Rosy." *The Wall Street Journal*. January 27, 2003. p. C1. Karmin, Craig. "Profit Forecasts Become Anybody's Guess." *The Wall Street Journal*. January 21, 2003. p. C1. Gasparino, Charles. "Merrill Lynch Investigation Widens." *The Wall Street Journal*. April 11, 2002. p. C4. Elstein, Aaron. "Earnings Estimates Are All Over the Map." *The Wall Street Journal*. August 2, 2001. p. C1. Dreman, David. "Don't Count on those Earnings Forecasts." *Forbes*. January 26, 1998. p. 110.

³⁴ Brown. p. C1

1 Q. Can you identify any other problems with relying exclusively on analysts' forecasts?

2 A. Yes. Another problem with relying exclusively on analysts' forecasts and ignoring past
3 growth is that the results are entirely dependant on the source of the particular forecast.
4 For example, Dr. Zepp uses data from *First Call* and *Value Line* to estimate projected
5 near-term earnings growth. His estimate is 7.0 percent.³⁵ However, *Zacks Investment*
6 *Research*, which is readily available, projects an average near-term earnings growth rate
7 of 5.5 percent for the companies in Dr. Zepp's sample.

8
9 Q. Should Dr. Zepp have considered DPS growth in his DCF analysis?

10 A. Yes. Dr. Zepp's failure to consider DPS growth in his DCF analysis assumes that
11 investors ignore DPS growth when pricing stocks. In the DCF model, the price of a
12 security is the discounted value of cash flows received by the investor. Equity investors
13 receive dividends, not earnings. According to Wharton School finance Professor Jeremy
14 Siegel:

15 Note that the price of the stock is always equal to the present value
16 of all future *dividends* and not the present value of future earnings.
17 Earnings not paid to investors can have value only if they are paid
18 as dividends or other cash disbursements at a later date. Valuing
19 stock as the present discounted value of future earnings is
20 manifestly wrong and greatly overstates the value of the firm.³⁶

21 Q. Has Dr. Zepp agreed with Staff's assumption that investors would look at DPS as
22 well as EPS?

³⁵ His estimate becomes 7.2 percent after correcting the errors discussed in the previous subsection.

³⁶ Siegel. P. 93.

1 A. Yes. In a 1999 Oregon proceeding, when asked if investors preferred DPS growth or EPS
2 growth, Dr. Zepp testified:

3 *According to me, investors would look at both, but this particular*
4 *testimony here refers to your testimony, in which you didn't look*
5 *at earnings per share growth. And my point is, if you're only*
6 *going to look at one – in my view, if you were only going to look*
7 *at one, investors would look at earnings per share growth. That's*
8 *the testimony, and I still stand by that testimony, but as I've stated,*
9 *I would look at both.*³⁷ (emphasis added)

10
11 Additionally, Dr. Zepp testified in the same proceeding:

12 Investors would examine past and forecasted growth in earnings
13 per share ("EPS"), *dividends per share ("DPS")* and other trends
14 that provide indications about what future growth would be.³⁸

15 Therefore, based on his own testimony in a previous proceeding, Dr. Zepp should have
16 considered DPS growth in his DCF analysis.

17
18 **Q. Can you cite any other cost of equity studies for water utilities where Dr. Zepp relied**
19 **on historical DPS growth?**

20 A. Yes. In Table 8 of his direct testimony, Dr. Zepp calculates cost of equity estimates for
21 four California water utilities. In estimating constant dividend growth, Dr. Zepp averages
22 past DPS growth, EPS growth, and sustainable growth.

³⁷ Sworn Testimony of Dr. Thomas M. Zepp, dated January 21, 1999. Before the Public Utility Commission of Oregon. Docket UM 903. p. 9 at 19 – 25 and p. 10 at 1 – 3.

³⁸ Rebuttal Testimony of Thomas M. Zepp, dated December 17, 1998. Before the Public Utility Commission of Oregon. Docket UM 903. p. 17 at 12-14.

1
2 **Dr. Zepp's Risk Premium Estimates**

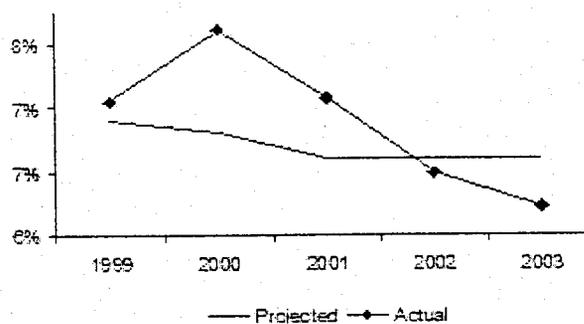
3 **Q. Please describe Dr. Zepp's "risk premium" analysis.**

4 A. Dr. Zepp examines the difference between the returns on proxies for Arizona Water and
5 Baa corporate bond yields. He performed three studies and calculated three ranges of risk
6 premia. He then adds these risk premia to a range of consensus forecasts of the Baa
7 corporate bond rate compiled by *Blue Chip Financial Forecasts*.

8
9 **Q. In general, is Dr. Zepp's "risk premium" method valid to estimate Arizona Water's
10 cost of equity?**

11 A. No. Dr. Zepp's risk premium method is not valid to estimate Arizona Water's cost of
12 equity because it relies on forecasts of the Baa corporate bond rate. The Commission
13 should not rely on forecasts of interest rates. Analysts who forecast future rates do not
14 have any more information about the future than what is already reflected in the current
15 rate. Analysts' tendency to be wrong in their forecasts of future interest rates is illustrated
16 in Chart 4. The graph shows *Blue Chip Financial Forecasts* consensus forecasts of the
17 Aaa corporate bond rate versus the actual rate:

18 **Chart 4: Actual vs. Projected Aaa Bonds**



1 An examination of Dr. Zepp's own risk premium analysis shows how bad professional
2 analysts are at predicting future interest rates. For example, Dr. Zepp relies on a range of
3 consensus forecasts of the Baa bond rate compiled by *Blue Chip Financial Forecasts* in
4 December 2001 for the period 2003 to 2004. This range averages 8.10 percent. As of
5 May 2, 2003, the Baa corporate bond rate was 6.68 percent – a difference of 142 basis
6 points.

7
8 Relying on interest rate forecasts unnecessarily introduces forecasting error into cost of
9 capital calculation, as well as estimation error. Cost of capital estimation errors should be
10 minimized, not enlarged.

11
12 According to Nancy L. Jacob of the University of Washington and R. Richardson Pettit of
13 the University of Houston:

14
15 While we know something about many of the factors that
16 *determine* interest rates (money supply, the demand for loanable
17 funds, etc.) little evidence exists to suggest these factors can be
18 predicted with enough accuracy to successfully *predict* the rates.³⁹

19
20 **Q. Does Staff have any other general concerns about Dr. Zepp's risk premium method?**

21 **A.** Yes. First, while the risk premium approach is based on a general rule of thumb that
22 common stocks are riskier than bonds, the Commission should primarily rely on cost of
23 equity models developed in the corporate finance literature rather than on rules of thumb,
24 to the greatest extent possible. I recommend that the Commission rely on the CAPM
25 rather than Dr. Zepp's "risk premium" method. The CAPM was developed by Nobel

³⁹ Jacob, Nancy L., R. Richardson Pettit. *Investments*. Irwin. Homewood, Ill. 1988. p. 499.

1 Prize winning economists and is the most popular method of estimating the cost of equity
2 among CFOs.⁴⁰

3
4 Second, in his first two studies Dr. Zepp assumes that ROEs authorized by regulatory
5 commissions provide "unbiased estimates of the cost of equity facing utilities at different
6 points in time." (See direct testimony of Thomas M. Zepp. p. 38 at 3-4.) This is
7 problematic because the capital markets determine the cost of equity, not regulatory
8 commissions. Further, this Commission has no way of knowing how these other cases
9 were resolved. Allowed returns often reflect various incentives and disincentives put into
10 place by each state commission for various purposes which likely do not, and would not,
11 apply to Arizona Water. This Commission cannot rely on previously authorized ROE's
12 because it cannot know the particulars behind each case nor could it cross-examine
13 witnesses in those cases even if it did know the particulars.

14
15 Third, Staff has general concerns about the use of a corporate bond rate to imply equity
16 risk premiums. Because a corporate bond contains some default risk which is
17 diversifiable, the investor's expected rate of return is lower than the bond's yield to
18 maturity.⁴¹ Therefore, the yield to maturity on a corporate bond cannot be compared to
19 the cost of equity. Professor Laurence Booth of the Rotman School of Management at the
20 University of Toronto states the following:

21
22 As for the premium over long term A bond yields, it has to be
23 pointed out here that corporate bonds are default risky. The
24 maximum return you can get from a corporate bond held to
25 maturity is the yield to maturity. Since corporate bonds are default
26 risky, the investor's expected rate of return is significantly lower

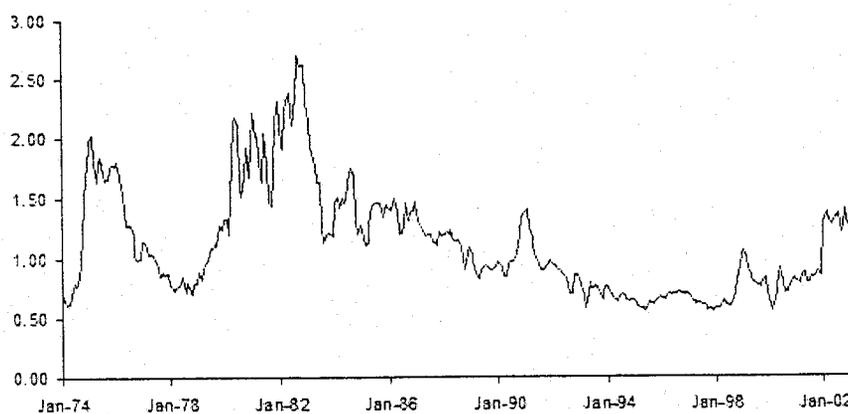
⁴⁰ Graham, John R., Campbel R. Harvey. pp. 187-243.

⁴¹ Weston, J. Fred, Thomas E. Copeland. Managerial Finance. The Dryden Press. 1986. Chicago. pp. 434 - 435.

1 than the yield to maturity. As a result, *the yield to maturity on a*
2 *corporate bond is not an estimate of the investor's required rate of*
3 *return, and cannot be meaningfully compared to the [cost of*
4 *equity]. Only the yield to maturity on a default free government*
5 *bond is an estimate of a required rate of return, similar to the [cost*
6 *of equity]. This is why all risk comparisons should be to*
7 *government default free bonds, otherwise you mix apples and*
8 *oranges.*⁴² (emphasis added)
9

10 Finally, Staff has serious concerns regarding Dr. Zepp's choice of the Baa rated corporate
11 bond rate to calculate his risk premia. This is because risk premiums for securities can
12 change over time.⁴³ Chart 5 shows the spread between the yields to maturity for Aaa-rated
13 corporate bonds and Baa-rated corporate bonds from 1974 through the present. The
14 spread shown in Chart 5 is a measure of the risk premium for investing in higher-risk Baa-
15 rated corporate bonds over low-risk Aaa-rated corporate bonds. Chart 5 supports the
16 statement above that one cannot use corporate bonds to imply meaningful equity risk
17 premiums because the default risk for corporate bonds can change significantly over time.
18

19 Chart 5: Moody's Corporate Bond Yield Spreads (Baa - Aaa)



⁴² Booth, Laurence. "The Importance of Market-to-Book Ratios in Regulation." NRRQ Quarterly Bulletin. Winter 1997. pp. 415 - 425.

⁴³ Reilly, Frank K., Keith C. Brown. Investment Analysis and Portfolio Management. South-Western. 2003. Mason, OH. p. 394.

1 *Dr. Zepp's First Risk Premium Study*

2 **Q. What is Dr. Zepp's first study?**

3 A. Dr. Zepp's first study is based on the difference between past accounting returns on equity
4 to some undefined sample of companies "comparable" to San Gabriel Valley Water
5 Company compiled by the staff of the California Public Utilities Commission ("CPUC")
6 and Baa corporate bond rates. Dr. Zepp's first study also relies on data from *C.A. Turner*
7 *Utility Reports* ("*C.A. Turner*"), and assumes that (1) authorized ROE's equal the cost of
8 equity, and (2) the companies have earned 40 basis points less than their authorized
9 ROE's, and adjusts his risk premia upward on this assumption. His risk premia estimates
10 are 3.21 percent and 3.33 percent.

11
12 **Q. Does Staff have any specific concerns regarding Dr. Zepp's first study?**

13 A. Yes. Dr. Zepp has failed to confirm in his testimony or in his work papers that the
14 companies used by the CPUC staff to calculate accounting returns on equity are (1) all
15 water companies or comparable in risk to Arizona Water, (2) the same, or even
16 comparable in risk, to the companies generating the *C.A. Turner* data, or (3) that they have
17 earned less than their authorized ROE's.

18
19 *Dr. Zepp's Second Risk Premium Study*

20 **Q. What is Dr. Zepp's second study?**

21 A. Dr. Zepp's second study relies on previously authorized ROEs for gas utilities to compute
22 a "risk premium" above the Baa corporate bond rate. His risk premia estimates under this
23 approach are 3.27 percent and 3.37 percent.

24

1 Q. Is Dr. Zepp's second study appropriate?

2 A. No. The Commission should not rely on Dr. Zepp's second study for the reasons stated
3 above with respect to authorized ROEs granted by other commissions in other
4 jurisdictions. Further, Dr. Zepp has not shown that the companies used in his second risk
5 premium study are comparable in risk to Arizona Water, or are water utilities at all.
6

7 *Dr. Zepp's Third Risk Premium Study*

8 Q. What is Dr. Zepp's third study?

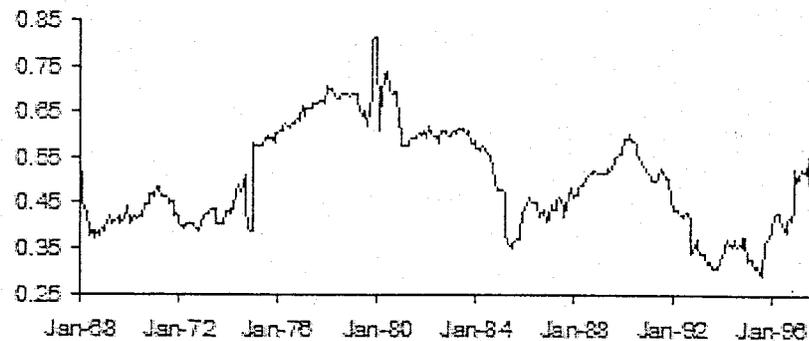
9 A. Dr. Zepp's third study examines the difference between historical returns for Moody's gas
10 distribution utility stock index and Baa corporate bond rates for the period 1954 to 2000.
11 Under this approach, Dr. Zepp calculates an average risk premium of 3.7 percent.
12

13 Q. Is his third risk premium study appropriate?

14 A. No. Dr. Zepp's third risk premium study is not appropriate because he has failed to
15 account for changing industry risk over time. His method is inconsistent with current
16 capital market conditions to the extent that gas distribution utility risk has changed in the
17 past 49 years. The following graph shows the change in average gas distribution utility
18 betas from 1968 to 1997:⁴⁴
19
20
21
22
23

⁴⁴ Sample average raw O.L.S. betas from a sample of nine local distribution companies, calculated at the Public Utility Commission of Oregon.

Chart 6: Average Gas Distribution Utility Betas
Over Time



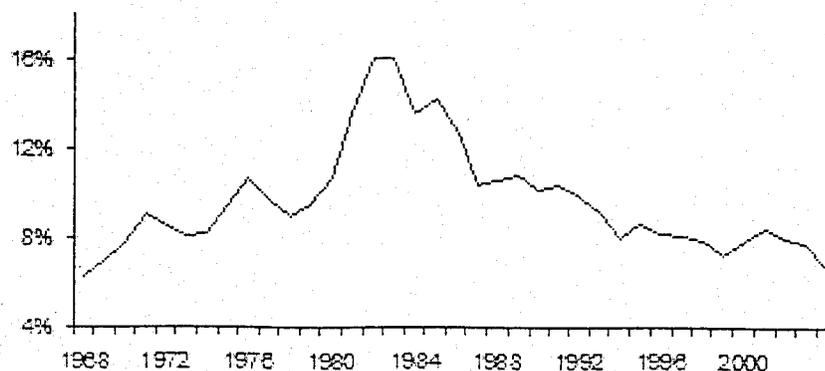
Further, Dr. Zepp has failed to show a relationship between water utility risk and gas distribution utility risk over the past 49 years. Even if he could show such a historical relationship, past risk is not relevant to current risk and its required return.

Dr. Zepp's Testimony on Baa Corporate Bond Rates

Q. In an attempt to "provide a useful perspective to determine what is a fair rate of return today," Dr. Zepp states that "with the exception of the year 2000, interest rates for Baa corporate bonds are higher today than they were in every year since 1996." (See direct testimony Thomas M. Zepp. P. 23 at 6 - 7.) Is he correct?

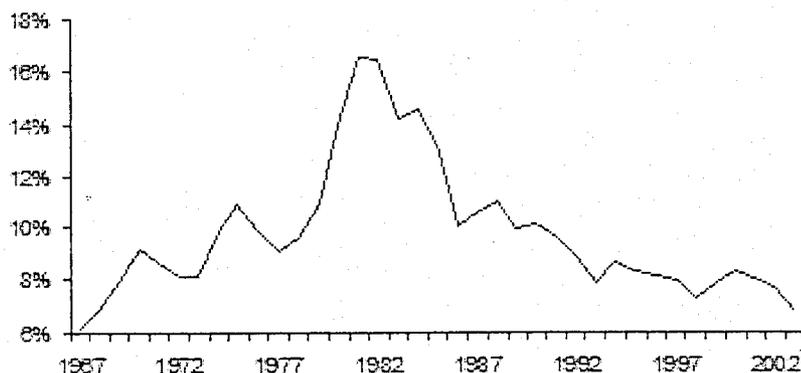
A. No, he is not correct. Actually, interest rates for Baa corporate bonds are *lower* today than they were in every year since 1967. The following graph provides a better perspective:

Chart 7: Baa Rated Corporate Bond Yields



1 Baa-rated *utility* bonds have performed in the same manner. Interest rates for Baa rated
2 utility bonds are *lower* today than they were in every year since 1967. See the following
3 graph:

4 Chart 8: Baa Rated Utility Bond Yields



12 Schedule JMR-19 shows actual Baa corporate and utility bond yields for 1967 to 2003.
13 These low Baa bond yields are consistent with the currently low costs of capital.

14
15 **Q. Does Dr. Zepp's testimony on the Baa corporate bond rate support a cost of equity
16 for water utilities that is significantly below 9.0 percent?**

17 **A.** Yes. In Table 8 of his direct testimony Dr. Zepp calculates DCF cost of equity estimates
18 for four California Class-A water utilities. Dr. Zepp's cost of equity estimates for these
19 water utilities for the year 1997 averages 9.0 percent. The Baa corporate bond rate was
20 7.87 percent in 1997. The Baa corporate bond rate is currently 6.68 percent.⁴⁵ Therefore,
21 assuming there *were* a meaningful relationship between corporate bonds and the cost of
22 equity, Dr. Zepp's own testimony in this proceeding supports a current cost of equity for
23 water utilities below 9.0 percent, relative to past years.
24

⁴⁵ See Schedule JMR-19

1 **Dr. Zepp's Testimony on the Market-to-Book Ratio**

2 **Q.** On page 30 of his direct testimony Dr. Zepp rebuts testimony you gave in a previous
3 proceeding⁴⁶ in which you stated that the financial implication of a market-to-book
4 ratio greater than 1.0 is that investors expect the utility to earn book returns on
5 equity greater than its cost of equity. (See direct testimony of Thomas M. Zepp. p.
6 30 at 20 – 24 and 31 at 1 – 13.) Dr. Zepp characterizes the above implication as a
7 “naïve arithmetic model” and offers several reasons for the market-to-book ratio of a
8 regulated utility to be above 1.0. Please comment.

9 **A.** As I stated in the testimony cited by Dr. Zepp and in Section III of this testimony, rate
10 orders do not force market-to-book ratios to 1.0 for a variety of reasons. However, the
11 fact that market-to-book ratios for regulated companies may be above 1.0 for any of the
12 reasons cited by Dr. Zepp or myself does not mean that this basic proposition in finance is
13 wrong. In the article cited in footnote 42, Professor Booth recognizes different reasons for
14 the market-to-book ratio of a regulated utility to be above 1.0. Professor Booth also states
15 the following:

16
17 Theoretically, there is no question whatsoever that a market-to-
18 book ratio of 1.50 indicates that the [cost of equity] is less than the
19 [allowed rate of return on equity], *we have never even come across*
20 *a company witness who would disagree with that proposition.*⁴⁷
21 (emphasis added)

22
23 **Q.** Does inclusion of the stock financing (vs) growth term in your DCF analysis moot the
24 market-to-book ratio issue?

⁴⁶ See direct testimony of Joel M. Reiker. Docket No. W-02025A-01-0559. p. 14 at 16-18.

⁴⁷ Professor Booth is a colleague of Myron Gordon, who has been characterized in this testimony as the father of modern DCF analysis.

1 A. Yes. Staff included the vs growth term in its intrinsic growth rate calculation to account
2 for the assumption that the average market-to-book ratio for the sample water companies
3 is expected to remain above 1.0.

4
5 **Dr. Zepp's 100 to 150 Basis Point Risk Addition**

6 **Q. Do you recommend the Commission adopt Dr. Zepp's 100 to 150 basis point risk**
7 **addition?**

8 A. No. I recommend that the Commission reject Dr. Zepp's 100 to 150 basis point risk
9 addition. Dr. Zepp justifies his risk addition based on four so-called additional risk
10 factors: (1) bond placement, (2) use of an historical test year, (3) Environmental
11 Protection Agency ("EPA") requirements, (4) potential disallowances, and (5) size. I deal
12 with each of these so-called risk factors in turn, and I show that they do not, or have not
13 been shown to affect the cost of equity.

14
15 *Bond Placement*

16 **Q. On page 21 of his direct testimony Dr. Zepp claims that Arizona Water faces**
17 **additional risks because "traditional lenders were no longer interested in purchasing**
18 **bonds in amounts less than \$20 million, and in general, were now focusing on buying**
19 **issues of \$50 million or more." Has the Company issued bonds in an amount less**
20 **than \$20 million in the past few years?**

21 A. Yes, it has. On April 30, 2001, the Company filed a certificate of compliance with Staff,
22 indicating that on April 12, 2001, it had issued and sold \$15 million of newly authorized
23 general mortgage bonds to Pacific Life & Annuity Company. Therefore, Dr. Zepp's claim
24 is incorrect.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23

Q. Even if the Company did face this unique risk of bond placement would equity investors expect to be rewarded for it?

A. No. Even if Arizona Water did face this unique risk of bond placement, it would not affect its cost of equity. Unsystematic (unique) risk is not priced by the market.⁴⁸

Historical Test Year

Q. On page 13 of his direct testimony Dr. Zepp asserts that Arizona Water faces more risk than the utilities in his sample because it has rates based on an historical test year, with limited ability to make post test year adjustments. Is equity risk related to test year conventions?

A. No. The test year convention does not affect risk. Test years are the vehicle to determine average costs and tariffs. Business risk is mainly related to consumption, which is independent of the test year convention.

Q. Has the Commission ever granted an equity premium to account for its use of a historical test year?

A. No. To my knowledge, the Commission has never granted a ROE premium to account for its use of a historical test year. The Commission should not grant an equity premium to account for a historical test year in this case either.

Q. Even if Staff did not make post test-year adjustments, would the use of a historical test year affect Arizona Water's cost of equity?

⁴⁸ Weston, J. Fred, Thomas E. Copeland. Managerial Finance. 1986. Dryden Press, Chicago. p. 415.

1 A. No. The relevant risk measure of any asset, including Arizona Water's common equity, is
2 its covariance with the market portfolio.⁴⁹ Dr. Zepp has failed to show correlation
3 between the use of a historical test year and the market portfolio. Therefore, even if Staff
4 did not make reasonable post test year adjustments, the use of a historical test year would
5 not affect Arizona Water's systematic risk, the only form of risk relevant to the cost of
6 equity. Dr. Zepp essentially proposes that the Commission give free money to every
7 company its sets rates for, at the expense of Arizona consumers.

8
9 *EPA Requirements*

10 **Q. Dr. Zepp claims that Arizona Water faces new risks related to EPA requirements to**
11 **remove arsenic from water supplies. Do any of the risks Dr. Zepp claims Arizona**
12 **Water faces as a result of a new arsenic standard affect its systematic risk, the only**
13 **form of risk that affects the cost of equity?**

14 A. No. To the extent that any risk related to EPA requirements is unique to Arizona Water, it
15 would not be priced by the market. The market does not price the unique risk of
16 securities.⁵⁰

17
18 **Q. What are the implications of the EPA requirements for Arizona Water?**

19 A. The EPA requirements mean that, at some point in the future, Arizona Water will have to
20 add rate base. However, this growth in the Company's assets is quite simply *growth*, not
21 risk. Dr. Zepp seems to be arguing that bigger is riskier *and* that smaller is riskier.

22

⁴⁹ Reilly, Frank K., Keith C. Brown. *Investment Analysis & Portfolio Management*. 2003. South-Western. Mason, OH. p. 248.

⁵⁰ Weston, J. Fred, Thomas E. Copeland. P. 435.

1 Q. Has the Commission agreed with Staff on this issue?

2 A. Yes. In Arizona Water's last rate case the Commission stated in Decision No. 64282,
3 dated December 28, 2001:

4
5 We do not agree with the Company's proposal to assign a risk
6 premium to Arizona Water based on ... the United States
7 Environmental Protection Agency's ("EPA") proposed revision to
8 the arsenic drinking water standards.

9
10 With respect to the EPA's standards, we note that all water
11 companies will be affected by the new rules and we do not believe
12 that the arsenic standards should be used to attach a higher level of
13 risk to Arizona Water.

14
15 The Commission should make the same finding in this Arizona Water rate case.

16
17 *Potential Disallowances*

18 Q. On page 14 of his direct testimony Dr. Zepp states that the Commission "excluded
19 from rate base \$1.8 million of non-revenue producing plant that was completed and
20 in-service 9 months before the decision." (See direct testimony of Thomas M. Zepp
21 p. 14 at 1 - 4.) Would potential rate base disallowances increase Arizona Water's
22 systematic risk relative to the sample companies?

23 A. No. Dr. Zepp has failed to show how potential rate base disallowances would increase
24 Arizona Water's beta risk relative to the sample companies. All of the sample water
25 companies presumably face the risk of potential disallowances. Therefore, to the extent
26 that it covaries with the market portfolio at all, it is accounted for in Staff's market-based
27 analyses.

28
29 Q. Have any regulatory agencies addressed the issue of rate base disallowances?

1 A. Yes. In Docket No. 89-624 the FCC stated the following:

2
3 Moreover, contrary to Ameritech's position, we are not required to
4 allow a return on all prudently invested capital. See *Duquesne*
5 *Light Co. v. Barasch*, 109 S. Ct. 609 (1989). Rather, we must
6 assure only that the "end result" of our ratemaking decisions is not
7 confiscatory. [FN193] *Id.*, 109 S. Ct. at 619-19. Nothing in the
8 Constitution or in the Communications Act requires the agency to
9 adjust the prescribed rate of return to take into account the
10 agency's policies regarding rate base disallowances.

11
12 Dr. Zepp never shows that the end result of potential disallowances increases systematic
13 risk any more than a normal business suffering a loss.

14
15 *Size*

16 Q. Has the Commission previously ruled on the issue of firm size with regard to the
17 ROE?

18 A. Yes. In Arizona Water's last rate case the Commission said the following in Decision No.
19 64282:

20
21 We do not agree with the Company's proposal to assign a risk
22 premium to Arizona Water based on its size relative to the other
23 publicly traded water utilities...

24
25 Additionally, in Decision No. 64727 (*Black Mountain Gas Company*), dated April 17,
26 2002, the Commission agreed with Staff's position that "the 'firm size phenomenon' does
27 not exist for regulated utilities, and that therefore there is no need to adjust for risk for
28 small firm size in utility rate regulation."
29

1 Q. Is Dr. Zepp correct in his claim that Arizona Water's small size compared to the
2 publicly traded water companies in his sample warrants an additional return?

3 A. No. Several studies have investigated the "firm size phenomenon" – the observation that
4 smaller publicly traded companies have historically earned higher returns than larger
5 companies. One study cited by Dr. Zepp on page 19 of his direct testimony is published
6 by Ibbotson Associates in its annual yearbook: Stocks, Bonds, Bills, and Inflation.
7 Chapter 7 of the Ibbotson Associates yearbook discusses the firm size phenomenon. On
8 average, small companies experienced higher returns than large ones over the 1926 to
9 2001 period. However, the Ibbotson Associates study examines the entire universe of
10 New York Stock Exchange ("NYSE"), American Stock Exchange ("AMEX"), and
11 NASDAQ listed securities and is not specific to the public utility industry.

12
13 Q. Can Staff cite any studies that have focused on the public utility industry and are
14 uniquely helpful to regulators?

15 A. Yes. In 1993 the *Journal of the Midwest Finance Association* published a study by Annie
16 Wong ("Wong study") that examined whether the firm size phenomenon exists in the
17 public utility industry.

18
19 Q. What did the Wong study conclude?

20 A. The Wong study concluded that a firm size risk factor may be required for industrial firms
21 but not for utilities:

22
23 The objective of this study is to examine if the size effect exists in
24 the utility industry. After controlling for equity values, there is
25 some weak evidence that firm size is a missing factor from the
26 CAPM for the industrial but not for the utility stocks. This implies
27 that although the size phenomenon has been strongly documented
28 for the industrials, the findings suggest that *there is no need to*

1 *adjust for the firm size in utility rate regulations.*⁵¹ (emphasis
2 added)

3
4 **Q. To what did the Wong study attribute the irrelevance of size in the utility industry?**

5 A. The study cites the monopolistic power and regulated financial structure of utilities as the
6 main reasons:

7
8 First, given firm size, utility stocks are consistently less risky than
9 industrial stocks. Second, industrial betas tend to decrease with
10 firm size but utility betas do not. These findings may be attributed
11 to the fact that all public utilities operate in an environment with
12 regional monopolistic power and regulated financial structure. *As*
13 *a result, the business and financial risks are very similar among*
14 *the utilities regardless of their sizes. Therefore, utility betas would*
15 *not necessarily be expected to be related to firm size.* (emphasis
16 added)

17
18 **Q. Are there other possible reasons in addition to the above for the absence of a firm**
19 **size phenomenon in the utility industry?**

20 A. Yes. One interesting fact regarding the firm size phenomenon reported by Ibbotson
21 Associates is that “virtually all of the small stock effect occurs in January.”⁵² This
22 becomes important when one considers the firm size phenomenon in conjunction with the
23 “January effect” – historically higher stock returns during the first few days of January.
24 Professor Burton Malkiel of Princeton University provides one possible explanation for
25 the “January effect”.

26
27 One possible explanation for a “January effect” is that tax effects
28 are at work. Some investors may sell securities at the end of the
29 calendar year to establish short-term capital losses for income-tax
30 purposes. If this selling pressure depresses stock prices before the

⁵¹ Wong, Annie. “Utility Stocks and the Size Effect: An Empirical Analysis.” *Journal of the Midwest Finance Association*. 1993. pp. 95 – 101.

⁵² Stocks Bonds Bills and Inflation 2002 Yearbook: Market Results for 1926 – 2001. Ibbotson Associates. 2002. p. 136.

1 end of the year, it would seem reasonable that the bounce-back
2 during the first week in January could create abnormal returns
3 during that period. Although this effect could be applicable for all
4 stocks, *it would be larger for small firms because stocks of small*
5 *companies are more volatile and less likely to be in the portfolios*
6 *of tax-exempt institutional investors and pension funds.*⁵³
7

8 Most public utilities “have returns which do not vary a great deal over time”⁵⁴ and are
9 therefore less volatile than average securities.⁵⁵ Therefore, based on Professor Malkiel’s
10 possible explanation of the January effect, another reason the firm size phenomenon does
11 not exist in the utility industry may exist.

12
13 **Q. On page 20 of his direct testimony Dr. Zepp cites a study conducted by CPUC Staff**
14 **which he claims supports adding a size premium to Arizona Water’s ROE. Should**
15 **the Commission rely on the CPUC Staff study?**

16 **A. No. I reviewed the CPUC Staff study and found several problems with it. The**
17 **Commission should not rely on the CPUC Staff study for the following reasons:**

18
19 1. The focus of the CPUC study is water utilities with fewer than 10,000 service
20 connections. Arizona Water has approximately 60,000 customers.

21
22 2. The CPUC Study is outdated. The Staff report is dated June 10, 1991, and as of that
23 date, the CPUC had not adopted simplified rate filings for water utilities since 1965 (p. 8).
24 The CPUC Staff study was prompted by the financial and operational problems that were
25 plaguing small water utilities in California at that time. The ACC has its own methods by
26 which it addresses the problems of small water utilities.

⁵³ Malkiel. p. 248.

⁵⁴ Jacob, Nancy L., R. Richardson Petit. p. 187.

⁵⁵ This is evidenced by the average beta for utilities.

1
2 3. The CPUC Staff completely ignored corporate financial principles by failing to show
3 how any of the "explanatory variables" such as customer growth per year (p. 19), which
4 they conclude are the cause of smaller utilities' higher risk, covary with the market or
5 increase systematic risk, the only type of risk that affects the cost of equity.
6

7 In addition to the above, the CPUC Staff draws the troubling conclusion that a utility's
8 own failure to file for a rate increase somehow increases risk (p. 30). This flies in the face
9 of modern corporate finance theory. Staff concludes that an educated review of the CPUC
10 Staff report reveals an array of reasons for this Commission to reject it for use in Arizona.
11

12 **Q. In footnote 3 to his direct testimony Dr. Zepp cites a CPUC order ("Park Water**
13 **Order") which supports his testimony on company size. Should the Commission rely**
14 **on the Park Water Order?**

15 **A.** No. I reviewed the Park Water Order and much like the CPUC Staff study, I found
16 several problems with it. The Commission should not rely on the Park Water Order
17 because (1) the CPUC apparently relied on the Ibbotson Associates study (p. 31) discussed
18 above, and (2) the CPUC considered numerous unsystematic risks which, according to
19 modern portfolio theory, would not affect the cost of equity.
20

21 In light of the problems associated with the CPUC Staff study and the Park Water order, I
22 recommend that the Commission avoid following the CPUC with respect to the cost of
23 capital.
24

1 Q. On pages 20 – 21 and Table 8 of his direct testimony Dr. Zepp presents his own study
2 (“Zepp study”) in which he calculates DCF estimates of the cost of equity to four
3 California water utilities. The results of his “study” indicate that the smaller
4 California water utilities had a cost of equity that was, on average, 99 basis points
5 higher than the cost of equity to the larger California water utilities. Should the
6 Commission rely on the Zepp study?

7 A. No. The Commission should reject the Zepp study for three main reasons:

8
9 1. Dr. Zepp did not perform the appropriate statistical test. Performing a standard
10 statistical test known as a confidence interval shows that, with 95 percent confidence, it is
11 plausible that the average difference between the cost of equity to larger and smaller water
12 utilities is zero. Or, that the average cost of equity to *larger* water utilities is as much as
13 78 basis points *higher* than the average cost of equity to smaller water utilities, based on
14 the Zepp study.

15
16 2. The only way Dr. Zepp can find his results statistically significant under his own
17 statistical test is to use an unusually low confidence/significance level.

18
19 3. Dr. Zepp conducted a one-tailed hypothesis test when he should have conducted a two-
20 tailed test.

21
22 Q. Does a standard statistical test show no difference between the costs of equity to large
23 and small water utilities, based on the Zepp study?

24 A. Yes. Conducting a standard statistical test known as a confidence interval shows that the
25 difference between the costs of equity to larger and smaller water utilities may actually be

1 zero, based on the Zepp study. Additionally, a confidence interval based on the Zepp
2 study shows that larger water utilities may have, on average, a *higher* cost of equity than
3 smaller water utilities.⁵⁶ Staff's confidence interval is shown in Exhibit JMR-1.

4
5 Q. On page 21 of his direct testimony Dr. Zepp states that "the t-statistic reported in
6 Table 8 shows that, at a 90% level of confidence, the cost of equity for the smaller
7 water utilities is statistically significantly higher than the cost of equity for the larger
8 water utilities." (See direct testimony of Thomas M. Zepp. p. 21 at 5 - 8.) Are Dr.
9 Zepp's results statistically significant at a common significance level?

10
11 A. No, they are not. The only way Dr. Zepp can conclude that his results are statistically
12 significant is to use an unusually low confidence/significance level.⁵⁷ "The significance
13 level is usually chosen in consideration of other factors that affect and are affected by it,
14 like sample size, estimated size of the effect being tested, and consequences of making a
15 mistake. *Common significance levels are .05 (1 chance in 20), .01 (1 chance in 100), and*
16 *.001 (1 chance in 1,000).*"⁵⁸ Dr. Zepp chose an unusually low significance level of .1 (1
17 chance in 10). For most purposes nothing poorer than a .05 level of significance is good
18 enough.⁵⁹ Had Dr. Zepp chosen a .05 level of significance (95% level of confidence) he

⁵⁶ A confidence interval may be regarded as just a set of acceptable hypotheses. Exhibit JMR-1 shows Staff's confidence interval using data from the Zepp study. Using the sample mean difference in the costs of equity to larger and smaller water utilities of -0.99 percent, along with a 95 percent confidence level, the confidence interval shows that the population mean difference in the costs of equity to larger and smaller water utilities ranges from -2.76 percent to 0.78 percent, based on the Zepp study (see Exhibit JMR-1). This means that any hypothesis that lies between -2.76 percent and 0.78 percent can be judged acceptable. Because 0.00 (zero) percent lies within the confidence interval, the hypothesis that the population mean difference between the costs of equity to larger and smaller water utilities is actually zero cannot be rejected, based on the Zepp study. Additionally, the hypothesis that larger water utilities have, on average, a *higher* cost of equity (up to 78 basis points) than smaller water utilities cannot be rejected.

⁵⁷ The risk of committing a type 1 error (erroneously rejecting the null hypothesis) is called the significance level. A .05 significance level means that there is a 1 chance in 20 of committing a type 1 error.

⁵⁸ Voelker, David H., Peter Z. Orton. Statistics. 1993. Cliffs. p. 78.

⁵⁹ Huff, Darrell. How to Lie with Statistics. 1954. Norton. p. 42.

1 would not be able to conclude that the cost of equity to the smaller water utilities was
2 statistically significantly higher than the cost of equity to the larger water utilities during
3 the period of his study.

4
5 **Q. Should Dr. Zepp have conducted a two-tailed hypothesis test instead of a one-tailed**
6 **test?**

7 **A.** Yes. Dr. Zepp conducted a one-tailed hypothesis test when he should have conducted a
8 two-tailed test. "In practice, you should use a one-tailed test only when you have good
9 reason to expect that the difference will be in a particular direction. A two-tailed test is
10 more conservative than a one-tailed test – it takes a more extreme test statistic to reject the
11 null hypothesis in a two-tailed test."⁶⁰

12
13 In reviewing the Zepp study, I would recommend that one take a "conservative" and
14 unbiased approach to testing its significance: a two-tailed test. Further, by using a one-
15 tailed test, Dr. Zepp is assuming that the average difference in the cost of equity to the two
16 samples only goes in one direction. It is reasonable to assume, however, that the
17 difference may be positive *or* negative. Dr. Zepp unreasonably presumed that a "small
18 company risk premium" necessarily had to be positive. This lack of unbiasedness
19 inappropriately influenced and prejudged his result. In other words, it appears he used a
20 result-driven approach. Staff has shown in its confidence interval (constructed in Exhibit
21 JMR-1) that the hypothesis that larger water utilities have, on average, a *higher* cost of
22 equity (up to 78 basis points) than smaller water utilities cannot be rejected.
23

⁶⁰Voelker, David H., Peter Z. Orton. P. 75.

1 Had Dr. Zepp appropriately used a two-tailed test, even at the unusually low confidence
2 level of 90 percent, he would have concluded that the difference between the costs of
3 equity to the larger and smaller water utilities was not statistically significantly different
4 from zero.

5
6 **Q. Has the Commission previously reviewed the Zepp study?**

7 A. Yes. In Arizona Water's last rate case⁶¹ Dr. Zepp submitted essentially the same study
8 ("2000 Zepp study") as evidence. However, the results were slightly different.

9
10 **Q. Please compare the 2000 Zepp study with the current Zepp study.**

11 A. Exhibit JMR-2 compares the 2000 Zepp study side-by-side with the current Zepp study.
12 Both studies examine the same companies over the same time period and calculate the
13 cost of equity in the same manner using the same average dividend yields. However, by
14 changing the expected dividend growth calculation in the current study, Dr. Zepp has
15 successfully lowered the standard deviation, and increased the statistical significance, of
16 his results. This is yet another reason the Commission should not rely on the current Zepp
17 study. According to Fischer Black, partner at Goldman, Sachs & Co. in New York:

18
19 When a researcher tries many ways to do a study, including
20 various combinations of explanatory factors, various periods, and
21 various models, we often say he is "data mining." If he reports
22 only the more successful runs, we have a hard time interpreting
23 any statistical analysis he does. We worry that he selected, from
24 the many models tried, only the ones that seem to support his
25 conclusions. With enough data mining, all the results that seem
26 significant could be just accidental. (Lo and MacKinlay [1990]
27 refer to this as "data snooping." Less formally, we call it
28 "hindsight.")⁶²

⁶¹ Docket No. W-01445A-00-0962. Filed on November 22, 2000.

⁶² Black, Fischer. "Beta and Return." *The Journal of Portfolio Management*. Fall 1993. pp 8 - 9.

1 By calculating the expected dividend growth rate in a number of different ways, one can
2 use such a "study" to support a wide range of small company "risk premiums".
3

4 **Q. Based on the available evidence, should the Commission award Arizona Water a**
5 **higher ROE based on its size?**

6 **A. No.**
7

8 **Capital Structure Adjustment**

9 **Q. Does Dr. Zepp make an adjustment to his proposed ROE to account for the fact that**
10 **Arizona Water's financial risk is lower than his sample companies' financial risk?**

11 **A. No.** The average capital structure of the companies used in Dr. Zepp's analysis reflects
12 greater financial risk compared to Arizona Water. Therefore, the companies used in Dr.
13 Zepp's analysis have a higher cost of equity than Arizona Water. Dr. Zepp's ROE
14 recommendation for Arizona Water should therefore be lower, rather than higher, than the
15 sample companies.
16

17 Dr. Zepp acknowledges this financial concept in pre-filed testimony in Docket No. WS-
18 01303A-02-0867 et seq. (Arizona-American Water Company, Inc.), in which he adjusts
19 his recommended ROE for increased financial risk. He does not adjust his recommended
20 ROE for *decreased* financial risk in this docket.
21

22 **VII. CONCLUSION**

23 **Q. Please summarize your recommendations.**

24 **A.** Staff recommends the Commission adopt a 9.0 percent ROE, an 8.46 percent cost of long-
25 term debt, a 4.0 percent cost of short-term debt, and an 8.6 percent rate of return. Staff

1 recommends the Commission give little weight to the testimony of the Company's
2 witness, Dr. Thomas Zepp. Staff disagrees with his methods and his estimates are not
3 representative of current costs of equity.

4
5 **Q. Does this conclude your direct testimony?**

6 **A. Yes, it does.**

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Capital Structures of Sample Water Companies
 31-Dec-02

Line No.	[A] Company	[B] Ticker Symbol	[C] Long-Term Debt	[D] Common Equity	[E] Total
1	American States Water	AWR	52.0%	48.0%	100.0%
2	California Water	CWT	55.7%	44.3%	100.0%
3	Connecticut Water Services	CTWS	44.8%	55.2%	100.0%
4	Middlesex Water	MSEX	53.3%	46.7%	100.0%
5	Philadelphia Suburban	PSC	54.2%	45.8%	100.0%
6	SJW Corp.	SJW	41.7%	58.3%	100.0%
7	Average		50.3%	49.7%	100.0%
8					
9	Arizona Water Company		29.9%	70.1%	100.0%
10					
11					
12					
13					
14					
15					
16					

Source: 05/02/2003 Value Line

Arizona Water Company
Calculation of Intrinsic Growth
Sample Water Companies

Line No.	[A] Company	[B] 10-Year Retention Growth br	[C] Projected Retention Growth br	[D] Book Value BV	[E] Market Price MP	[F] $1 - \frac{V}{(BV)/(NP)}$	[G] s	[H] Stock Financing Growth vs	[I] 10-Year Intrinsic Growth br + vs	[J] Projected Intrinsic Growth br + vs
1	American States Water	2.6%	5.0%	14.14	26.0	0.46	2.6%	1.2%	3.8%	6.2%
2	California Water	2.8%	4.0%	13.70	26.9	0.49	0.2%	0.1%	3.0%	4.1%
3	Connecticut Water Service	2.9%	No Projection	9.78	25.4	0.61	1.5%	0.9%	3.8%	No Projection
4	Middlesex Water	1.8%	No Projection	10.06	22.1	0.54	5.8%	3.1%	4.9%	No Projection
5	Philadelphia Suburban	3.7%	8.0%	7.36	23.2	0.68	7.3%	5.0%	8.7%	13.0%
6	SJM Corp.	4.9%	No Projection	53.21	85.5	0.38	0.0%	0.0%	4.9%	No Projection
7										
8	Average	3.1%	5.7%				2.9%		4.8%	7.8%

16 Book value per Schedule JMR-5
17 Market Price per Schedule JMR-5
18 s value = Funds raised from the sale of stock as a fraction of existing common equity over previous seven years.

Arizona Water Company
Calculation of Expected Infinite Annual Growth in Dividends
Sample Water Companies

[A] [B]

Line No.		g
1	10-Year EPS Growth	3.2%
2	Projected EPS Growth	8.7%
3	10-Year DPS Growth	2.5%
4	Projected DPS Growth	2.9%
5	10-Year Intrinsic Growth	4.8%
6	Projected Intrinsic Growth	7.8%
7		
8	Average	4.98%
9		
10		
11		
12	Per Schedule JMR-2 and Schedule JMR-3	

Arizona Water Company
 Selected Financial Data of Sample Water Companies

[A]	[B]	[C]	[D]	[E]	[F]	[G]	
Line No.	Company	Symbol	Spot Price 5/6/03	Book Value 5/6/03	Mkt To Book	Value Line Beta	Raw Beta
1	American States Water	AWR	26.00	14.14	1.8	0.60	0.37
2	California Water	CWT	26.90	13.70	2.0	0.60	0.37
3	Connecticut Water Services	CTWS	25.36	9.78	2.6	0.60	0.37
4	Middlesex Water	MSEX	22.07	10.06	2.2	0.55	0.30
5	Philadelphia Suburban	PSC	23.15	7.36	3.1	0.70	0.52
6	SJW Corp.	SJW	85.50	53.21	1.6	0.50	0.22
7							
8	Average				2.2	0.59	0.36
9							
10							
11							
12							
13							
14							
15							
16							

Arizona Water Company
Multi-Stage DCF Estimates
Sample Water Companies

[A]	[B]	[C]	[D]	[E]	[F]	[G]	[H]	[I]
Line No.	Current Mkt. Price (P_0)	Projected Dividends ¹ (stage 1 growth) (D_t)					Stage 2 growth ² (g_n)	Equity Cost Estimate (K)
		d_1	d_2	d_3	d_4	d_5		
3	26.0	0.88	0.91	0.93	0.96	0.99	6.5%	9.5%
4	26.9	1.12	1.13	1.15	1.16	1.17	6.5%	10.0%
5	25.4	0.85	0.88	0.90	0.93	0.96	6.5%	9.5%
6	22.1	0.88	0.91	0.94	0.97	1.00	6.5%	10.1%
7	23.2	0.58	0.61	0.64	0.68	0.71	6.5%	8.9%
8	85.5	2.95	3.04	3.13	3.23	3.33	6.5%	9.6%
13								
14							Average	9.6%

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)^n} \right]$$

Where: P_0 = current stock price

D_t = dividends expected during stage 1

K = cost of equity

n = years of non-constant growth

D_n = dividend expected in year n

g_n = constant rate of growth expected after year n

¹ d_t (Value Line Companies) = "Est'd Div'd next 12 mos." May 2, 2003, Value Line Selection & Opinion.

² d_t (V.I. Small Cap Editor) = Most recent annualized dividend times 1 plus average projected DPS growth rate.

³ Average annual growth in GDP 1929-2002 in current dollars. <http://www.bea.doc.gov>

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Final Cost of Equity Estimates
 Sample Water Companies

[A]	[B]	[C]	[D]	[E]
Line		D_1/P_0		
No. 1	Constant Growth DCF	3.47%	g	k
2	Constant Growth DCF Estimate		4.98%	8.5%
3	Multi-Stage DCF Estimate			9.6%
4	Average of DCF Estimates			9.0%
5	CAPM Method	Rf	(Rp)	k
6	Historical Market Risk Premium	3.3%	7.4%	7.7%
7	Current Market Risk Premium	3.3%	13.1%	11.1%
8	Average of CAPM Estimates			9.4%
9				
10			Average	9.2%
11				

10/10/80

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Capital Structure
 And Weighted Cost of Capital

[A]	[B]	[C]	[D]	[E]	[F]
Line No.	Weight (%)	Cost	Weighted Cost	Gross Rev. Conv. Factor	Grossed-Up Cost
1	28.24%	8.46%	2.39%	1.00	2.39%
2	5.62%	4.00%	0.22%	1.00	0.22%
3	66.13%	9.0%	5.95%	1.63	9.71%
4	100.0%		8.6%		12.33%

Pre-tax Interest Coverage [4 + (1 + 2)] 4.7

Arizona Water Company
Calculation of Unlevered Beta
Sample Water Companies

[A]	[B]	[C]	[D]	[E]	[F]	
Line No.	Company	Value Line Levered Raw Beta β_L	Tax Rate t	Book Debt (\$mil) BD	Equity Cap (\$mil) EC	Unlevered Raw Beta $\beta_{UL} = \frac{\beta_L}{1 + \frac{BD}{EC}(1-t)}$
1	American States Water	0.37	38.9%	231.1	213.3	0.22
2	California Water	0.37	39.7%	250.4	199.2	0.21
3	Connecticut Water Services	0.37	33.8%	64.8	79.9	0.24
4	Middlesex Water	0.30	33.3%	87.5	76.5	0.17
5	Philadelphia Suburban	0.52	38.5%	582.9	493.1	0.30
6	SJW Corp.	0.22	40.4%	110.0	153.8	0.16
18						
19	Average	0.36				0.22
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						
31						
32						
33						
34						
35						
36						
37						
38						
39						

$$\beta_{UL} = \frac{\beta_L}{1 + \frac{BD}{EC}(1-t)}$$

Where :

- β_{UL} = unlevered beta
- β_L = levered beta
- BD = book debt
- EC = equity capital
- t = tax rate

Arizona Water Company
 Calculation of Relevered Beta

Line No.	[A]	[B]	[C]	[D]	[E]	[F]	[G]
	Unlevered Raw Beta β_{UL}	Book Debt BD	Equity Cap EC	Tax Rate t	Relevered Raw Beta $\beta_{RL} = \beta_{UL} (1 + (1-t)BD/EC)$	Adjusted Relevered Beta β_{RL}	
1							
2	Arizona Water Company	22,600,000	52,916,454	38.7%	0.28	0.53	
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							

$$\beta_{RL} = \beta_{UL} (1 + (1-t)BD \div EC)$$

Where :

β_{RL} = relevered beta

β_{UL} = unlevered beta

t = tax rate

BD = book debt

EC = equity capital

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Capital Structure Adjustment

Line No.	[A] CAPM Method	[B] Rf	[C] β	[D] (Rp)	[E] k
1	Historical Market Risk Premium	3.3%	0.59	7.4%	7.7%
2	Current Market Risk Premium	3.3%	0.59	13.1%	11.1%
3	Average of CAPM Estimates				9.4%
4					
5	Relevered Beta	Rf	β	(Rp)	k
6	Historical Market Risk Premium	3.3%	0.53	7.4%	7.3%
7	Current Market Risk Premium	3.3%	0.53	13.1%	10.3%
8	Average of CAPM Estimates				8.8%
9					
10	Capital Structure Adjustment (8 - 3)				-0.6%

Arizona Water Company
 Capital Structures of Sample Gas Companies
 2002

Line No.	[A] Company	[B] Ticker Symbol	[C] Long-Term Debt	[D] Common Equity	[E] Total
1	AGL Resources	ATG	58.2%	41.8%	100.0%
2	Atmos Energy	ATO	58.7%	41.3%	100.0%
3	Cascade Natural Gas	CGC	59.1%	40.9%	100.0%
4	Laclede Group	LG	51.6%	48.4%	100.0%
5	Nicor Inc.	GAS	34.7%	65.3%	100.0%
6	Northwest Natural Gas	NWN	48.0%	52.0%	100.0%
7	Peoples Energy	PGL	39.6%	60.4%	100.0%
8	Piedmont Natural Gas	PNY	43.9%	56.1%	100.0%
9	Southwest Gas	SWX	64.4%	35.6%	100.0%
10	WGL Holdings	WGL	44.9%	55.1%	100.0%
11	Average		50.3%	49.7%	100.0%
12					
13					
14					
15					
16					
17					
18					
19	Source: Value Line				

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Growth in Earnings and Dividends
 Sample Gas Companies

[A]	[B]	[C]	[D]	[E]	
Line No.	Company	10-Year Earnings EPS	Projected Earnings EPS	10-Year Dividends DPS	Projected Dividends DPS
1	AGL Resources	4.9%	2.9%	0.5%	0.0%
2	Atmos Energy	4.1%	8.7%	3.6%	2.3%
3	Cascade Natural Gas	6.0%	9.1%	0.3%	0.4%
4	Laclede Group	0.1%	9.4%	1.1%	0.4%
5	Nicor Inc.	4.1%	4.6%	4.5%	4.0%
6	Northwest Natural Gas	8.2%	8.2%	0.9%	1.1%
7	Peoples Energy	3.1%	5.7%	1.6%	1.6%
8	Piedmont Natural Gas	3.0%	10.8%	5.8%	3.5%
9	Southwest Gas	3.7%	13.1%	1.6%	0.0%
10	WGL Holdings	-1.1%	16.1%	1.7%	0.9%
11					
12	Average	3.6%	8.9%	2.2%	1.4%
13					
14					
15					
16	Source: Value Line				

Arizona Water Company
Docket No. W-01445A-02-0619

Arizona Water Company
Calculation of Expected Infinite Annual Growth in Dividends
Sample Gas Companies

[A] [B]

Line No.		g
1	10-Year EPS Growth	3.6%
2	Projected EPS Growth	8.9%
3	10-Year DPS Growth	2.2%
4	Projected DPS Growth	1.4%
5	10-Year Intrinsic Growth	4.6%
6	Projected Intrinsic Growth	6.7%
7		
8	Average	4.6%
9		
10		
11		
12		

Per Schedule JMR-13 and Schedule JMR-14

Arizona Water Company
 Selected Financial Data of Sample Gas Companies

[A]	[B]	[C]	[D]	[E]	[F]	[G]	
Line No.	Company	Symbol	Spot Price 5/6/03	Book Value 5/6/03	Mkt To Book	Value Line Beta	Raw Beta
1	AGL Resources	ATG	25.39	12.9	2.0	0.75	0.60
2	Atmos Energy	ATO	23.06	14.0	1.7	0.60	0.37
3	Cascade Natural Gas	CGC	18.69	10.5	1.8	0.65	0.45
4	Laclede Group	LG	24.20	15.4	1.6	0.60	0.37
5	Nicor Inc.	GAS	31.15	17.1	1.8	0.90	0.82
6	Northwest Natural Gas	NWN	26.20	19.2	1.4	0.60	0.37
7	Peoples Energy	PGL	39.85	23.0	1.7	0.75	0.60
8	Piedmont Natural Gas	PNY	37.35	18.1	2.1	0.70	0.52
9	Southwest Gas	SWX	20.55	18.0	1.1	0.70	0.52
10	WGL Holdings	WGL	26.45	15.8	1.7	0.65	0.45
11					1.7	0.69	0.51
12	Average						
13							
14							
15							
16							
17							
18							
19							
20							

Arizona Water Company
Multi-Stage DCF Estimates
Sample Gas Companies

Line No.	(A)	(B)	(C)					(G)	(H)	(I)
			Current Mkt. Price (P ₀)	Projected Dividends ¹ (D _t)	(D)	(E)	(F)			
			d ₁	d ₂	d ₃	d ₄	d ₅			
1										
2		25.4	1.12	1.12	1.12	1.12	1.12	6.5%		10.0%
3	AGL Resources	23.1	1.21	1.24	1.28	1.31	1.34	6.5%		11.1%
4	Atmos Energy	18.7	0.96	0.97	0.97	0.98	0.99	6.5%		10.7%
5	Cascade Natural Gas	24.2	1.34	1.35	1.36	1.37	1.38	6.5%		11.1%
6	Laclede Group	31.2	1.86	1.95	2.05	2.15	2.25	6.5%		12.2%
7	Nicor Inc.	26.2	1.27	1.29	1.30	1.32	1.34	6.5%		10.6%
8	Northwest Natural Gas	39.9	2.12	2.15	2.17	2.20	2.23	6.5%		11.0%
9	Peoples Energy	37.4	1.66	1.72	1.77	1.83	1.90	6.5%		10.5%
10	Piedmont Natural Gas	20.6	0.82	0.82	0.82	0.82	0.82	6.5%		9.7%
11	Southwest Gas	26.5	1.28	1.29	1.31	1.32	1.33	6.5%		10.5%
12	WGL Holdings									
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										
32										
33										
34										
35										
36										

$$P_0 = \sum_{t=1}^n \frac{D_t}{(1+K)^t} + \frac{D_n(1+g_n)}{K-g_n} \left[\frac{1}{(1+K)^n} \right]$$

Where: P₀ = current stock price

D_t = dividends expected during stage t

K = cost of equity

n = years of non - constant growth

D_n = dividend expected in year n

g_n = constant rate of growth expected after year n

¹ d_t = "Est'd Div'd next 12 mos." May 2, 2003 Value Line Selection & Opinion.

² Average annual growth in GDP 1929 - 2002 in current dollars. <http://www.bea.doc.gov/bea/dn/nipaweb/tableViewFixed.asp#Mid>

Average 10.7%

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Final Cost of Equity Estimates
 Sample Gas Companies

[A]	[B]	[C]	[D]	[E]
		D_1/P_0	g	k
Line No.	Constant Growth DCF			
1	Constant Growth DCF Estimate	4.97%	4.56%	9.5%
2	Multi-Stage DCF Estimate			10.7%
3	Average of DCF Estimates			10.1%
4				
5	CAPM Method	R_f	(R_p)	k
6	Historical Market Risk Premium	3.3%	7.4%	8.4%
7	Current Market Risk Premium	3.3%	13.1%	12.3%
8	Average of CAPM Estimates			10.4%
9				
10			Average	10.3%
11				

Arizona Water Company
 Docket No. W-01445A-02-0619

Arizona Water Company
 Actual Baa Rated Public Utility and Corporate Bond Rates

Year/Month	Baa Rated	
	Utility Bonds ¹	Corporate Bonds ²
1967	6.15%	6.23%
1968	6.87%	6.94%
1969	7.93%	7.81%
1970	9.18%	9.11%
1971	8.63%	8.56%
1972	8.17%	8.16%
1973	8.17%	8.24%
1974	9.84%	9.50%
1975	10.96%	10.61%
1976	9.82%	9.75%
1977	9.06%	8.97%
1978	9.62%	9.49%
1979	10.96%	10.69%
1980	13.95%	13.67%
1981	16.60%	16.04%
1982	16.45%	16.11%
1983	14.20%	13.55%
1984	14.53%	14.19%
1985	12.96%	12.72%
1986	10.00%	10.39%
1987	10.53%	10.58%
1988	11.00%	10.83%
1989	9.97%	10.18%
1990	10.06%	10.36%
1991	9.55%	9.80%
1992	8.86%	8.98%
1993	7.91%	7.93%
1994	8.63%	8.63%
1995	8.29%	8.20%
1996	8.17%	8.05%
1997	7.95%	7.87%
1998	7.26%	7.22%
1999	7.88%	7.88%
2000	8.36%	8.37%
2001	8.02%	7.95%
2002	7.69%	7.80%
2003	6.78%	6.68%

¹1967 - 2001: Mergent Public Utility Manual

²2002: Value Line Selection and Opinion

³1967 - 2002: Federal Reserve

2003: 05/07/2003 Value Line Selection & Opinion & Federal Reserve

Arizona Water Company
Construction of Confidence Interval for Current Zepp Study

Year	X_1^a	$(X_1 - \bar{X}_1)$	$(X_1 - \bar{X}_1)^2$	X_2^b	$(X_2 - \bar{X}_2)$	$(X_2 - \bar{X}_2)^2$
1987	14.24%	2.20%	0.05%	15.98%	2.95%	0.09%
1988	13.48%	1.44%	0.02%	15.42%	2.39%	0.06%
1989	13.84%	1.80%	0.03%	13.93%	0.90%	0.01%
1990	13.87%	1.83%	0.03%	14.99%	1.96%	0.04%
1991	13.67%	1.63%	0.03%	13.30%	0.28%	0.00%
1992	12.50%	0.46%	0.00%	13.65%	0.62%	0.00%
1993	11.30%	-0.74%	0.01%	12.15%	-0.88%	0.01%
1994	10.70%	-1.34%	0.02%	10.94%	-2.09%	0.04%
1995	10.55%	-1.49%	0.02%	11.64%	-1.39%	0.02%
1996	9.88%	-2.16%	0.05%	11.67%	-1.35%	0.02%
1997	8.40%	-3.64%	0.13%	9.64%	-3.39%	0.11%
	\bar{X}_1 : 12.04%	Σ : 0	Σ : 0.39%	\bar{X}_2 : 13.03%	Σ : 0	Σ : 0.40%

95% Confidence Interval:

$$\Delta = (\bar{X}_1 - \bar{X}_2) \pm t_{0.025} s_p \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}$$

$$\Delta = (12.04\% - 13.03\%) \pm 2.09 \sqrt{\frac{0.79\%}{20} \left(\frac{1}{11} + \frac{1}{11} \right)}$$

$$\Delta = (0.99\%) \pm 2.09 (0.008463)$$

$$\Delta = (0.99\%) \pm 1.77\%$$

$$\Delta = -2.76\% \text{ to } 0.78\%$$

Conclusion: Thus, with 95% confidence, Δ (population mean difference) is estimated to be between -2.76% and 0.78%. Because 0.00% (zero) lies inside the confidence interval, the hypothesis that $\Delta = 0.00\%$ (the mean difference between the cost of equity to large water companies and small water companies is zero) is acceptable.^c

^aCost of equity estimate to larger California water utilities.

^bCost of equity estimate to smaller California water utilities.

^cWonnacott, Ronald J., Thomas H. Wonnacott. Introductory Statistics. 1985. John Wiley & Sons. New York. pp. 257-259.

where:

Δ = population mean difference

\bar{X}_1 = mean of first sample

\bar{X}_2 = mean of second sample

$t_{0.025} = 2.09$ (found on the two-tailed t distribution table)

s_p = estimate of the population standard deviation, where:

$$s_p^2 = \frac{\sum (X_1 - \bar{X}_1)^2 + \sum (X_2 - \bar{X}_2)^2}{(n_1 - 1) + (n_2 - 1)}$$

n_1 = size of first sample

n_2 = size of second sample

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER

Chairman

JIM IRVIN

Commissioner

WILLIAM A. MUNDELL

Commissioner

JEFF HATCH-MILLER

Commissioner

MIKE GLEASON

Commissioner

IN THE MATTER OF THE APPLICATION OF)
ARIZONA WATER COMPANY, AN ARIZONA)
CORPORATION, FOR ADJUSTMENTS TO)
ITS RATES AND CHARGES FOR UTILITY)
SERVICE FURNISHED BY ITS EASTERN)
GROUP AND FOR CERTAIN RELATED)
APPROVALS)

DOCKET NO. W-01445A-02-0619

SURREBUTTAL

TESTIMONY

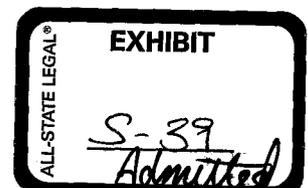
OF

JOEL M. REIKER

PUBLIC UTILITIES ANALYST V

UTILITIES DIVISION

SEPTEMBER 3, 2003



**EXECUTIVE SUMMARY
OF THE SURREBUTTAL TESTIMONY
OF STAFF WITNESS
JOEL M. REIKER
ARIZONA WATER COMPANY
DOCKET NO. W-01445A-02-0619**

The surrebuttal testimony of Staff witness Joel M. Reiker addresses the following issues:

Response to the rebuttal testimony of Company witness Thomas M. Zepp – Staff responds to the rebuttal testimony of Thomas M. Zepp.

Dr. Zepp's risk premium analysis is not valid.

Dr. Zepp cannot use corporate bond yields to imply meaningful equity risk premiums.

Dr. Zepp's response to Mr. Reiker's testimony regarding financial risk should not be given weight by the Commission. Dr. Zepp's assumption that the spread between the cost of Arizona Water's last bond issue and A-rated/AA-rated bonds is due to business risk is unreasonable. The likely cause of this spread is default risk or liquidity risk, neither of which increase Arizona Water's cost of equity. Dr. Zepp is not comparing apples to apples when he claims Mr. Reiker used the wrong measure of equity in his capital structure adjustment.

The Commission should not rely on the Fama-French three-factor model as Dr. Zepp proposes because it has not been widely accepted by the academic community, and a number of recent studies indicate that the model is not correct.

The soon-to-be published Zepp article contains fatal flaws and should not be relied upon to assume there is a small firm effect for utilities. There are several problems associated with Dr. Zepp's annual beta calculation. The Zepp article finds no fault with the findings of Wong. And the "new evidence" provided in the Zepp article has already been addressed by Staff in its direct testimony.

Dr. Zepp's claim that Staff's confidence interval is inappropriate to test the significance of the Zepp study is incorrect. Mr. Reiker explains why Staff's confidence interval is appropriate and provides examples showing that Dr. Zepp's paired difference test is not the appropriate test. Mr. Reiker shows that the preferred significance level for statistical testing is .05 or higher.

Dr. Zepp's extended version of the CAPM presented in his rebuttal testimony and his ad hoc risk premium approach are not preferred to the original CAPM. Dr. Zepp has not shown that CAPM tests using short-term Treasuries and raw betas can be appropriately applied to Staff's CAPM, which already produces required returns higher than what the original CAPM would produce. Dr. Zepp has not shown that a zero-beta CAPM, appropriately applied, would produce higher required returns than Staff's CAPM.

Dr. Zepp has not shown that investors ignore past or projected DPS growth, and he has not shown that past or projected DPS growth should not be used in a constant-growth DCF application for water utilities. Dr. Zepp's restatement of Staff's multi-stage DCF method should be given no weight by the Commission.

Mr. Reiker also responds to the rebuttal testimony of Company witnesses Ralph J. Kennedy and intervener Walter W. Meek.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
RESPONSE TO THE REBUTTAL TESTIMONY OF THOMAS M. ZEPP	1
Risk Premium Estimates.....	1
Bond Yield Comparison.....	2
Financial Risk.....	3
The Three-Factor Model.....	5
The Zepp Article	7
<i>Dr. Zepp's Annual Beta</i>	7
<i>New Evidence</i>	11
<i>Wong Findings</i>	12
<i>Differential Information</i>	12
The Zepp Study.....	13
The CAPM	17
Constant-Growth DCF Method	20
Multi-Stage DCF Method.....	23
RESPONSE TO THE REBUTTAL TESTIMONY OF RALPH J. KENNEDY	24
Liquidity Premium	24
RESPONSE TO THE REBUTTAL TESTIMONY OF WALTER W. MEEK.....	25
CAPM.....	25
Risk.....	27
CONCLUSION.....	28

1 **INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Joel M. Reiker. My business address is 1200 West Washington Street,
4 Phoenix, Arizona 85007.

5
6 **Q. Are you the same Joel M. Reiker who previously filed direct testimony in this
7 proceeding?**

8 A. Yes.

9
10 **Q. What is the purpose of your surrebuttal testimony?**

11 A. The purpose of my surrebuttal testimony is to respond to criticisms of Staff's direct
12 testimony contained in the rebuttal testimony of Thomas M. Zepp. I also respond to
13 Company witness Ralph J. Kennedy and intervener Walter W. Meek.

14
15 **RESPONSE TO THE REBUTTAL TESTIMONY OF THOMAS M. ZEPP**

16 **Risk Premium Estimates**

17 **Q. On page 22 of his rebuttal testimony Dr. Zepp criticizes Staff for not asking for his
18 work papers. Did Staff and/or the Residential Utility Consumer Office ("RUCO")
19 request copies of Dr. Zepp's work papers?**

20 A. Yes. The parties in this case sent no less than four separate data requests asking for the
21 Company's work papers (REL 1-29, REL 1-30, JMR 2-1, RUCO 1.19). For some reason
22 the Company chose to withhold Dr. Zepp's Rebuttal Table 2 from Staff and RUCO until
23 now.

24
25 **Q. Does the work paper provided as Rebuttal Table 2 of Dr. Zepp's rebuttal testimony
26 validate his risk premium analysis?**

1 A. No, it does not. Dr. Zepp's first and second risk premium studies still assume that ROEs
2 equal equity costs. On page 48 of Staff's direct testimony I described the problems
3 associated with relying on ROEs authorized by regulatory commissions to estimate the
4 cost of equity. Additionally, on page 54 of Staff's direct testimony I provided a quote
5 from Professor Laurence Booth. Professor Booth stated in a *NRRI Quarterly Bulletin*
6 article that "theoretically, there is no question whatsoever that a market-to-book ratio of
7 1.50 indicates that the [cost of equity] is less than the [allowed ROE]." Professor Booth
8 has never come across a company witness who would disagree with that proposition.¹
9 The sample water companies have an average market-to-book ratio of 2.2 and the sample
10 gas companies have an average market-to-book ratio of 1.7. Therefore, it is unreasonable
11 for Dr. Zepp to assume that equity costs equal authorized ROEs in his first two risk
12 premium studies, and it is unreasonable for Dr. Zepp to assume the water utilities in his
13 first risk premium study have earned less than their costs of equity.

14
15 **Bond Yield Comparison**

16 **Q.** On pages 24 and 25 of his rebuttal testimony Dr. Zepp compares the rate on Arizona
17 Water's series K bonds to the yield on A-rated and AA-rated bonds. He states that
18 "If all water utilities have equity costs that are the same margin above their
19 respective costs of debt ... the Company requires a risk premium that is at least 37 to
20 49 basis points above the benchmark costs of equity estimated for the water utilities
21 sample." (See rebuttal testimony of Thomas M. Zepp. p. 25 at 7 - 10.) Does Staff
22 agree?

23 **A.** No. As stated on pages 48 and 49 of Staff's direct testimony, the yield on corporate bonds
24 cannot be meaningfully compared to the cost of equity. This is because corporate bonds
25 contain some default risk which is diversifiable. On page 49 and Chart 5 of Staff's direct
26 testimony I reported the historical yield spread between Aaa-rated and Baa-rated corporate

¹ Booth, Laurence. "The Importance of Market-to-Book Ratios in Regulation." *NRRI Quarterly Bulletin*. Winter 1997. pp. 415 - 425.

1 bonds. This yield spread also exists within individual bond rating categories. Different
2 companies have different perceived levels of default risk, and because some of this default
3 risk is diversifiable (unsystematic) it is irrelevant to the cost of equity. That is why
4 Professor Booth states that all risk comparisons should be to default-free government
5 bonds.² Richard Brealey of the London Business School and Stewart Myers of M.I.T
6 discuss this concept on pages 561 and 562 of their text Principles of Corporate Finance
7 (third edition).

8
9 **Financial Risk**

10 **Q. On pages 28 and 29 of his rebuttal testimony Dr. Zepp gives three responses to**
11 **Staff's testimony that Arizona Water is less risky because it has less financial risk**
12 **than the sample companies. His first response is to repeat his observation that**
13 **Arizona Water's last bond issue had a cost that was higher than the cost of A-rated**
14 **and AA-rated corporate bonds. He states that "the most obvious answer is that**
15 **Arizona Water has additional business risk that more than offsets its lower financial**
16 **risk." (See rebuttal testimony of Thomas M. Zepp. p. 28 at 26 and p. 29 at 1 - 2.)**

17 **Does Staff agree?**

18 **A.** No. Staff does not agree that the most obvious cause of a yield spread is business risk.
19 As previously discussed, the most obvious factor affecting a yield spread would be the
20 probability of default.

21
22 **Q. Are there other reasons for a private bond placement to have a cost that is higher**
23 **than the cost of corporate bonds?**

24 **A.** Yes. Professor Frank Reilly of the University of Notre Dame and Professor Keith Brown
25 of the University of Texas explain why a private placement may have a higher cost than a
26 public offering in their 2003 financial text Investment Analysis & Portfolio Management:
27

² Booth. pp. 415 - 425.

1 Rather than a public sale using one of these arrangements, primary
2 offerings can be sold privately. In such an arrangement, referred to
3 as a *private placement*, the firm designs an issue with the
4 assistance of an investment banker and sells it to a small group of
5 institutions. The firm enjoys lower issuing costs because it does
6 not need to prepare the extensive registration statement required
7 for a public offering. *The institution that buys the issue typically*
8 *benefits because the issuing firm passes some of these cost savings*
9 *on to the investor as a higher return.* In fact, the institution should
10 require a higher return because of the absence of any secondary
11 market for these securities, which implies higher liquidity risk.³
12 (latter emphasis added.)

13 Therefore, the yield spread between corporate bonds and privately placed bonds would
14 likely be related to the risk of the institution being able to resell the placement in a
15 secondary market, and *not* higher business risk.

16
17 **Q. Dr. Zepp's second response is to claim that Staff used the wrong measure of equity**
18 **to implement Equation 6 (unlevered beta) in its direct testimony. (See rebuttal**
19 **testimony of Thomas M. Zepp. p. 29 at 22 – 26.) Please comment.**

20 **A.** The Ibbotson Associates yearbook cited in Staff's direct testimony indeed uses the
21 market value of equity to calculate unlevered betas. However, regardless of how
22 Ibbotson Associates unlevers their betas, we are not concerned with market equity ratios
23 in this proceeding. It would be nonsensical to unlever beta with a market equity ratio and
24 relever it with a book equity ratio and apply it to a book value rate base. Dr. Zepp
25 attempts to discredit Staff's capital structure adjustment by comparing market values to
26 book values and he ignores the simple fact that the sample water companies are more
27 leveraged than Arizona Water. Dr. Zepp should compare apples to apples.

28
29 **Q. Dr. Zepp's third response is to take issue with Staff's assumption that Arizona**
30 **Water has the same business risk as the sample water companies. He states that you**
31 **"[have] no evidence to make such a result-driven assumption." (See rebuttal**

³Reilly, Frank K., Keith C. Brown. *Investment Analysis & Portfolio Management*. 2003. Thomson South-Western. Mason, OH. p. 111.

1 **testimony of Thomas M. Zepp. p. 30 at 15 – 17.) Does evidence suggest Arizona**
2 **Water has the same business risk as the sample water companies?**

3 A. Yes. Business risk is the uncertainty of income caused by the firm's *industry*.⁴ All of the
4 sample water companies are in the regulated water utility industry. The assumption is not
5 result driven as it is an assumption made before a reasonable result is calculated.

6
7 **The Three-Factor Model**

8 **Q. On page 31 of his rebuttal testimony Dr. Zepp mentions studies performed by Fama**
9 **and French. Dr. Zepp states that Fama and French have found there are three**
10 **systematic risks: market risk (beta), size, and distress. (See rebuttal testimony of**
11 **Thomas M. Zepp. p. 31 at 5 – 9.) Is Staff aware of these studies?**

12 A. Yes. Fama and French published their first study in 1992 which found that during the
13 period 1963 to 1990, small companies and companies with low multiples of book values
14 had higher returns than average stocks. Stocks selling at low multiples of their book
15 values are often called value stocks (Dr. Zepp refers to this situation as distress), whereas
16 stocks selling at high multiples of their book values are called growth stocks. As a result
17 of their studies, Fama and French developed an alternative three-factor asset pricing
18 model where, in addition to the market risk premium, risk factors associated with firm
19 size and differences between growth and value firms are present.

20
21 **Q. Are there problems associated with the Fama-French model?**

22 A. Yes. In the 2002 financial text Intermediate Financial Management, Brigham and Daves
23 discuss three reasons why the majority of managers are using the CAPM and *not* the
24 Fama-French three-factor model. The first reason is data availability. For example, the
25 data required for the size factor and book value-to-market value factor are not readily
26 available. The second reason is that while historical data related to these factors is

⁴ Reilly, Frank K., Keith C. Brown. p. 338.

1 available, we don't know whether the historical average returns for these factors (size and
2 book value-to-market value) are good estimators of expected returns. The third reason
3 managers haven't adopted the Fama-French model, according to Brigham and Daves, is
4 that it has *not* been widely accepted by the academic community. On page 94 of
5 Intermediate Financial Management Brigham and Daves state:

6
7 In fact, there are a number of very recent studies indicating that the
8 Fama-French model is not correct.⁵ Several of these studies
9 suggest that the size effect is no longer having an effect on stock
10 returns, that there never was a size effect (the previous results were
11 caused by peculiarities in the data sources), or that the size effect
12 doesn't apply to most companies. Other studies suggest that the
13 book-to-market effect is not as significant as first supposed and
14 that the book-to-market effect is not caused by risk. Another
15 recent study shows that if the composition of a company's assets
16 were changing over time with respect to the mix of physical assets
17 and growth opportunities (such as R&D, patents, etc.), then it
18 would appear as though there were size and book-to-market
19 effects. In other words, even if the returns on the individual assets
20 conform to the CAPM, changes in the mix of assets would cause
21 the firm's beta to change over time in such a way that the firm will
22 appear to have size and book-to-market effects.^{6,7}

23
24 Another interesting observation concerning the original Fama-French study is related to
25 the time period they examined; 1963 - 1990. During that period value stocks (stocks that
26 Dr. Zepp would describe as being in "distress") did much better than growth stocks.
27 Growth stocks gained in the 1960s and peaked in 1972, going into a long bear market

⁵ See Peter J. Knez and Mark J. Ready, "On the Robustness of Size and Book-to-market in the Cross-Sectional Regressions," *Journal of Finance*, September 1997, 1355-1382; Dongcheol Kim, "A Reexamination of Firm Size, Book-to-market, and Earnings Price in the Cross-Section of Expected Stock Returns," *Journal of Financial and Quantitative Analysis*, December 1997, 463-489; Tyler Shumway and Vincent A. Warther, "The Delisting Bias in CRSP's Nasdaq Data and Its Implications for the Size Effect," *Journal of Finance*, December 1999, 2361-2379; Tim Loughran, "Book-to-Market Across Firm Size, Exchange, and Seasonality: Is There an Effect?" *Journal of Financial and Quantitative Analysis*, September 1997, 249-268; and Ilia D. Dichev, "Is the Risk of Bankruptcy a Systematic Risk?" *Journal of Finance*, June 1998, 1131-1147.

⁶ See Jonathan B. Berk, Richard C. Green, and Vasant Naik, "Optimal Investment, Growth Options, and Security Returns," *Journal of Finance*, October 1999, 1553-1608.

⁷ Brigham, Eugene F., Phillip R. Daves. Intermediate Financial Management. 2002. South-Western. pp. 93-94.

1 while value stocks such as oil companies soared. In the technology boom of 1990 - 2000
2 (after the original Fama-French study) growth stocks gained relative to value stocks.⁸

3
4 **The Zepp Article**

5 **Q. On page 33 of his rebuttal testimony Dr. Zepp presents his soon-to-be published**
6 **article “Utility Stocks and the Size Effect – Revisited” (“Zepp article”). Has Staff**
7 **reviewed the Zepp article?**

8 **A. Yes. Staff reviewed the Zepp article and found four reasons the Commission should not**
9 **rely on it:**

- 10 1. Dr. Zepp’s annual beta calculation contains several critical flaws.
- 11 2. The “new evidence on risk premiums required by small utilities” introduced in
12 the Zepp article includes the California Public Utility Commission (“CPUC”)
13 Staff study and the current Zepp study, which Staff has already addressed in its
14 direct testimony.
- 15 3. Dr. Zepp cannot dispute the fact that Wong found the size effect for utilities to
16 be insignificant in every period from 1968 to 1987 using monthly and daily data,
17 and in three out of four periods using weekly data.
- 18 4. Dr. Zepp’s statement that “if the small firm effect is explained by differential
19 information ... differences in available information suggests there is a small firm
20 effect in the utility industry”⁹ is not necessarily true.

21
22 *Dr. Zepp’s Annual Beta*

23 **Q. On page 579 of the Zepp article Dr. Zepp reports a beta (“Zepp annual beta”) that**
24 **he calculated using annual return data for Connecticut Water Service, Middlesex**

⁸ Siegel, Jeremy. *Stocks for the Long Run*. 2002. McGraw-Hill. New York. 3rd edition. pp. 138.

⁹ Zepp, Thomas M., “Utility Stocks and the Size Effect – Revisited.” *The Quarterly Review of Economics and Finance*. (43) 2003. pp. 578 – 582.

1 **Water, and SJW Corporation, and compares it to the average *Value Line* beta for**
2 **these companies. Did Staff review Dr. Zepp's beta calculation?**

3 A. Yes. Dr. Zepp uses the Zepp annual beta reported in his article to support his claim that
4 when annual data are used to estimate betas for small utility stocks, the beta estimate
5 increases. However, upon reviewing the calculations and data underlying the Zepp
6 annual beta, Staff has found that they cannot be used to support Dr. Zepp's claim.

7

8 **Q. What problems did Staff find with Dr. Zepp's annual beta calculation?**

9 A. The first problem Staff found with the Zepp annual beta calculation is related to Dr.
10 Zepp's "pooling" of his return data. On page 579 of his article Dr. Zepp states that his
11 annual beta is "estimated with pooled annual data for the utilities ... it is assumed that the
12 underlying beta for each of the water utilities is the same." This "pooling" of returns
13 essentially amounts to manufacturing data points which, in turn, increase the statistical
14 significance of his annual beta.

15

16 **Q. How does pooling the return data increase the statistical significance of the Zepp**
17 **annual beta?**

18 A. Pooling the return data increases the statistical significance of the Zepp annual beta
19 because instead of having just five data points to calculate a beta based on five years
20 worth of annual returns, Dr. Zepp used fifteen data points to calculate a beta based on
21 five years worth of annual returns. In other words, Dr. Zepp has manufactured ten
22 additional data points. More data points result in higher statistical significance.

23

24 **Q. Could Dr. Zepp have calculated a meaningful annual beta without pooling his**
25 **return data?**

26 A. No. Dr. Zepp could have assumed "that the underlying beta for each of the water utilities
27 is the same" by averaging the annual returns of the three companies and then running a

1 regression with five annual returns. However, the Zepp annual beta calculated under this
2 method would not have been significantly different from zero at the .05 significance
3 level.

4
5 **Q. In a footnote on page 579 of his article Dr. Zepp states that he used a dummy**
6 **variable in 1999 "to reflect the proposed acquisition of SJW Corporation." Is the**
7 **Zepp annual beta significantly different from zero if you remove Dr. Zepp's dummy**
8 **variable?**

9 A. No. Staff removed Dr. Zepp's dummy variable from his regression and the resulting beta
10 was not significantly different from zero at the .05 significance level.

11
12 **Q. Did Staff uncover any problems related to the statistical test Dr. Zepp used to test**
13 **the significance of his annual beta?**

14 A. Yes. In testing whether his annual beta was significantly different than the average *Value*
15 *Line* beta Dr. Zepp used a one-tailed test when he should have used a two-tailed test. By
16 using a one-tailed test Dr. Zepp assumed that a beta estimated with annual data could
17 only be higher, and not lower, than a beta estimated with weekly data. His assumption is
18 contrary to a 1977 study conducted by David Levhari and Haim Levy which found beta
19 for defensive stocks (those with a beta less than 1.0) decreases when the return interval
20 increases.¹⁰

21
22 **Q. Is the Zepp annual beta significantly different from the average *Value Line* beta**
23 **when a two-tailed test is conducted?**

24 A. No. The Zepp annual beta is not significantly different from the average *Value Line* beta
25 at the .05 significance level if a two-tailed test is used.

26

¹⁰ Levhari, David. Levy, Haim. "The Capital Asset Pricing Model and the Investment Horizon." *The Review of Economics and Statistics*. February 1977. pp. 92 -104.

1 **Q. Can the Zepp annual beta be compared to *Value Line* betas?**

2 A. No, it cannot. Dr. Zepp's annual beta cannot be compared to the average *Value Line*
3 beta for four reasons. First, Dr. Zepp used the S&P 500 index as the market proxy
4 whereas *Value Line* uses the New York Stock Exchange ("NYSE") Composite Index. On
5 page 271 of the financial text Investments, Nancy L. Jacob and R. Richardson Pettit
6 indicate that differences can exist between beta estimates based on the use of the S&P
7 500 index rather than the NYSE index.¹¹

8
9 The second reason Dr. Zepp's annual beta cannot be compared to *Value Line* betas is the
10 fact that Dr. Zepp used total returns (dividends and capital gains) for the companies in his
11 sample and total returns for the S&P 500 index while *Value Line* uses changes in the
12 price of a stock and changes in the NYSE index.

13
14 Another reason Dr. Zepp's annual beta cannot be compared to *Value Line* betas is the fact
15 that *Value Line* does not use "pooled" return data to calculate beta.

16
17 Finally, Dr. Zepp's annual beta cannot be compared to *Value Line* betas because, to the
18 best of my knowledge, *Value Line* does not use dummy variables in their regressions.

19
20 **Q. Did Staff attempt to re-create Dr. Zepp's annual beta using the NYSE index and
21 price returns that are more comparable to the data *Value Line* uses?**

22 A. Yes. Staff obtained closing prices for Connecticut Water Service, Middlesex Water, SJW
23 Corporation, and the NYSE Composite Index for the period 1995 – 2000 from msn
24 Money, and attempted to calculate annual betas.

25
26 **Q. Please describe Staff's analysis and findings.**

¹¹ Jacob, Nancy L., Pettit, R. Richardson. Investments. Irwin. Homewood, Ill. 1988. p. 271.

1 A. Staff began by calculating annual beta estimates for each of the three companies using
2 five years of annual price returns and the NYSE Composite Index. None of the annual
3 beta estimates calculated by Staff were significantly different from zero. The annual beta
4 estimate for SJW Corp. became significant only when a dummy variable was added in
5 1999, but the beta estimate was no longer comparable to *Value Line* betas. Staff
6 replicated Dr. Zepp's "pooling" method and the resulting beta estimate was not
7 statistically different from zero, unless a dummy variable was added in 1999 for SJW
8 Corp.

9
10 Staff concluded that meaningful beta estimates comparable to *Value Line* betas could not
11 be calculated using five years of annual data. Staff further concluded that the sole factor
12 driving statistical significance for any of its beta estimates was the dummy variable in
13 1999 for SJW Corp.

14
15 *New Evidence*

16 **Q. Has Staff reviewed the "new evidence on risk premiums required by small utilities"**
17 **mentioned in the Zepp article?**

18 A. Yes. The first "new" piece of evidence is the CPUC Staff study cited by Dr. Zepp on
19 page 20 of his direct testimony. Staff addressed the CPUC Staff study and explained why
20 the Commission should reject it for use in Arizona on pages 62 – 63 of its direct
21 testimony. The other "new" piece of evidence is the current Zepp study presented by Dr.
22 Zepp on pages 20 – 21, and Table 8 of his direct testimony.

23
24 **Q. Does Staff have any general comments on the current Zepp study as it is presented**
25 **in the Zepp article?**

1 A. Yes. The only observation Staff has regarding the current Zepp study as it is presented in
2 the Zepp article is that it is the more successful of the two Zepp studies Staff is aware of.
3 The results of the other Zepp study, referred to as the "2000 Zepp study" on page 67 of
4 Staff's direct testimony, are *not* reported in the Zepp article. As mentioned on page 67 of
5 Staff's direct testimony, the results of the 2000 Zepp study have lower statistical
6 significance than even the current Zepp study. The current Zepp study and the 2000
7 Zepp study are essentially the same study, except for the way Dr. Zepp calculates
8 expected dividend growth. Dr. Zepp only reported the more successful study (the current
9 Zepp study) in the Zepp article. Staff will address the actual validity of the current Zepp
10 study later in its surrebuttal testimony.

11
12 *Wong Findings*

13 **Q. Does the Zepp article find any fault with the empirical results of the Wong study?**

14 A. No. The Zepp article does nothing to contradict the results of the Wong study. Wong
15 found the size effect for utilities to be insignificant in every period from 1968 to 1987
16 using monthly and daily data, and in three out of four periods using weekly data. The
17 Zepp article acknowledges and does not dispute the empirical findings of Wong.

18
19 *Differential Information*

20 **Q. Why is Dr. Zepp's statement that "if the small firm effect is explained by**
21 **differential information ... differences in available information suggests there is a**
22 **small firm effect in the utility industry" not necessarily true?**

23 A. Dr. Zepp's statement is not necessarily true because even if more information is produced
24 in a rate proceeding for a large utility than in a rate proceeding for a smaller utility, it
25 does not always hold that parties to the large utility proceeding will receive a larger piece
26 of the information "pie" than the parties to the small proceeding. It makes sense that

1 there will be a smaller amount of total information concerning a smaller utility, and a
2 larger percentage of that information may come out in a small utility rate proceeding than
3 will come out in a large utility rate proceeding. Thus, if the differential information
4 hypothesis is correct, it does not necessarily suggest the existence of a small firm effect
5 for utilities.

6
7 **The Zepp Study**

8 **Q. Should the Commission rely on the Zepp study?**

9 A. No. On pages 64 – 68 of Staff's direct testimony I provided three reasons the Commission
10 should not rely on the Zepp study. First, Staff's confidence interval constructed in Exhibit
11 JMR-1 of its my testimony shows that, with 95 percent confidence, it is plausible that the
12 average difference between the cost of equity to larger and smaller water utilities is zero.
13 Second, the only way Dr. Zepp can find his results statistically significant under his own
14 statistical test is to use an unusually low confidence/significance level. Finally, Dr. Zepp
15 conducted a one-tailed hypothesis test when he should have conducted a two-tailed test.

16
17 **Q. On pages 39 – 40 of his rebuttal testimony Dr. Zepp states that his paired difference**
18 **test, and not Staff's confidence interval, is the appropriate method to test the**
19 **statistical significance of the Zepp study. (See rebuttal testimony of Thomas M.**
20 **Zepp. p. 39 at 3 – 7.) Is he correct?**

21 A. No. Below, I provide an example showing that Staff's confidence interval is the
22 appropriate test to use. I also explain why the example Dr. Zepp provided from Professor
23 Mendenhall's book is *not* analogous to the Zepp study and I provide a better example of a
24 paired difference test that clearly shows why it should not be used to test the Zepp study.

25
26 **Q. Why is the example from Professor Mendenhall's book provided by Dr. Zepp *not***
27 **analogous to the Zepp study?**

1 A. The example from Professor Mendenhall's book is not analogous to the Zepp study
2 because the samples of larger and smaller water utilities were independently drawn. Dr.
3 Zepp cannot claim that the large water utilities and the small water utilities in the Zepp
4 study are not independent samples. Dr. Zepp attempts to draw an analogy between the
5 Zepp study and the Mendenhall example by comparing a *year* in the Zepp study to an
6 *automobile* in the Mendenhall example. This comparison is not appropriate.

7

8 **Q. Can Staff provide an example of a confidence interval that shows it is the**
9 **appropriate method to test the significance of the Zepp study?**

10 A. Yes. Professor Ronald Wonnacott and Professor Thomas Wonnacott provide an example
11 of a confidence interval in their text Introductory Statistics. In Example 8-3, Wonnacott &
12 Wonnacott compare the difference between the average grades of two classes of students:

13

14

15

16

17

18

From a large class, a sample of 4 grades were drawn: 64, 66, 89,
and 77. From a second large class, an *independent* sample of 3
grades were drawn: 56, 71, and 53. Calculate the 95% confidence
interval for the difference between the two class means ...¹²
(emphasis added)

19

20

21

22

23

24

25

26

27

28

In the above example, the grades were drawn from students of separate classes
representing independent samples. This is analogous to the Zepp study where equity costs
were calculated for samples of companies drawn from separate classes representing
independent samples (i.e. a sample of small water utilities was drawn from the population
of small water utilities and a sample of large water utilities was drawn from the population
of large water utilities.) Wonnacott & Wonnacott provide the equation for the confidence
interval used by Staff to test the Zepp study, as the appropriate equation in the above
example.

¹² Wonnacott, Ronald J., Wonnacott, Thomas H. Introductory Statistics. 1985. John Wiley & Sons. New York. p. 232.

1 **Q. Do Wonnacott & Wonnacott give an example of a paired difference test?**

2 A. Yes. In Section 8-4 of Introductory Statistics, Wonnacott & Wonnacott provide an
3 example of paired samples:

4
5 Suppose a comparison of fall and spring grades is done *using the*
6 *same students both times*. Then the paired grades (spring X_1 and
7 fall X_2) for each of the students can be set out, as in Table 8-3.¹³
8 (emphasis added)

9
10 The students in this example are analogous to the automobiles in the Mendenhall example
11 cited by Dr. Zepp, and grades in the fall and spring are analogous to mounting two
12 different types of tires on the rear wheels of each automobile in the Mendenhall example.
13 Clearly, a confidence interval would be inappropriate for both of these examples. This is
14 because in both cases the samples are not independent. We are using the same students in
15 the Wonnacott & Wonnacott example and we are using the same automobiles in the
16 Mendenhall example.

17
18 A paired difference test is only appropriate when we have a paired sample; that is, a
19 sample where we have pairs of values. The Mendenhall example is a paired sample
20 because we have one pair of values (two different types of tires, one each on the rear of a
21 vehicle) for each vehicle. The Wonnacott & Wonnacott example is a paired sample
22 because we have a pair of grades (one in the fall and one in the spring) for each student.

23
24 A confidence interval is appropriate when we have values such as equity costs, drawn
25 from independent samples such as large and small water utilities.

26
27 **Q. On page 40 of his rebuttal testimony Dr. Zepp responds to Staff's testimony that the**
28 **only way he could find his results to be statistically significant is to adopt an**

¹³ Wonnacott. P. 236.

1 unusually low significance level of .1.¹⁴ He states that standard t-tables show
2 significance levels of between .25 percent and .0005 percent.¹⁵ Please comment.

3 A. Staff is aware that standard t-tables report significance levels as low as .25. Staff is also
4 aware that many statistics books indicate the preferred significance level is .05 or higher.
5 On page 65 of Staff's direct testimony I cited the classic book How to Lie with Statistics
6 by Darrell Huff. On page 42 of How to Lie with Statistics Mr. Huff states the following:

7
8 How can you avoid being fooled by inconclusive results? Must
9 every man be his own statistician and study the raw data for
10 himself? It is not that bad; there is a test of significance that is
11 easy to understand. It is simply a way of reporting how likely it is
12 that a test figure represents a real result rather than something
13 produced by chance. This is the little figure that is not there – on
14 the assumption that you, the lay reader, wouldn't understand it. Or
15 that, where there's an axe to grind, you would.

16
17 If the source of your information gives you also the degree of
18 significance, you'll have a better idea of where you stand ... *for*
19 *most purposes nothing poorer than this five per cent level of*
20 *significance [.05] is good enough.* For some the demanded level is
21 one percent [.01], which means that there are ninety-nine chances
22 out of a hundred that an apparent difference, or whatnot, is real.
23 Anything this likely is sometimes described as "practically
24 certain."¹⁶ (emphasis added)

25
26 In a study with such a small sample size as the Zepp study it behooves the analyst to use
27 a common significance level of .05 or higher. If this is done, Dr. Zepp's results are not
28 significant.

29
30 Q. On page 41 of his rebuttal testimony Dr. Zepp states that a one-tailed test is the
31 appropriate test because a two-tailed test ignores the fact that scholars generally

¹⁴ .1 significance level = 10% chance of committing a type one error.

¹⁵ .25 significance level = 25% chance of committing a type one error. .0005 significance level = .05% chance of committing a type one error.

¹⁶ Huff, Darrell. How to Lie with Statistics. Darrell Huff and Irving Geis. 1954. p. 42.

1 **agree there is a small firm effect for stocks in general. (See rebuttal testimony of**
2 **Thomas M. Zepp. p. 41 at 1 – 4.) Does Staff have any comments?**

3 A. Staff has two comments. First, we are not testing to see if there is a small firm effect for
4 stocks in general. We are testing to see if there is a small firm effect for utilities. Given
5 the findings of the Wong study, lack of other studies supporting the existence of a size
6 effect for utilities, and the extremely small sample size in the Zepp study, it is appropriate
7 to use a two-tailed test.

8
9 Second, while it may be generally agreed that smaller stocks have earned higher returns
10 historically than larger stocks, new evidence increasingly indicates that there never was a
11 size effect. A 1999 study published in *The Journal of Finance* found that after correcting
12 for the bias caused by missing returns for delisted stocks, there is no evidence that there
13 ever was a size effect for Nasdaq stocks. In the article, Shumway and Warther state that
14 Nasdaq stocks are ideal for examining the size effect because they are the smallest and
15 most distressed stocks. Their finding for Nasdaq stocks is evidence against the
16 hypothesis that the size effect is due to the systematic pricing of the distress risk of
17 smaller firms.¹⁷

18

19 **The CAPM**

20 **Q. On page 42 of his rebuttal testimony Dr. Zepp presents what he calls a “general”**
21 **form of the CAPM (equation 2) which includes a zero beta asset (R_z) and a second**
22 **risk factor (SR) representing “any other systematic risks that investors consider in**
23 **the pricing of stocks” and characterizes the CAPM used by Staff and RUCO as a**
24 **“very specific” version of the CAPM (equation 3). (See rebuttal testimony of**
25 **Thomas M. Zepp. p. 42 at 14 – 25.) Please respond.**

¹⁷ Shumway, Tyler. Warther, Vincent A. “The Delisting Bias in CRSP’s Nasdaq Data and Its Implications for the Size Effect.” *The Journal of Finance*. December 1999. 2361 – 2379.

1 A. The CAPM adopted by Staff and RUCO actually conforms to the original CAPM. It is the
2 version most widely used by companies, and it is more popular than any other method of
3 estimating the cost of equity among firms.¹⁸ The version Dr. Zepp presents in equation 2
4 on page 42 of his rebuttal testimony is actually an extended version of the original CAPM.
5 Extended versions of the CAPM, including the subjective, ad hoc risk premium approach
6 which on page 44 of his testimony Dr. Zepp claims is the preferred method, are actually
7 *not* preferred methods.

8

9 **Q. On page 47 of his rebuttal testimony Dr. Zepp claims that empirical studies of the**
10 **original CAPM have found the required return for the zero-beta asset to be higher**
11 **than the Treasury bill rate. (See rebuttal testimony of Thomas M. Zepp. p. 47 at 7 –**
12 **8.) What is the zero-beta asset?**

13 A. The zero-beta asset is a portfolio of assets that has no covariability with the market
14 portfolio. The required return on the zero-beta asset (R_z) is used in place of the return on
15 U.S. Treasuries (R_f) in the extended version of the CAPM known as the zero-beta CAPM.
16 The zero-beta CAPM is said to be flatter than the original CAPM, resulting in higher
17 expected returns for low beta stocks and lower expected returns for high beta stocks
18 compared to the original CAPM.

19

20 **Q. On pages 49 – 50 of his rebuttal testimony Dr. Zepp mentions two specific studies**
21 **which he claims found the required return for the zero-beta asset to be higher than**
22 **the yield on Treasury bills. (See rebuttal testimony of Thomas M. Zepp. p. 49 at 10**
23 **– 26.) Has Dr. Zepp shown that the results of those studies can be applied to Staff's**
24 **CAPM?**

¹⁸ Graham, John R. Campbel R. Harvey. "The Theory and Practice of Corporate Finance: Evidence from the Field." *Journal of Financial Economics*. 60 (2001) pp. 187-243.

1 A. No. Unlike Staff's CAPM, the CAPM tests cited by Dr. Zepp used *short-term* Treasury
2 bills and *raw* (unadjusted) betas. Dr. Zepp has not provided evidence that the results of
3 CAPM studies which use *short-term* Treasury bills and *raw* betas can be appropriately
4 applied to a CAPM application such as Staff's that uses *intermediate-term* Treasury notes,
5 which generally have *higher* returns than T-bills, and *Value Line* betas that are adjusted
6 towards 1.0, which *increase* the required returns for low beta stocks such as utilities. In
7 other words, although Staff's CAPM analysis conforms to the original version, it produces
8 required returns *higher* than what the original CAPM would produce.

9
10 Further, Dr. Zepp has not shown that a zero-beta CAPM application, appropriately
11 applied, would produce higher required returns than Staff's CAPM. Such an application
12 would require an estimate of the current required return on the zero-beta asset, which must
13 be empirically inferred from the prices of securities, and raw betas.

14
15 **Q. On pages 50 - 51 of his rebuttal testimony Dr. Zepp restates Staff's CAPM results**
16 **using analysts' forecasts of long-term Treasury bond yields. Does Staff agree with**
17 **Dr. Zepp's restatement of its CAPM?**

18 A. No. First, Dr. Zepp's use of a forecasted Treasury bond yield is inappropriate. On pages
19 46 - 47 of Staff's direct testimony I explained why the Commission should *not* rely on
20 forecasted interest rates. Second, Dr. Zepp's use of a long-term Treasury bond as the risk-
21 free rate (R_f) in the CAPM is contrary to suggestions by financial experts that most
22 investors consider the intermediate time frame (5-10 years) a more appropriate investment
23 horizon.¹⁹ Also, when using the CAPM to estimate the cost of equity to a public utility, it
24 makes sense that the risk-free rate that is chosen should be an estimate of the rate expected
25 to prevail during the period that rates are in effect. Third, a long-term Treasury bond yield
26 is inappropriate for use in a CAPM for a utility rate proceeding because it includes a risk

¹⁹ Reilly, Frank K., and Keith C. Brown. Investment Analysis and Portfolio Management. 2003. South-Western. Mason, OH. p. 439.

1 premium above and beyond expected future interest rates, which R_f represents in the
2 CAPM. This risk premium is called a "liquidity risk premium." If Dr. Zepp's risk-free
3 rate includes a risk premium it cannot be risk-free; and an analyst cannot use it in a CAPM
4 analysis. Brealey and Myers describe how a long-term Treasury bond yield can be
5 corrected for use in the CAPM in their book Principles of Corporate Finance:

6
7 The risk-free rate could be defined as a long-term Treasury bond
8 yield. If you do this, however, you should subtract the risk
9 premium of Treasury bonds over bills ... This figure could in turn
10 be used an expected average future r_f in the capital asset pricing
11 model.²⁰

12
13 **Constant-Growth DCF Method**

14 **Q. How does Staff respond to Dr. Zepp's statement that "knowledgeable investors**
15 **relying on the constant-growth DCF model would not use past DPS growth or**
16 **forecasts of near-term DPS growth to determine growth?" (See rebuttal testimony of**
17 **Thomas M. Zepp. p. 54 at 10 – 11.)**

18 **A.** His statement is speculative. Dr. Zepp qualifies his statement by claiming that past DPS
19 growth and forecasts of near-term DPS growth are the worst indicators of future growth
20 when an industry is in transition and companies within that industry are in the process of
21 attempting to increase their financial strength. (See rebuttal testimony of Thomas M.
22 Zepp. p. 53 at 8 – 11.) However, investors receive dividends, and the discounted value of
23 dividends received in the first several years of owning a stock are reflected in its market
24 price – whether DPS are expected to grow more rapidly in the future or not. Further, such
25 a statement assumes that an industry has been in transition for ten years, and ignores the
26 over-optimism in analysts' earnings forecasts that investors are aware of. As stated on
27 page 43 of Staff's direct testimony, to the extent that investors are aware of the bias in

²⁰ Brealey, Richard. Myers, Stewart C. Principles of Corporate Finance. 3rd edition. McGraw-Hill. New York. 1988. p. 184.

1 analysts' projections of future earnings, they will make appropriate adjustments – possibly
2 by considering more-stable DPS growth.
3

4 **Q. Does the Gordon, Gordon, and Gould (“GG&G”) article cited by Dr. Zepp support**
5 **his argument that past DPS growth should not be included in a DCF cost of equity**
6 **analysis?**

7 A. No, it does not. Dr. Zepp uses the GG&G article to support his position not to include
8 past DPS growth in a constant-growth DCF analysis. The GG&G article simply
9 concluded that analysts' forecasts of growth in EPS outperformed past BR (retention)
10 growth, past DPS growth, and past EPS growth during the period of their study. The
11 following quote from the GG&G article gives perspective:

12
13 For our sample of utility shares, [forecasts of earnings growth]
14 performed well, with [past BR growth], [past DPS growth], and
15 [past EPS growth] a distant fourth.²¹ (emphasis added)

16 The GG&G article concludes that the worst performer was past EPS growth, not past DPS
17 growth, and that past EPS growth was distant in its inferiority.
18

19 **Q. Does the GG&G article state that forecasts of EPS should be the only determinant of**
20 **perpetual dividend growth in the constant-growth DCF model?**

21 A. No. The article does not state that forecasted EPS growth is the only growth rate to be
22 used in a constant-growth DCF analysis. Furthermore, it does not suggest that investors
23 rely solely on analysts' forecasts of EPS growth when pricing stocks.
24

25 **Q. Has Professor Gordon commented on the appropriate dividend growth rate to be**
26 **used in his DCF model subsequent to the GG&G article?**

²¹ Gordon, David A., Myron J. Gordon, Lawrence I. Gould. “Choice Among Methods of Estimating Share Yield.”
The Journal of Portfolio Management. Spring 1989. p. 54.

1 A. Yes. On May 8, 1998, approximately nine years after publication of the GG&G article,
2 Professor Gordon provided the keynote Address at the 30th Financial Forum of the Society
3 of Utility and Regulatory Financial Analysts. In referencing the Federal Energy
4 Regulatory Commission's ("FERC") use of an average of security analysts' forecasts of
5 the short-term earnings growth rate and a typically lower figure such as the past growth
6 rate in GNP, Professor Gordon said:

7
8 Such an average can be questioned on various grounds. However,
9 my judgment is that between the short-term forecast alone and its
10 average with the past growth rate in GNP, *the latter may be a more*
11 *reasonable figure.* Furthermore, the above average may deserve
12 regulatory consideration along with other plausible estimates of the
13 cost of equity capital, in the absence of a superior method for
14 taking advantage of security analyst forecasts.²² (emphasis added)

15 Dr. Zepp does not average his forecasted growth rates with any historical growth rates.

16
17 **Q. How does Staff respond to Dr. Zepp's statement on page 55 of his rebuttal testimony**
18 **that, to the extent analysts have already taken historical growth into account in their**
19 **forecasts, Staff's approach double-counts the past? (See rebuttal testimony of**
20 **Thomas M. Zepp. p. 55 at 8 – 12.)**

21 A. As stated on page 40 of Staff's direct testimony, Staff agrees that professional analysts
22 may have considered past growth in their forecasts. However, the appropriate growth rate
23 to use in the DCF formula is the dividend growth rate expected by *investors*, not analysts.
24 Therefore, the reasonable assumption that investors rely, to some extent, on past growth in
25 addition to analysts' forecasts, warrants consideration of both.

26
27 **Q. On pages 55 – 56 of his rebuttal testimony Dr. Zepp attempts to show that past DPS**
28 **growth and near-term forecasts of DPS growth would not be considered by investors**
29 **by conducting an ad hoc analysis of Staff's expected dividend yields and past and**

²² Gordon, M.J. Keynote Address at the 30th Financial Forum of the Society of Utility and Regulatory Financial Analysts. May 8, 1998. p. 4.

1 **forecasted DPS growth rates. He calculates constant-growth DCF estimates ranging**
2 **from 6.0 percent to 7.2 percent. Should the Commission give this portion of Dr.**
3 **Zepp's rebuttal testimony any weight?**

4 A. No. This portion of Dr. Zepp's rebuttal testimony should be given no weight by the
5 Commission for several reasons. First, Dr. Zepp implicitly assumes that authorized ROEs
6 equal equity costs. Staff has already addressed the problems associated with assuming
7 authorized ROEs equal equity costs. Second, Dr. Zepp relies on forecasts of Baa
8 corporate bond rates. Staff has already explained why the Commission should not rely on
9 interest rate forecasts. Third, Dr. Zepp again makes the fatal mistake of comparing the
10 rate on Baa corporate bonds to the cost of equity. Staff has already explained why
11 corporate bond yields cannot be used to imply meaningful equity risk premiums. Fourth,
12 Dr. Zepp adds Staff's past and forecasted DPS growth rates to the expected dividend yield
13 to arrive at DCF cost of equity estimates ranging from 6.0 percent to 7.2 percent. This
14 procedure is inappropriate because Staff does not rely solely on DPS growth in its
15 constant-growth DCF analysis, nor does Staff suggest that rational investors rely solely on
16 DPS growth when pricing stocks. This portion of Dr. Zepp's testimony is a straw man
17 and should be given no weight by the Commission.

18
19 **Multi-Stage DCF Method**

20 **Q. How does Dr. Zepp modify Staff's multi-stage DCF analysis?**

21 A. On pages 57 – 59 of his rebuttal testimony Dr. Zepp modifies Staff's multi-stage DCF
22 analysis by injecting a supernormal growth stage between the first and second stages of
23 growth. He assumes that investors expect this supernormal growth to occur during years
24 2007 – 2016.

25
26 **Q. Are his modifications appropriate?**

1 A. No. His modifications are not appropriate for two reasons. First, Dr. Zepp assumes that
2 investors would use *Value Line's* projected retention ("BR") growth rate to project
3 dividends in 2007 and 2008. This is inappropriate because *Value Line* already projects
4 DPS growth in those years. Investors relying on a multi-stage DCF model would use
5 information concerning DPS growth to the greatest extent possible in the first stage.

6
7 Second, Dr. Zepp takes *Value Line's* projected BR growth rate for 2006 – 2008 and
8 misapplies it to years 2009 – 2016. *Value Line* does not project growth for the years 2009
9 – 2016, and Dr. Zepp's perpetual growth rate does not begin until the year 2017.
10 Therefore, inserting a projected BR growth rate for the years 2006 – 2008 into years 2009
11 – 2016, before starting the perpetual growth rate in 2017, is speculative. The Commission
12 should give no weight to Dr. Zepp's restatement of Staff's multi-stage DCF analysis.

13
14 **RESPONSE TO THE REBUTTAL TESTIMONY OF RALPH J. KENNEDY**

15 **Liquidity Premium**

16 **Q. On pages 21 – 24 of his rebuttal testimony Mr. Kennedy discusses the Company's**
17 **Series K bond issue and states that potential investors required a liquidity premium.**
18 **He also states that investors in the Company's common stock are likely to have the**
19 **same concerns. (See rebuttal testimony of Ralph J. Kennedy. p. 23 at 19 – 22.) Does**
20 **Staff agree that Arizona Water's equity investors would require a liquidity**
21 **premium?**

22 A. No. A liquidity premium is related to the risk that a security, initially sold in a primary
23 market, cannot be easily sold in a secondary market. However, Arizona Water's stock is
24 privately held, similar to the manner in which Arizona Public Service Co.'s stock is held
25 by Pinnacle West Capital Corp., and thus there is no primary or secondary market and it is
26 not subject to secondary market liquidity concerns. Assuming Arizona Water's stock was

1 publicly traded, Staff's market-based ROE has already accounted for risks that would be
2 priced by the market.

3

4 **RESPONSE TO THE REBUTTAL TESTIMONY OF WALTER W. MEEK**

5 **CAPM**

6 **Q. On page 5 of his rebuttal testimony Mr. Meek states that while the required returns**
7 **being produced by the CAPM "may be theoretically sound, [they] are suspect, from a**
8 **common sense perspective." (See rebuttal testimony of Walter W. Meek. P. 5 at 7 –**
9 **8.) Does Staff agree?**

10 **A.** No. Staff's CAPM cost of equity estimates average 9.4 percent. On pages 5 – 7 of Staff's
11 direct testimony I provided information regarding historical returns for average risk
12 securities as well as observational perspective on current capital costs. On page 6 of
13 Staff's direct testimony I reported that Wharton School finance professor Jeremy Siegel
14 published his finding that the average compound and arithmetic returns on U. S. equities
15 have been 8.3 percent and 9.7 percent, respectively, using 199 years of data from 1802
16 through 2001.²³ One should keep in mind that these returns are actual returns, not
17 expected returns. However, the risk of a regulated water utility, as measured by beta, is
18 significantly below the theoretical beta (1.0) of average risk securities. Therefore, Staff's
19 recommendation is consistent with published returns and informed common sense.

20

21 **Q. Does evidence suggest that capital costs in general are lower now than they have been**
22 **in decades?**

23 **A.** Yes. On page 6 of Staff's direct testimony I presented Chart 2, shown below. Chart 2 of
24 Staff's direct testimony puts interest rates and capital costs in general, into historical
25 perspective. Interest rates have declined significantly in the past twenty years and are
26 currently at their lowest level since the 1950s.

²³ Siegel, Jeremy J. Stocks for the Long Run. 3rd edition. McGraw-Hill, New York. 2002. p. 13.

Chart 2: History of 5- and 10-Year Treasury Yields



According to the CAPM, the cost of equity moves in the same direction as interest rates. Chart 2 suggests that capital costs, including the cost of equity, are lower than they have been in decades.

Q. On page 5 of his rebuttal testimony Mr. Meek states that the required return produced by Staff's CAPM is "substantially less than what water and gas companies are currently earning, and well below *Value Line's* projections for 2004 and the 2006 – 2008 time period." (See rebuttal testimony of Walter W. Meek. p. 5 at 11 – 14.) Mr. Meek again cites returns reported by C. A. Turner Utility Reports on page 9 of his rebuttal testimony. What type of return is Mr. Meek referring to?

A. Mr. Meek is referring to book/accounting returns. Book returns represent what the sample water companies have recorded or are projected to record as book earnings as a percentage of common equity. These particular book returns do not represent current *market* returns, and therefore cannot be used to gauge the current cost of equity.

Q. Does *Value Line* project market returns for the sample water companies?

A. Yes. In the upper-left-hand corner of the *Ratings & Reports*, *Value Line* projects the average annual market return – this is price appreciation plus dividend income, for each

1 company for the next three-to-five years. *Value Line's* projected three-to-five year price
2 appreciation plus dividend income return for American States Water, California Water,
3 and Philadelphia Suburban Corp. averages 6.2 percent. The investors represented by Mr.
4 Meek would logically look at this projection before examining book returns if they were
5 purchasing stock in these companies.

6
7 **Risk**

8 **Q. On page 7 of his rebuttal testimony Mr. Meek states that he does not agree with**
9 **Staff's testimony that "the risk associated with a particular firm is 'eliminated' if**
10 **securities are purchased in portfolios." (See rebuttal testimony of Walter W. Meek.**
11 **p. 7 at 5.) What type of risk is Staff referring to?**

12 A. Staff is referring to unique risk. Unique risk is also known as diversifiable risk, or
13 unsystematic risk.

14
15 **Q. Can Staff explain how the unique risk of a security can be eliminated through**
16 **shareholder diversification?**

17 A. Yes. According to modern portfolio theory ("MPT"), investors purchase assets in
18 portfolios, and in doing so reduce the total variation of their returns. The total variation of
19 a portfolio is less than the sum of its parts because in a diversified portfolio of risky assets
20 some returns are high while others are low, offsetting each other. For example, stock A (a
21 suntan lotion company) and stock B (an umbrella company) are both expected to earn 10
22 percent and have equivalent risk. However, it seems that returns on the two stocks move
23 in exactly opposite directions. When it is sunny, stock A makes unusually good returns
24 but stock B makes unusually poor returns. When it is rainy, stock B makes unusually
25 good returns and stock A makes unusually poor returns. Combining the two stocks in a
26 portfolio allows all risk to be diversified away, even though each of the companies'
27 returns is still quite risky independently. This risk that can be diversified away becomes

1 irrelevant and investors do not require a return on this unique risk. Diversification allows
2 investors to reduce their level of risk exposure for any given level of expected return. The
3 risk that is left is called systematic risk. Systematic risk measures the extent to which a
4 security's returns are correlated with returns in the general market of risky assets.

5
6 MPT is a widely accepted concept that gained added fame in 1990 when the Nobel Prize
7 in Economic Sciences was awarded to Harry Markowitz, Merton Miller, and William
8 Sharpe for their work on the concept.

9

10 **CONCLUSION**

11 **Q. Please summarize Staff's recommendations.**

12 A. Staff continues to recommend the Commission adopt a 9.0 percent ROE, an 8.46 percent
13 cost of long-term debt, a 4.0 percent cost of short-term debt, and an 8.6 percent rate of
14 return. Staff recommends the Commission give little weight to the rebuttal testimony of
15 Company witness Dr. Thomas Zepp. Staff disagrees with his methods and his estimates
16 are not representative of current costs of equity.

17

18 **Q. Does this conclude Staff's surrebuttal testimony?**

19 A. Yes.

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER
Chairman

JIM IRVIN
Commissioner

WILLIAM A. MUNDELL
Commissioner

JEFF HATCH-MILLER
Commissioner

MIKE GLEASON
Commissioner

IN THE MATTER OF THE APPLICATION OF)
ARIZONA WATER COMPANY FOR)
ADJUSTMENTS TO ITS RATES AND)
CHARGES FOR WATER UTILITY)
SERVICE)
_____)

DOCKET NO. W-01445A-02-0619

DIRECT

TESTIMONY

OF

JOHN S. THORNTON, JR.

CHIEF, FINANCIAL & REGULATORY ANALYSIS SECTION

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

JULY 8, 2003

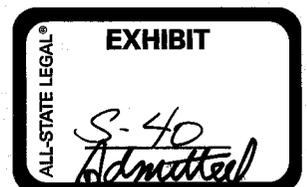


TABLE OF CONTENTS

	<u>Page</u>
Introduction.....	1
Summary of Testimony and Recommendations.....	1
The First Tier – The Lifeline Rate.....	2
Marginal Cost Pricing, Regulation, and Economic Efficiency.....	2
The Third Tier – Average Incremental Cost Calculation.....	9
The Second Tier.....	10
Consolidated Pricing Principles Is Not Consolidated Rates.....	10

EXHIBIT

Witness Qualifications Statement.....	JST-1
---------------------------------------	-------

**EXECUTIVE SUMMARY
ARIZONA WATER COMPANY
DOCKET NO. W-01445A-02-0619**

Mr. Thornton's testimony addresses the appropriateness of an inverted-block three-tiered rate design for Arizona Water Company's Eastern Group based on accepted marginal cost rate design principles. Mr. Ron Ludders applies these principles to the individual systems to design specific rates. Specifically, the inverted block rate design principle that Staff recommends includes a lifeline rate for the first 3,000 gallons of consumption, a marginal-cost-based premium rate for the third block of consumption, and a middle block rate that is derived to achieve the desired revenue requirement in conjunction with the first and third blocks. Staff refers to this rate design as a three-tiered rate design. The first tier covers the first two thousand gallons of consumption and is priced at a twenty-percent discount to the second tier rate. The third tier is priced at a twenty-percent premium to the second tier rate. The second tier is derived for each system depending on the system revenue requirement and other rate design considerations.

The three-tiered rate structure is not expected to effect conservation in the short run: it is primarily a cost-based rate structure using a marginal cost concept. However, a three-tiered price signal is expected to affect long-run consumption patterns and it offers the potential for conservation in the longer term.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is John S. Thornton, Jr. I am the Chief of the Financial and Regulatory Analysis
4 Section of the Utilities Division ("Staff"), Arizona Corporation Commission ("ACC" or
5 "Commission"). My business address is 1200 West Washington Street, Phoenix, Arizona
6 85007.

7
8 **Q. Please describe your educational background and professional experience.**

9 A. Please see my Witness Qualifications Statement, attached as Exhibit JST-1, for a synopsis
10 of my educational background and professional experience.

11
12 **Q. What is the scope of your testimony in this case?**

13 A. My testimony addresses rate design principles in this case. Mr. Ron Ludders applies these
14 principles to the individual systems. Specifically, I address the appropriateness of an
15 inverted-block three-tiered rate design for Arizona Water Company's Eastern Group. The
16 inverted block rate design principle that Staff recommends is based on a lifeline rate for
17 the first block, a marginal-cost-based rate for the third block, and a middle block that is
18 derived to achieve the desired revenue requirement in conjunction with the first and third
19 blocks. I refer to this rate design as a "three-tiered" rate design.

20
21 **SUMMARY OF TESTIMONY AND RECOMMENDATIONS**

22 **Q. Briefly summarize your testimony.**

23 A. Staff recommends three tiers for Arizona Water Company's rate design for all systems.
24 Staff recommends that the first tier cover the first two thousand gallons of consumption
25 and be priced at a twenty-percent discount to the second tier rate. Staff recommends that
26 the third tier be priced at a twenty-percent premium to the second tier rate. The second

1 tier is derived for each system depending on the system revenue requirement and rate
2 design considerations. Mr. Ludders addresses revenue requirements and rates for the
3 systems.

4
5 **THE FIRST TIER – THE LIFELINE RATE**

6 **Q. What principle does Staff recommend for developing the first tier for the Eastern**
7 **Group?**

8 A. Staff recommends a lifeline rate; a rate that has a lower rate than the system's average
9 commodity cost and that covers a minimum amount of gallons. The lifeline rate concept
10 is appropriate for water pricing because it is the only utility commodity that is necessary
11 for life and is actually ingested by consumers. The lifeline rate can provide affordable and
12 available minimum amounts of water to a consumer. Staff recommends that the lifeline
13 rate be set at an approximate twenty (20) percent discount to the second tier rate. Staff
14 recommends that the first tier apply to the first three thousand gallons of consumption per
15 customer.

16
17 **Q. How did Staff choose the three thousand gallon break for the first tier?**

18 A. Staff considered a number of factors, including the Arizona Department of Environmental
19 Quality engineering standard for the minimum level of consumption: one hundred gallons
20 per day per consumer. The three-thousand gallon break provides a minimum amount of
21 water for one consumer per month given an average of about thirty days in any given
22 month.

23
24 **MARGINAL COST PRICING, REGULATION, AND ECONOMIC EFFICIENCY**

25 **Q. Has marginal cost pricing been used in setting utility rates in the United States?**

1 A. Yes. Marginal cost pricing has been used in rate design for regulated investor-owned
2 utilities in the United States. The American Water Works ("AWWA") Manual M1 reports
3 the following:

4
5 Marginal cost pricing has been the topic of extensive discussion in rate-setting
6 theory over the last 25 years. From a purely theoretical viewpoint, it results in an
7 optimal rate schedule that sends accurate price signals to system customers.
8

9 In my former jurisdiction of Oregon, we used marginal cost pricing in electricity rate
10 design. In this case, Staff recommends using embedded cost to establish the revenue
11 requirement and marginal cost pricing principles in rate design. Dr. Patrick Mann, a
12 published authority in applying marginal cost pricing to water pricing, reports the
13 following in his article "Marginal-Cost pricing: Its Role in Conservation"¹:

14
15 A survey of state commissions indicates that the majority still require regulated
16 water utilities to file rates based on fully allocated or embedded-cost approaches.
17 In a few states, though, forward-looking rate structures have been instituted to
18 reflect modified marginal cost pricing. Such applications, however, have required
19 regulators to scale back the calculated marginal-cost price to a level that would
20 allow revenue requirements be recouped on an embedded cost basis. A few water
21 utilities have adopted seasonal or inverted-block pricing based on estimations of
22 marginal-cost differentials by season or demand function. The scaling
23 requirement, however, along with other factors, has limited the appeal of this rate-
24 setting technique.

25
26 In his paper "Water-Utility Regulation: Rates and Cost Recovery"² Dr. Mann writes,

27
28 Both state and local rate regulation of water utilities can be made more efficient.
29 Certain costing, financing, and pricing initiatives could reduce the inefficiencies
30 associated with monopoly regulation. These include:

31 •integrating marginal or incremental costing into the rate-design process;...

¹ Published in the *Journal of the American Water Works Association* and available at <http://www.cepis.ops-oms.org/muwww/fulltext/repind48/marginal/marginal.html>.

² Available at <http://www.rppi.org/ps155.html>.

1 By generating pricing signals that more accurately reflect water's scarcity value,
2 these initiatives would be consistent with the development of market-based
3 allocation systems for regional water supplies.
4

5 Marginal cost pricing signals are used in rate design so that consumers receive price
6 signals that reflect the cost of incremental system capacity, resulting in economic
7 efficiency. Social economic efficiency is realized when marginal cost and marginal
8 revenue are in equilibrium. This economic concept is taught early in microeconomic
9 coursework and is central to neoclassical economics.
10

11 **Q. Has marginal cost pricing been used in setting utility rates outside of the United**
12 **States?**

13 A. Yes. Marginal cost pricing has been used in rate design outside of the United States in
14 many parts of the world. My research showed marginal cost pricing principles used in the
15 European Union, Canada, the Americas (apart from the U.S. and Canada), Australia,
16 Africa, and Asia. The Office of Water Services for the United Kingdom, as early as 1997,
17 established the importance of calculating long-run marginal cost for purposes of water
18 pricing (MD148 & MD123). Setting price equal to marginal cost is often a condition of
19 international loans to developing countries.³
20

21 **Q. Can you provide a case study of applying the marginal cost principal to water rate**
22 **setting?**

23 A. Yes. The *Journal of the American Water Works Association* published an article titled
24 "Developing Rates With Citizen Involvement"⁴ in which it presented a case study of
25 applying the marginal cost principal to water rate setting for the Marin Municipal Water
26 District ("MMWD"). A project advisory committee representing various interests applied

³ See <http://www.lboro.ac.uk/departments/cv/wedc/papers/23/groupf/barker.pdf>.

⁴ Robert Reed and Ronald Johnson, "Developing Rates With Citizen Involvement" *Journal of the American Water Works Association*, vol. 86, no. 10 (October 1994).

1 the marginal cost principle which resulted in a three-tiered inverted block rate structure
2 after MMWD board approval. The article states:

3
4 After the [project advisory committee] discussed the advantages of marginal cost,
5 it decided to follow marginal cost principles in developing a tiered rate structure.
6 This approach was selected for the following reasons:

- 7 •The marginal cost approach provides a sound "cost of service"
8 justification for the water rate tiers.
9 •Marginal costs reflect MMWD's actual cost for obtaining and delivering
10 additional water to meet customer demand.
11 •Marginal cost pricing provides customers with a price signal that reflects
12 the actual cost of water service, thus reducing the likelihood of the over- or
13 underutilization of water.
14 •When water is priced at the marginal cost, demand can indicate when
15 consumers are willing to pay the price of acquiring additional water
16 supplies.

17 The decision to apply marginal cost principles to the rate design gave the [project
18 advisory committee] a sound cost basis for the tiered rates.
19

20 Applying marginal cost principles to the Eastern Group in this docket provides a sound
21 cost basis for tiered rates as well.

22
23 **Q. What did the MMWD choose as the marginal cost basis for the third tier?**

24 **A.** The MMWD ended up basing the third tier on the marginal cost of reclaimed water. Staff
25 finds value in this notion because it is consistent with applying social costs to rate design,
26 regardless of whether any particular system is expanding, contracting, or faces increased
27 costs with increased capacity. The reclamation approach captures the notion that water is
28 a scarce resource and that its pricing should include the cost of returning it to an aquifer.
29 Water treatment costs represent a cost of reclaiming water.

30
31 **Q. Did the MMWD see consumption fall as a result of the three-tiered rate design?**

32 **A.** No. A year after implementation the MMWD found that water use was close to predicted
33 levels and that sufficient revenues were generated throughout the year. The MMWD

1 experience is consistent with the observation that water use changes little with a three-
2 tiered rate design. Economists would say that water is "price inelastic." Therefore, Staff
3 did not make any changes to test-year bill counts in conjunction with the three tiers.

4

5 **Q. Does the observation that consumption did not fall negate the value of the three-**
6 **tiered rate design.**

7 A. No. The three-tiered rate design was still valuable because it helps encourage economic
8 efficiency, even if consumption did not fall, and prices the product higher for greater
9 levels of consumption. It also provided price signals for future consumption that can be
10 used by consumers in longer-range planning, such as in choice of home appliances and
11 landscaping.

12

13 **Q. Is the three-tiered rate design consistent with a conservation mandate?**

14 A. The three-tiered rate design is primarily a cost-based rate structure using a marginal cost
15 concept. The three-tiered rate design is not used as a justification for conservation but it
16 can serve to modify behaviour in the long-term and cause preservation of a scarce
17 resource. The three-tiered rate design is consistent with the State of Arizona's long-run
18 vision of preserving water by sending the correct price signal.

19

20 **Q. Has the marginal cost concept been used yet in water rate setting before the Arizona**
21 **Corporation Commission ("ACC") to the best of your knowledge?**

22 A. The idea of using marginal cost pricing for inverted block water rate design has not yet
23 been used before the ACC. Its application represents an important step forward in rate
24 design for water companies, particularly given the scarcity of water in the desert
25 Southwest.

26

1 **Q. Has the Commission previously approved inverted block rate design for a water**
2 **company in the form of tiered rates?**

3 A. Yes. The Commission has previously approved inverted block rate design for water
4 companies in the form of tiered rates. Recent cases include Starlight Water Co. (Docket
5 No. W-02848A-02-0449, a four-tiered rate structure in which rates increased from \$3.50
6 per thousand gallons to \$10.00), Mt. Lemmon Cooperative Water Co., Inc. (Docket No.
7 W-01408A-02-0595, a four-tiered rate structure in which rates increased from \$6.00 per
8 thousand gallons to \$20.00), and JNJ Enterprises, L.L.C. dba Christopher Creek Haven
9 Waven Co. (Docket No. W-03880A-02-0462, a three-tiered rate structure in which rates
10 increased from \$4.00 per thousand to \$6.00).

11
12 **Q. Why does marginal cost pricing result in economic efficiency?**

13 A. Marginal cost pricing results in prices that represent the marginal cost of additional water.
14 Water consumption and production are optimized when society has produced that last unit
15 of water where marginal cost equals marginal benefit. This equilibrium occurs when
16 marginal cost and marginal revenue are equal. A simple example assuming increasing
17 supply costs might help to explain the concept: The optimal output of Honda Civic cars is
18 achieved when the last consumer values the car just at its marginal cost of production.
19 The next Civic after equilibrium will cost more to produce than the next consumer values
20 it; therefore, it represents overproduction. The previous Civic to equilibrium is valued
21 more by the previous consumer than it costs to produce; therefore it represents
22 underproduction.

23
24 **Q. Why is marginal cost pricing particularly important for water rate design?**

25 A. Water is a unique exhaustible good whose embedded marginal raw cost is close to free
26 until the "well runs dry", at which point it becomes extraordinarily expensive if not

1 infinitely expensive. An upper limit on water cost might be measured by trucked-in water
2 that has run approximately \$46⁵ per thousand gallons for some systems who have recently
3 faced this expense, versus pennies per thousand for native water supplies. Even at a
4 higher trucked in cost, physical quantity is severely limited through trucking. The State of
5 Arizona and the federal government have gone to great expense and social cost to bring
6 water to the desert in the form of the Central Arizona Project. Both the general nature of
7 water economics and our own specific hydrological experience in Arizona argue for
8 applying marginal cost pricing to water rate design.
9

10 **Q. Is marginal cost pricing appropriate even for declining systems?**

11 A. Yes. Even if a system faces no increases in demand or a moderate decline it will still face
12 replacement costs for existing wells, treatment, storage, and transmission. For example, if
13 new tires for your family's car cost more than the existing tires then you might consider
14 the expense of tire replacement using the cost of the new, or marginal, tires in calculating
15 the cost of driving and in deciding whether to drive or not. Note that in this example you
16 are not considering buying a new car and adding to your family's driving capacity. By
17 pricing the new car tire into your decision making you are properly facing the marginal
18 economic cost of driving. Therefore, inflationary pressures for marginal replacement
19 facilities, as well as increases in capacity, can be priced into rates using the marginal cost
20 approach. Increased Environmental Protection Agency requirements are bound to
21 increase costs of treating existing water supplies and demand. These increased
22 environmental costs can also be incorporated into tiered pricing using the marginal cost
23 concept. A system that is slated to be decommissioned is probably not a good candidate
24 for applying marginal cost pricing principles.
25

⁵ Estimated by adding water cost at \$5.95 per 1,000 gallons to hauling expense of \$260/6,500 gallons.

1 **Q. Did Staff strictly apply marginal cost or a similar analytical method to the Eastern**
2 **Group.**

3 A. Strictly speaking, Staff applied an "average incremental cost" approach to the Eastern
4 Group. The difference between marginal cost and average incremental cost is that
5 marginal cost adds capacity in small amounts while average incremental cost adds
6 capacity in lumpy amounts. The average incremental approach is more practical and
7 applicable in this case, but the fundamental concept is the same. Staff relied on the
8 National Regulatory Research Institute's publication *Cost Allocation and Rate design for*
9 *Water Utilities* (NRRI90-17).

10
11 **THE THIRD TIER – AVERAGE INCREMENTAL COST CALCULATION**

12 **Q. What rate design calculation does Staff recommend for the third tier?**

13 A. Staff recommends that the third tier be set at twenty (20) percent above the second tier,
14 absent extenuating circumstances. The twenty percent factor was derived by dividing
15 Apache Junction's average incremental cost (\$3.74) by Apache Junction's system
16 "benchmark rate"⁶ (\$3.09). Staff calculated this relationship from Apache Junction data
17 and recommends that this relationship be applied across all systems in the Eastern Group
18 because they were filed as a group and should be governed by the same rate design
19 principles, to the extent practicable. Apache Junction data were particularly helpful
20 because the large size of the system permitted the average incremental cost to more
21 closely resemble a marginal cost calculation. The average incremental cost more closely
22 resembles a marginal cost calculation for Apache Junction because one well was added to

⁶ The system benchmark rate is derived by multiplying .75 times the revenue requirement and dividing the result by the adjusted test year gallonage. The system benchmark rate is an approximation of the average cost per 1,000 gallons if the rates were based on a cost-of-service study approach (and ignoring existing rates) that assumes that the customer charges make up 25 percent of costs and that 75 percent of costs are attributable to developing, treating, and delivering the commodity.

1 the largest of the eight systems, making the incremental addition as close to a marginal
2 addition as possible.

3
4 **THE SECOND TIER**

5 **Q. What rate design principle does Staff recommend for the second tier?**

6 A. Staff recommends that the second tier's rate (and the breakpoint with the third tier) be set
7 with consideration to existing rates and charges and usage patterns, amongst other general
8 rate design considerations (including gradualism). The actual tiered rates and the
9 breakpoint between the second and third tiers are set by the revenue requirements analyst
10 in this case.

11
12
13 **CONSOLIDATED PRICING PRINCIPLES IS NOT CONSOLIDATED RATES**

14 **Q. Are the marginal cost/average incremental cost principles Staff is recommending in
15 this docket the same as consolidated rates?**

16 A. No. Staff does not recommend consolidated rates in this docket. Consolidated rates are
17 inappropriate for water systems whose embedded costs vary from system to system and
18 who derive no apparent benefit from consolidation. Staff's recommendation in this docket
19 is a consistent rate design *principle* rather than a consistent *rate* for the Eastern Group.
20 Consolidated rates are probably the most appropriate in the telephone industry, which is
21 an integrated system and whose system integration benefits all users. A simple example
22 might help explain why consolidation can be appropriate in integrated systems: A
23 telephone in Prescott benefits a resident of Phoenix because it allows the Phoenician to
24 have broader communication access. In contrast, water availability in Apache Junction
25 does not benefit Miami users; two systems that are not physically integrated.

26

1 **Q. Do you have any concluding remarks on the importance and applicability of**
2 **marginal cost pricing in Arizona water rates?**

3 A. Yes. Water is a scarce natural resource whose pricing should include the notion of
4 scarcity, increasing cost, and/or the cost of reclaiming and returning it. Marginal cost
5 pricing provides a sound and accepted economic basis for inverted-block three-tiered rates
6 across Arizona Water Company's Eastern Group, and for other companies under Arizona
7 Corporation Commission jurisdiction.

8
9 **Q. Does this conclude your direct testimony?**

10 A. Yes, it does.

Exhibit JST-1

**Witness Qualifications Statement
John S. Thornton**

Witness Qualifications Statement

NAME: JOHN S. THORNTON, JR.

ADDRESS: 1200 West Washington St. Phoenix, AZ 85007

EDUCATION: Master of Science Degree from the University of London, having completed the graduate program in economics at The London School of Economics and Political Science (1986)

Graduate Diploma in Economics from The London School of Economics (1985).

Bachelor of Arts degree, major in economics, from Willamette University (1984).

Certified Rate of Return Analyst, member of the Society of Utility and Regulatory Financial Analysts.

1998 passed level I of the CFA
1995 PaineWebber Seminar on Corporate Finance for the Utility Industry.
1990 MIT/Harvard Public Disputes Resolution Program seminar.
1990 National Association of Regulatory Utility Commissioners (NARUC) Advanced Regulatory Studies Program.
1988 NARUC Annual Regulatory Studies Program.

EXPERIENCE: Chief, Financial & Regulatory Analysis Section, Utilities Division, Arizona Corporation Commission, 2001 to present.

- Testified in the following dockets:
- W-01656A-98-0577 & WS-02334A-98-0577—Sun City Water Co. and Sun City West Utilities Co.'s request for approval of the Central Arizona Project water utilization plan.
- E-01345A-02-0707—Arizona Public Service Co.'s application for authority to incur \$500,000,000 of debt and to acquire a financial interest in an affiliate.
- E-01345A-02-0840—Arizona Public Service Co.'s application for authority to loan \$125,000,000 of debt to an affiliate.
- E-01345A-02-0403—Arizona Public Service Co.'s application for approval of adjustment mechanisms.
- E-01032-00-0751, G-01032A-02-0598, E-01933A-02-0914, E-1032C-02-0914, G-01032A-02-0914—Consolidated dockets of UniSource, Citizens Communications Arizona Gas Division (AGD), & Citizens Communications Arizona Electric Division (AED); general rate case for the AGD, PPFAC adjustment for AED, and sale of AGD and AED to UniSource.

Witness Qualifications Statement (continued)

Senior Analyst with the Public Utility Commission of Oregon, 1988-2001.

- Testified or provided rate of return analyses in the following dockets:
- UE 102—PGE disaggregation/general rate case (chief rate of return witness).
- UE 94—PacifiCorp general rate case (chief rate of return witness).
- UE 93 (UM 592, UM 694)—Portland General Electric Co. excess power cost/Coyote/BPA filing.
- UE 92—Idaho Power general rate case.

- UE 88—Portland General Electric Co. general rate case (chief rate of return witness).
- UE 85/UM 529—Portland General Electric Co. Earnings test for Trojan Shutdown Cost Adjustment Account.
- UE 84—Idaho Power Co. deferred account earnings benchmark.
- UE 82/UM 445—Trojan Outage Cost Adjustment Account earnings test benchmark.
- UE79—Portland General Electric Co. general rate case (chief rate of return witness).
- UG 104/UG 105/UG 106—LDC deferred account earnings test benchmarks.
- UG88—Cascade Natural Gas Co. general rate case (chief rate of return witness).
- UG81—Northwest Natural Gas Co. general rate case (chief rate of return witness).
- UT 125—US WEST Communications, Inc general rate case (chief rate of return witness).
- UT 113—GTE Northwest general rate case (chief rate of return witness).
- UT101—United Telephone Co. of the Northwest general rate case (chief rate of return witness).
- UT85—US WEST general rate case (capital structure and debt cost witness).
- RP95-409—Northwest Pipeline general rate case (FERC).
- RP93-5—Northwest Pipeline general rate case (FERC).

Responsibilities have also included the following:

- Analyses and recommendations in over fifty financing dockets.
- UM 903— Northwest Natural, cost of capital analysis for purchased gas adjustment mechanism.
- UM 21—Cost of capital analysis for avoided cost calculations.
- UM 351—Cost of capital analysis for long-run incremental-cost studies.
- UM 573—Analysis of purchased power on the utility's cost of capital.
- UM 773—Cost of capital analysis for long-run incremental-cost studies.
- UM 814—Enron's application to acquire Portland General Electric Co.
- UM 918—Scottish Power plc's application to acquire PacifiCorp.
- UM 967—Sierra Pacific Resource's application to acquire Portland General Electric Co.

Speaker—US Agency for International Development's Conference on Private Sector Participation in the Colombian Power Sector.

Witness Qualifications Statement (continued)

Presented beta adjustment and distribution risk discount testimony on behalf of the Division of Ratepayer Advocates of the California Public Utility Commission, Application Nos. 98-05-019, 021, & 024.

Sierra Pacific Power Co. compliance filing docket no. 99-4001 and Nevada Power Co. compliance filing no. 99-4005: rate of return witness for intervenors Mirage Resorts, Inc., Park Place Entertainment Corp., and the Mandalay Group.

Corporate finance witness for the Industrial Customers of Northwest Utilities, Docket No. UE 010395, Avista Utilities.

Docket Nos. 01-10001 and 01-10002 re: application of Nevada Power Co. for authority to increase its annual revenue requirement for general rates charged to all classes of electric customers and for relief properly related thereto: Rate of return witness for intervenors MGM-Mirage.

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER

Chairman

JIM IRVIN

Commissioner

WILLIAM A. MUNDELL

Commissioner

JEFF HATCH-MILLER

Commissioner

MIKE GLEASON

Commissioner

IN THE MATTER OF THE APPLICATION OF)
ARIZONA WATER COMPANY FOR)
ADJUSTMENTS TO ITS RATES AND)
CHARGES FOR WATER UTILITY)
SERVICE)
_____)

DOCKET NO. W-01445A-02-0619

SURREBUTTAL

TESTIMONY

OF

JOHN S. THORNTON, JR.

CHIEF, FINANCIAL & REGULATORY ANALYSIS SECTION

UTILITIES DIVISION

ARIZONA CORPORATION COMMISSION

SEPTEMBER 3, 2003

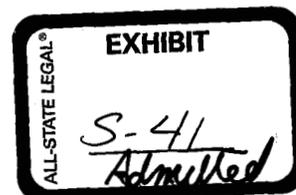


TABLE OF CONTENTS

	<u>Page</u>
Introduction.....	1
Summary of testimony and recommendations.....	1
Comments on the testimony of William M. Garfield	1
Comments on the testimony of Ralph J. Kennedy.....	2

**EXECUTIVE SUMMARY
ARIZONA WATER COMPANY
DOCKET NO. W-01445A-02-0619**

Mr. Thornton's surrebuttal testimony responds to Arizona Water Company's ("Arizona Water" or the "Company") testimony regarding the three-tiered rate design and its basis in marginal cost principles. The Company argues that three-tiered rate design is flawed for a number of reasons. Mr. Thornton addresses the Company's concerns and continues to recommend a three-tiered commodity rate structure given the increasing marginal cost of new supply.

1 **INTRODUCTION**

2 **Q. Please state your name.**

3 A. My name is John S. Thornton, Jr.
4

5 **Q. Are you the same John S. Thornton, Jr. who testified earlier?**

6 A. Yes, I am.
7

8 **Q. What is the scope of your surrebuttal testimony?**

9 A. My testimony responds to Arizona Water Company's testimony regarding the
10 appropriateness of tiered rates and applying marginal cost pricing principles in this
11 proceeding.
12

13 **SUMMARY OF TESTIMONY AND RECOMMENDATIONS**

14 **Q. Briefly summarize your testimony.**

15 A. I correct certain misunderstandings and miscommunications on the part of Arizona Water
16 Company regarding my prepared direct testimony. In particular, I clarify that Staff
17 applied the marginal cost pricing approach in this case to inject a forward-looking cost of
18 service approach to rate design. Staff neither *intended* to produce subsidies between meter
19 classes nor did it *intend* to develop tiered rates purely for conservation reasons.
20

21 **COMMENTS ON THE TESTIMONY OF WILLIAM M. GARFIELD**

22 **Q. Mr. Garfield testifies on page 17 at 12 to 16 that "[S]taff seeks to subsidize certain**
23 **residential customers by shifting revenue requirements to commercial and other**
24 **non-residential customers with no basis whatsoever for such a change, except Mr.**
25 **Thornton's testimony that Staff's proposed rate design serves the greater "social**
26 **good." Is his characterization of Staff's intent and your testimony correct?**

1 A. No, his testimony is not correct. Staff had no such intent to provide any subsidies beyond
2 the lifeline rate, which is so limited (3,000 gallons) that it should be not be considered a
3 widespread system of cross-subsidization shaping Staff's rate design. He seems to argue
4 that the third tier is *intended* to subsidize users who would not fall into the third tier by
5 those who would fall in the third tier. His speculation as to Staff's *intent* is incorrect.

6
7 Also, his testimony would appear to suggest that he is quoting the words "social good"
8 from my testimony. I did not refer specifically to the "social good" in the testimony
9 references he cites. His term "social good" might be considered to go beyond the point of
10 Staff's approach (which is directed to social economic efficiency) and venture primarily
11 into political or other social considerations. My testimony did not venture into these other
12 considerations.

13
14 **COMMENTS ON THE TESTIMONY OF RALPH J. KENNEDY**

15 **Q. What appear to be Mr. Kennedy's concerns with Staff's marginal cost pricing**
16 **approach?**

17 A. Mr. Kennedy testifies on page 9 at 17 to 22 that the approach is inadequately developed
18 and lacks both depth and breadth of quantitative support.

19
20 **Q. Do you agree that the marginal cost approach is inadequately developed and lacks**
21 **both depth and breadth of quantitative support?**

22 A. No, I do not agree with him. The approach has been developed over the past few decades
23 and the marginal cost theory behind is as old as neoclassical economics. The marginal
24 cost calculations and quantitative support can be relatively simple for a water system
25 (though more complicated for an electric system as an example), but their simplicity in
26 calculation should not be misconstrued as minimizing their importance.

1 **Q. Mr. Kennedy testifies that Staff's rate design is not supported by a cost-of-service**
2 **study. Do you agree?**

3 A. No, I do not agree. In fact, Staff's marginal cost analysis is a cost-of-service study,
4 though it is based on forward-looking costs rather than embedded costs on which a
5 traditional study would rely.

6
7 **Q. Regarding your specific calculation, Mr. Kennedy testifies on page 12 at 1 to 3 that**
8 **Staff did not explain how it selected or dealt with reserve or unused capacity, or**
9 **unaccounted for water. What is your response?**

10 A. Those sort of details are normally left to working papers or their clarification through data
11 requests. Despite Mr. Kennedy's lack of data request for such specific clarification, Staff
12 is happy to answer his questions here: Staff selected its output denominator through an
13 engineer's estimate of the number of customers that would be served by an additional well
14 on the Apache Junction system. Staff dealt with unaccounted for water by using average
15 end-use consumption per customer already on the system, rather than using pumped water.
16 Staff did not assume reserve or unused capacity.

17
18 **Q. Mr. Kennedy testifies on page 12 at lines 14 to 16 that he presumes that Staff agrees**
19 **with and generally followed the article you cited, "Developing Rates With Citizen**
20 **Involvement." Is his presumption correct?**

21 A. No, his presumption is not correct. As I testified on page 9 at 7 to 9 of my direct
22 testimony, "Staff relied on the National Regulatory Research Institute's publication *Cost*
23 *Allocation and Rate design for Water Utilities* (NRRI90-17)" in applying the marginal
24 cost approach. The article Mr. Kennedy cites was used to present a case study of applying
25 the marginal cost principal to water rate setting. (See my testimony at page 4 beginning at
26 21.)

1

2 **Q. Mr. Kennedy testifies on page 13 beginning at 17 that your testimony on price**
3 **elasticity may lead readers to incorrect conclusions. What is his argument and is he**
4 **correct?**

5 A. Mr. Kennedy's argument seems to be that price inelasticity does not necessarily mean that
6 rate design can disregard the effect of price elasticity. Unfortunately, Staff is
7 recommending a commodity price *decrease* for Arizona Water Company's largest Eastern
8 Group system, Apache Junction. If the Commission followed his advice then bill counts
9 should be adjusted upward leading to even lower commodity rates. Mr. Kennedy does not
10 recommend this adjustment in his testimony (which would lower rates further) and,
11 therefore, does not appear to support his own argument in practice when the adjustment
12 works against the Company's interest. To clarify, Staff did not make an elasticity
13 adjustment in the case of either increased or decreased rates. An elasticity adjustment
14 would be cumbersome and speculative, and therefore, no adjustment is appropriate in this
15 proceeding.

16

17 **Q. Does this conclude your surrebuttal testimony?**

18 A. Yes, it does.

**COST ALLOCATION AND RATE DESIGN
FOR WATER UTILITIES**

Janice A. Beecher
Senior Research Specialist
The National Regulatory Research Institute

Patrick C. Mann
Institute Associate and Professor of Economics
West Virginia University

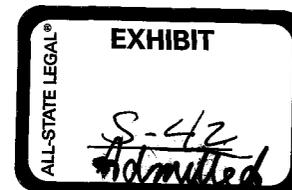
with

James R. Landers
Graduate Research Associate
The National Regulatory Research Institute

THE NATIONAL REGULATORY RESEARCH INSTITUTE
The Ohio State University
1080 Carmack Road
Columbus, Ohio 43210
(614) 292-9404

December 1990

This report was prepared by The National Regulatory Research Institute (NRRI) with funding provided by participating member commissions of the National Association of Regulatory Utility Commissioners (NARUC) and a grant from the American Water Works Association Research Foundation (AWWARF). The views and opinions of the authors do not necessarily state or reflect the views, opinions, or policies of the NRRI, the NARUC, the AWWARF, or their contributors.



EXECUTIVE SUMMARY

Cost allocation and rate design are fundamental and closely related parts of the utility ratemaking process. Their many complexities raise a variety of theoretical and practical issues. Though not a practitioner's manual, this report lays a foundation for further exploration of cost allocation and rate design for water utilities at a time when these concerns are increasingly salient. While the report focuses generally on commission-regulated water utilities, it has wider applicability.

The public water supply sector today is operating in an environment of dramatic change. Increasing public concern about economic growth and drinking water quality have complicated the provision of public water service. Per-capita water usage has continued to increase with rising affluence and urbanization. Potential reservoir sites for surface sources and available ground sources have become more scarce. Federal and state legislation and regulations have resulted in more stringent water quality standards. Traditional solutions to supply problems focused on augmenting existing supply sources; however, nontraditional methods including conservation, recycling, and programs designed to improve water system efficiency (for example, least-cost planning and incentive regulation) are now under consideration.

In the current environment of change, water utility issues are attaining a more prominent place on the public and governmental agendas. This growing interest can be attributed to health concerns, occasional droughts, and increased water rates, the latter being a chief concern of public utility regulators. Rising costs in water supply are the result of more stringent drinking water standards and the need to install costly treatment technologies, capacity additions required to accommodate demand growth, and the replacement and upgrading of aging water system infrastructures. The potential for water rates to rival those for energy utilities has increased regulatory concern, particularly with regard to the problem of rate shock and consumers' continued willingness and ability to pay for water service. Water utilities and regulators alike may need to reconsider cost allocation and rate design alternatives when responding to these issues.

Cost allocation is inexact; no single correct approach or method exists. Much depends on the criteria used by analysts. All cost studies involve judgments and should be viewed as a starting point. The choice of a cost allocation approach depends largely on utility management objectives and regulatory policy considerations. In the context of increasing pressure on water rates, a comparison of fully allocated (also known as fully distributed or embedded) cost analysis and marginal-cost analysis is warranted. Fully allocated and marginal-cost calculations both can provide decisionmakers with useful benchmarks for ratemaking as well as planning. These methods can produce divergent results. As a method of compromise, fully allocated costs can be used to determine revenue requirements while marginal costs can be used to design rates. Incremental least-cost analysis is proposed in this report as a marginal-cost ratemaking approach that emphasizes the practical application of least-cost planning criteria to ratemaking.

The theoretical pricing standard is to set rates equal to the cost of service; that is, rate differentials are based on cost differentials. However, to maintain this standard, cost differentials must be sufficiently defined. For example, if there are no marked differences in the cost of providing different volumes of service, it may be more appropriate to adopt a uniform commodity rate than a decreasing-block or increasing-block rate.

Despite the availability of many alternatives, water rate design leaves much discretion to decisionmakers. As in selecting a cost allocation method, the choice of rate design involves tradeoffs among the goals of efficiency, equity, revenue adequacy, and administrative feasibility. Rates that are equitable may not be efficient or perceived as affordable; rates that are perceived as affordable may not be efficient or generate sufficient revenues; rates that are efficient may not be administratively practical. The inclination to promote economic development or conservation policies through rate design must be considered within the context of basic ratemaking objectives and the tradeoffs among them. Decisionmakers may find it increasingly difficult to balance the competing perspectives that are inherent in the ratemaking process.

Finally, it is important to recognize that improved costing and pricing of water utility service, though essential to economic efficiency, is not a panacea for all the problems confronting water utilities and their regulators. Other issues and solutions merit further study as well.

TABLE OF CONTENTS

	PAGE
LIST OF FIGURESviii
LIST OF TABLES.	ix
FOREWORDxiii
ACKNOWLEDGEMENTS xv
 CHAPTER	
1 Introduction	1
Value, Cost, and Price	4
The Value of Water	4
The Cost of Water.	6
The Price of Water.	7
The Ratemaking Process	9
Three Perspectives on Ratemaking	9
Decision Areas in Cost Allocation and Rate Design.	12
 2 Characteristics of Water Utilities	 19
The Water Service Industry	19
Cost Characteristics	23
Financial Characteristics	25
Scale and Scope Economies	26
Demand Characteristics.	30
Price Elasticity of Water Demand.	31
Water Conservation	36
 3 Cost Allocation for Water Utilities	 39
Revenue Requirements.	40
Methods.	40
Factors Affecting Revenues	45
Test Year	46
Key Steps in Embedded-Cost Allocation	48
Criteria	52
Methods.	53
Commission Staff Perspectives on Cost Analysis	56
Conclusion.	62

TABLE OF CONTENTS (continued)

CHAPTER	PAGE
4	Marginal-Cost Pricing Applied to Water Utilities 63
	Marginal Cost in Theory and Practice 63
	Estimating the Marginal Cost of Water. 70
	Application Issues 72
	Allocative Efficiency 74
	Cost and Rate Stability 77
	Financial Viability. 78
	Administrative Feasibility 79
	Four Formulations of Marginal Cost. 81
	Simple Marginal Cost 82
	Textbook Marginal Cost 82
	Turvey Marginal Cost 83
	Average Marginal Cost 84
	Evaluating Estimation Techniques 87
	Incremental Least-Cost Analysis 89
	Methodology 91
	Assumptions 97
	Discussion 98
	Fully Allocated Costs and Marginal Costs Compared 99
5	Rate Design for Water Utilities. 103
	Water Rate Structures 105
	Flat Fees 106
	Fixture Rates. 111
	Uniform Rates 111
	Decreasing-Block Pricing 114
	Increasing-Block Pricing 118
	Seasonal Pricing. 119
	Excess-Use Charges 122
	Indoor/Outdoor Rates 123
	Lifeline Pricing 124
	Sliding-Scale Pricing 125
	Scarcity Pricing 125
	Spatial Pricing 125
	Other Water Charges. 126
	Dedicated-Capacity Charges. 127
	Capital Contributions 127
	Fire Protection Charges. 130
	Ancillary Charges 133
	Rate Structures Approved by Regulatory Commissions 133
	Conclusion. 136

CHAPTER 4

MARGINAL-COST PRICING APPLIED TO WATER UTILITIES¹

Central to the issues of cost allocation and rate design is contemporary economic theory, which is used by decisionmakers to understand certain consequences of policy choices. Among other things, theories raise expectations that certain decisions will have certain outcomes. This chapter reviews marginal-cost pricing theory as applied to the case of water supply utilities. Attention is paid to the theoretical and applied aspects of the theory as well as to specific formulations for its use. Also included is a presentation of a method for calculating simple incremental costs based on a least-cost planning perspective and a comparison of the fully allocated and marginal cost approaches.

Marginal Cost in Theory and Practice

Economic theory argues for pricing resources at marginal costs to ensure their efficient allocation, thus maximizing consumer welfare. Marginal cost is among the prevailing standards by which achievement of the competitive ideal is measured, not just by economists but by regulators and judges as well. Prices that accurately reflect marginal or incremental costs send a signal to consumers about consumption, which in turn sends a signal to producers about production.

Marginal cost is defined in economic theory as the derivation of the total cost function with respect to output. Unfortunately, this definition obscures both the conceptual and pragmatic problems that can be experienced in estimating the marginal cost of water service.

Put more simply, marginal cost is the additional cost of producing or selling a single incremental unit.² The marginal cost of water service is the cost incurred in providing more water service. In practical terms, the two essential components

¹ This chapter is based in part on Patrick C. Mann, *Water Service: Regulation and Rate Reform* (Columbus, OH: The National Regulatory Research Institute, 1981).

² See Patrick C. Mann and Donald L. Schlenger, "Marginal Cost and Seasonal Pricing of Water Service," *American Water Works Association Journal* 74 no. 1 (January 1982): 6.

of marginal cost are, first, the change in operating costs caused by changing the utilization rate for existing capacity and, second, the cost of expanding capacity, including the operating costs associated with the increased capacity. If the water utility is operating below capacity, marginal cost involves the incremental operating cost of producing more product units within the existing system capacity. In contrast, if a capacity increment is required, marginal cost involves the new capacity costs as well as the operating cost associated with the capacity increment. Calculating marginal costs involves projecting capacity and operating costs for a specified time span given a particular demand forecast. Such projections must take into account certain characteristics of water utilities themselves as well as potential influences on demand, including price.

The welfare principles that underlie marginal-cost pricing theory, as well as the allocative implications of the marginal-cost pricing rule, were set forth by Ruggles.³ Works by Vickrey and Wiseman are excellent sources for some of the key theoretical objections to marginal-cost pricing.⁴ These objections include the theory's limited value in selecting among alternative investments, the distortion effects on income distribution, and the value judgments implicit in applying marginal-cost pricing. Works by Steiner and Hirshleifer provide the early theoretical discussion of peak-load pricing, that is, its marginal-cost aspects and the pricing efficiency implications posed by variations in demand over time.⁵

The arguments for marginal-cost pricing involve economic efficiency and correct price signals. Prices for water service that equal marginal cost generate an efficient allocation of resources. The logic is that consumers are being induced to use water efficiently since the value they place on additional units of water is equal to the value they place on additional units of alternative or sacrificed goods. If water rates are unequal to marginal cost, consumers are receiving incorrect

³ Nancy Ruggles, "The Welfare Basis of the Marginal Cost Pricing Principle," and "Recent Developments in the Theory of Marginal Cost Pricing," *Review of Economic Studies* 17(1949-1950): 29 and 107, respectively.

⁴ William Vickrey, "Some Objections to Marginal Cost Pricing," *Journal of Political Economy* 56 (June 1948): 218-238; and J. Wiseman, "The Theory of Public Utility Price," *Oxford Economic Papers* 18 (February 1957): 56-74.

⁵ Peter O. Steiner, "Peak Loads and Efficient Pricing," *Quarterly Journal of Economics* 71 (November 1957): 585-610; and Jack Hirshleifer, "Peak Loads and Efficient Pricing: Comment," *Quarterly Journal of Economics* 72 (August 1958): 451-62.

signals regarding the resources used in water production; therefore, they will tend to consume either too little or too much water. Conservation is incorporated into the economic efficiency concept but economists generally do not view decreasing consumption in itself as a meaningful goal. That is, conservation is not decreasing usage per se, but instead involves the operation cost and capacity savings from efficient (marginal-cost) pricing.

Water rates based on marginal cost provide the foundation both for attaining an efficient utilization of water system capacity and attaining efficiency in capacity investment. Marginal-cost prices send signals to consumers about the resource cost consequences of their consumption decisions and, conversely, reflect the cost savings if consumers forego the consumption of additional units of water service. The ultimate purpose of marginal-cost pricing is to provide correct price signals for consumption decisions. Thus, when consumers affect water system costs by altering their consumption patterns, their bills change accordingly. In brief, marginal-cost prices reflect the immediate and near-term future cost consequences of usage decisions rather than the historical cost consequences of consumption decisions. Since pricing affects future usage decisions, not past usage decisions, future costs are those relevant for pricing.

In simple terms, economic efficiency is a standard which signals that no further reallocation of resources (either to or from the provision of water service) would enhance consumer satisfaction. The price equal to marginal-cost equation is the best available measure of attaining this standard. For example, price is the best proxy for the value placed on additional units of water service; marginal cost is the best proxy for the value placed on additional units of alternative goods. By water prices reflecting the immediate and near-term future costs of resources used or saved in water consumption, the marginal-cost approach implies a concept of equity in which consumers pay for these costs. In contrast, water prices based on average historical costs create the illusion that resources that can be used or saved at present or in the near-term future cost as much or as little as in the past. The approach implies a concept of equity in which consumers pay for the past costs of consumption decisions.

There are numerous ways of conceptualizing marginal costs: avoidable costs, product-specific costs, single and multiproduct costs, total service incremental

costs, and average incremental costs are among the choices.⁶ Incremental cost is a concept similar to marginal cost. While theoretical marginal cost refers to one-unit changes in output (such as a gallon of water), incremental cost can refer to larger changes in output (such as a million gallons of water), but also can refer to nonoutput changes (such as a change in water quality or system reliability). In addition, incremental costs can reflect changes in total cost over time. Economic purists prefer to use one gallon rather than a million gallons because it is truer to the theoretical idea of change at the margin. The incrementalist perspective is less rigorous but more practical. Nonetheless, for most purposes the concepts of marginal and incremental cost are virtually interchangeable.

There are also alternative ways of estimating marginal costs.⁷ The three basic approaches are engineering process models, econometric models, and optimization or simulation models. Engineering process models emphasize engineering estimates about the cost of alternative supply options. Econometric models use statistical techniques to estimate costs on the basis of the behavior of key cost-causing variables. Such models are frequently used in predicting demand as well. Optimization models combine engineering and economic constraints to achieve an equilibrium, as depicted in figure 4-1. Some alternative ways of measuring marginal costs in water supply are summarized in table 4-1.

Not everyone subscribes to the economist's social welfare paradigm, with its accompanying faith in the competitive ideal. Nor does everyone agree on its application to cost allocation and rate design decisionmaking or the appropriate method for doing so. Yet even if one does not see marginal-cost pricing as a means to economic efficiency, it still can be counted among the most important tools for cost allocation, rate design, and planning. At the very least, an understanding of marginal costs is helpful in evaluating other prospective analytical methods. What other goals the method achieves depends on one's perspective and policy goals.

⁶ For an overview, see William Pollard, "Economic Theory Relevant to Marginal and Incremental Cost Estimation," a paper presented at The National Regulatory Research Institute's Telephone Cost-of-Service Symposium in Columbus, Ohio (August 12-17, 1990).

⁷ Ibid.

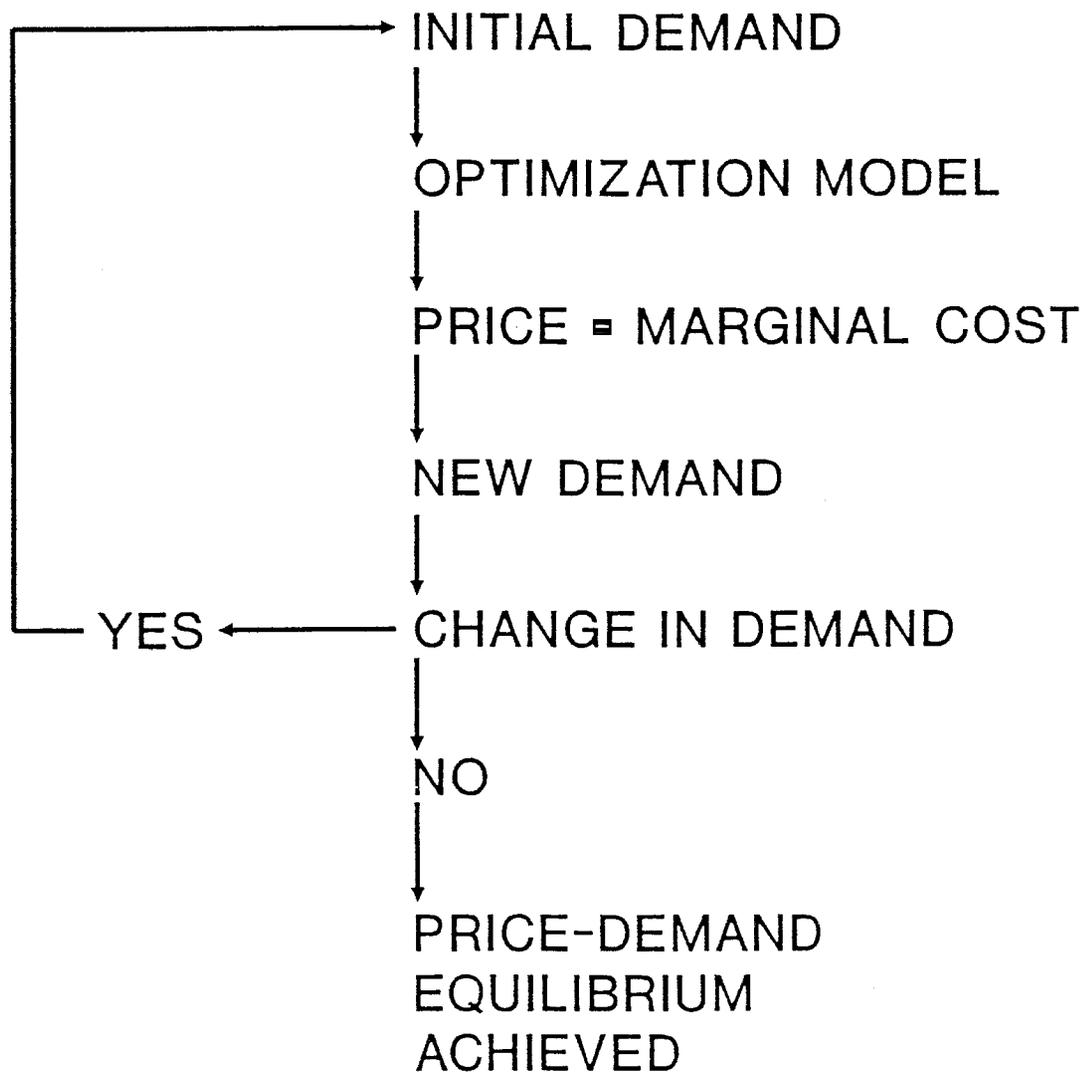


Fig. 4-1. Price-demand equilibrium analysis.

TABLE 4-1

SOME ALTERNATIVE METHODS FOR CALCULATING MARGINAL COSTS

Short-run Costs

- Estimate the average of past observed operating costs for each of the rating (such as, peak and off-peak) periods. These costs are then averaged for each rating period.
- Take some average of hourly operating costs for a given rating period from an economy dispatch model--that is, optimizing the dispatch of pumping stations and water tower discharge.
- Examine short-run operating costs and certain fixed costs with respect to meeting load requirements for any given hour.
- Determine the change on the long-run total cost function with varying load conditions. The change in costs can be calculated using the cost difference from one optimal system design to another as a result of a new load duration curve.
- Derive a set of hourly operating costs from an economy dispatch model. Rating periods can be chosen on the basis of the cost data.
- Derive the operating cost of the peaking plant or a hypothetical plant, simulated with a change in load conditions.
- Derive the operating costs of a rating period subject to a safe yield or reliability constraint.

Source-related Capacity Costs

- Derive the difference between hypothetical expansion plans that are totally peak related and calculate the cost in present value terms. (Some system expansions, such as reservoirs or wells, may be used for peak capacity only).
 - Derive the annual incremental cost of any added capacity cost as a result of an expected increase or change in load, allocating these costs to the rating periods on the basis of the ratio of loads between periods.
 - Determine the incremental capital costs of all new units and allocate them to the appropriate rating period.
 - Calculate the annual capacity cost of any increment of capacity for peak usage and adjust that cost for safe yield or other relevant criteria. These costs can be allocated to rating periods on the basis of comparing the safe yields for different rating periods.
-

TABLE 4-1 (continued)

Transmission and Distribution Costs

- Treat incremental transmission investment which is related to the incremental peak load growth as a residual to ensure the equality of a revenue requirement to projected revenue collections.
- Use either linear regression or simple division so that additions in transmission and distribution are related to some measure of peak load growth.
- Use regression analysis to relate the levelized transmission and distribution sales and other costs to either off-peak, peak, administrative short-run, or variable costs.
- Use changes in transmission investment cost related to changes in peak demand.
- Relate transmission costs to a price leveled series of cost to peak demand. Distribution costs can be based on a minimum distribution system.
- Use transmission-line losses. Distribution line losses plus average of the incremental connecting charges for new customers can be calculated.
- Use embedded average cost for distribution if it is too difficult to calculate marginal distribution cost.

Source: Adapted from Stephen L. Feldman, Robert Obeiter, Michael Abrash, and Martin Holdrich, *An Operational Approach to Estimating the Marginal Costs of Urban Water Supply With Illustrative Applications* (Unpublished report to the Wisconsin Public Service Commission, October 21, 1980), 24-28.

Estimating the Marginal Cost of Water

Marginal-cost estimation in water service involves forecasting future cost and output streams. These projections require information on several variables, including technology, input price behavior, and price elasticity of water demand. In addition, a planning horizon must be specified as well as appropriate capital recovery and annuitization rates. Marginal-cost estimation is forward looking; that is, marginal operating cost, marginal capacity cost, marginal purchased water cost, and marginal customer cost involve engineering forecasts of costs incurred or avoided if usage, capacity, or the number of customers change. Finally, the marginal cost of water service varies both with time (for example, peak demand as compared with off-peak demand) and with space (for example, locational variations within the utility service area).

Naturally, the biggest difficulty in applying marginal-cost pricing is estimating marginal costs, which depends on assumptions about where the next increment of supply will come from and, of course, its cost. Several different supply options providing different increments of capacity may be available. A new well, for example, adds a much smaller increment of capacity than a new reservoir and probably at a substantially lower overall cost. However, the per-unit incremental cost of the reservoir may be lower than that of the well because of the reservoir's larger capacity. Choosing between the two supply options depends on the forecast of water demand along with hydrological and water quality considerations.

Marginal-cost theory is typically operationalized through the development of time-differentiated rates, an example of which appears in table 4-2. Although time-differentiated pricing logically flows from marginal-cost pricing, seasonal rates can be based on average or embedded cost as well as on marginal cost. In water service, the emphasis on seasonal rather than time-of-day pricing is essentially a function of water system design.⁸ Distribution systems are generally designed to meet the maximum instantaneous flows anticipated from fire protection. The hourly peak demands of consumers are therefore not essential in the design of the distribution system. Thus, for most water systems there is minimal variation in

⁸ Steve H. Hanke, "A Method for Integrating Engineering and Economic Planning," *American Water Works Association Journal* 71 (September 1978): 487-91.

TABLE 4-2

**EXAMPLE OF MARGINAL-COST FUNCTIONALIZATION
FOR DEVELOPMENT OF SEASONAL RATES**

Marginal annual cost of capacity (\$/mgd/year)	
Source	19,361
Treatment	0
Transmission	27,669
Distribution	12,912
Short-run costs (\$/1,000 gallons)	
Electricity	0.111
Chemicals	0.010
Maintenance	0.373
Definition of peak periods	
Number of days in peak season	153
Number of peak hours per day	10
Number of peak days per week	7
Number of peak hours in peak season	1,530
Marginal cost of water (\$/1,000 gallons)	
<u>Off-peak season, all hours</u>	
Short-run costs	0.494
Source	0.053
Total	0.558
<u>Peak season, off-peak hours</u>	
Short-run costs	0.494
Source	0.053
Treatment	0.000
Transmission	0.181
Total	0.743
<u>Peak season, peak hours</u>	
Short-run costs	0.494
Source	0.053
Treatment	0.000
Transmission	0.181
Distribution	0.203
Total	0.949
Seasonal rates (\$/1,000 gallons)	
Off-peak season	0.558
Peak season	0.829

Source: Stephen L. Feldman, Robert Obeiter, Michael Abrash, and Martin Holdrich, *An Operational Approach to Estimating the Marginal Costs of Urban Water Supply With Illustrative Applications* (Unpublished report to the Wisconsin Public Service Commission, October 21, 1980), 68. Adjusted marginal prices also are reported.

incremental cost associated with daily demand cycles. Similar to the distribution system, storage capacity is determined more by fire protection considerations than by anticipated peak hour demands. Elevated storage can also partially accommodate the daily use cycle (peak and off-peak hours) as well as peak demand for transmission capacity. In contrast, major supply sources and major transmission, pumping, and treatment facilities are generally designed to meet seasonal variations in demand. For many water systems, the capacity costs of these facilities primarily reflect summer peak demands. Thus, for most water systems there is substantial variation in the incremental cost associated with their seasonal demand cycles. Regarding time-differentiated pricing in water service, the emphasis thus should be on long-term (maximum day) demand rather than on short-term (maximum hour) demand. Chapter 5 contains a more detailed discussion of seasonal rates.

Application Issues

Several obstacles can impede the effective application of marginal-cost pricing to water service. For example, Harbeson questioned whether economists actually comprehend the magnitude of divergence between estimated and theoretical marginal cost.⁹ Similarly, Turvey asserted that the textbook concept of marginal cost was too simplistic to be useful.¹⁰

The application of marginal-cost theory in the water sector involves many tradeoffs among competing concerns.¹¹ The manner in which this complex set of constraints is handled in any particular circumstance depends on how marginal cost is perceived. The conclusions that may be reached will differ to the extent that different conceptions of marginal cost exist. The application of marginal-cost pricing theory to water utilities raises four general issues: (1) allocative efficiency, (2) cost and rate stability, (3) financial viability, and (4) administrative feasibility. As seen in table 4-3, each of the general application issues is associated with some specific application issues.

⁹ Robert Harbeson, "A Critique of Marginal Cost Pricing," *Land Economics* 31 (February 1955): 54-74.

¹⁰ Ralph Turvey, "Marginal Cost," *Economic Journal* 78 (June 1969): 282-94.

¹¹ Steve H. Hanke and Robert K. Davis, "Potential for Marginal Cost Pricing in Water Resource Management," *Water Resources Research* 9 (August 1973): 808-25.

TABLE 4-3

GENERAL AND SPECIFIC APPLICATION ISSUES
ASSOCIATED WITH MARGINAL-COST PRICING

General Issues	Specific Issues
Allocative Efficiency	Income distribution effects Barriers to economic efficiency Ineffectiveness Competing policy goals
Cost and Rate Stability	Needle peaking and shifting peaks Distribution and customer costs Fire protection costs Purchased water costs
Financial Viability	Excess revenues Inadequate revenues Bypass Arbitrary remedies
Administrative Feasibility	Data requirements Predictive accuracy Time lags Public opposition

Source: Authors' construct.

Allocative Efficiency

Externalities pose a limitation to marginal-cost pricing theory in terms of economic efficiency. The observed willingness of consumers to pay incremental costs should not be the sole criterion for supplying them with water service. Externalities are associated with water service. For example, an external benefit that may result from the consumption of potable water is that the health of the consumer may improve with use of improved supplies; as a result, the consumer may not infect another consumer whose future health also will be enhanced. However, since the first consumer does not take the health of the second into consideration in decisions to consume water, willingness to pay incremental costs tends to understate the benefits to the community. In addition, consumers may not sufficiently understand the linkage between water quality and public health. Another example is the provision of water service for fire protection which, when afforded to one resident, also benefits neighbors by stopping the spread of fires and holding down fire insurance rates. Consumers may not understand implicitly the linkage between water service reliability and fire protection.

With respect to output, costs tend to be marginal only intermittently, depending on system utilization. If water system capacity is less than fully utilized, the only costs immediately attributable to additional water usage are certain operating costs (including the cost of purchased water). These costs are referred to as short-run marginal cost (SRMC). Long-run marginal cost (LRMC), in contrast, refers to the sum of SRMC and marginal capacity cost (MCC)--the cost of extending capacity to accommodate additional usage. The two definitions of marginal cost--one applicable in the short run and the other in the long run--must be reconciled since a pricing policy which is associated with the efficient use of existing capacity can result in nonoptimal investment decisions, and vice versa.

Strictly interpreted, the marginal-cost approach requires that price equal SRMC when capacity is not fully utilized, but, as full capacity utilization is attained, price should be increased to ration existing capacity. Once a capacity increment is completed, price should fall again to SRMC, for then the only real incremental costs are operating costs. In brief, prices theoretically should be increased with increasing demand in the period before a capacity increment is necessary; then when the capacity increment becomes available (and excess capacity exists), prices should

be decreased, as illustrated in figure 4-2.¹² Water price, therefore, has the twin objectives of (a) attaining an efficient allocation of resources when the system is operating at less than full capacity, and (b) providing signals for when to invest in additional capacity.¹³

Some analysts have addressed the "second best" problem; that is, the issue of marginal-cost pricing not necessarily being optimal for the water sector given significant divergences from optimal pricing and optimal resource allocation in other sectors of the economy.¹⁴ Marginal-cost pricing in one sector may still produce allocative inefficiency if the remaining sectors (through monopoly, taxation, and so on) have prices unequal to marginal cost. Water itself is not priced systematically in each of the major use sectors--agriculture, industry, and public supply. Allocation problems may be particularly apparent during periods of drought or when water supplies are otherwise impaired. Finally, allocative efficiency may not be achievable if other policy goals--such as equity--take precedence.

In addition, some specific application issues related to allocative efficiency include income distribution effects, barriers to economic efficiency, ineffectiveness, and competing policy goals. First, marginal-cost pricing, as with any pricing scheme, has distributive effects on income, a public policy consideration that will generally arise in its implementation. Second, the anticipated economic efficiency gains from marginal-cost pricing may not materialize if, for example, technical or cost efficiencies are not achieved. Moreover, these efficiencies will remain elusive given deviations from efficient pricing in other sectors of the economy, including water use sectors other than public supply. Third, implementation of marginal-cost pricing through seasonal rates or other rate structures may have little or no effect on water consumption patterns which will be a disappointment for those who seek to use the rate structure to induce operational changes, such as load factor improvement. Fourth, policy goals other than allocative efficiency, such as affordability and equity, play a role in cost allocation and rate design.

¹² William Goolsby, "Optimal Pricing and Investment in Community Water Supply," *American Water Works Association Journal* 67 (May 1975): 220-24.

¹³ William Vickrey, "Responsive Pricing of Public Utility Services," *Bell Journal of Economics* 2 (Spring 1971): 337-46.

¹⁴ William Vickrey, "Some Implications of Marginal Cost Pricing for Public Utilities," *American Economic Review* 45 (May 1955): 605-620; and Robert Harbeson, "A Critique of Marginal Cost Pricing," *Land Economics* 31 (February 1955): 54-74.

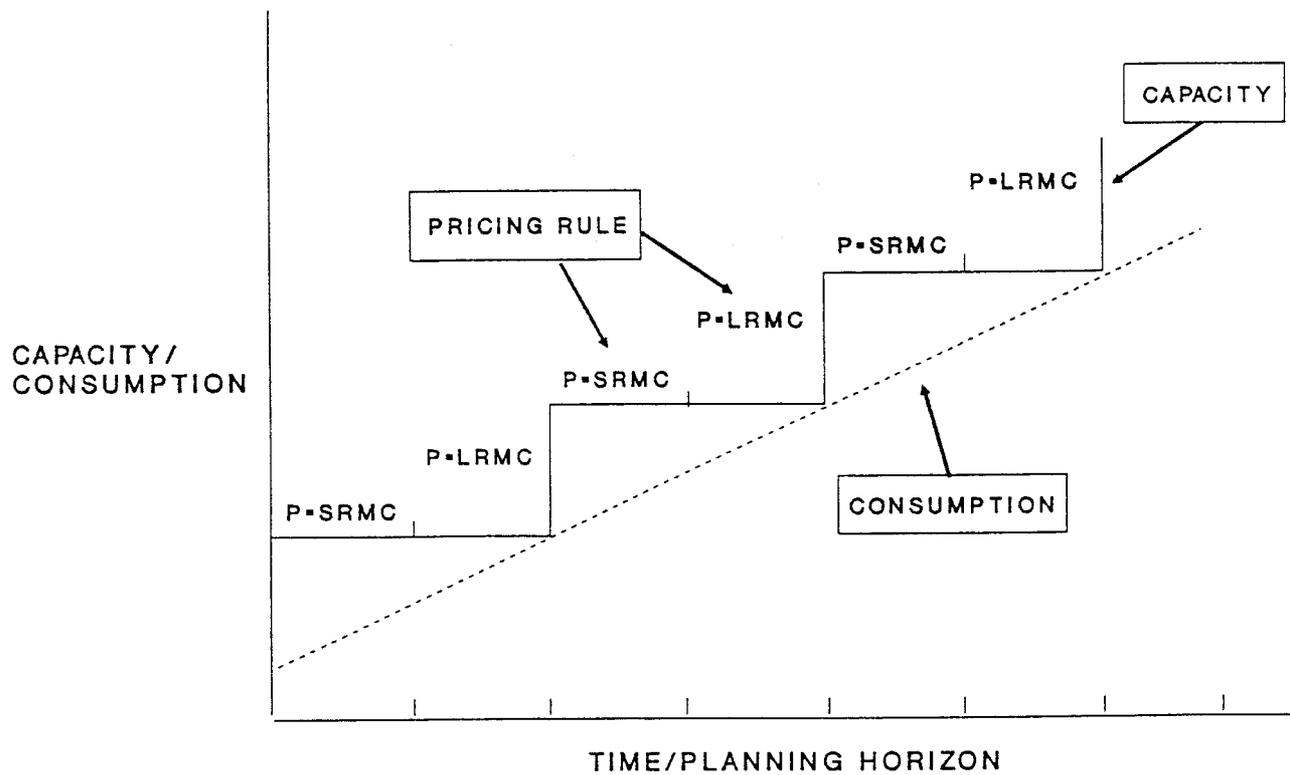


Fig. 4-2. Long-run marginal cost (LRMC) and short-run marginal cost (SRMC) pricing applications for lumpy capacity additions.

Cost and Rate Stability

Cost and rate stability problems associated with strict application of marginal-cost pricing theory are especially apparent in the presence of capital indivisibility (also known as investment "lumpiness"), meaning that capacity is typically added in large increments, some of which have a relatively long service life. By contrast, the rate of capacity utilization changes gradually. In fact, lumpiness is a trait that can apply to operation and maintenance expenses as well, perhaps especially for very small systems.¹⁵ The indivisibility condition is particularly applicable to new water authorities which have a relatively small existing capital stock, and in which large investments are required to place a central system into full operation. Given initial capacity costs which are high relative to operation costs, strict marginal-cost pricing (as well as the strict use of embedded costs) will result in significant fluctuations in price creating a considerable source of uncertainty for consumers and creating problems (including rate shock) both for water utility managements and regulators. Even where it is technologically possible to extend capacity in relatively small increments, fluctuations in financing availability may result in capacity being extended in large increments. The exception is the already established water system with its large existing capital stock; in this case, if demand increments are relatively small and systematic, the indivisibility problem can be minimal.

Another aspect of capital indivisibility is found in the water distribution network. Prior to its construction, distribution costs would be characterized as incremental costs. However, the distribution network is generally designed to meet demands placed upon it for many future years, during which time additional usage causes negligible incremental distribution capacity costs. Economic theory suggests that the price charged for this element of service also should be negligible. This, however, presents a conflict between economic efficiency and the financial viability of the water utility.

Some specific application issues related to cost and rate stability are needle peaking and shifting peaks, distribution and customer costs, fire protection costs,

¹⁵ Contrast, for example, the addition of another licensed operator to a small one-operator system as compared with a system already employing ten operators (all with comparable salaries, etc). Relative expenses would increase by 100% to the small system and by only 10% to the larger system.

and purchased water costs. First, for a summer-peaking utility (because of lawn sprinkling), peak demand may not be substantially reduced by seasonal pricing, even though average demand declines. Results include the deterioration in annual load factors and revenue erosion. Seasonal rates may induce consumption that shifts the time of peaks but not their overall magnitude. Second, unstable rates can result from inappropriate cost allocation rules. Distribution costs (which vary with main size, number of customers, and location of mains) and customer costs (which are independent of capital expansion) can be handled through service charges. Third, capacity increments may or may not include capacity for meeting fire flow requirements. The joint nature of water service for consumption and fire protection makes it difficult to calculate the marginal cost of fire protection; thus, there has been a tendency to avoid the calculation of marginal fire protection cost. Fourth, the calculation of marginal costs should fully account for wholesale purchases of treated or untreated water.

Financial Viability

The strict application of marginal-cost pricing theory will result in insufficient revenues to the water utility if average cost exceeds marginal cost and excess revenues if average cost is less than marginal cost. In other words, marginal-cost pricing may lead to a mismatch of costs and revenues. This is one of the chief concerns about the marginal-cost pricing approach expressed by the American Water Works Association.¹⁶ Accordingly, "it may be necessary to structure customer charges to achieve a balance of revenues and costs or to diverge from marginal-cost pricing somewhat" in order to align costs and revenues.¹⁷ Of course in doing so, the economic efficiency gains of the marginal-cost pricing method may be lost. There is also concern that high prices will lead to consumption reductions that in turn reduce revenues and threaten the financial viability of the water utility. For these reasons, it may not be possible to achieve the most efficient allocation of water supplies.

¹⁶ American Water Works Association, *Water Rates* (Denver, CO: American Water Works Association, Manual M1, Third Edition, 1983), 57.

¹⁷ Mark Day, "A Discussion of Empirical Evidence of the Conservation Impact of Water Rates," in Arizona Corporation Commission, *Water Pricing and Water Demand* (1986): 38.

Some specific financial viability issues that are in the implementation of marginal-cost pricing include excess revenues, inadequate revenues, bypass, and arbitrary remedies. First, water rates set equal to marginal cost may generate revenues in excess of revenue requirements for the water utility, primarily because historical accounting costs tend to underestimate the actual value of resources. Second, if prices based on marginal costs are below prices based on average costs, utility revenues will be inadequate. In particular, utilities with plentiful capacity may have difficulty recovering costs under marginal-cost pricing. Third, confronted with higher water rates, and based on price elasticities for water demand, some large industrial and commercial customers may bypass the local water utility in favor of self supply, which may have adverse effects on the utility's revenue stream. Fourth, methods to treat the problems of excess revenues, inadequate revenues, and bypass can be arbitrary and atheoretical, and many produce ambiguous price signals that undermine the potential for efficiency gains. Subsidization (in either direction) is more likely when revenues do not match costs.

Administrative Feasibility

Sophisticated analyses of utility costs require substantial resources for data collection and cost calculation, affecting both utilities and their regulators. There are measurement difficulties associated with the way cost data are collected and stored in utility accounting systems and with the higher metering and administrative costs required for the collection of certain types of data. Long-run marginal-cost estimations are highly subjective and the use of large data bases and elaborate calculations may not always improve decisionmaking by utilities and their regulators.

There is also the possibility that a well-executed average-cost pricing methodology will result in a close approximation of marginal costs, and do so in a simpler, more understandable way. In fact, some fully distributed cost studies may look much like marginal-cost studies. Decisionmakers may prefer the status quo analysis of historical costs, particularly if it is perceived to be less costly. The problem is in deciding whether the benefits of using marginal-cost analysis--including efficiency gains--outweigh these administrative costs.

Some specific application issues related to administrative feasibility include: data requirements, predictive accuracy, time lags, and public opposition. First,

cost analysis requires substantial, accurate cost and demand data. Further, a rate structure can be no more sophisticated than the capability of measuring the water consumption to which the rate structure is applied. Thus water metering is essential and changes in cost accounting and billing practices may be necessary as well. Second, the cost forecasting necessary for marginal-cost estimation is imprecise and alternative calculation techniques yield different results. The approach also requires reliable data on the price elasticity of peak water demand. Without reliable elasticity estimates, price changes will have uncertain effects on revenues, load factors, operation costs, and capacity requirements. Third, billing cycles and time lags between the occurrence of peak demands, meter reading, and the customer's receipt of the water bill increase the uncertainty of consumer response to price. Fourth, the public and regulators may have difficulty accepting a radical change in the establishment of water rates, particularly if consumers perceive that a new rate structure is inequitable, unaffordable, or confusing.

Most of these application problems can be addressed, if not resolved. For example, probably the most problematic issue is the potential for marginal-cost pricing to result in excess revenues for the water utility. Stephen Feldman and his colleagues proposed several alternative tactics for addressing this problem.¹⁸ One could decide not to reconcile the resulting rates with the revenue requirement. Assuming this is not desirable, costs can be adjusted while maintaining peak to off-peak ratios. Alternatively, marginal-cost components (short-run and long-run) can be adjusted proportionately. Overcollections can be rebated or taxed. Intramarginal discounts can be used to lower rates. Rates also could be adjusted by treating distribution cost as a residual. Finally, the inverse elasticity rule can be used in rate design to treat different customer classes differently (Ramsey pricing).

In sum, the application of marginal-cost pricing involves substantial problems, complicating its implementation. Interestingly, however, opponents of marginal-cost pricing stress these conceptual and applicational problems, rather than the possible superiority of conventional average-cost pricing. Many analysts recognize that the problems associated with marginal-cost pricing also apply to average-cost pricing. Of course, analysts' judgment plays a role in any method.

¹⁸ Stephen L. Feldman, Robert Obeiter, Michael Abrash, and Martin Holdrich, *An Operational Approach to Estimating the Marginal Costs of Urban Water Supply with Illustrative Applications* (Unpublished report to the Wisconsin Public Service Commission, October 21, 1980), 28.

However, conceptual and applicational problems should not stifle ratemaking innovation. Perhaps the most serious difficulty in using marginal-cost pricing lies not in the theory itself or even in the calculation of marginal costs but in the actual translation of cost estimates into water rates. The potential beneficial effects on costs, price stability, and economic efficiency under a marginal-cost or incremental-cost approach would appear to tip the scales in favor of considering including this approach among other tools of the trade.

Four Formulations of Marginal Cost¹⁹

Most definitions of marginal cost are similar in that they are forward looking; that is, they focus on immediate and near-term-future costs and output. Definitions differ in the extent to which they stress the importance of short-run as opposed to long-run costs, operation as opposed to capacity costs, and changes in consumption in different time periods. Thus, the definitions vary to the extent to which they focus on short-run versus long-run allocative efficiency and by the extent to which they attempt to minimize price fluctuations. Four marginal-cost formulations are discussed below:

- Simple Marginal Cost (SMC)
- Textbook Marginal Cost (TMC)
- Turvey Marginal Cost (TVMC)
- Average Marginal Cost (AMC)

All four formulations are presented for completeness, but while the first two lay the foundation for marginal-cost pricing, severe weaknesses preclude their application in the regulatory context. The other formulations are less true to pure economic theory but more pragmatic.

¹⁹ See also, Patrick C. Mann, Robert J. Saunders, and Jeremy J. Warford, "A Note on Capital Indivisibility and the Definition of Marginal Cost," *Water Resources Research* 16 no. 3 (June 1980): 602-4.

Simple Marginal Cost

Simple marginal cost (SMC) is defined as:

$$SMC_t = \frac{(R_t - R_{t-1}) + I_t}{(Q_t - Q_{t-1})}$$

where: t = the year for which the calculation is being made,
 R = operating and maintenance expenditures,
 I = capital investment becoming operational, and
 Q = water output.

If capacity increments are uneven, SMC generates cost estimations having significant volatility; thus the primary objection to this particular definition of marginal cost is that it precludes any averaging of future capacity increment. In this context, the remaining three formulations of marginal cost incorporate varying degrees of averaging or "smoothing" capital expenditures. It is stressed here that SMC, and similar formulations which focus primarily on short-run marginal cost, cannot be considered as practical cost estimation methods for water service. In brief, SMC, by focusing on the short-run, essentially fails to recognize the averaging of capacity increments, and the desirability of averaging to meet certain regulatory objectives.

Textbook Marginal Cost

Textbook marginal cost (TMC) consists of two components: short-run marginal cost (SRMC), reflecting operating cost increments, and marginal capital cost (MCC), reflecting capital expenditure increments. Similar to SMC, TMC reflects a relatively short planning horizon. TMC is defined as:

$$\begin{aligned} TMC_t &= SRMC_t + MCC_t \\ &= \frac{(R_t - R_{t-1}) + rI_t}{(Q_t - Q_{t-1})} \end{aligned}$$

where: r = the capital recovery factor or the annual payment that would repay a unit loan over the economic life, n years, of the capital expenditure with compound interest of i on the unpaid balance; that is:

$$r = \frac{i(1+i)^n}{(1+i)^n - 1}$$

Given uneven capacity increments, TMC reflects both SRMC and MCC in the years in which capacity becomes operational and reflects only short-run marginal costs in the years in which no capital investment becomes operational. TMC, therefore, generates cost estimations exhibiting substantial fluctuations. However, the application of the annuitization factor (r) to capital expenditures produces some averaging of capacity costs.

Turvey Marginal Cost

Turvey marginal cost (TVMC) is an estimation method advocated by Ralph Turvey for application in water supply.²⁰ Similar techniques have been advocated for application to electric utilities.²¹ TVMC can be defined as the present worth of the cost increment resulting from the same permanent increment in demand starting at the beginning of year $t-1$ *minus* the present worth of the cost increment resulting from the same permanent increment in demand starting at the beginning in year t . That is, TVMC reflects the difference in the present values of the future cost streams by shifting (for example, postponing or accelerating) a specified capacity increment by one year. The focus is not on the total costs of capacity expansion but on the cost effects of postponement or acceleration of expansion. In this context, marginal cost is the cost saving from postponing a capacity increment and not the cost saving from abandoning the capacity increment entirely.

TVMC considers marginal capacity costs with marginal operating costs defined as annual operating cost divided by the annual amount of water consumption. TVMC differs from the textbook conception of marginal cost in that it varies both

²⁰ Ralph Turvey, "Analyzing the Marginal Cost of Water Supply," *Land Economics* 52 (May 1976): 158-68.

²¹ Charles J. Cicchetti, William J. Gillen, and Paul Smolensky, *The Marginal Cost and Pricing of Electricity* (Cambridge, MA: Ballinger Publishing Company, 1977).

upward and downward and is positive only in those years when demand is at or near existing capacity; in between capacity increments, TVMC is generally zero. TVMC is affected when capacity increments are pushed forward or backward in time. Given an increment to projected demand growth, TVMC measures the effect on the present value of total system costs from the acceleration in capacity expansion. Given a decrement to projected demand growth, TVMC measures the effect on the present value of total system costs from the postponement in capacity expansion. In brief, TVMC reflects the difference in total system costs caused by changes in projected permanent demand growth. The TVMC method does not generally look beyond the next capacity increment; thus it ignores the effect of changing unit costs associated with subsequent changes in output. It does, however, incorporate an adjustment for system water loss.

Hanke developed marginal-cost estimates employing a version of TVMC.²² In his calculation, MCC for a specific year y equals the present worth in y of planned system costs associated with the incremental annual demand starting in year y *minus* the present worth in y of planned system costs with the increment in annual demand starting in year $y + 1$, divided by the annual increment in usage. Thus, marginal capital cost is calculated on the premise of a postponement in capacity expansion. Total marginal cost is the composite for marginal capital costs and marginal operating costs (projected operation costs divided by projected annual water usage). To calculate marginal capital costs for annual use, the relevant capacity investment is aggregated; to calculate costs on a seasonal basis, the relevant planned investment are disaggregated into summer capacity and winter (base) capacity.

Average Marginal Cost

Average marginal cost (AMC) can be viewed as an attempt to reach a compromise between short-run allocative efficiency and the need for correct capacity investment signals by going beyond the traditional definition of the long run by including all future capital expenditures for a specified planning period. Of course, the longer the time frame, the greater the uncertainty of the capital cost

²² Steve H. Hanke, "On the Marginal Cost of Water Supply," *Water Engineering and Management* 120 (February 1981): 60-63, 69.

estimates. Given its emphasis on a planning horizon, AMC avoids the problem of defining the magnitude of the very next capacity increment, which is invariably difficult to specify, particularly for large water systems in which several different capacity investments may become operational simultaneously.

Mann, Saunders, and Warford presented a relatively sophisticated version of AMC labeled as average incremental cost (AIC).²³ In essence, AIC is calculated by discounting the future incremental costs which will be incurred in providing the incremental water demanded and dividing that by the discounted value of incremental water output over the planning period, as follows:

$$\text{AIC} = \frac{\text{Present worth of the least-cost investment stream}}{\text{Present worth of the incremental output stream resulting from the capacity investment}}$$

Hanke presented a somewhat more pragmatic version of average marginal cost.²⁴ Capital expenditures are categorized into those capacity increments associated with water volume (such as treatment plants, service reservoirs, trunk mains, and source of supply facilities) and those not associated with water volume (such as distribution mains, meters, and customer services). The latter capital expenditures are primarily related to the number of customers served and should not be included in marginal capital cost calculations to be used as a basis for commodity charges; they are more appropriate for connection and service charges. Since investment increments often change abruptly, the capacity increments are averaged over several years. Therefore, marginal capital cost is formulated as the annuitized value of planned capacity expenditures becoming operational divided by the forecasted increment in total water usage for the planning period (say, five years). Marginal operation and maintenance costs are categorized into those related to volume and those not related to volume and are also averaged over the planning horizon. The resulting average marginal cost, then, consists of averages for both capital costs and the appropriate operation and maintenance costs.

The AMC method recognizes that different increments of capacity have different life spans. It also provides cost estimates that reflect future cost trends

²³ Mann, Saunders, and Warford, "A Note on Capital Indivisibility."

²⁴ Steve H. Hanke, "A Method for Integrating Engineering and Economic Planning," *American Water Works Association Journal* 71 (September 1978): 487-91.

to be incurred as water usage changes. Finally, the method recognizes that with capacity increment lumpiness and the associated abrupt changes in operating costs when capacity increments become operational, it is essential that both capacity and operating costs be averaged over a specified planning period. Given the nature of its averaging process, AMC tends to generate cost estimates that exceed short-run marginal costs but that are less than long-run marginal costs in the TMC formulation. AMC generates cost estimates that smooth out capital expenditures while reflecting the trend of future costs that will be incurred as usage increases.

Hanke also suggested a modified cost categorization in calculating marginal capital costs.²⁵ He divided capacity costs into those associated with facilities designed to meet maximum-day demand (such as treatment plants), those related to average-day demand (such as reservoirs), and those related to customers and population growth (such as meters). Marginal capital cost in this case consists of separate components for supplying maximum-day demand and average-day demand. In essence, one can calculate peak and off-peak marginal capital costs according to these components. This categorization is important if there is substantial cost variation over the annual demand cycle, which could justify seasonal water rates. If consumers are to receive correct price signals, then the peak period should involve a price reflecting peak and off-peak costs; the off-peak price should reflect only off-peak costs. Hanke and Smart extended marginal-cost analysis to incorporate a demand simulation model.²⁶ Such models are useful in projecting consumer responses to changes in rate design, such as the implementation of a uniform rate based on marginal cost or seasonal rates based on peak and off-peak marginal costs.

Feldman, Breese, and Obeiter offer another version of average marginal cost.²⁷ Their version incorporates the calculation of the marginal costs of source capacity, transmission capacity, distribution capacity, treatment capacity, as well as marginal

²⁵ Steve H. Hanke, "Water Rates: An Assessment of Current Issues," *American Water Works Association Journal* 67 (May 1975): 215-19.

²⁶ Steve H. Hanke and A. C. Smart, "Water Pricing as a Conservation Tool: A Practical Management Option," in *Environmental Economics* (Canberra, Australia: Australian Government Publishing Service, 1979).

²⁷ Stephen L. Feldman, John Breese, and Robert Obeiter, "The Search for Equity and Efficiency in the Pricing of A Public Service: Urban Water," *Economic Geography* 57 (January 1981): 78-92.

operating cost. As with other marginal-cost methods, the data employed in the calculations are engineering's best estimates. Customer costs are excluded from the analysis because they are presumed to be unchanged with system expansion. Finally, in this version, marginal costs are adjusted upward for system water losses.

Evaluating Estimation Techniques

In the abstract, marginal cost is a simple concept. In practice, different definitions of marginal cost exist. The version selected for actual implementation may be determined by factors such as the size of the projected demand increment, the relevant planning horizon, data availability, the preference for short-run allocative efficiency as opposed to long-run resource allocation, the potential impact of technology on production costs, the extent to which price stability is desired, prevailing prices, and the revenue consequences of each particular formulation of marginal cost.

The definitions of marginal cost described above cover the spectrum of tradeoffs among most of these factors. For example, even though TMC is the method that adheres most strictly to theoretical marginal cost, in certain cases both it and SMC can be rejected on technical grounds because they incorporate an insufficient planning horizon (therefore providing inadequate price signals to water consumers regarding the marginal capital cost of water service). The two methods can also be rejected on practical grounds since the potential price volatility associated with each creates regulatory, political, as well as administrative and financial management problems for the water utility. TVMC and AMC are marginal-cost formulations which average the costs of capacity expansion; that is, they incorporate marginal capital cost in price even when capacity increments are not imminent. AMC and TVMC incorporate a longer view of water costs than do SMC and TMC, thus minimizing cost-price fluctuations.

A framework is essential for selecting the most appropriate marginal-cost definition for any particular application. As discussed above, four essential evaluation criteria are:

- Allocative efficiency
- Cost and rate stability
- Revenue adequacy
- Administrative feasibility

The first criterion involves the issue of which marginal-cost definition will satisfy the criterion of minimum divergence from textbook marginal cost (TMC), which represents an approximation of a price that induces short-run allocative efficiency and correctly signals the justification of capacity increments. TMC may not be an absolute representation of marginal cost as defined in economic theory, but it does approximate the theoretical specification of marginal cost. This criterion implies that alternative methods be examined for both absolute differences and ratios between their marginal-cost estimations and comparable TMC estimations. One anticipates that the alternative formulations will tend to converge toward TMC as the capital investment pattern becomes smoother. Even if one does not accept economic efficiency in the broadest sense as a reasonable policy goal, the choice of a marginal-cost pricing method can bring about improvements in price and investment signals as well as the development of a practical cost estimation tool.

The second criterion involves the issue of which marginal-cost definition will best satisfy the criterion of minimizing the volatility of estimations; that is, which technique tends to generate cost estimations having the property of relative stability even under conditions of extreme lumpiness in capacity investment. This criterion implies that marginal-cost estimations be examined for properties of direction (behavior patterns), magnitude, and volatility. This criterion recognizes that marginal-cost pricing has not been feasible in some cases since, under conditions of lumpy investment, prices can be extremely volatile creating both political and financial management problems.

The third criterion concerns the issue of which marginal-cost definition will best satisfy the criterion of providing adequate revenues to cover revenue requirements; that is, which technique minimizes the potential for revenue erosion as well as excess revenues. This criterion indicates that the estimation methods be examined for the property of revenue flows and whether those flows will match incurred costs or revenue requirements.

The fourth criterion is administrative feasibility. The operationalization of marginal costs can be more or less complex. Some of the more sophisticated approaches may be closer to the textbook ideal and yet be very costly to implement. In some cases, the cost of generating data may outweigh the benefits, even the efficiency gains, of the marginal-cost method. A related point is that customer confusion about changes in rate design may create administrative and regulatory

problems for the water system. On the other hand, administrative costs are associated with all methods.

The relative importance of the four criteria is essentially a function of judgment. For example, since the typical sale of water is in the nature of a short-term agreement, those who advocate prices based on short-run marginal cost accept price volatility as less important than economic efficiency. That is, the potential exists for continually changing water prices. However, a rational pricing scheme cannot incorporate one criterion such as efficiency and totally ignore price stability and financial considerations. Conversely, a rational pricing scheme cannot incorporate price stability and adequate revenue generation and overlook allocative efficiency as a relevant consideration.

The selection of one definition of marginal cost results in accepting various tradeoffs among allocative efficiency, cost and rate stability, revenue adequacy, and administrative feasibility. The magnitude and nature of these tradeoffs will vary with investment conditions, price horizons, capital recovery factors, economies of scale, and system growth. The ambiguous nature of the marginal-cost concept permits significant latitude in its actual estimation with the outcome being cost estimates diverging from theoretical marginal cost. For example, the averaging process implicit in the average marginal cost and Turvey marginal-cost formulations, even though desirable, can produce cost estimates having little resemblance to the marginal-cost concept portrayed in microeconomic theory. In sum, there are several ways in which marginal cost can be defined for pricing purposes, each having theoretical and practical disadvantages as well as advantages.

Incremental Least-Cost Analysis

The development of a marginal-cost method for application in water is made easier with the use of an appropriate policy framework. Proposed here is a method for calculating average incremental costs that builds substantially on the estimation techniques discussed above while incorporating several practical solutions to some of the more troublesome conceptual and application problems. The general steps in the incremental least-cost (ILC) approach are compared with a marginal-cost pricing approach in table 4-4.

The proposed ILC method defines the next increment of capacity in terms of least-cost planning criteria. The rationale is that cost allocation and rate design

TABLE 4-4

COMPARISON OF MARGINAL-COST ANALYSIS AND
INCREMENTAL LEAST-COST ANALYSIS

Key Steps in a Marginal-Cost Analysis

- STEP 1: Identify all potential supply options.
- STEP 2: Choose the most viable supply option.
- STEP 3: Develop cost-allocation assumptions and methodology.
- STEP 4: Perform the cost estimation for the most viable supply option.
- STEP 5: Use the cost estimation in rate design.

Key Steps in an Incremental Least-Cost Analysis

- STEP 1: Identify all potential supply options using planning criteria.
- STEP 2: Develop cost-allocation assumptions and methodology.
- STEP 3: Perform the cost estimation for each supply option.
- STEP 4: Choose the most viable least-cost supply option.
- STEP 5: Use the cost estimation in rate design and planning.

Source: Authors' construct

are an integral part of supply planning and such a methodology helps reinforce these relationships. A planning approach confines the number of capacity increment alternatives to those that meet a priori planning criteria within a specified planning time frame. Planning criteria need not be confined to least-cost principles or even to cost considerations. For example, most water supply plans would require systems to maintain basic engineering and health standards related to system reliability and water quality where cost is a subordinate consideration. The planning framework can span any length of time, and potential capacity increments can be either small or large and have either a short or long service life. One need not assume that the next capacity increment will be added within the next year or even in the next few years. Absent a highly technical analysis, water system engineers essentially can make an educated forecast about a select number of potential capacity sources.

Methodology

The incremental least-cost methodology is summarized in table 4-5. The first step is the identification of appropriate supply alternatives (including changes in output levels using existing capacity as well as nontraditional supply options) consistent with relevant planning criteria. Each supply increment will involve different types of costs in the different functional areas of public water supply: source development (including raw water storage), pumping, transmission, treatment, and storage (for treated water). Some options, such as purchased water, require a separate functional category. Which cost categories are affected by each option depends on the system's existing capacity configuration. Some, for example, may entail additional incremental costs in only select areas without affecting costs in others.

TABLE 4-5
STEPS IN AN INCREMENTAL LEAST-COST ANALYSIS

-
- Identification of incremental capacity alternatives.
 - Feasibility analysis of incremental capacity alternatives.
 - Estimation of capital and operation and maintenance costs.
 - Cost allocation to functional categories of water supply.
 - Cost allocation to off-peak and peak demand.
 - Cost allocation to service classes.
 - Calculation of total annualized incremental costs (TAIC).
 - Calculation of average incremental costs (AIC).
 - Identification of incremental least-cost (ILC) alternative.
 - Use of estimates in rate design and planning.

Source: Authors' construct.

For purposes of comparison, the incremental capital costs (k) associated with each supply alternative are operationalized as the annual payment over the useful service life of the capital expenditure necessary to pay interest and fully recover capital costs, as follows:²⁸

$$k = \frac{Ci(1+i)^n}{(1+i)^n - 1}$$

where: k = annualized capital costs,
 C = the total capital expenditure required,
 n = the useful service life of the capital expenditure (a proxy for the consumer payback period), and
 i = the appropriate interest (financing) rate.

For each capacity alternative, the analyst must also estimate operation and maintenance expenses (OM). A pragmatic approach is to use the projected annual OM for the first year that the capacity addition is expected to be operational. Knowing both k and OM for each option allows the calculation of total annualized incremental costs (TAIC) for each capacity option according to the general formula:

$$TAIC = k + OM.$$

Allocating costs to each of the identified functional areas of water supply yields the more detailed formula:

$$TAIC = \frac{(k+OM)_d + (k+OM)_p + (k+OM)_r + (k+OM)_t + (k+OM)_s + (k+OM)_o}{(k+OM)_t + (k+OM)_s + (k+OM)_o}$$

where: k = annualized capital costs,
 OM = additional annual operation and maintenance costs,
 d = source development,
 p = pumping,
 r = transmission,
 t = treatment,
 s = storage, and
 o = nontraditional supply.

²⁸ Jack Hirshleifer, James C. Dehaven, and Jerome W. Milliman, *Water Supply: Economics, Technology, and Policy* (Chicago: University of Chicago Press, 1960).

This calculation of TAIC can be performed for unallocated additions to system capacity, for additions that meet off-peak or peak capacity needs, or for capacity requirements for different customer classes (which also may be divided into off-peak and peak needs). Analysts must develop allocation rules for the assignment of costs. Although in theory all costs can be allocated to a functional area of water supply, some analysts may choose to use a separate category for joint or common costs, such as general office expenses. The customer categories that apply depend on characteristics of the water service area. Cost allocation can be facilitated by the use of an incremental cost allocation matrix, an example of which appears in table 4-6.

The next step in the analysis is the choice of an appropriate denominator for comparing costs on a per-unit basis in terms of what is known as average incremental cost (AIC). Some of the available alternatives are summarized in table 4-7. As always, analyst judgment plays an important role. One approach is to calculate AIC by dividing simple annual costs (TAIC) by the amount of designed capacity added in millions of gallons per annum (mg):

$$AIC_{mg} = \frac{TAIC}{W_{mg}}$$

where: W = additional increment of water capacity, and
mg = million gallons per annum.

The problem with this formulation of AIC is that it does not take into account the difference between designed capacity and utilized capacity or the magnitude of water losses. As a result, AIC_{mg} may tend to underrepresent unit costs. An alternative denominator can be used to reflect the expected utilization of the capacity increment. A utilization factor is the ratio of the maximum demand of a system to the installed capacity of the system. Thus, an alternative AIC calculation can be represented by:

$$AIC_{umg} = \frac{TAIC}{u * W_{mg}}$$

where: u = utilization factor for the capacity increment.

TABLE 4-7

NOTATION USED IN CALCULATING AVERAGE INCREMENTAL COSTS

Notation	Definition
k	Incremental capital costs (annualized).
OM	Incremental operation and maintenance costs (annualized).
$k+OM$	Total annualized incremental cost (TAIC).
$\frac{k+OM}{W_{mg}}$	Average incremental cost (AIC) per system design capacity.
$\frac{k+OM}{u * W_{mg}}$	Average incremental cost (AIC) per utilized capacity, where u = a utilization factor based on system output.
$\frac{k+OM}{W_{rpmg}}$	Average incremental cost (AIC) per revenue producing water.
$\frac{k}{W_{mg}} + \frac{OM}{u * W_{mg}}$	An average incremental cost (AIC) hybrid where unit capital costs are based on added design capacity and unit O&M costs are based on output using a utilization factor.

Source: Authors' construct.

There is another approach for dealing with the issue of water losses, water that is provided free-of-charge, or otherwise unaccounted-for water. Caused by a variety of conditions, "nonaccount water" is not billed and therefore generates no revenues for the utility.²⁹ The greater the system water loss, the more AIC will underestimate the actual incremental cost of water. Although historical records can be used, care should be taken in estimating revenue producing water because water losses do not necessarily increase linearly with output. Given an estimate of expected annual revenue producing water (rpmg), another calculation of AIC can be made as follows:

$$AIC_{rpmg} = \frac{TAIC}{W_{rpmg}}$$

where: rpmg = revenue producing million gallons per annum.

It follows that the incremental cost of water losses can be estimated by calculating the difference between the incremental cost of the gross additional increment of capacity and the incremental cost of revenue producing capacity. Because mg is always greater than rpmg, this number will always be positive. Water system managers and their regulators will certainly take note of the magnitude of this amount. For some utilities, leak detection and repair may itself be a cost effective (if not least cost) source of additional capacity. Indeed, the incremental least-cost method incorporates a variable (o) to address this potential source of supply. Other supply options, such as purchased water and conservation programs, also can be considered in the nontraditional category, as long as their cost impacts on other functional areas (such as transmission and distribution) also are identified.

Assuming that AIC is calculated for more than one potential source of additional capacity, incremental least cost (ILC) is simply the lowest value that results from the comparative analysis. The option identified should be reanalyzed in terms of feasibility and desirability. If the least-cost alternative is not preferable, it is incumbent on the analyst to explain why. Finally, the least-cost estimate should be compared with cost estimates using other methodologies, including traditional methods used to determine revenue requirements. The divergence

²⁹ On the issue of water losses, see Lynn P. Wallace, *Water and Revenue Losses: Unaccounted-For Water* (Denver, CO: American Water Works Association, 1987).

between estimates should be evaluated with care, particularly if the analysis is used for pricing decisions.

Assumptions

It is important to clarify the several assumptions underlying the application of the incremental least-cost method described here. These apply to other approaches as well and may present application limitations when certain conditions cannot be assumed. First, it is assumed that operating and cost data on potential supply capacity increments (including changes in existing levels of output) are either readily available or can be easily estimated. Second, operating and cost data on nontraditional supply alternatives, such as wholesale purchases, source-of-supply leasing, leak detection and repair, conservation technology, and so on, can also be estimated. Third, service lives and financing rates associated with alternative capacity increments can be identified with reliability. Fourth, reasonable estimates can be made of the amount of water capacity added to the water system as well as revenue producing water and unaccounted-for water. Fifth, the cost of incremental additions to the distribution system can be directly recovered and therefore are not properly included in a marginal-cost analysis. Sixth, it is assumed that the water utility experiences a positive growth rate in water output and usage along with increased costs of service during the planning period. This assumption precludes the generation of negative marginal-cost values that can occur under this and other cost calculation techniques.

Perhaps most importantly, similar to the average marginal-cost method previously discussed, it is assumed that the use of the incremental least-cost method as described places more importance on the evaluative criteria of cost and rate stability, revenue adequacy, and administrative feasibility than on the criterion of economic efficiency. The method is principally a least-cost planning and general ratemaking tool, and one that should be used in conjunction with others available to the analyst, including historical cost studies.

Discussion

An important part of the ILC method is that incremental capital and operation costs are estimated for each potential capacity increment on an annualized basis. Average incremental costs can be calculated by determining annualized costs and dividing this amount by the amount of capacity added. Capital and operating costs can be estimated separately for each of the principal cost categories (that is, source development, storage, transmission, treatment, and so on) and, at the analyst's discretion, separately for capacity needed to meet off-peak and peak demand. The analysis can be taken a step further by estimating these costs for different customer classes. Still, the method does not require more data than most other cost allocation analyses.

The method, as described, allows analysts to consider alternative measures of average incremental cost based on the denominator of choice. For example, the method recognizes both the incremental cost of added capacity and the incremental cost of revenue-producing water.³⁰ The difference between the two is a reasonable estimate of the incremental cost of water loss on a per-unit basis. Water suppliers and regulators obviously have an interest in the amount of a system's unaccounted-for or nonaccount water and the incremental cost of these water losses. A reasonable estimate of this cost may induce some water supply managers to implement leak detection and repair programs as essentially a source of additional capacity.

Finally, the method allows for the calculation of more than one average incremental-cost estimate, based on the existence of more than one capacity alternative. These can be used to identify the least-cost alternative for planning purposes as well as ratemaking. If an estimate other than the least-cost amount is selected, the rationale for doing so should be made clear. More complicated analyses can incorporate sensitivity tests using different technology and system growth assumptions. At a minimum, water suppliers (and arguably their regulators)

³⁰ The importance of revenue-producing water as the denominator in calculating per-unit costs was emphasized in Patrick C. Mann and Janice A. Beecher, *Cost Impact of Safe Drinking Water Act Compliance for Commission-Regulated Water Utilities* (Columbus, OH: The National Regulatory Research Institute, 1989).

should be able to conduct a rudimentary analysis of future capacity needs within a planning framework.

The key benefits of the incremental least-cost method, then, are that it establishes a principle for choosing the next capacity increment and eliminates many of the concerns related to time frame, simplifies the calculation of annualized costs, provides for the assessment of the incremental costs of revenue-producing water, and sets forth an array of alternatives from which to choose. One of the chief benefits of the least-cost approach is that it encourages the analysis of nontraditional capacity increments, such as purchased water, leasing, water loss reduction, and conservation, within a planning framework.

Incremental least cost has analytical value as a reasonable proxy for marginal costs in a planning framework, even though it departs significantly from the textbook definition with regard to economic efficiency. It offers pragmatic solutions to some of the problems of marginal-cost estimation. Whether or not the value of ILC actually becomes the estimate used for rate design and planning decisions may involve a variety of other considerations.

The choice of any approach depends largely on policy goals and preferences about how to achieve them. Marginal-cost pricing has been advanced by economic theory to make more efficient the allocation of water supply resources. Although marginal-cost or incremental pricing is an imperfect approach to water utility ratemaking, substantial benefits may be gained from its use. At the very least, the results of such an analysis can be used for comparison with more traditional cost allocation and pricing methods in the context of least-cost planning.

Fully Allocated Costs and Marginal Costs Compared

In the regulatory context, an important difference between fully allocated methods and marginal or incremental cost methods is the sequence of procedures. With fully allocated cost methods, revenue requirement determination is followed by cost functionalization (using historic or embedded accounting costs), cost classification, interclass cost allocation, unit cost calculation, and, finally, rate design. One starts with the premise of the equality of revenues and costs followed by an interclass cost allocation that achieves the matching of costs and revenues. Obviously, there can be elements of arbitrariness in the transition from cost allocation to rate design. For example, an allocation method can be selected on the

basis of producing allocations that justify a predetermined rate structure rather than on the basis of cost causation principles.

With marginal-cost methods, selection of the planning horizon is followed by the estimation of marginal unit costs (possibly on a functionalized basis), cost classification, rate design, and finally the reconciliation of costs and revenues. One starts with the premise of the equality of price and marginal cost followed by cost adjustments to insure compatibility with revenue requirements. Since unit costs are directly calculated as the bases for rate structure, incremental methods generally do not involve interclass cost allocations.

The differences between fully allocated and marginal-cost methods may be overstated. For example, average cost calculations often are used as approximations of incremental distribution cost and incremental customer cost since incremental cost calculations for these components tend to be less precise than for production (that is, treatment). Both fully allocated and marginal-cost estimations may be adjusted in the rate design process for competition differences across markets. Both methods can be employed to provide a sophisticated rationale for value of service pricing. Both methods do not automatically generate cost-revenue equality. That is, marginal-cost estimations can create rates needing adjustment prior to implementation; fully allocated costs can lead to rates needing adjustment after implementation.

Both fully allocated cost and marginal-cost methods involve value judgments. In fully allocated cost methods, judgments occur in cost assignments, capacity cost allocations, and in the allocation of administrative and general expense. Value judgments also occur in selecting a marginal-cost estimation method, in determining the planning horizon and the timing of new capacity, in defining incremental output, and in reconciling costs and revenues. It is quite possible that the same approximate rate structure can be obtained either by a fully allocated or a marginal-cost method.

Cost concepts have emerged that incorporate elements of both fully allocated cost and marginal-cost methods. For example, the concept of attributable cost is viewed as the direct cost of providing a service plus a portion of other costs which are influenced by the provision of the service, but which would not necessarily be avoidable if the service were not provided. In brief, attributable cost is a melding of embedded and incremental cost. In contrast, the concept of avoidable cost is virtually synonymous with marginal cost. The mixed test year is

another concept that, in theory at least, combines the use of embedded and incremental costs. Many commissions prefer this approach to exclusive reliance on either historic or projected data.

Few attempts, however, have been made in the regulatory process to integrate fully allocated cost methods with incremental cost methods. William Melody must be considered a pioneer in assessing the potential for combining these approaches.³¹ He suggested that fully allocated cost methods could be employed in allocating revenue requirements to customer classes and specific services. Thus, fully allocated costs would determine the overall revenue requirements attributable to individual customer classes, blocks of use, and other services. Incremental cost estimates could then be employed for designing rates for these classes and services (such as different usage blocks). Thus, incremental cost would assist (along with demand and market factors) in structuring rates. Therefore, fully allocated cost emerges as the revenue requirement standard while incremental cost remains an important factor in rate design.

The Wisconsin Public Service Commission is one of the few commissions that has attempted the actual integration of fully allocated cost and incremental cost methods.³² The Commission in recent years has employed embedded cost studies to determine the range for cost allocation; embedded cost becomes the primary basis for determining revenue targets for individual classes of service. The Commission then employs incremental cost studies to indicate the point within the range for interclass allocations; incremental cost becomes the primary basis for rate design within classes of service. Further research on the integration of these approaches is probably overdue.³³ However, another issue requiring attention is the criticism

³¹ William H. Melody, "Interservice Subsidy: Regulatory Standards and Applied Economics," in Harry M. Trebing, ed., *Essays on Public Utility Regulation* (East Lansing, MI: Institute of Public Utilities, Michigan State University, 1971), 167-210.

³² Robert J. Malko and Terrance B. Nicolai, "Using Accounting Cost and Marginal Cost in Electricity Rate Design," Eleventh Annual Rate Symposium on Pricing Electric, Gas, and Telecommunications Services (Columbia, MO: University of Missouri, 1985), 168-82.

³³ Patrick C. Mann, "Costing Method Selection: Rhetoric and Substance," in Patrick C. Mann and Harry M. Trebing, eds., *Public Utility Regulation in an Environment of Change* (East Lansing, MI: Institute of Public Utilities, Michigan State University, 1987), 519-28.

that combining fully allocated and marginal-cost approaches undermines the goals of both methods and produces meaningless results.

In sum, both fully allocated cost and marginal-cost estimations can provide regulators with important benchmarks for rate design. Since these methods can generate divergent results, an option available to regulators is to conduct multiple costing analyses thus producing several pricing benchmarks rather than singular cost values. For example, the results of fully allocated cost studies can be supplemented with incremental cost estimations thus providing both minimum and maximum standards for specific rates. Many of the rate design alternatives available today, and discussed in the following chapter, incorporate elements of fully allocated and marginal-cost analysis.

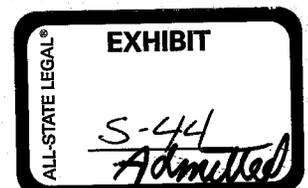
BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER
Chairman
JIM IRVIN
Commissioner
WILLIAM A. MUNDELL
Commissioner
JEFF HATCH-MILLER
Commissioner
MIKE GLEASON
Commissioner

IN THE MATTER OF THE APPLICATION OF) DOCKET NO. W-01445A-02-0619
ARIZONA WATER COMPANY, AN)
ARIZONA CORPORATION, FOR)
ADJUSTMENTS TO ITS RATES AND)
CHARGES FOR UTILITY SERVICE)
FURNISHED BY ITS EASTERN GROUP)
AND FOR CERTAIN RELATED)
APPROVALS)

DIRECT
TESTIMONY
OF
RONALD E. LUDDERS
PUBLIC UTILITIES ANALYST V
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

JULY 8, 2003



EXECUTIVE SUMMARY
ARIZONA WATER COMPANY CORPORATION
EASTERN GROUP
DOCKET NO. W-01445A-02-0619

General Background

Arizona Water Company is a certificated Arizona public service corporation with headquarters located in Phoenix, Arizona. The Company supplies water to approximately 60,000 customers in eight counties throughout Arizona. The Company is composed of 18 separate water systems located in Ajo Heights, Apache Junction, Bisbee, Casa Grande, Coolidge, Lakeside, Miami, Oracle, Overgaard, Pinewood, Rimrock, San Manuel, Sedona, Sierra Vista, Stanfield, Superior, White Tank, and Winkelman. This permanent rate application applies only to the eight systems that comprise the Eastern Group (i.e. Apache Junction, Bisbee, Miami, Oracle, San Manuel, Sierra Vista, Superior, and Winkelman). The Eastern Group serves approximately 29,000 customers.

Apache Junction System

Proposed Revenue Increase – Apache Junction

The Company requested total annual operating revenues of \$10,249,590. This revenue amount represents an increase of \$1,305,663, or 14.60 percent, over the Company filed adjusted test year revenue of \$8,943,927.

Staff recommends total annual operating revenues of \$8,137,215. This revenue amount represents a decrease of \$901,427, or 9.97 percent, below Staff's adjusted test year revenue of \$9,038,642.

Rate Base – Apache Junction

Staff recommends an original cost rate base of \$18,346,065, a reduction of \$5,860,951, or 24.21, percent compared to the Company's proposed rate base of \$24,207,016.

Operating Income – Apache Junction

Staff recommends adjusted operating income of \$1,571,524, a decrease of \$1,091,248, or 40.98 percent, compared to the Company's proposal of \$2,662,772.

Adopting Staff's recommended operating income results in an 8.566 rate of return versus the Company's proposal of 11.00 percent.

Bisbee System

Proposed Revenue Increase – Bisbee

The Company requested total annual operating revenues of \$1,869,599. This revenue amount represents an increase of \$612,649, or 48.74 percent, over the Company filed adjusted test year revenue of \$1,256,950.

Staff recommends total annual operating revenues of \$1,613,909. This revenue amount represents an increase of \$357,306, or 28.43 percent, over the Staff adjusted test year revenue of \$1,256,603.

Rate Base - Bisbee

Staff recommends an original cost rate base of \$3,425,681, a reduction of \$274,432, or 7.42 percent, compared to the Company's proposed rate base of \$3,700,113.

Operating Income - Bisbee

Staff recommends operating income of \$293,444, a decrease of \$113,568, or 27.90 percent, compared to the Company's proposed operating income of \$407,012.

Adopting Staff's recommended operating income results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

Miami System

Proposed Revenue Increase – Miami

The Company requested total annual operating revenues of \$2,179,657. This revenue amount represents an increase of \$722,718, or 49.61 percent, over the Company filed adjusted test year revenue of \$1,456,939.

Staff recommends total annual operating revenues of \$1,641,342. This revenue amount represents an increase of \$184,620, or 12.67 percent, over the Staff adjusted test year revenue of \$1,456,722.

Rate Base - Miami

Staff recommends an original cost rate base of \$2,740,612, a reduction of \$1,829,584, or 40.03 percent, compared to the Company's proposed rate base of \$4,570,196.

Operating Income - Miami

Staff recommends operating income of \$234,761, a decrease of \$267,961, or 53.30 percent, compared to the Company's proposed operating income of \$502,722.

Adopting Staff's recommended rates results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

Oracle System

Proposed Revenue Increase – Oracle

The Company requested total annual operating revenues of \$1,060,904. This revenue amount represents an increase of \$233,327, or 28.19 percent, over the Company filed adjusted test year revenue of \$827,577.

Staff recommends total annual operating revenues of \$905,849. This revenue amount represents an increase of \$77,081, or 9.30 percent, over the Staff adjusted test year revenue of \$828,768.

Rate Base - Oracle

Staff recommends an original cost rate base of \$2,415,268, a reduction of \$404,132, or 14.33 percent, compared to the Company's proposed rate base of \$2,819,400.

Operating Income - Oracle

Staff recommends operating income of \$47,232, a decrease of \$95,702, or 66.96 percent, compared to the Company's proposed operating income of \$142,934.

Adopting Staff's recommended operating income results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

San Manuel System

Proposed Revenue Increase – San Manuel

The Company requested total annual operating revenues of \$921,119. This revenue amount represents an increase of \$446,869, or 94.23 percent, over the Company filed adjusted test year revenue of \$474,250.

Staff recommends total annual operating revenues of \$821,535. This revenue amount represents an increase of \$347,419, or 73.28 percent, over the Staff adjusted test year revenue of \$474,116.

Rate Base Adjustments – San Manuel

Staff recommends an original cost rate base of \$641,450, a reduction of \$152,543, or 19.21 percent, compared to the Company's proposed rate base of \$793,993.

Operating Income – San Manuel

Staff recommends operating income of \$54,947, a decrease of \$32,392, or 37.08 percent, compared to the Company's proposed operating income of \$87,339.

Adopting Staff's recommended operating income results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

Sierra Vista System

Proposed Revenue Increase – Sierra Vista

The Company requested total annual operating revenues of \$1,308,079. This revenue amount represents an increase of \$411,594, or 45.91 percent, over the Company adjusted test year revenue of \$896,485.

Staff recommends total annual operating revenues of \$1,105,272. This revenue amount represents an increase of \$208,109, or 23.20 percent, over the Staff adjusted test year revenue of \$897,163.

Rate Base – Sierra Vista

Staff recommends an original cost rate base of \$2,200,445, a reduction of \$374,242, or 14.54 percent, compared to the Company's proposed rate base of \$2,574,687.

Operating Income – Sierra Vista

Staff recommends operating income of \$188,490, a decrease of \$94,726, or 33.4 percent, compared to the Company's proposed operating income of \$283,216.

Adopting Staff's recommended operating income results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

Superior System

Proposed Revenue Increase – Superior

The Company requested total annual operating revenues of \$1,190,319. This revenue amount represents an increase of \$491,351, or 70.30 percent, over the Company filed adjusted test year revenue of \$698,968.

Staff recommends total annual operating revenues of \$1,024,222. This revenue amount represents an increase of \$325,633, or 46.61 percent, over the Staff adjusted test year revenue of \$698,589.

Rate Base - Superior

Staff recommends an original cost rate base of \$2,400,573, a reduction of \$273,003, or 10.21 percent, compared to the Company's proposed rate base of \$2,673,576.

Operating Income - Superior

Staff recommends operating income of \$205,633, a decrease of \$88,460, or 30.08 percent, compared to the Company's proposed operating income of \$294,093.

Adopting Staff's recommended operating income results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

Winkelman System

Proposed Revenue Increase – Winkelman

The Company requested total annual operating revenues of \$129,358. According to the Company, this revenue amount represents an increase of \$32,343, or 31.97 percent, over the Company adjusted test year revenue of \$98,022.

Staff recommends total annual operating revenues of \$115,659. This revenue amount represents an increase of \$16,935, or 17.15 percent, over the Staff adjusted test year revenue of \$98,724.

Rate Base - Winkelman

Staff recommends an original cost rate base of \$232,924, a reduction of \$32,975, or 12.40 percent, compared to the Company's proposed rate base of \$265,899.

Operating Income - Winkelman

Staff recommends total operating revenue of \$19,952, a decrease of \$9,297, or 31.79 percent, compared to the Company's proposed operating revenue of \$29,249.

Adopting Staff's recommended operating income results in an 8.566 percent rate of return versus the Company's proposed 11.00 percent.

Arsenic Removal Recovery Mechanism

There is currently no arsenic removal plant constructed in the Eastern Group. However, the recommended arsenic order is pending and, therefore, Staff's recommendation regarding an arsenic cost recovery system cannot be finalized until the Commission determines what action it accepts in dealing with this issue.

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION.....	1
PURPOSE OF TESTIMONY	2
BACKGROUND.....	3
ORDER OF TESTIMONY	5
APACHE JUNCTION	18
SUMMARY OF PROPOSED REVENUE – APACHE JUNCTION	18
RATE BASE – APACHE JUNCTION	18
<i>Original Cost Rate Base</i>	18
<i>Rate Base Adjustment No. 1– Test Year Plant In Service</i>	18
<i>Rate Base Adjustment Nos. 7, 8, 9 and 10 – Accumulated Depreciation</i>	19
<i>Rate Base Adjustment No. 11 – Cash Working Capital Allowance</i>	21
OPERATING INCOME – APACHE JUNCTION	23
<i>Operating Income Summary</i>	23
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	23
<i>Operating Income Adjustment Nos. 4, 6, 9, 11 and 12 – 2001 Expense Annualization Adjustment</i>	28
<i>Operating Income Adjustment No. 8 – Water Testing Expense</i>	29
<i>Operating Income Adjustment No. 14 – Rate Case Expense</i>	29
<i>Operating Income Adjustment Nos. 17 and 18 – Income Taxes</i>	32
RATE DESIGN – APACHE JUNCTION.....	33
<i>Rate Consolidation</i>	33
<i>Rate Design</i>	34
BISBEE SYSTEM	36
SUMMARY OF PROPOSED REVENUE – BISBEE.....	36

RATE BASE - BISBEE	36
<i>Original Cost Rate Base</i>	36
<i>Rate Base Adjustment No. 1 – Plant In Service</i>	36
<i>Rate Base Adjustment Nos. 4, 5, 6 and 7 – Accumulated Depreciation</i>	38
<i>Rate Base Adjustment No. 8 – Cash Working Capital Allowance</i>	40
OPERATING INCOME - BISBEE	41
<i>Operating Income Summary</i>	41
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	41
<i>Operating Income Adjustment No. 3 – Water Testing Expense</i>	42
<i>Operating Income Adjustment No. 6 and 7 – Expense Annualization Adjustment</i>	43
<i>Operating Income Adjustment No. 9 – Rate Case Expense</i>	43
<i>Operating Income Adjustment No. 10 – Depreciation and Amortization Expense</i>	44
<i>Operating Income Adjustment No. 11 – Property Taxes</i>	46
<i>Operating Income Adjustment Nos. 12 and 13 – Income Taxes</i>	46
RATE DESIGN - BISBEE	47
<i>Rate Design</i>	47
MIAMI SYSTEM	48
SUMMARY OF PROPOSED REVENUE - MIAMI	48
RATE BASE - MIAMI	48
<i>Original Cost Rate Base</i>	48
<i>Rate Base Adjustment No. 1 – Plant In Service</i>	48
<i>Rate Base Adjustment No. 2 – Post-Test Year Plant In Service</i>	49
<i>Rate Base Adjustment Nos. 4, 5, 6 and 7 – Accumulated Depreciation</i>	50
<i>Rate Base Adjustment Nos. 8 and 9 – Pinal Creek Group</i>	52
<i>Rate Base Adjustment No. 10 – Cash Working Capital Allowance</i>	52
OPERATING INCOME - MIAMI	54
<i>Operating Income Summary</i>	54

<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	54
<i>Operating Income Adjustment No. 4 – Water Testing Expense</i>	55
<i>Operating Income Adjustment No. 7 and 9 – Expense Annualization Adjustment</i>	56
<i>Operating Income Adjustment No. 10 – Rate Case Expense</i>	56
<i>Operating Income Adjustment Nos. 12 – Depreciation and Amortization Expense</i>	57
<i>Operating Income Adjustment No. 12 – Property Taxes</i>	59
<i>Operating Income Adjustment No. 8 – Income Taxes</i>	59
RATE DESIGN - MIAMI	60
ORACLE SYSTEM	62
SUMMARY OF PROPOSED REVENUE - ORACLE	62
RATE BASE - ORACLE	62
<i>Original Cost Rate Base</i>	62
<i>Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation</i>	63
<i>Rate Base Adjustment No. 7– Cash Working Capital Allowance</i>	65
OPERATING INCOME - ORACLE	67
<i>Operating Income Summary</i>	67
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	67
<i>Operating Income Adjustment No. 4 – Water Testing Expense</i>	68
<i>Operating Income Adjustment No. 5 and 7 – Expense Annualization Adjustment</i>	68
<i>Operating Income Adjustment No. 8 – Rate Case Expense</i>	69
<i>Operating Income Adjustment Nos. 10 – Depreciation and Amortization Expense</i>	70
<i>Operating Income Adjustment No. 11 – Property Taxes</i>	71
<i>Operating Income Adjustment No. 8 – Income Taxes</i>	72
RATE DESIGN - ORACLE	72
<i>Rate Design</i>	72
SAN MANUEL SYSTEM	74
SUMMARY OF PROPOSED REVENUE – SAN MANUEL	74

RATE BASE – SAN MANUEL	74
<i>Original Cost Rate Base</i>	74
<i>Rate Base Adjustment No. 1 – Plant In Service</i>	74
<i>Rate Base Adjustment No. 2 – Post-Test Year Plant In Service</i>	75
<i>Rate Base Adjustment Nos. 4, 5, 6 and 7 – Accumulated Depreciation</i>	76
<i>Rate Base Adjustment No. 8 – Cash Working Capital Allowance</i>	78
OPERATING INCOME – SAN MANUEL	79
<i>Operating Income Summary</i>	79
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	80
<i>Operating Income Adjustment No. 5 – Water Testing Expense</i>	81
<i>Operating Income Adjustment No. 6 and 8 – Expense Annualization Adjustment</i>	81
<i>Operating Income Adjustment No. 10 – Rate Case Expense</i>	82
<i>Operating Income Adjustment Nos. 11 – Depreciation and Amortization Expense</i>	83
<i>Operating Income Adjustment No. 12 – Property Taxes</i>	84
<i>Operating Income Adjustment Nos. 13 and 14 – Income Taxes</i>	85
RATE DESIGN – SAN MANUEL	85
<i>Rate Design</i>	85
SIERRA VISTA	87
RATE BASE – SIERRA VISTA	87
<i>Original Cost Rate Base</i>	87
<i>Rate Base Adjustment No. 1 – Plant In Service</i>	87
<i>Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation</i>	88
<i>Rate Base Adjustment No. 7 – Cash Working Capital Allowance</i>	90
<i>Operating Income Summary</i>	92
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	92
<i>Operating Income Adjustment Nos. 3, 6, and 7 – Expense Annualization Adjustment</i>	93
<i>Operating Income Adjustment No. 5 – Water Testing Expense</i>	93

<i>Operating Income Adjustment No. 5 – Rate Case Expense</i>	94
<i>Operating Income Adjustment No. 10 – Depreciation and Amortization Expense</i>	94
<i>Operating Income Adjustment No. 11 – Property Taxes</i>	96
<i>Operating Income Adjustment No. 12 and 13 – Income Taxes</i>	97
RATE DESIGN – SIERRA VISTA	97
SUPERIOR SYSTEM	99
SUMMARY OF PROPOSED REVENUE- SUPERIOR	99
RATE BASE - SUPERIOR	99
<i>Original Cost Rate Base</i>	99
<i>Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation</i>	100
<i>Rate Base Adjustment No. 5 – Cash Working Capital Allowance</i>	102
<i>Operating Income Summary</i>	104
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	104
<i>Operating Income Adjustment No. 3 – Water Testing Expense</i>	105
<i>Operating Income Adjustment No. 5 and 6 – Expense Annualization Adjustment</i>	106
<i>Operating Income Adjustment No. 7 – Rate Case Expense</i>	106
<i>Operating Income Adjustment No. 9 – Depreciation and Amortization Expense</i>	107
<i>Operating Income Adjustment No. 10 – Property Taxes</i>	108
<i>Operating Income Adjustment Nos. 10 and 11 – Income Taxes</i>	108
RATE DESIGN – SUPERIOR	109
<i>Rate Consolidation</i>	109
<i>Rate Design</i>	110
WINKELMAN SYSTEM	111
SUMMARY OF PROPOSED REVENUE - WINKELMAN	111
RATE BASE - WINKELMAN	111
<i>Original Cost Rate Base</i>	111
<i>Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation</i>	112

<i>Rate Base Adjustment No. 7 – Cash Working Capital Allowance</i>	114
OPERATING INCOME - WINKELMAN	116
<i>Operating Income Summary</i>	116
<i>Operating Income Adjustment No. 1 – Revenue Annualization Adjustment</i>	116
<i>Operating Income Adjustment No. 3, 6 and 7 – Expense Annualization Adjustment</i>	117
<i>Operating Income Adjustment No. 5 – Water Testing Expense</i>	117
<i>Operating Income Adjustment No. 9 – Rate Case Expense</i>	118
<i>Operating Income Adjustment Nos. 11 – Depreciation and Amortization Expense</i>	119
<i>Operating Income Adjustment No. 14– Property Taxes</i>	120
<i>Operating Income Adjustment No. 13 – Income Taxes</i>	120
RATE DESIGN - WINKELMAN.....	121
<i>Rate Design</i>	121
ARSENIC REMOVAL RECOVERY MECHANISM.....	123

SCHEDULES

Schedules – Apache Junction	REL-
Schedules – Bisbee System	REL-
Schedules – Miami System	REL-
Schedules – San Manuel System	REL-
Schedules – Sierra Vista	REL-
Schedules – Superior System	REL-
Schedules – Winkelman System	REL-

1 **INTRODUCTION**

2 **Q. Please state Staff's name, occupation and business address.**

3 A. My name is Ronald E. Ludders. I am a Public Utilities Analyst V with the Utilities
4 Division of the Arizona Corporation Commission ("Commission"). My business address
5 is 1200 West Washington Street, Phoenix, Arizona 85007.

6
7 **Q. How long have you been employed by the Commission?**

8 A. I have been employed by the Commission since December 1989.

9
10 **Q. What are your responsibilities as a Public Utilities Analyst?**

11 A. Among other responsibilities, I review and analyze the accounting books and records of
12 regulated utilities for accuracy, completeness, and reasonableness; interpret rules and
13 regulations, prepare work-papers, schedules, revenue requirements, rate design, staff
14 reports and testimony for rate-making purposes regarding utility applications for rate
15 adjustments, financing and other matters that come before the Commission.

16
17 **Q. Have you previously testified before this Commission?**

18 A. Yes.

19
20 **Q. What is your educational background?**

21 A. I obtained a Bachelor of Science Degree in Business Administration, with majors in
22 Marketing and Accounting from Eastern Illinois University. I possess a minor in
23 Business Management. I have attended NARUC (National Association of Regulatory
24 Utility Commissioners) classes, rate seminars and numerous in-house training classes and
25 courses regarding statistics, utility auditing, management accounting, rate design,
26 taxation, cash working capital studies, and utility service charges.

27
28

1 I have been a member of the National Association of Accountants (now the Institute of
2 Management Accountants) and the Institute of Internal Auditors.

3
4 **Q. Briefly describe Staff's pertinent work experience.**

5 A. Prior to my employment with the Commission, I held several positions with Arizona
6 Public Service, serving as a Project Accountant, Cost Control Analyst and Internal
7 Auditor. I have also served as a Senior Auditor for the State of Arizona – Auditor
8 General and the Governor's Management and Audit Team. Further, I have served as a
9 Revenue Auditor with the Arizona Department of Transportation.

10
11 As a Commission employee I have been assigned water and wastewater rate cases,
12 financing cases, acquisitions and sales of assets, fuel adjustors, Certificates of
13 Convenience and Necessity, interim rate cases, depreciation and tariff matters.

14
15 **Q. Please describe your duties and responsibilities as a Public Utilities Analyst.**

16 A. I am responsible for the examination and verification of financial and statistical
17 information included in assigned utility rate applications. I develop revenue
18 requirements, design rates, prepare written reports, testimony, and schedules that support
19 recommendations presented to the Commission. I am also responsible for testifying at
20 formal hearings on these matters.

21
22 **PURPOSE OF TESTIMONY**

23 **Q. What is the purpose of your testimony in this proceeding?**

24 A. The purpose of my testimony is to present the Arizona Corporation Commission Utilities
25 Division Staff's ("Staff") analysis and recommendations regarding the Eastern Group of
26 Arizona Water Company's ("Arizona Water" or "Company") application for a permanent
27 rate increase. I present recommendations in the areas of rate base, operating income,
28 revenue requirement and rate design. Staff witness Joel Reiker, presents the cost of

1 capital recommendations. Staff witness Lyndon Hammon, presents the engineering
2 analysis and recommendations. Staff witness John Thornton presents rate design. Staff
3 also presents its recommendation regarding the Company's application for an adjustor
4 mechanism to recover costs incurred to comply with new maximum contaminant level
5 ("MCL") arsenic regulations.

6
7 **Q. What is the basis of Staff's recommendations contained in this testimony?**

8 A. I performed a regulatory audit of the Company's records to determine whether sufficient,
9 relevant and reliable evidence exists to support the proposals in Arizona Water's rate
10 application. Staff's regulatory audit consisted of the following: (1) examining and
11 testing Arizona Water Company's accounting ledgers, reports and supporting documents;
12 (2) tracing recorded amounts to source documents; and, (3) verifying that the Company-
13 applied accounting principles were in accordance with the NARUC Uniform System of
14 Accounts ("USOA").

15
16 **BACKGROUND**

17 **Q. Would you please review the Company's background?**

18 A. Arizona Water Company is a certificated Arizona public service corporation with
19 headquarters located in Phoenix, Arizona. The Company supplies water to
20 approximately 60,000 customers in eight counties throughout Arizona. The Company is
21 composed of 18 separate water systems located in Ajo Heights, Apache Junction, Bisbee,
22 Casa Grande, Coolidge, Lakeside, Miami, Oracle, Overgaard, Pinewood, Rimrock, San
23 Manuel, Sedona, Sierra Vista, Stanfield, Superior, White Tank, and Winkelman. The
24 instant application applies only to the systems that comprise the Eastern Group (i.e.
25 Apache Junction, Bisbee, Miami, Oracle, San Manuel, Sierra Vista, Superior, and
26 Winkelman). The Eastern Group serves over 29,000 customers.

1 **Q. How is Arizona Water authorized to file these eight systems as a group?**

2 A. Decision No. 58120, dated December 23, 1992, authorized Arizona Water to make rate
3 filings by group instead of filing all eighteen of its water systems simultaneously. Due to
4 the complexity and time involved in processing eighteen simultaneous rate cases,
5 Decision No. 58120 authorized Arizona Water to "implement the three-group concept..."
6 for future rate proceedings. (See Decision No. 58120, page 39, line 10) Under the three-
7 group concept recognized in that decision, the Company's operations would be divided
8 into three groups: Eastern Group, Southern Group, and Northern Group based on
9 geographical and existing divisional considerations. On August 14, 2002, Arizona Water
10 Company filed an application for a permanent rate increase for the Eastern Group. The
11 application was found insufficient on September 13, 2002 and made sufficient on
12 October 11, 2002.

13
14 **Q. What decision(s) authorized the Eastern Group's current rates?**

15 A. Arizona Water's Eastern Group's current rates and charges were authorized in Decision
16 No. 58120, dated December 23, 1992. The service charges were later modified in
17 Decision No. 60512, dated December 3, 1997. The purchased power adjustor
18 mechanisms ("PPAM") were changed in Decision No. 58293, dated May 19, 1993, and
19 Decision No. 62755, dated July 25, 2000. The Monitoring Assistance Program ("MAP")
20 surcharge was established in Decision No. 62141, dated December 14, 1999.

21
22 **Q. Please summarize the Company's rate request for the Eastern Group.**

23 A. The Company proposes rates that produce operating revenue of \$18,692,677 and
24 operating income of \$4,576,537 for an 11.00 percent rate of return on an original cost rate
25 base of \$41,604,880. The Company's proposal would increase revenue by 29.5 percent
26 for the Eastern Group.

27
28

1 **Q. What test year was used by the Company in the instant case?**

2 A. Arizona Water's rate filing is based on the historical test year over the twelve months
3 ending December 31, 2001 ("Test Year") with post-test year increases to rate base.
4

5 **Q. Did the Company prepare Reconstruction Cost New Rate Base Net of Depreciation**
6 **("RCND") schedules?**

7 A. No. The Company did not file RCND schedules. Therefore, Staff used the original cost
8 rate base ("OCLD") as the fair value rate base ("FVRB") for all systems of the Eastern
9 Group.
10

11 **ORDER OF TESTIMONY**

12 **Q. How is Staff's testimony organized?**

13 A. Staff's testimony is organized to present analysis, recommendations, and supporting
14 schedules for each of the eight water systems independently. Staff testimony for the
15 individual systems is presented in the following order: Apache Junction, Bisbee, Miami,
16 Oracle, San Manuel, Sierra Vista, Superior, and Winkelman. Finally, Staff addresses the
17 Company's request for an adjustment mechanism to recover the treatment costs that will
18 be incurred to comply with the new Environmental Protection Agency ("EPA")
19 maximum contaminant level for arsenic.
20

21 **Q. Are there any items or adjustments in the Staffs report that are common to all**
22 **systems within the Eastern Group?**

23 A. Yes, there are many items common to all systems. Staff has chosen to discuss many of
24 these items in this section here rather than repeat this information in each individual
25 system. Adjustments made to each system will include the dollar amount of the
26 adjustment and any information specific to that system. The common issues discussed
27 here are: post-test year cut-off date, gross revenue conversion factor ("GRCF"),
28 depreciation rates and expense, lead-lag analysis, annualization of revenue and expenses,

1 purchased power adjustment mechanism ("PPAM"), purchased water adjustment
2 mechanism ("PWAM"), water testing expenses, donations to charity, rate case expenses,
3 property taxes, rate design and service charges.

4
5 Post-Test Year Cut-Off Date

6 **Q. Why did Staff use a cut-off date of December 31, 2002?**

7 A. Staff had to determine a cut-off date for two reasons. First, Staff needed a reasonable
8 cut-off date to complete its audit. Second, if utility plant placed in service long after the
9 test year's conclusion is included in rate base, then the rate base will be out of
10 synchronization with test year revenue and expenses. The Company, through the direct
11 testimony of its Vice President, Mr. Michael J. Whitehead, suggests that Staff extend its
12 post-test year cut-off date to a time immediately before the hearing on this matter. On
13 page 7 of Mr. Whitehead's direct testimony, he states that "Ideally, Staff would update
14 the findings in its Staff Report to a date immediately before the hearing". If that were
15 done, Staff would be accepting post-test year plant twenty-one months after the close of
16 the test year and would have no time to conduct the analysis required to complete its
17 testimony. Therefore, Staff used the cut-off date of December 31, 2002, because it was a
18 reasonable time period after the test year's end but not so far into the future as to require
19 an updated test year.

20
21 Gross Revenue Conversion Factor

22 **Q. Does Staff agree with the Company's proposed Gross Revenue Conversion Factor of**
23 **1.63241?**

24 A. No.
25
26
27
28

1 **Q. Does Staff agree with portions of the Company's Gross Revenue Conversion Factor**
2 **calculation?**

3 A. Yes. Staff agrees that uniform marginal Federal and State income tax rates based on the
4 Eastern Group as a whole is appropriate. Staff also agrees that the respective marginal
5 Federal and State income tax rates are 6.968 and 34.00 percent. Further, Staff agrees that
6 the GRCF should include a component to recognize the Company's 0.2032 percent
7 uncollectible rate.

8
9 **Q. What is Staff's disagreement with the Company's GRCF?**

10 A. The Company did not properly use the tax and uncollectible rates to calculate the GRCF.
11 The proper calculation is shown on Schedule REL-2. The Company's calculation
12 incorrectly uses the uncollectible rate. The Company's calculation uses the actual
13 uncollectible rate. Since there is no income tax on uncollected revenue, the uncollectible
14 rate must be adjusted to an after tax basis by multiplying the uncollectible rate times one
15 minus the effective combined Federal and State income tax rate. Schedule REL-2 shows
16 a reconciliation of Staff's proposed revenue and the incremental operating income,
17 income taxes, and uncollectible expense.

18
19 Depreciation Rates and Expenses

20 **Q. Has the Company made any adjustments to the depreciation rates as required in the**
21 **Northern Division's Decision?**

22 A. Yes, the schedule submitted in Mr. Ralph Kennedy's direct testimony (page 16) contains
23 component rates for each plant account. The Company's depreciation expense and
24 associated accumulated depreciation contained in its application were based on these
25 rates. On February 12, 2003, Mr. Kennedy informed Staff that the Company
26 inadvertently did not use its most current depreciation study in its calculation and
27 submitted its most current component rates. The depreciation rates contained in this most
28 current submittal have been reviewed and approved by Staff Engineering and are

1 contained in Exhibit E of Mr. Lyndon Hammon's direct testimony and are applicable to
2 all systems within the Eastern Group.

3
4 **Q. How did the Company determine depreciation expense?**

5 A. The Company's proposal includes two pro forma adjustments. The Company's first pro
6 forma adjustment increased depreciation expense to provide an additional six months of
7 depreciation expense on test year plant additions. The Company's second pro forma
8 adjustment increased depreciation expense to provide twelve months of depreciation
9 expense on the Company's proposed post-test year plant additions that were projected to
10 be completed by December 31, 2002.

11
12 Lead-Lag Analysis

13 **Q. What is the purpose of a lead-lag analysis?**

14 A. A lead-lag analysis measures the timing of cash receipts and disbursements. The purpose
15 of a lead-lag study is to estimate of the average amount of funds either supplied by
16 shareholders or received in advance from ratepayers for business operations. If cash is
17 received from the ratepayer prior to its use, a reduction is made to the rate base to reflect
18 the actual amount of working capital provided by the ratepayers. When the Company
19 makes payments prior to receiving cash from ratepayers, rate base is increased to reflect
20 the additional funds supplied by shareholders.

21
22 **Q. Does Staff agree with the Company's proposed cash working capital?**

23 A. No. The Company's proposed cash working capital is based on a lead-lag analysis that
24 contains several conceptual and methodological errors.

25
26 **Q. Does Staff agree with the Company's lead-lag analysis?**

27 A. The Company's calculation of expense lag days included depreciation and amortization
28 expense and federal deferred income taxes, which are all non-cash expenses, and should

1 be excluded from such an analysis. The Company further failed to include interest
2 expense, which is a cash expense and should be included in the analysis. The Company's
3 method compared dollar-day revenue lag to dollar-day expense lag to calculate excess
4 dollar-day revenue lag. The Company's analysis mismatches the dollar amount included
5 in the dollar-day revenue and dollar-day expense lag amounts. The effect is to include
6 non-cash items in the dollar-day revenue lag amount and exclude non-cash items in the
7 dollar-day expense lag amount. This results in a mismatch and overstates cash working
8 capital.

9
10 **Q. Did Staff prepare a lead-lag analysis?**

11 A. Yes. Staff's analysis was done on a system-by-system basis. Staff's analysis made the
12 following adjustments to the Company's analysis: (1) Staff used expense amounts and
13 expense lag days for each individual system; (2) Staff removed depreciation expense and
14 deferred income taxes from the calculation of expense lag days; (3) Staff recognized
15 interest expense; (4) Staff incorporated its adjustments to operating expenses; and (5)
16 Staff used a method that eliminates the mismatch between the dollar amount included in
17 the dollar-day revenue and dollar-day expense lag amounts by comparing revenue lag
18 days directly to payment lag days. Finally, Staff adjusted the number of expense days on
19 Property Taxes to co-ordinate the appropriate expense lag as determined by the
20 Department of Revenue.

21
22 Annualization of Revenue

23 **Q. Does Staff agree with the Company's annualization of revenue and expenses?**

24 A. No. Staff reviewed the annualization and determined that it was inconsistent. The
25 average annual revenue per customer was calculated based on the revenue for a 5/8-inch
26 meter only and not the total of revenue from all meter sizes in order to properly match
27 revenue and expenses. This procedure created a revenue mismatch and increased the
28 Company's revenue adjustment by \$96,209, from \$211,509 to \$307,718.

1 The Company calculated variable expense adjustments based on total expenses for all
2 customers, not just the 5/8-inch metered customers. The result of Staff's analysis is an
3 increase of \$492, from \$116,040 to \$116,532.

4
5 Purchased Power Adjustment Mechanism

6 **Q. Is the Company requesting continuation of its Purchased Power Adjustment**
7 **Mechanism?**

8 A. Yes, on page 22 of Ms. Sheryl Hubbard's direct testimony, she states "that the Company
9 proposes that the adjustor mechanism be reset to zero with new base levels established in
10 this proceeding at the current level of expense."

11
12 **Q. Please explain what a PPAM is and how it works.**

13 A. The adjustor was established so the Company could pass the additional or reduced cost of
14 electric power on to its customers thereby recovering or reducing the expense. In the
15 past, the price of purchased power had been somewhat volatile with monthly fluctuations
16 that would increase or decrease the cost of either purchased electric or natural gas power.
17 In the case of Arizona Water Company, the adjustor mechanism applies to all its systems.
18 Currently, Arizona Water Company is the only water provider still using this adjustor.
19 Staff recommends eliminating the PPAM because the procedure for accounting and
20 reporting PPAMs involves monthly tracking by the Company, and review and analysis by
21 Staff. The PPAMs approved in 2003 were:

22
23 Apache Junction - 1/10 of 1 cent per 100 gallons

24 Bisbee - 1/5 of one cent per 100 gallons

25 Miami - 1/10 of one cent per 100 gallons

26 San Manuel - 1/10 of one cent per 100 gallons

27 Superior 3/10 of one cent per 100 gallons.)

28

1 Because of the immateriality of these amounts, Staff believes the cost of tracking the
2 Purchased Power Adjustor Mechanism outweighs its benefit and recommends its
3 elimination.

4
5 Purchased Water Adjustment Mechanism

6 **Q. Is the Company requesting continuation of its Purchased Water Adjustment**
7 **Mechanism?**

8 A. Yes, on page 22 of Ms. Sheryl Hubbard's direct testimony, she states "that the Company
9 proposes that the adjustor mechanism be reset to zero with new base levels established in
10 this proceeding at the current level of expense."

11
12 **Q. Please explain what a PWAM is and how it works.**

13 A. In 1986, the Company was granted a purchased water adjustment mechanism for the Ajo,
14 San Manuel, and Superior systems that would increase or decrease the purchased water
15 expense as the market price fluctuated. The adjustor mechanism would pass the
16 additional or reduced cost of purchased water on to customers, thereby recovering or
17 reducing the expense. Currently, Arizona Water Company is the only water provider still
18 using this form of adjustor. Like the PPAM, the accounting for this procedure includes
19 both Company and Staff costs. Staff believes these costs outweigh any benefit due to the
20 insignificant changes in the adjustor rate. Therefore, Staff recommends the elimination
21 of the adjustor altogether.

22
23 Water Testing Expense

24 **Q. Has Staff reviewed the Water Testing Expenses proposed by the Company?**

25 A. Staff reviewed the Company's proposed Water Testing Expenses and discusses its
26 findings in Mr. Hammon's direct testimony.

1 **Q. Has Staff reviewed the pro forma Chlorination Labor and Wages Expenses (Water**
2 **Treatment) proposed by the Company?**

3 A. Staff has reviewed the Company's pro forma Chlorination Labor and Wages Expenses
4 and has found that they do not meet the "known and measurable" standard. Staff used
5 actual 2002 expenses because of the uncertainties of Company estimates. Please refer to
6 Mr. Hammon's direct testimony.

7
8 Donations to Charity

9 **Q. Did Staff remove contributions to charities from the Company's income statement?**

10 A. Yes. Company donations to charities are expenses that should be properly borne by
11 shareholders and not ratepayers. Staff has made an adjustment for this.

12
13 Rate Case Expenses

14 **Q. Did the Company increase its proposed Rate Case Expense?**

15 A. Yes. The Company notified Staff in its response to Staff's data request REL 18-3 that it
16 had planned to increase its Rate Case Expenses by \$15,000, from \$257,550 to \$274,550.
17 The Company claimed this expense was necessary due to Staff's motion to extend the
18 procedural deadlines and the possibility of future depositions.

19
20 **Q. Does Staff agree with the Company's proposed Rate Case Expense?**

21 A. No. Staff's review of the Company's Rate Case Expense began with an analysis of the
22 1992 rate case that included all 18 systems at a cost of \$90,970 or \$5,053 per system. In
23 that case, the Commission allowed Rate Case Expense of \$90,970 amortized over three-
24 years or \$30,323 per year. In this instance, the Company has not filed an Eastern Group
25 rate case for eleven years.

26
27 If the Company receives the rate case expense it originally requested in this case (i.e.
28 \$257,550 for 8 systems) plus the amount allowed in the Northern group's rate case (i.e.

1 \$216,982 for 5 systems) the Company will incur \$474,532 for only 13 of its 18 systems.
2 The 1992 Rate Case Expense for 13 systems would have been only \$65,689 ($\$90,970$
3 divided by 18 = $\$5,053$ per system multiplied by 13 = $\$65,689$). The increase in Rate
4 Case Expense of $\$408,843$, from $\$65,585$ to $\$474,843$ results in an increase of 622
5 percent.

6
7 Rate Case Expense increases of this magnitude are not consistent with economies of scale
8 that should result from the filings of two of the three divisions (groups) of the Company.

9
10 Although it is difficult to determine exactly what the Rate Case Expense should be, due
11 to the estimated costs to be incurred upon completion of the rate case, Staff is proposing
12 an expense level of $\$180,913$, a reduction of $\$76,637$ or 29.8 percent less than the
13 Company's requested expense of $\$257,550$. Staff arrived at this number by determining
14 the amount of attorney fees incurred as of April 30, 2003, or about the half way point of
15 the rate case. This number was approximately $\$50,000$ to which Staff added another
16 $\$50,000$ for the second half of the case for a total of $\$100,000$. Additionally, the
17 Company estimated Utility Resources (Cost of Capital) expenses to be $\$49,000$ of which
18 only $\$25,687$ had been expended as of April 30, thus a remaining balance of over
19 $\$23,000$ to cover rebuttal and hearing expenses. Staff estimates these expenses not to
20 exceed $\$8,000$ ($\$200$ per hour x 40 additional hours = $\$8,000$). Further, Staff reviewed
21 the Company's anticipated Payroll and Payroll Overheads expense of $\$48,000$ and its
22 estimated Miscellaneous expense of $\$14,550$ and projected the expense to be three-
23 fourths of what was proposed for a total Staff adjusted expense of $\$180,913$. Moreover,
24 even if Staff's adjustment is not adopted, the additional ten per cent claimed by the
25 Company regarding the Motion to Continue should be disallowed, because the motion
26 was directly related to the Company's lack of completeness of responses to Staff's data
27 requests.

1 **Q. Does Staff agree with the Company's proposal to amortize Rate Case Expense over**
2 **three years?**

3 A. No. According to the Administrative Law Judge's proposed order in Docket No.
4 W-01445A-00-0962 on the arsenic cost recovery mechanism, and the Company's
5 acceptance to file a rate case using a test year of 2006, a five-year amortization period
6 should be utilized. The application of a three-year amortization period would allow the
7 Company to over-earn its approved Rate Case Expense by two years. Therefore, Staff
8 amortized its recommended Rate Case Expense over five years.

9
10 Depreciation Expense

11 **Q. Does Staff agree with the Company's method for determining depreciation expense?**

12 A. No. Depreciation expense should reflect the proposed depreciation rate which is then
13 applied to the authorized balance for each plant account. Staff recommends disallowing a
14 portion of the Company's proposed post-test year plant additions that were not revenue
15 neutral or not in service by Staff's cut-off date, December 31, 2002. The difference
16 between Staff's plant recommendation and the Company's causes a corresponding
17 difference in depreciation expense. In addition, the Company calculated its depreciation
18 expense using dated component depreciation rates that it later corrected during the course
19 of Staff's analysis. Staff reviewed and accepted the new rates and Staff used these new
20 rates in calculating this expense.

21
22 Property Tax

23 **Q. How did Staff determine each system's Property Tax expense?**

24 A. Staff used the "Arizona Department of Revenue ("ADOR") New Valuation Methodology
25 for Water and Sewer Companies". Under this method, the Company is required to file
26 form 82055 with ADOR who uses it to determine the full cash value for water and
27 wastewater property used in Arizona. Staff requested and received the Company's 2002
28 form 82055 for each of the Eastern Group's systems.

1 Since the Company leases its vehicles, it was not required to report the dollar value of its
2 licensed vehicles on line 3, Balance Sheet Information, Form 82055, page 4 of 6. The
3 Company did not complete page 5 of 6 – Schedule of Non-Capitalized Leased or Rented
4 Operating Property (System) for Water Utility Companies which it was required to
5 report.

6
7 The effect of this oversight is to overpay property taxes because, under the DOR's
8 valuation methodology, the net book value of licensed vehicles (owned or leased) is
9 deducted from the value indicated by gross revenue. The Company is paying taxes on its
10 vehicles twice.

11
12 According to the Department of Revenue, "The new methodology uses revenue as a base
13 then adds Construction Work in Progress ("CWIP") and deducts for vehicles. The
14 vehicle allowance, i.e. deducting the net book value of licensed vehicles from the value,
15 is designed to avoid double taxation. Owners of licensed vehicles pay an in lieu property
16 tax on these (vehicles). If a water or sewer company uses vehicles in its operation and
17 the company does not provide the net book value of these vehicles and this net book
18 value is not deducted from the value of the operating utility, then the company is
19 probably being over-valued based on the formula we follow."

20
21 To eliminate this overpayment, Staff has deducted the net book cost of licensed vehicles
22 in its determination of property taxes for each system.

23
24 Metered Revenue Requirement

25 **Q. How did Staff determine its metered revenue requirement?**

26 A. Once Staff determined a system's revenue requirement, it deducted revenue obtained
27 from other operating revenue. The resulting revenue requirement was the basis for
28 Staff's metered rates.

1 **Q. How does Staff's proposed rate structure compare with the Company's?**

2 A. The Company proposed single-tier rates for each of its systems based on customer class
3 distinguished by meter size, in addition to a monthly minimum charge. Staff proposes a
4 three-tier rate structure for the commodity charge. Customer class is distinguished by
5 meter size and the monthly minimum. Please refer to Mr. Thornton's testimony.

6
7 **Q. What are the advantages of a three-tier inverted rate structure over a uniform rate?**

8 A. Flat commodity rates assume there are no increases in costs associated with increases in
9 usage. Under uniform rates there is no incentive to reduce water usage. Because of the
10 ever-increasing demand for a finite resource, innovative and more complex rate structures
11 are being proposed nationwide and internationally in an attempt to properly affect
12 consumer choices.

13
14 **Q. Has Staff reviewed the Company's requested increase in some of its Service
15 Charges?**

16 A. Yes. The Company proposed increases in two of its existing service-related charges.
17 The Company proposed that its returned check charge (Non-Sufficient Funds) be
18 increased from \$10 to \$25. Additionally, the Company requested a late charge tariff of
19 1.5 percent per month for bills delinquent for more than 15 days.

20
21 **Q. Does Staff agree with the Company's returned check charge and late charge
22 proposals?**

23 A. Yes. These service-related charges need to be revised in accordance with rising labor and
24 other expenses. Additionally, these increases in the service-related charges will allow the
25 Company to recover expenses from its cost-causers. Finally, the Company proposed
26 service charges are consistent with those recommended in the Northern Group rate case
27 (Decision No. 64282, dated December 28, 2001).

28

1 **Q. Does that conclude your discussion on the Eastern Groups common issues?**

2 **A. Yes, it does.**

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

28

1 **APACHE JUNCTION**

2
3 **Summary of Proposed Revenue – Apache Junction**

4 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
5 **and Staff's recommended revenue requirements?**

6 A. Yes. Please refer to Schedule REL-1. The Company proposed total annual operating
7 revenue of \$10,249,590, which represents an increase of \$1,305,663, or 14.60 percent,
8 over the Company's adjusted test year revenue of \$8,943,927. However, the Company's
9 Schedule A-1 shows an increase of \$1,735,319 that when added to the adjusted test year
10 revenue of \$8,943,927 results in annual revenue of \$10,679,246 or a difference of
11 \$432,656.

12
13 Staff recommends total annual operating revenue for the Apache Junction system of
14 \$8,137,215. Staff's recommendation represents a decrease of \$901,427, or 9.97 percent,
15 under its adjusted test year revenue of \$9,038,642.

16
17 **Rate Base – Apache Junction**

18 Original Cost Rate Base

19 **Q. Did Staff prepare an Original Cost Rate Base Schedule?**

20 A. Yes, as shown on Schedule REL-3, Staff recommends a rate base of \$18,346,065, which
21 represents a decrease of \$5,860,951 from the Company's proposed \$24,207,016. Staff's
22 rate base adjustments are described below.

23
24 Rate Base Adjustment No. 1– Test Year Plant In Service

25 **Q. Please explain Staff's adjustments to Plant In Service?**

26 A. Staff's adjustment to Plant In Service resulted in a reduction of \$3,412,565. The first part
27 of this adjustment represents the reclassification of \$6,292 of plant inadvertently posted
28 to Purchased Pumping Power rather than Electrical Pumping Equipment. The second

1 part of the adjustment consists of a decrease of \$2,604,304 which represents the portion
2 of post-test year plant in service that was not revenue neutral or was not in service by
3 December 31, 2002. The third part of the adjustment reflects post-test year retired plant
4 for \$109,650 not shown on the Company's application. This adjustment is proper to
5 remove the corresponding plant that was replaced by the post-test year plant additions
6 that Staff accepted. Finally, Staff reclassified Deferred Central Arizona Project ("CAP")
7 charges of \$704,903 to a separate line item in the rate base schedule. This was done so
8 that these charges were segregated for clarification and ease of recording annual
9 amortization of the deferred charges.

10
11 **Q. Please summarize Staff's recommendation regarding Plant In Service.**

12 A. Staff recommends \$51,814,226 for Plant In Service, a \$3,412,565 decrease from the
13 Company's proposed \$55,226,791. The calculation of Staff's recommendation is shown
14 on Schedule REL-5.

15
16 Rate Base Adjustment No. 5 and 6 – CAP Deferrals

17 **Q. How did Staff treat the CAP deferrals?**

18 A. Staff established separate line items for the CAP deferral and accumulated amortization
19 similar to the way Contributions in Aid of Construction are listed. Staff accepted the
20 Apache Junction deferral of \$704,903 and amortized \$20,118 of annual expense to record
21 the recovery of the deferral over the 34 year remaining life of the CAP contract. Staff's
22 adjustment is shown on Schedule REL-6.

23
24 Rate Base Adjustment Nos. 7, 8, 9 and 10 – Accumulated Depreciation

25 **Q. What pro forma adjustments did the Company propose for Accumulated**
26 **Depreciation?**

27 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
28 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 2 of 11, of the

1 filing, increased Accumulated Depreciation by \$112,897 to reflect twelve months of
2 depreciation expense on the Company's proposed post-test year plant additions that were
3 expected to be completed by December 31, 2002. The Company's pro forma adjustment
4 no. 3, as shown on Schedule B-2, page 2 of 11, of the filing, decreased Accumulated
5 Depreciation by \$2,886 and according to the Company represents six months of
6 depreciation expenses on test year plant additions.

7
8 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
9 **proper matching with the Company's pro forma adjustment to include all plant**
10 **actually in service by December 31, 2002?**

11 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
12 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
13 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
14 expense but only for the post-test year plant. Using the mid-year convention, this
15 adjustment should represent six months depreciation expense only. Pro forma adjustment
16 no. 3 increased accumulated depreciation by only six months for plant placed in service
17 during the test year and remaining in service through the December 31, 2002, cut-off
18 date.

19
20 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
21 **Service and Accumulated Depreciation cut-off dates?**

22 A. The Company's proposal violates the matching principle. It overstates rate base and
23 allows the Company to earn on investment it has already recovered from ratepayers via
24 depreciation expense.

25
26 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

27 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
28 used the same cut-off date, December 31, 2002, for calculating Accumulated

1 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
2 accumulation of depreciation expense on all plant in rate base using the half-year
3 convention adopted by the Company. The depreciation accruals are calculated on plant
4 balances that are known and measurable, have been transferred out of the Construction
5 Work in Progress ("CWIP") to the appropriate plant accounts.

6
7 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

8 A. Calculation of Staff's recommendation is shown on Schedule REL-7. Staff increased
9 Accumulated Depreciation by \$1,100,547, from \$8,791,705 to \$9,892,252. This
10 adjustment is made up of several components including a \$35,589 (adjustment no. 7)
11 increase as a result of Staff's analysis. Staff recommends increasing the pro forma
12 adjustment for Accumulated Depreciation on test year plant by \$1,307,339 (adjustment
13 no. 9) from \$2,886 to \$1,304,453, and recommends decreasing the pro forma adjustment
14 for Accumulated Depreciation on post-test year plant additions by \$96,399 (adjustment
15 no. 8) from \$112,897 to \$16,498. Additionally, Staff removed \$145,982 (adjustment no.
16 10) in retired post-test year plant from Accumulated Depreciation in accordance with
17 NARUC – USOA accounting procedures.

18
19
20 Rate Base Adjustment No. 11 – Cash Working Capital Allowance

21 **Q. What did the Company propose for its working capital allowance?**

22 A. The Company proposed \$559,088 for working capital. Schedule B-5, page 1 of 2, of the
23 filing shows that the proposed amount is composed of cash working capital, materials and
24 supplies, required bank balances, and prepayments.

25
26 **Q. Does Staff agree with the Company calculation?**

27 A. No. Staff does not agree with the Company's proposed \$328,417 cash working capital
28 component of the working capital allowance.

1 **Q. Why does Staff disagree with the Company's proposed cash working capital**
2 **component of working capital?**

3 A. The Company's proposed cash working capital is based on a lead-lag analysis that
4 contains several conceptual and methodological errors.

5
6 **Q. What is the result of Staff's lead-lag analysis?**

7 A. Staff's lead-lag analysis indicated a negative \$941,880 cash working capital component
8 or a reduction of \$1,270,297 below the Company's \$328,417 figure. In other words,
9 ratepayers are providing working capital to the system.

10
11 **Q. How else did Staff adjust Working Capital?**

12 A. Staff increased the Materials and Supply Inventory by \$19,303, from \$43,863 to \$63,166
13 as a result of materials that were transferred from Repairs and Maintenance expense to
14 Working Capital.

15
16 **Q. What Working Capital allowance is Staff recommending?**

17 A. Staff recommends a working capital allowance of negative \$691,906 as shown on
18 Schedule REL-8.

19
20 Rate Base Adjustment No. 12 and 13 – Allocated Post-Test Year Additions

21 **Q. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year**
22 **additions?**

23 A. Yes. Staff accepted only revenue neutral plant that was in service by the December 31,
24 2002, cut off date. Using the Company's allocation factors, Staff decreased the Phoenix
25 Office allocation by \$765,834, which included \$36,332 of post-test year retired plant.
26 Additionally, Staff reduced the Meter Shop allocation by \$15,796. Staff's adjustment
27 reduced the Phoenix Office and Meter Shop allocations by \$781,630, from \$870,209 to
28 \$88,579 as shown on Schedule REL-9.

1 **Operating Income – Apache Junction**

2 Operating Income Summary

3 **Q. What did Staff recommend for test year revenue, expenses, and operating income?**

4 A. Staff's analysis resulted in test year revenue of \$9,038,642, expenses of \$6,914,757, and
5 an operating income of \$2,123,885 as shown on Schedules REL-10. Staff's adjustments
6 are discussed below.

7
8 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

9 **Q. How did the Company annualize 2001 revenue?**

10 A. The Company multiplied 591 (that represents the average growth in customers on the
11 Apache Junction system during the test year) by \$350 (the Company's determination of
12 annual revenue per customer) which resulted in a revenue increase of \$206,850.

13
14 **Q. Did Staff make an adjustment to annual revenue in the Company's calculation?**

15 A. Yes. Staff made a \$94,715 adjustment to increase the Company's proposed annualization
16 from \$206,850 to \$301,565. Staff's calculation of the adjustment is shown on Schedule
17 REL-12. Staff reviewed the Company's annualization and determined that it was
18 inconsistent. The average annual revenue per customer was calculated based on the
19 revenue for a 5/8-inch meter only and not the total of revenue from all meter sizes in
20 order to properly match revenue and expenses. This procedure created a revenue
21 mismatch. Staff's recalculation recognizes revenue from all meter sizes and calculated
22 the average annual revenue per customer to be \$510 rather than the Company's \$350.

23
24
25
26
27
28

1 Operating Income Adjustment No. 2 – CAP Purchased Water Adjustment

2 **Q. What is Arizona Water proposing for Purchased Water Expense for the Apache**
3 **Junction System?**

4 A. The Company proposed \$1,003,040 for Purchased Water Expense. This number is
5 composed of \$805,211 in actual 2001 purchased water expenses and \$197,829 in pro
6 forma adjustments as shown on schedule REL-13.

7
8 **Q. Please discuss the components of the Company's \$805,211 actual Purchased Water**
9 **Expense.**

10 A. The \$805,211 amount is composed of \$703,309 in CAP and City of Mesa treatment costs
11 incurred for potable water; \$94,027 for golf course effluent (i.e., non potable CAP water);
12 and a \$7,875 unrecognized amount ($\$703,309 + \$94,027 + \$7,875 = \$805,211$).

13
14 **Q. Did Staff make any adjustments to the Company's \$805,211 Purchased Water**
15 **Expense amount?**

16 A. Yes. Staff increased the CAP and City of Mesa treatment costs by \$25,188, from
17 \$703,309 to \$728,497 as a result of using the actual 2002 CAP and City of Mesa
18 treatment costs. Staff also removed the \$7,875 unreconciled amount as it was not an
19 expense incurred by the Apache Junction system and reclassified to the Miami system's
20 as a BHP Copper purchased water adjustment.

21
22 **Q. Please discuss the components of the Company's \$197,829 pro forma adjustment to**
23 **Purchased Water Expense.**

24 A. The Company's \$197,829 pro forma adjustment to purchased water expense is composed
25 of \$10,982 to normalize the 2001 City of Mesa treatment costs; \$113,939 to expense
26 CAP Municipal and Industrial ("M & I") costs that are currently being deferred; \$41,304
27 to reflect a rate increase in the Central Arizona Water Conservation District ("CAWCD")
28 contract delivery charge; and \$31,604 to annualize the expense.

1 **Q. Would you please discuss the Company's \$10,982 pro forma adjustment to**
2 **normalize the 2001 City of Mesa treatment costs?**

3 A. The City of Mesa bills Arizona Water for capital M&I costs each month. Normally, there
4 are 12 bills in any given year. However, during the test year, the CAP canal was closed
5 for repairs in November. The Company included the November 2001 charge as an
6 ongoing expense by estimating the November M&I charge (i.e., total M&I costs
7 $\$120,801 / 11 \text{ months} = \$10,982$) and adding the amount to the total test year M&I costs.

8
9 **Q. Did Staff accept the Company's \$10,982 pro forma adjustment to normalize the**
10 **2001 City of Mesa treatment costs?**

11 A. No. Staff removed the amount. Staff used the actual 2002 M&I capital cost as it was
12 known and measurable and included 12 months of M&I bills. Therefore, the \$10,982
13 adjustment to estimate and include an additional month was not necessary.

14
15 **Q. Please discuss the Company's \$113,939 pro forma adjustment to include M&I**
16 **charges in Purchased Water Expense.**

17 A. The Commission, in Decision No. 58120 (dated December 23, 1992) authorized Arizona
18 Water to defer the CAP M&I charges. Since substantially all of the CAP allocation for
19 the Apache Junction system is used and useful, the Company is proposing to expense all
20 test year CAP M&I charges by including the \$113,939 in M&I charges in Purchased
21 Water Expense.

22
23 **Q. Did you make any changes to the Company's \$113,939 pro forma adjustment to**
24 **Purchased Water expense?**

25 A. Yes. Staff decreased the CAP M&I capital charges by \$4,839, from \$113,939 to
26 \$109,100 as a result of using the Company's actual 2002 costs. The 2002 costs are
27 known and measurable and reflect 12 months of M&I capital costs.

1 **Q. Please discuss the Company's \$41,304 pro forma adjustment to reflect a CAWCD**
2 **contract rate increase in Purchased Water Expense.**

3 A. The Company was notified in June 2002 that the CAWCD contract delivery charge
4 would increase by \$8 from \$58 to \$66 per acre-foot effective January 1, 2003. The \$4
5 per acre-foot increase would result in an annual Purchased Water Expense increase of
6 \$41,304. The increase was calculated by multiplying the test year acre-feet by the \$4
7 increase (5,163 acre-feet x \$8 = \$41,304).

8
9 **Q. Did Staff make any changes to the Company's \$41,304 pro forma adjustment to**
10 **Purchased Water Expense?**

11 A. Yes. Staff increased the amount by \$2,128, from \$41,304 to \$43,432 as a result of using
12 the 2002 acre-feet (5,429 acre-feet x \$8 = \$43,432).

13
14 **Q. Please discuss the Company's \$31,604 pro forma adjustment to annualize**
15 **Purchased Water Expense.**

16 A. The Company annualized test year revenue and expenses using the test year end number
17 of customers. The annualization study increased purchased water expense by \$31,604.

18
19 **Q. Did Staff accept the Company's \$31,604 pro forma adjustment to Purchased Water**
20 **Expense?**

21 A. No. Staff removed the adjustment as Staff is using the 2002 actual purchased water
22 expense of \$728,497 shown on line 1 of Schedule REL-13.

23
24 **Q. What is Staff's net adjustment to Purchased Water expense for the Apache Junction**
25 **system?**

26 A. Staff decreased Purchased Water expense by \$27,984, from \$1,003,040 to \$975,056 as
27 shown on Schedule REL-13.

28

1 Operating Income Adjustment No. 3 – CAP Amortization Adjustment

2 **Q. What did Arizona Water propose for its deferred CAP Municipal and Industrial**
3 **charges?**

4 A. The Company proposed to amortize \$704,903 in deferred CAP charges over a three-year
5 period as shown on schedule REL-14.

6
7 **Q. Does Staff agree that the balance to be amortized is \$704,903?**

8 A. No. The Company's balance was calculated using an estimated amount. Staff's balance
9 used actual amounts.

10
11 The Company's \$704,903 balance was composed of two amounts: \$46,315 + \$658,588.
12 The \$46,315 was the actual balance of the unamortized portion of the \$60,000 deferred
13 CAP authorized in Decision No. 58120 (dated December 23, 1992). The \$658,588 was
14 an estimate of the deferred CAP M&I balance accrued from 1986 through December 31,
15 2002. Staff used the Company's actual December 31, 2002 deferred CAP M&I balance
16 of \$645,207, as shown on Schedule REL-14.

17
18 **Q. Does Staff agree that the amortization period is three years?**

19 A. No. The Company's three-year amortization period was not consistent with generally
20 accepted accounting principles ("GAAP"). GAAP requires that deferred charges be
21 amortized over the asset's estimated benefit period, not to exceed 40 years. Staff
22 amortized the contract over its remaining life (i.e., 32 years).

23
24 **Q. What was Staff's adjustment to Depreciation and Amortization expense for the**
25 **Apache Junction system?**

26 A. Staff decreased depreciation and amortization expense by \$213,470, from \$233,588 to
27 \$20,118.

1 Operating Income Adjustment Nos. 4, 6, 9, 11 and 12 – 2001 Expense Annualization
2 Adjustment

3 **Q. Did Staff recalculate annualized expenses?**

4 A. Yes. Staff's calculations are shown as adjustments nos. 4, 6, 9, 11 and 12 and are shown
5 on Schedule REL-15. Staff recommends an expense annualization adjustment of
6 \$115,344, an increase in expense of \$495 compared to the Company's expense
7 adjustment of \$114,849.

8
9 Operating Income Adjustment No. 5 – Purchased Pumping Power

10 **Q. Did Staff adjust Purchased Pumping Power?**

11 A. Yes. Staff accepted the Company's Purchased Pumping Power with the exception of a
12 repaired pump inadvertently posted as an expense. The \$6,276 was reclassified to
13 Electrical Pumping Equipment as shown on Schedule REL-16.

14
15 Operating Income Adjustment No. 7 – Water Treatment Expense

16 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages**
17 **Expense?**

18 A. Yes, Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
19 and found them not to be "known and measurable." Because of the uncertainties of the
20 Company estimates, Staff used actual 2002 expenses. The amount applicable to Apache
21 Junction was decreased from the Company's pro forma adjustment by \$2,868, from
22 \$191,642 to \$188,774 as shown on Schedule REL-17. Please refer to Mr. Hammon's
23 testimony.

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Operating Income Adjustment No. 8 – Water Testing Expense

Q. Does Staff agree with the Company's Water Testing Expense?

A. No. Staff recommended this expense be based on Staff's water testing expense analysis of \$36,869, which increases annual operating expenses by \$8,176. The adjustment is discussed in greater detail in the testimony of Staff witness Lyndon Hammon.

Operating Income Adjustment No. 10 – Transmission and Distribution Expense

Q. What adjustment did Staff make to Transmission and Distribution Expense?

A. Staff reclassified \$19,303 from Transmission and Distribution Expense to Materials and supplies. The Company inadvertently posted \$19,303 to Transmission and Distribution Expense that should have been posted to Materials and Supplies Inventory as shown on Schedule REL-19.

Operating Income Adjustment No. 16 – Charitable Contributions Expense

Q. Did the Company remove charitable contributions from its test year expenses?

A. No, even though charitable contributions bear no relationship to the provision of water service. Therefore, Staff removed \$7,647 from the Administrative and General account as shown on REL-20.

Operating Income Adjustment No. 14 – Rate Case Expense

Q. What Rate Case Expense did Arizona Water propose for the Apache Junction system?

A. The Company proposed total Rate Case Expense of \$133,952 for the Apache Junction system. Rate Case Expense is a component of the Company's proposed \$896,828 Administrative and General Expense, shown on Schedule REL-21.

1 **Q. Does Staff agree that the Company's Rate Case Expense for the Apache Junction**
2 **system is reasonable?**

3 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
4 reasonable.

5
6 **Q. What amount does Staff recommend allocating to the Apache Junction system?**

7 A. Staff recommends allocating \$94,093 to the Apache Junction system. Staff's
8 recommended allocation uses the Company-proposed allocation factor of 0.52010 percent
9 (\$180,913 x 0.52010 = \$94,093). Staff recommends annual Rate Case Expense of
10 \$18,819 (\$94,093 amortized over five years) a decrease of \$25,832 from the Company's
11 requested \$44,651, as shown on Schedule REL-21.

12
13 Operating Income Adjustment No. 15 – Depreciation and Amortization Expense

14 **Q. What did the Company propose for depreciation expense?**

15 A. The Company proposed \$1,425,605 for depreciation expense. The Company's proposal
16 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as
17 shown on Schedule C-2, page 7 of 36, of the filing, increased depreciation expense by
18 \$2,886 to provide an additional six months of depreciation expense on test year plant
19 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
20 page 8 of 36, of the filing, increased depreciation expense by \$112,897 to provide twelve
21 months of depreciation expense on the Company's proposed post-test year plant additions
22 that were projected to be completed by December 31, 2002.

23
24 **Q. Does Staff agree with the Company's proposed depreciation expense?**

25 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
26 the authorized balance for each plant account. Previously, Staff recommended
27 disallowing a portion of the Company's proposed post-test year plant additions to remove
28 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not

1 revenue neutral. The difference between Staff plant recommendation and the Company's
2 causes a corresponding difference in depreciation expense. In addition, the Company
3 calculated its depreciation expense using dated component depreciation rates that it later
4 corrected. Staff reviewed and accepted the new rates and Staff used the new rates in
5 calculating rates.

6
7 **Q. What are the components of Apache Junction's proposed depreciation expense?**

8 A. The Company's proposed depreciation expense is composed of \$1,082,006 recorded in
9 the test year, a negative \$2,886 pro forma adjustment to recognize an additional half-year
10 of depreciation of test year plant additions, and a positive \$112,897 pro forma adjustment
11 to recognize twelve months of depreciation of post-test year plant additions.
12 Furthermore, the Company made a positive pro forma adjustment of \$233,588 to
13 recognize the annual amortization it is requesting to be charged to deferred Central
14 Arizona Project M & I charges for pre-1991 and post-1990 M & I deferrals. These
15 represent the Company's \$1,425,605 proposed depreciation and amortization expenses.

16
17 **Q. Why is Staff's recommended depreciation expense different than the Company's
18 proposed amount?**

19 A. Staff's recommended depreciation expense is different for two reasons. First, the
20 Company's calculated depreciation expense used a dated component depreciation
21 schedule which it later changed during the course of Staff's analysis. Staff recommends
22 adopting the individual component account rates identified in the Company's late-filed
23 depreciation study which was reviewed and accepted by Engineering Staff who used it to
24 calculate the Staff's depreciation expense. Second, Staff calculated depreciation expense
25 on its recommended plant, which reflects adjustments previously discussed.

26
27
28

1 **Q. Please summarize Staff's recommendations for depreciation expense.**

2 A. Staff recommends \$1,067,852 for depreciation expense, a \$357,753 decrease from the
3 Company's proposed \$1,425,605. Staff's calculation includes the amortization of CIAC
4 at the weighted proposed depreciation rates. Staff's recommendation is shown on
5 Schedule REL-22.

6

7 Operating Income Adjustment No. 16 – Property Taxes

8 **Q. What is Arizona Water proposing for property tax expense for the Apache Junction**
9 **system?**

10 A. The Company proposes property tax expense of \$751,447, \$638,730 for Maricopa
11 County and 112,717 for Pinal County.

12

13 **Q. Does Staff agree with the Company's amount?**

14 A. No. The Department of Revenue Property Valuation and Equalization Section developed
15 a new method to calculate property taxes. Staff adopted this new method of calculating
16 property taxes.

17

18 **Q. What amount of property tax expense does Staff recommend?**

19 A. Staff recommends property tax expense of \$789,185. Staff recommends an increase of
20 Maricopa County taxes of \$35,528, from \$112,717 to \$148,245. Staff also recommends
21 an increase in Pinal County taxes of \$2,210, from \$638,730 to \$640,940. Staff's
22 calculations are shown on Schedules REL-23 and REL-24.

23

24 Operating Income Adjustment Nos. 17 and 18 – Income Taxes

25 **Q. What income tax expense did Arizona Water propose?**

26 A. The Company proposed \$508,210 in federal income taxes and \$77,441 in state income
27 taxes for a combined income tax of \$585,651.

28

1 **Q. Does Staff agree with the Company's amount?**

2 A. No. Staff does not agree with the Company's calculation because income tax expense is
3 a function of taxable income, and Staff's recommended taxable income is different from
4 the Company's.

5
6 **Q. What amount is Staff recommending for test year income tax expense?**

7 A. As shown on Schedules REL-25, Staff recommends federal income tax of \$847,452 and
8 state income tax of \$186,686 for a combined income tax of \$1,034,138.

9
10 **Q. What amount of income tax expense has Staff calculated for its recommended
11 revenue?**

12 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$562,902 and
13 state income tax of \$124,002 for a combined income tax of \$686,904.

14
15 **Rate Design – Apache Junction**

16 Rate Consolidation

17 **Q. Did Staff review the Company's proposal to consolidate rates for the Apache
18 Junction and Superior systems?**

19 A. Yes. Staff has reviewed the rate consolidation plan.

20
21 **Q. What is the Company's rationale for the rate consolidation plan?**

22 A. The Company seeks an interconnection between the two systems which it believes will
23 provide increased reliability for customers of both systems. The Company proposes to do
24 this in two phases. Phase one would equalize the two system's basic monthly charges.
25 Step two, to be considered in the Eastern Groups next rate case, would combine the
26 commodity charges of the two systems. (See Direct Testimony of Ralph Kennedy, pages
27 11 and 12.)
28

1 **Q. Does Staff recommend approval of the Company's rate consolidation plan?**

2 A. No. According to Staff Engineering there is no interconnection between Apache Junction
3 and Superior, and there are CC&N voids between the Apache Junction system and the
4 well field at Florence Junction. Additionally, the Apache Junction and Superior systems
5 exhibit differences in revenue requirements due to the age of the respective infrastructure,
6 maintenance costs, power costs and growth rates. Staff recommends that each of the
7 Eastern Group's eight systems have their own unique rates based upon the characteristics
8 of each system. Rate consolidation causes cross-subsidization among systems and results
9 in unfair rates.

10

11 Rate Design

12 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and its**
13 **recommended rates and charges?**

14 A. Yes. Schedule REL-26 provides a summary of the present rates, Company-proposed
15 rates, and Staff's recommended rates.

16

17 **Q. Please summarize the present rate design.**

18 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
19 meter size and include 1,000 gallons and one commodity rate applies to all gallons sold.

20

21 **Q. Please summarize the Company's proposed rate design.**

22 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
23 meter size and include no gallons and one commodity rate applies to all use.

24

25 **Q. Please summarize Staff's rate design.**

26 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
27 meter size and include no gallons. The commodity rates are based on an inverted tier rate
28 design that includes three tiers with the first break-point at 3,000 gallons and the second

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

break-point at over 50,000 gallons. The three-tier rate structure applies to all metered customers.

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 24,207,016	\$ 18,346,065
2	Adjusted Operating Income (Loss)	\$ 1,862,934	\$ 2,123,885
3	Current Rate of Return (L2 / L1)	7.70%	11.58%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 2,662,772	\$ 1,571,524
6	Operating Income Deficiency (L5 - L2)	\$ 799,838	\$ (552,362)
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 1,305,663	\$ (901,427)
9	Adjusted Test Year Revenue	\$ 8,943,927	\$ 9,038,642
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 10,249,590	\$ 8,137,215
11	Require Increase in Revenue (%) (L8/L9)	14.60%	-9.97%

GROSS REVENUE CONVERSION FACTOR

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		
2	Billings		1.000000
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		<u>38.72365%</u>
6	Gross Revenue Conversion Factor		<u><u>1.631951</u></u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	<u>6.96800%</u>
9	Federal Taxable Income (L5 - L6)	93.03200%
10	Applicable Federal Income Tax Rate (Line 32)	<u>34.00000%</u>
11	Effective Federal Income Tax Rate (L7 x L8)	<u>31.63088%</u>
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u><u>38.59888%</u></u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		<u>61.40112%</u>
16	Uncollectible Rate After Income Taxes		<u><u>0.12477%</u></u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	\$ (901,427)	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles		\$ (1,832)
20	Recommended Increase in Revenue (from REL-1,L8)	\$ (901,427)	
21	Required Increase in Revenue to Provide for Uncollectibles	(1,832)	
22	Incremental Taxable Income	\$ (899,595)	
23	Combined Federal and State Income Tax Rate	<u>38.59888%</u>	
24	Required Increase in Revenue to Provide for Income Taxes		(347,234)
25	Required Operating Income	\$ 1,571,524	
26	Adjusted Test Year Operating Income (Loss)	<u>2,123,885</u>	
27	Required Increase in Operating Income		(552,362)
28	Total Required Increase In Revenue		<u><u>\$ (901,427)</u></u>

Calculation of Income Tax:

	Test Year		STAFF Recommended	
29	Revenue	\$ 9,038,642	\$ 8,137,215	
30	Less: Operating Expenses Excluding Income Taxes	\$ 5,880,619	\$ 5,878,787	
31	Less: Synchronized Interest	\$ 478,832	\$ 478,832	
32	Arizona Taxable Income	\$ 2,679,191	\$ 1,779,596	
33	Arizona State Income Tax Rate	6.968%	6.968%	
34	Arizona Income Tax	\$ 186,686	\$ 124,002	
35	Federal Taxable Income	\$ 2,492,505	\$ 1,655,593	
36	Federal Income Tax @ 34%	\$ 847,452	\$ 562,902	
37	Combined Federal and State Income Tax	<u>\$ 1,034,138</u>	<u>\$ 686,904</u>	
			\$ (347,234)	

Calculation of Interest Synchronization:

38	Rate Base	\$ 18,346,065
39	Weighted Average Cost of Debt	<u>2.610%</u>
40	Synchronized Interest	<u><u>\$ 478,832</u></u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 55,226,791	\$ 51,814,226
2	Less: Accumulated Depreciation	(8,791,705)	(9,892,252)
4	Net Plant in Service	<u>\$ 46,435,086</u>	<u>\$ 41,921,974</u>
<u>LESS:</u>			
5	Advances in Aid of Construction (AIAC)	(15,443,377)	(15,443,377)
6	Contributions in Aid of Construction (CIAC)	\$ (6,228,486)	\$ (6,228,486)
7	Less: Accumulated Amortization	713,806	713,806
8	Net CIAC	<u>(5,514,680)</u>	<u>(5,514,680)</u>
9	Total Advances and Contributions	(20,958,057)	(20,958,057)
10	Customer Deposits	-	-
11	Meter Advances	-	-
12	Deferred Income Tax Credits	(2,699,309)	(2,699,309)
<u>ADD:</u>			
13	Deferred Central Arizona Project Charges	-	704,903
14	Less: Accumulated Amortization	-	(20,118)
	Net Deferred CAP Charges	<u>684,785</u>	<u>684,785</u>
13	Working Capital	559,087	(691,907)
14	Phoenix Office Allocation	852,453	86,619
15	Meter Shop Allocation	17,756	1,960
17	Total Rate Base	<u>\$ 24,207,016</u>	<u>\$ 18,346,065</u>

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(J) ADJ.No.9	(K) ADJ.No.10	(L) ADJ.No.11	(M) ADJ.No.12	(N) ADJ.No.13	(O) STAFF ADJUSTED
PLANT IN SERVICE:																
1	Plant	1,435														1,435
2	Other Intangibles	113,956														113,956
3	Water Rights	49,438														49,438
4	Other Source of Supply Land	2,505,438														2,505,438
5	Wells	14,187														14,187
6	Pumping Plant Land	43,621														43,621
7	Pumping Plant Structures & Improvements	2,461,590	6,292													2,467,882
8	Electric Pumping Equipment															
9	Gas Engine Equipment															
10	Water Treatment Land															
11	Water Treatment Structures & Improvements	9,760														9,760
12	Water Treatment Equipment	122,743														122,743
13	Transmission and Distribution Land	183,798														183,798
14	Storage Tanks	3,755,335														3,755,335
15	Transmission and Distribution Mains	28,329,468														28,329,468
16	Fire Sinker Taps	352,430														352,430
17	Services	7,442,934														7,442,934
18	Meters	1,263,272														1,263,272
19	Hydrants	2,422,487														2,422,487
20	General Plant Land	47,015														47,015
21	General Plant Structures	412,571														412,571
22	Leasehold Improvements	164,370														164,370
23	Office Furniture and Improvements	177,890														177,890
24	Warehouse Equipment	3,469														3,469
25	Tools, Shop and Garage Equipment	147,593														147,593
26	Laboratory Equipment	8,708														8,708
27	Power Operated Equipment	30,448														30,448
28	Communication Equipment	67,680														67,680
29	Miscellaneous Equipment	32,926														32,926
30	Total Plant in Service - Actual	50,774,834.00	6,292	(2,804,304)	(109,650)	(704,903)										50,774,834.00
31	Post Test Year Retired Plant	3,753,346			(109,650)	(704,903)										3,753,346
32	Deferred Central Arizona Project Charges															
33	Total Plant in Service - Adjusted	\$ 55,226,791	\$ 6,292	\$ (2,804,304)	\$ (109,650)	\$ (704,903)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$ 50,774,834.00
34	Less: Accumulated Depreciation - Actual															
35	Less: Accumulated Depreciation - Post T.Y.	(8,681,694)							(35,589)							(8,717,283)
36	Less: Accumulated Depreciation - 12 Mos T.Y.	(112,697)								96,399						(16,498)
37	Less: Accumulated Depreciation - Retired Plant	2,865								(1,307,339)						(1,304,453)
38	Total Accumulated Depreciation - Adjusted	\$ (8,791,705)							\$ (35,589)	\$ (96,399)						\$ (9,892,252)
39	Plus: Construction Work in Progress															
40	Net Plant in Service	\$ 46,435,086	\$ 6,292	\$ (2,804,304)	\$ (109,650)	\$ (704,903)	\$	\$	\$ (35,589)	\$ 96,399	\$ (1,307,339)	\$ 145,992	\$	\$	\$	\$ 41,921,974
41	Advances in Aid of Construction (AMC)															
42	Contributions in Aid of Construction (CIAC)	\$ (15,443,377)														(15,443,377)
43	Less: Accumulated Amortization	(6,228,486)														(6,228,486)
44	Net CIAC (L25 - L26)	713,806														713,806
45	Total Advances and Contributions	(20,958,057)														(20,958,057)
46	Customer Deposits															
47	Meter Advances															
48	Deferred Income Tax Credits	(2,699,309)														(2,699,309)
ADD:																
49	Deferred Central Arizona Project Charges															
50	Less: Accumulated Amortization															
51	Net Deferred CAP Charges															
52	Working Capital Allowance	559,087														559,087
53	Meter Shop Allocation	852,453														852,453
54	Projected Capital Expenditures	17,756														17,756
55	Deferred Debits															
56	Other Additions															
57	Total Rate Base	\$ 24,207,016	\$ 6,292	\$ (2,604,304)	\$ (109,650)	\$ (704,903)	\$	\$	\$ (35,589)	\$ 96,399	\$ (1,307,339)	\$ 145,992	\$ (1,250,994)	\$	\$ (15,796)	\$ 18,946,065

RATE BASE ADJUSTMENT NOS. 1, 2, 3 and 4 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 50,768,542	\$ 6,292	\$ 50,774,834
2	Post-Test Year Plant	\$ 3,753,346	\$ (2,604,304)	\$ 1,149,042
3	Post-Test Year Retired Plant	\$ -	\$ (109,650)	\$ (109,650)
4	Deferred CAP Charges	\$ 704,903	\$ (704,903)	\$ -
5	Adjusted Test Year Plant	\$ 55,226,791	\$ (3,412,565)	\$ 51,814,226

RATE BASE ADJUSTMENT NOS. 5 and 6 - CAP DEFERRALS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Deferred CAP Charges	\$ -	\$ 704,903	\$ 704,903
2	Less Amortization	-	(20,118)	(20,118)
3	Total	\$ -	\$ 684,785	\$ 684,785

Staff amortized its recommended annual recovery of the deferred CAP charges over the life of the CAP contract rather than over three years as requested by the Company.

RATE BASE ADJUSTMENT NOS. 7, 8, 9 and 10 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (8,681,694)	\$ (35,589)	\$ (8,717,283)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (112,897)	\$ 96,399	\$ (16,498)
3	Accumulated Depreciation, Test Year Plant	\$ 2,886	\$ (1,307,339)	\$ (1,304,453)
4	Accumulated Depreciation, Retired Plant	\$ -	\$ 145,982	\$ 145,982
		<u>\$ (8,791,705)</u>	<u>\$ (1,100,547)</u>	<u>\$ (9,892,252)</u>

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 8

OPERATING INCOME ADJUSTMENT NO. 11 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Cash Working Capital	\$ 328,417	\$ (1,270,297)	\$ (941,880)
2	Materials and Supplies Inventory	43,863	19,303	63,166
3	Required Bank Balances	118,768	-	118,768
4	Prepayments and special Deposits	68,040	-	68,040
5	Total	<u>\$ 559,088</u>	<u>\$ (1,250,994)</u>	<u>(691,906)</u>

RATE BASE ADJUSTMENT NOS. 12 and 13 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 852,453	\$ (729,502)	\$ 122,951
2	Meter Shop Allocations	\$ 17,756	\$ (15,796)	\$ 1,960
3	Phoenix Office Allocation - Retirements	\$ -	\$ (36,332)	\$ (36,332)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 870,209	\$ (781,630)	\$ 88,579

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
<u>REVENUES:</u>						
1	Total Operating Revenues	\$ 8,943,927	\$ 94,715	\$ 9,038,642	\$ (901,427)	\$ 8,137,215
<u>EXPENSES:</u>						
Source of Supply Expenses:						
2	Purchased Water	\$ 1,003,040	\$ (241,454)	\$ 761,586	\$ -	\$ 761,586
3	Other	23,251	-	23,251	-	23,251
Pumping Expenses:						
4	Purchased Power	618,711	(6,251)	612,460	-	612,460
5	Purchased Gas	-	-	-	-	-
6	Other	117,465	-	117,465	-	117,465
7	Water Treatment Expenses	191,642	5,320	196,962	-	196,962
8	Transmission and Distribution Expenses	758,594	(19,050)	739,544	-	739,544
9	Customer Account Expenses	636,246	225	636,471	(1,832)	634,639
10	Sales Expenses	2,059	-	2,059	-	2,059
11	Administrative and General Expenses	896,828	(33,499)	863,329	-	863,329
12	Total Operation and Maintenance	\$ 4,247,836	(294,709)	3,953,127	(1,832)	3,951,296
13	Depreciation and Amortization	1,425,605	(357,753)	1,067,852	-	1,067,852
15	Ad Valorem (Property)	751,447	37,738	789,185	-	789,185
Taxes:						
14	Federal & State Income Tax	585,651	448,487	1,034,138	(347,234)	686,904
16	Other	70,454	-	70,454	-	70,454
17	Total Operating Expenses	\$ 7,080,993	\$ (166,236)	\$ 6,914,757	\$ (349,065)	\$ 6,565,691
18	Operating Income (Loss)	\$ 1,862,934	\$ 260,951	\$ 2,123,885	\$ (552,362)	\$ 1,571,524

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.#1	(C) ADJ.#2	(D) ADJ.#3	(E) ADJ.#4	(F) ADJ.#5	(G) ADJ.#6	(H) ADJ.#7	(I) ADJ.#8	(J) ADJ.#9	(K) ADJ.#10	(L) ADJ.#11
1	<u>REVENUES:</u> Total Operating Revenues	\$ 8,943,927	\$ 94,715										
	<u>EXPENSES:</u>												
	Source of Supply Expenses:												
2	Purchased Water	\$ 1,003,040		\$ (27,984)	\$ (213,470)								
3	Other	23,251											
4	Pumping Expenses:					25	(6,276)						
5	Purchased Power	618,711											
6	Purchased Gas	117,465											
7	Other	191,642											
8	Water Treatment Expenses	756,594						12	(2,868)	8,176			
9	Transmission and Distribution Expenses	636,246											
10	Customer Account Expenses	2,059									253	(19,303)	
11	Sales Expenses	896,828											225
12	Administrative and General Expenses	4,247,836		(27,984)	(213,470)	25	(6,276)	12	(2,868)	8,176	253	(19,303)	225
13	Total Operation and Maintenance	1,425,605											
14	Depreciation and Amortization	751,447											
15	Ad Valorem (Property)												
16	Taxes												
17	Federal & State Income Tax	585,651											
18	Other	70,454											
	<u>Total Operating Expenses</u>	<u>\$ 7,080,993</u>	<u>\$ -</u>	<u>\$ (27,984)</u>	<u>\$ (213,470)</u>	<u>\$ 25</u>	<u>\$ (6,276)</u>	<u>\$ 12</u>	<u>\$ (2,868)</u>	<u>\$ 8,176</u>	<u>\$ 253</u>	<u>\$ (19,303)</u>	<u>\$ 225</u>
	<u>Operating Income (Loss)</u>	<u>\$ 1,862,934</u>	<u>\$ 94,715</u>	<u>\$ 27,984</u>	<u>\$ 213,470</u>	<u>\$ (25)</u>	<u>\$ 6,276</u>	<u>\$ (12)</u>	<u>\$ 2,868</u>	<u>\$ (8,176)</u>	<u>\$ (253)</u>	<u>\$ 19,303</u>	<u>\$ (225)</u>

SUMMARY OF OPERATING INCOME ADJUSTMENT

LINE NO.	DESCRIPTION	(M) ADJ #12	(N) ADJ #13	(O) ADJ #14	(P) ADJ #15	(Q) ADJ #16	(R) ADJ #17	(S) ADJ #18	(T) STAFF ADJUSTED
REVENUES:									
1	Total Operating Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,038,642
EXPENSES:									
Source of Supply Expenses:									
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 761,586
3	Other	-	-	-	-	-	-	-	23,251
Pumping Expenses:									
4	Purchased Power	-	-	-	-	-	-	-	612,460
5	Purchased Gas	-	-	-	-	-	-	-	-
6	Other	-	-	-	-	-	-	-	117,465
7	Water Treatment Expenses	-	-	-	-	-	-	-	196,962
8	Transmission and Distribution Expenses	-	-	-	-	-	-	-	739,544
9	Customer Account Expenses	-	-	-	-	-	-	-	636,471
10	Sales Expenses	-	-	-	-	-	-	-	2,059
11	Administrative and General Expenses	(20)	(7,647)	(25,832)	-	-	-	-	863,329
12	Total Operation and Maintenance	(20)	(7,647)	(25,832)	-	-	-	-	3,953,127
13	Depreciation and Amortization	-	-	-	(357,753)	-	-	-	1,067,852
15	Ad Valorem (Property)	-	-	-	-	37,738	-	-	789,185
Taxes									
14	Federal & State Income Tax	-	-	-	-	-	339,242	109,245	1,034,138
16	Other	-	-	-	-	-	-	-	70,454
17	Total Operating Expenses	\$ (20)	\$ (7,647)	\$ (25,832)	\$ (357,753)	\$ 37,738	\$ 339,242	\$ 109,245	\$ 6,914,757
18	Operating Income (Loss)	\$ 20	\$ 7,647	\$ 25,832	\$ 357,753	\$ (37,738)	\$ (339,242)	\$ (109,245)	\$ 2,123,885

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	\$ 591	\$	\$ 591
2	Avg Annual Bill Per Customer for TY	350		510
3	Avg Annual Revenue for Additional Customers	\$ 206,850	\$ 94,715	\$ 301,565

OPERATING INCOME ADJUSTMENT NO. 2 - CAP PURCHASED WATER ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Purchased Water - CAP & City of Mesa Treatment	\$ 703,309	\$ 25,188	\$ 728,497
2	Purchased Water - Effluent	\$ 94,027	\$ -	\$ 94,027
3	Purchased Water - Unreconciled Amount	\$ 7,875	\$ (7,875)	\$ -
4	Subtotal	\$ 805,211	\$ 17,313	\$ 822,524
5	November 2001 Mesa Treatment Cost	\$ 10,982	\$ (10,982)	\$ -
6	M&I Capital Costs (Currently Deferred)	\$ 113,939	\$ (4,839)	\$ 109,100
7	Increase in CAWCD Charge Per Acre-Feet	\$ 41,304	\$ 2,128	\$ 43,432
8	Subtotal	\$ 166,225	\$ (13,693)	\$ 152,532
9	Expense Annualization Adjustment	\$ 31,604	\$ (31,604)	\$ -
10	Subtotal	\$ 197,829	\$ (45,297)	\$ 152,532
11	Total Purchased Water (L4+L10)	\$ 1,003,040	\$ (27,984)	\$ 975,056

OPERATING INCOME ADJUSTMENT NO. 3 - CAP AMORTIZATION ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	2002 Unamortized Balance of \$60,000 Deferred CAP	\$ 46,315	\$ -	\$ 46,315
2	2002 Deferred CAP Balance (Accrued from 1986 to 2002)	\$ 658,588	\$ (13,381)	\$ 645,207
3	Total Deferred CAP Balance To Be Amortized	\$ 704,903	\$ (13,381)	\$ 691,522
4	Proposed Amortization Period (In Months)	36	350	386
5	Monthly Deferred CAP Amortization Expense	\$ 19,581	\$ (17,789)	\$ 1,792
6	Multiplied by 12 Months	12	-	12
7	Annual Deferred CAP Amortization Expense	\$ 234,968	\$ (213,470)	\$ 21,498
8	Less: Test year Amort Exp on \$60,000 Deferred CAP	\$ 1,380	-	\$ 1,380
	Total Annual CAP Amortization Expense	\$ 233,588	\$ (213,470)	\$ 20,118

9	<u>Calculation of Staff Proposed Amortization Period (In Months)</u>	
10	2035	End of CAP Contract (March 15, 2035)
11	- 2003	Beginning of Amortization Period
12	32	Full Years Remaining on Life of Contract (Jan 2003 to Dec 2034)
13	x 12	Multiplied by 12 months
14	384	Number of Months From Jan 2003 to Dec 2034
15	+ 2	Plus 2 Months (Jan 2035 to March 15, 2035)
16	386	Staff Proposed Amortization Period (In Months)

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 15

OPERATING INCOME ADJUSTMENT NOS. 4, 6, 9, 11 and 12 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Source of Supply	\$ 31,604	\$ (20)	\$ 31,584
2	Purchased Pumping Power	26,903	25	26,928
3	Water Treatment Expense	7,226	12	7,238
4	Transmission & Distribution Expense	26,012	253	26,265
5	Customer Accounting	23,104	225	23,329
6	Total	<u>\$ 114,849</u>	<u>\$ 495</u>	<u>\$ 115,344</u>

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-16

OPERATING INCOME ADJUSTMENT NO. 5 - PURCHASED PUMPING POWER ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Purchased Pumping Power	\$ 618,711	\$ (6,276)	\$ 612,435

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 17

OPERATING INCOME ADJUSTMENT NO. 7 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Water Treatment	\$ 191,642	\$ (2,868)	\$ 188,774

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 8 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 28,693	\$ 8,176	\$ 36,869

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-19

OPERATING INCOME ADJUSTMENT NO. 10 TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 758,594	\$ (19,303)	\$ 739,291

OPERATING INCOME ADJUSTMENT NO. 13 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 7,647	\$ (7,647)	\$ -

OPERATING INCOME ADJUSTMENT NO. 14 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	ADJUSTMENT	STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.52010		0.52010
3	Annual Rate Case Expense for Eastern Group	\$ 133,952	\$ (39,859)	\$ 94,093
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 44,651	\$ (25,832)	\$ 18,819

OPERATING INCOME ADJUSTMENT NO. 15 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 1,425,605	\$ (212,006)	\$ 1,213,599
2	CIAC Amortization	-	(145,747)	(145,747)
		<u>\$ 1,425,605</u>	<u>\$ (357,753)</u>	<u>\$ 1,067,852</u>

OPERATING INCOME ADJUSTMENT NO. 16 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 1,273,158
2	2001 Annual Gross Revenues			\$ 1,289,733
3	2002 Annual Gross Revenues			\$ 1,403,919
4	Plus Staff's Recommended Increase			\$ (135,214)
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 3,831,596
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 1,277,199
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 2,554,397
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Vaule of Leased Vehicles (See Note A Below)			\$ 31,814
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 2,522,583
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 630,646
15	Composite Property Tax Rate (See Note B Below)			0.235069
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 112,717	\$ 35,528	\$ 148,245

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

OPERATING INCOME ADJUSTMENT NO. 16 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 7,214,564
2	2001 Annual Gross Revenues			\$ 7,303,486
3	2002 Annual Gross Revenues			\$ 7,955,543
4	Plus Staff's Recommended Increase			\$ (766,213)
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 21,707,380
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 7,235,793
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 14,471,587
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Vaule of Leased Vehicles (See Note A Below)			\$ 180,278
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 14,291,309
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 3,572,827
15	Composite Property Tax Rate (See Note B Below)			0.179393
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 638,730	\$ 2,210	\$ 640,940

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 25

OPERATING INCOME ADJUSTMENT NOS. 17 and 18 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ 508,210	\$ 339,242	\$ 847,452
2	State Income Taxes	77,441	\$ 109,245	186,686
3	Total Income Taxes	<u>\$ 585,651</u>	<u>\$ 448,487</u>	<u>\$ 1,034,138</u>

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge		
	Present Rates	---Proposed Rates---	
		Company	Staff
5/8" x 3/4" Meter	\$ 12.43	\$ 18.13	\$ 12.43
1" Meter	\$ 24.86	\$ 40.79	\$ 35.71
2" Meter	\$ 62.15	\$ 117.85	\$ 113.80
3" Meter	\$ 103.58	\$ 211.58	\$ 283.79
4" Meter	\$ 207.16	\$ 377.65	\$ 532.97
6" Meter	\$ 362.53	\$ 717.59	\$ 717.50
8" Meter	\$ 362.53	\$ 989.54	\$ 862.25
10" Meter	\$ 673.27	\$ 1,624.09	\$ 1,003.50

Gallons Included in Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0
1" Meter	1,000	0	0
2" Meter	1,000	0	0
3" Meter	1,000	0	0
4" Meter	1,000	0	0
6" Meter	1,000	0	0
8" Meter	1,000	0	0
10" Meter	1,000	0	0
Fire Hydrants Used For Construction Water	1,000	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 2.5690	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 2.5690	\$ 2.5250	\$ 1.5008
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 2.5690	\$ 2.5250	\$ 1.8760
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 2.5690	\$ 2.5250	\$ 2.2512

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
 CONTINUED**

Service Charges:

Establishment
 Guarantee Deposit
 Reconnection for Delinquency (per disconnection)
 Re-establishment
 Service Call Out (After Regular Working Hours Only)
 Returned Check Charge
 Meter Re-read (After Regular Working Hours Only)
 Meter Test
 Late Charge

Present Rates	---Proposed Rates---	
	Company	Staff
\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **BISBEE SYSTEM**

2
3 **Summary of Proposed Revenue – Bisbee**

4 **Q. Did Staff prepare a schedule representative of the Company proposed increase and**
5 **Staff's recommended revenue requirement?**

6 A. Yes. Please refer to Schedule REL-1. The Company proposes total annual operating
7 revenue of \$1,869,599. This represents an increase of \$612,649, or 48.74 percent, over
8 the Company adjusted test year revenue of \$1,256,950.

9
10 **Q. Please summarize Staff's recommended revenue for the Bisbee system.**

11 A. Staff's recommended total annual operating revenue for the Bisbee system is \$1,613,909.
12 Staff's recommendation represents an increase of \$357,306, or 28.43 percent, over its
13 adjusted test year revenue of \$1,256,603.

14
15 **Rate Base - Bisbee**

16 Original Cost Rate Base

17 **Q. Did Staff prepare an Original Cost Rate Base Schedule?**

18 A. Yes, shown on Schedule REL-3, Staff recommends a rate base of \$3,425,681. Staff's
19 recommended rate base is a decrease of \$274,432 from the Company's proposal of
20 \$3,700,113. Staff's rate base adjustments are described below

21
22 Rate Base Adjustment No. 1 – Plant In Service

23 **Q. What adjustment to actual test year plant did the Company propose for the Bisbee**
24 **system?**

25 A. The Company recommended increasing actual Plant In Service by \$597,543. This
26 amount represents all actual and projected plant additions placed in service or expected to
27 be placed in service by December 31, 2002. Twelve months past the 2001 test year.

1 Rate Base Adjustment No. 1 – Reclassification of Expense to Plant

2 **Q. Did Staff make any adjustments to the Company's test year Plant In Service?**

3 A. Yes. Staff reclassified \$6,328 in plant erroneously classified as Purchased Pumping
4 Power expense into the Electrical Pumping Equipment account. This adjustment is made
5 up of \$3,783 charged to the Bisbee Purchased Pumping Power account and \$2,545
6 charged to the Sierra Vista Purchased Pumping Power account and reclassified to the
7 Bisbee Electrical Pumping Power account. This adjustment increased test year Plant In
8 Service from \$6,836,398 to \$6,842,726 as shown on Schedule REL-5.

9
10 Rate Base Adjustment No. 2 – Addition of Post-Test Year Plant

11 **Q. Does Staff's recommended rate base include plant placed into service after the test
12 year?**

13 A. Yes. Staff included \$786,254 of plant in rate base that the Company placed into service
14 after the end of the test year but no later than December 31, 2002 as shown on REL-5.
15 Staff increased the Company's pro forma post-test year plant additions by \$188,711, from
16 \$597,543 to \$786,254 to recognize revenue neutral plant placed in service by
17 December 31, 2002.

18
19 Rate Base Adjustment No. 3 – Post-Test Year Retired Plant

20 **Q. Did the Company make any adjustment for plant retired due to the 2002 post-test
21 year plant placed in Service?**

22 A. No, the Company's application did not reflect plant retired due to the plant that was
23 replaced by the post-test year additions. Staff therefore removed \$15,065 from Plant In
24 Service as shown on Schedule REL-5 and from Accumulated Depreciation.

25
26 **Q. Please summarize Staff's recommendations regarding Plant In Service.**

27 A. Staff recommends \$7,613,915 for Plant In Service, a \$179,974 increase from the
28 Company's proposed \$7,433,941, as shown on Schedule REL-5

1 Rate Base Adjustment Nos. 4, 5, 6 and 7 – Accumulated Depreciation

2 **Q. What pro forma adjustments did the Company propose for Accumulated**
3 **Depreciation?**

4 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
5 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 3 of 11, of the
6 filing, increased Accumulated Depreciation by \$20,636 to reflect twelve months
7 depreciation expense on the Company's proposed post-test year plant additions that were
8 expected to be completed by December 31, 2002. The Company's pro forma adjustment
9 no. 3, as shown on Schedule B-2, page 3 of 11, of the filing, increased Accumulated
10 Depreciation by \$6,993 and represents six months depreciation expenses on test year
11 plant additions.

12
13 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
14 **proper matching with the Company's pro forma adjustment to include all plant to**
15 **be in service by December 31, 2002?**

16 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
17 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
18 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
19 expense but only for the post-test year plant. Using the mid-year convention, this
20 adjustment should represent six months depreciation expense only. Pro forma adjustment
21 no. 3 increased accumulated depreciation by only six months for plant placed in service
22 during the test year and remaining in service through the December 31, 2002, cut-off
23 date.

24
25
26
27
28

1 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
2 **Service and Accumulated Depreciation cut-off dates?**

3 A. The Company's proposal violates the matching principle. It overstates rate base and
4 allows the Company to earn on investment it has already recovered from ratepayers via
5 depreciation expense.

6
7 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

8 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
9 used the same cut-off date, December 31, 2002, for calculating Accumulated
10 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
11 accumulation of depreciation expense on all plant included in rate base using the half-
12 year convention adopted by the Company. The depreciation accruals are calculated on
13 plant balances that are known and measurable, have been transferred out of the
14 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
15 have been sufficiently examined.

16
17 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

18 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff increased
19 Accumulated Depreciation by \$128,966, from \$3,099,049 to \$3,228,015. This
20 adjustment is made up of several components including a \$7,458 (adjustment no. 4)
21 reduction as a result of Staff's analysis. Staff's recommended increasing the pro forma
22 adjustment for Accumulated Depreciation on test year plant by \$169,679 (adjustment no.
23 6) from \$6,993 to \$176,672, and it recommended decreasing the pro forma adjustment for
24 Accumulated Depreciation on post-test year plant additions by \$10,094 (adjustment no.
25 5) from \$20,636 to \$10,542. Additionally, Staff removed \$23,161 (adjustment no. 7) in
26 retired post-test year plant from Accumulated Depreciation in accordance with NARUC -
27 USOA accounting procedures.

28

1 Rate Base Adjustment No. 8 – Cash Working Capital Allowance

2 **Q. What did the Company propose for its working capital allowance?**

3 A. The Company proposed \$100,985 for working capital. Schedule B-5, page 1 of 2, of the
4 filing shows that the proposed amount is composed of cash working capital, materials and
5 supplies, required bank balances, and prepayments.

6
7 **Q. Does Staff agree with the Company calculation?**

8 A. No. Staff does not agree with the Company's proposed \$28,193 cash working capital
9 component of the working capital allowance.

10
11 **Q. Why does Staff disagree with the Company's proposed cash working capital
12 component of working capital?**

13 A. The Company's proposed cash working capital is based on a lead-lag analysis that
14 contains several conceptual and methodological errors.

15
16 **Q. What is the result of Staff's lead-lag analysis?**

17 A. Staff's lead-lag analysis indicates a negative \$127,335 cash working capital component
18 or a reduction of \$155,528 below the Company's \$28,193 figure. In other words,
19 ratepayers are providing working capital to the system.

20
21 **Q. How else did Staff adjust Working Capital?**

22 A. Staff increased the Materials and Supply Inventory by \$4,258 from \$31,166 to \$35,424 as
23 a result of materials that were transferred from Transmission and Distribution Expense to
24 Working Capital.

25
26 **Q. What Working Capital allowance is Staff recommending?**

27 A. Staff recommends a working capital allowance of negative \$50,285 as shown on
28 Schedule REL-7.

1 Rate Base Adjustment No. 9 and 10 – Allocated Post-Test Year Additions

2 **Q. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year**
3 **additions?**

4 A. Yes. Staff accepted only revenue neutral plant that was in service by the December 31,
5 2002, cut off date. Using the Company's allocation factors, Staff decreased the Phoenix
6 Office allocation by \$170,650, which included \$8,096 of post-test year retired plant and
7 the Meter Shop allocation by \$3,520. Staff's adjustment reduced the Phoenix Office and
8 Meter shop allocations by \$174,170, from \$193,907 to \$19,737. Staff's analysis is shown
9 on Schedule REL-9.

10
11 **Operating Income - Bisbee**

12 Operating Income Summary

13 **Q. What are Staff's recommended test year revenue, expenses, and operating income?**

14 A. Staff's analysis resulted in test year revenue of \$1,256,603 as adjusted by Staff, expenses
15 of \$1,182,103, and an operating income of \$74,500 as shown on Schedules REL-9.
16 Staff's adjustments are discussed below.

17
18 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

19 **Q. How did the Company annualize revenue?**

20 A. The Company multiplied negative 6 (that represents the average growth in customers on
21 the Bisbee system during the test year) by \$311 (which is the Company's determination
22 of annual revenue per customer) that resulted in a revenue decline of \$1,866.

23
24 **Q. Did Staff make an adjustment to annual revenue in the Company's calculation?**

25 A. Yes. Staff made a negative \$347 adjustment to decrease the Company's proposed
26 annualization from a negative \$1,866 to a negative \$2,213. Staff's calculation of the
27 adjustment is shown on Schedule REL-11. Staff's recalculation recognizes revenue from
28

1 all meter sizes and calculated the average annual revenue per customer to be \$369 rather
2 than the Company's \$311.

3
4 Operating Income Adjustment No. 2 – Purchased Pumping Power

5 **Q. Did Staff adjust Purchased Pumping Power?**

6 A. Yes. Staff accepted the Company's Purchased Pumping Power Expense with the
7 exception of a repaired pump of \$3,782 inadvertently allocated and posted to Bisbee's
8 Purchased Pumping Power expense. Staff reclassified the pump to Plant In Service,
9 Electric Pumping Equipment, as shown on Schedule REL-13.

10
11 Operating Income Adjustment No. 3 – Water Testing Expense

12 **Q. What is Arizona Water's proposed Water Testing Expense?**

13 A. Arizona Water's proposed Water Testing Expense is \$3,610 for the Bisbee system.
14 Water Testing Expense is a component of the Company's proposed \$47,494 Water
15 Treatment Expense shown on Schedule REL -13.

16
17 **Q. Did Staff agree with the Company's Water Testing Expense?**

18 A. No. Staff recommends this expense be based on Staff's water testing expense analysis of
19 \$3,257, which decreases annual operating expenses by \$353. The adjustment is
20 discussed in greater detail in the testimony of Staff witness Lyndon Hammon.

21
22 Operating Income Adjustment No. 4 – Water Treatment Expense

23 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages
24 Expense?**

25 A. Yes. Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
26 and found them not to be "known and measurable." Because of the uncertainties of the
27 Company estimates, Staff used actual 2002 expenses. The amount applicable to Bisbee
28

1 was decreased from the Company's pro forma expense by \$5,790, from \$47,494 to
2 \$41,704 as shown on Schedule REL-14. Please refer to Mr. Hammon's testimony.

3
4 Operating Income Adjustment No. 5- Transmission and Distribution Expense

5 **Q. What adjustment did Staff make to Transmission and Distribution Expense?**

6 A. Staff's reduced Transmission and Distribution Expenses by \$4,258. The Company
7 inadvertently posted \$4,258 to Transmission and Distribution Expense that should have
8 been posted to Materials and Supplies Inventory, as shown on Schedule REL-15.

9
10 Operating Income Adjustment No. 6 and 7 - Expense Annualization Adjustment

11 **Q. Did Staff recalculate annualized expenses?**

12 A. Yes. Staff's calculations are shown as adjustments nos. 6 and 7 and are shown on
13 Schedule REL-16. Staff recommends an expense annualization adjustment of a negative
14 \$1,121, an increase of \$6.

15
16 Operating Income Adjustment No. 8 - Charitable Contributions Expense

17 **Q. Did the Company remove charitable contributions from its test year expenses?**

18 A. No, even though charitable contributions bear no relationship to the provision of water
19 service. Therefore, Staff removed \$1,704 from the Administrative and General account
20 as shown on REL-17.

21
22 Operating Income Adjustment No. 9 - Rate Case Expense

23 **Q. What Rate Case Expense did Arizona Water propose for the Bisbee system?**

24 A. The Company proposed total Rate Case Expense of \$29,850 for the Bisbee system. Rate
25 Case Expense is a component of the Company's proposed \$235,785 Administrative and
26 General Expense, shown on Schedule REL-18.

1 **Q. Does Staff agree that the Company's Rate Case Expense for the Bisbee system is**
2 **reasonable?**

3 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
4 reasonable.

5
6 **Q. What amount does Staff recommend allocating to the Bisbee system?**

7 A. Staff recommends allocating \$20,968 to the Bisbee system. Staff recommends allocation
8 use the Company-proposed allocation factor of 0.11590 percent ($\$180,913 \times 0.11590 =$
9 $\$20,968$). Staff recommends annual Rate Case Expense of \$4,194 ($\$20,968$ amortized
10 over five years), a decrease of \$5,756 from the Company's requested of \$9,950, as shown
11 on Schedule REL-18.

12
13 Operating Income Adjustment No. 10 – Depreciation and Amortization Expense

14 **Q. What did the Company propose for depreciation expense?**

15 A. The Company proposed \$200,874 for depreciation expense. The Company's proposal
16 included two pro forma adjustments. The Company's pro forma adjustment no. 17, as
17 shown on Schedule C-2, page 11 of 36 of the filing, increased depreciation expense by
18 \$6,993 to provide an additional six months of depreciation expense on test year plant
19 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
20 page 12 of 36 of the filing, increased depreciation expense by \$20,636 to provide twelve
21 months of depreciation expense on the Company's proposed post-test year plant additions
22 that were projected to be completed by December 31, 2002.

23
24 **Q. Does Staff agree with the Company's proposed depreciation expense?**

25 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
26 the authorized balance for each plant account. Previously, Staff recommended
27 disallowing a portion of the Company's proposed post-test year plant additions to remove
28 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not

1 revenue neutral. The difference between Staff plant recommendation and the Company's
2 causes a corresponding difference in depreciation expense. In addition, the Company
3 calculated its depreciation expense using dated component depreciation rates that it later
4 corrected. Staff reviewed and accepted the new depreciation rates which were used in
5 calculating rates.

6
7 **Q. Please summarize Staff's recommendations for depreciation expense.**

8 A. Staff recommended \$205,252 for depreciation expense, a \$4,378 increase over the
9 Company's proposed \$200,874. Staff's calculation includes the amortization of CIAC at
10 the weighted proposed depreciation rates. Staff's recommendation is shown on Schedule
11 REL-19.

12
13 **Q. What are the components of Bisbee's proposed depreciation expense?**

14 A. The Company's proposed depreciation expense is composed of \$173,245 recorded in the
15 test year, a \$6,993 pro forma adjustment to recognize an additional half-year of
16 depreciation on test year plant additions, and \$20,636 pro forma adjustment to recognize
17 twelve months of depreciation on post-test year plant additions for a total of \$200,874.

18
19 **Q. Why is Staff's recommended depreciation expense different than the Company's
20 proposed amount?**

21 A. Staff's recommended depreciation expense is different for two reasons. First, the
22 Company's calculated depreciation expense used a dated component depreciation
23 schedule which it later changed during the course of Staff's analysis. Staff recommends
24 adopting the individual component account rates identified in the Company's late-filed
25 depreciation study which was reviewed and accepted by Staff who used it to calculate
26 Staff's depreciation expense. Second, Staff calculated depreciation expense on its
27 recommended plant, which reflects adjustments previously discussed.
28

1 Operating Income Adjustment No. 11– Property Taxes

2 **Q. What is Arizona Water proposing for property tax expense?**

3 A. The Company is proposing property tax expense of \$106,595.

4
5 **Q. Does Staff agree with the Company’s amount?**

6 A. No. The Department of Revenue Property Valuation and Equalization Section developed
7 a new method to calculate property taxes. Staff adopted this new method of calculating
8 property taxes.

9
10 **Q. What amount of property tax expense does Staff recommend?**

11 A. Staff recommends property tax expense of \$99,661, a decrease of \$6,934 from the
12 Company’s proposal of \$106,595, as shown on Schedule REL-20.

13
14 Operating Income Adjustment Nos.12 and 13 – Income Taxes

15 **Q. What income tax expense did Arizona Water propose?**

16 A. The Company proposed \$845 in federal taxes and a negative \$1,297 in state income tax
17 for a combined federal and state income tax of a negative \$452.

18
19 **Q. Does Staff agree with the Company’s amount?**

20 A. No. Staff does not agree with the Company’s calculation because income tax expense is
21 a function of taxable income, and Staff recommended taxable income is different from
22 the Company’s.

23
24 **Q. What amount is Staff recommending for test year income tax expense?**

25 A. As shown on Schedules REL-21, Staff recommends a negative federal income tax of
26 \$7,681 and a negative state income tax of \$1,692 for a combined negative income tax of
27 \$9,373.

28

1 **Q. What amount of income tax expense has Staff calculated for its recommended**
2 **revenue?**

3 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$105,108 and
4 state income tax of \$23,154 for a combined income tax of \$128,262.

5
6 **Rate Design - Bisbee**

7 Rate Design

8 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and**
9 **Staff's recommended rates and charges?**

10 A. Yes. Schedule REL-22 provides a summary of the present rates, Company-proposed
11 rates, and Staff's recommended rates.

12
13 **Q. Please summarize the present rate design.**

14 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
15 meter size and include 1,000 gallons and one commodity rate applies to all use.

16
17 **Q. Please summarize the Company's proposed rate design.**

18 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
19 meter size and include no gallons and one commodity rate applies to all use.

20
21 **Q. Please summarize Staff's rate design.**

22 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
23 meter size and include no gallons. The commodity rates are based on an inverted tier rate
24 design that includes three tiers with the first break-point at 3,000 gallons and the second
25 break-point at over 50,000 gallons. The three-tier rate structure applies to all metered
26 customers.

27
28

Arizona Water Company - Bisbee
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 3,700,113	\$ 3,425,681
2	Adjusted Operating Income (Loss)	\$ 31,709	\$ 74,500
3	Current Rate of Return (L2 / L1)	0.86%	2.17%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 407,012	\$ 293,444
6	Operating Income Deficiency (L5 - L2)	\$ 375,303	\$ 218,944
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 612,649	\$ 357,306
9	Adjusted Test Year Revenue	\$ 1,256,950	\$ 1,256,603
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 1,869,599	\$ 1,613,909
11	Require Increase in Revenue (%) (L8/L9)	48.74%	28.43%

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		
2	Billings		1.000000
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		<u>38.72365%</u>
6	Gross Revenue Conversion Factor		<u><u>1.631951</u></u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	6.96800%
9	Federal Taxable Income (L5 - L6)	93.03200%
10	Applicable Federal Income Tax Rate (Line 32)	34.00000%
11	Effective Federal Income Tax Rate (L7 x L8)	31.63088%
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u>38.59888%</u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		<u>61.40112%</u>
16	Uncollectible Rate After Income Taxes		<u>0.12477%</u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	<u>\$ 357,306</u>	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles		\$ 726
20	Recommended Increase in Revenue (from REL-1,L8)	<u>\$ 357,306</u>	
21	Required Increase in Revenue to Provide for Uncollectibles		726
22	Incremental Taxable Income	\$ 356,580	
23	Combined Federal and State Income Tax Rate	38.59888%	
24	Required Increase in Revenue to Provide for Income Taxes		137,636
25	Required Operating Income	\$ 293,444	
26	Adjusted Test Year Operating Income (Loss)	<u>74,500</u>	
27	Required Increase in Operating Income		218,944
28	Total Required Increase In Revenue		<u><u>\$ 357,306</u></u>

Calculation of Income Tax:

	Test Year	STAFF Recommended
29	Revenue	\$ 1,256,603
30	Less: Operating Expenses Excluding Income Taxes	\$ 1,191,477
31	Less: Synchronized Interest	\$ 89,410
32	Arizona Taxable Income	\$ (24,284)
33	Arizona State Income Tax Rate	6.968%
34	Arizona Income Tax	\$ (1,692)
35	Federal Taxable Income	\$ 309,142
36	Federal Income Tax @ 34%	\$ (7,681)
37	Combined Federal and State Income Tax	<u>\$ (9,373)</u>
		\$ 137,636

Calculation of Interest Synchronization:

38	Rate Base	<u>\$ 3,425,681</u>
39	Weighted Average Cost of Debt	2.610%
40	Synchronized Interest	<u>\$ 89,410</u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 7,433,939	\$ 7,613,913
2	Less: Accumulated Depreciation	(3,099,049)	(3,228,015)
3	Net Plant in Service	<u>\$ 4,334,890</u>	<u>\$ 4,385,898</u>
<u>LESS:</u>			
4	Advances in Aid of Construction (AIAC)	(190,083)	(190,083)
5	Contributions in Aid of Construction (CIAC)	\$ (372,133)	\$ (372,133)
6	Less: Accumulated Amortization	55,613	55,613
7	Net CIAC	<u>(316,520)</u>	<u>(316,520)</u>
8	Total Advances and Contributions	(506,603)	(506,603)
9	Customer Deposits	-	-
10	Meter Advances	-	-
11	Deferred Income Tax Credits	(423,066)	(423,066)
<u>ADD:</u>			
12	Working Capital	100,985	(50,285)
13	Phoenix Office Allocation	189,951	19,301
14	Meter Shop Allocation	3,956	436
15		-	-
16		-	-
17		-	-
18	Total Rate Base	<u>\$ 3,700,113</u>	<u>\$ 3,425,681</u>

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(J) ADJ.No.9	(K) ADJ.No.10	(M) STAFF ADJUSTED
<u>PLANT IN SERVICE:</u>													
1	Organization												
2	Franchises												
3	Other Intangibles												5,294
4	Water Rights	5,294											4,033
5	Other Source of Supply Land	4,033											48,766
6	Wells	48,766											7,054
7	Pumping Plant Land	7,054											26,509
8	Pumping Plant Structures & Improvements	26,509											519,733
9	Electric Pumping Equipment	513,405	6,328										164,220
10	Gas Engine Equipment	164,220											
11	Water Treatment Land												31,930
12	Water Treatment Structures & Improvements	31,930											38,243
13	Water Treatment Equipment	38,243											5,044
14	Transmission and Distribution Land	5,044											353,044
15	Storage Tanks	353,044											3,965,590
16	Transmission and Distribution Mains	3,965,590											29,546
17	Fire Sprinkler Taps	29,546											817,067
18	Services	817,067											211,876
19	Meters	211,876											193,556
20	Hydrants	193,556											
21	General Plant Land												16,438
22	General Plant Structures	16,438											8,058
23	Leasehold Improvements	8,058											79,855
24	Office Furniture and Improvements	79,855											
25	Warehouse Equipment												37,681
26	Tools, Shop and Garage Equipment	37,681											543
27	Laboratory Equipment	543											15,583
28	Power Operated Equipment	15,583											242,999
29	Communication Equipment	242,999											20,062
30	Miscellaneous Equipment	20,062											6,842,724
31	Total Plant in Service - Actual	6,836,396	6,328	188,711									786,254
32	Pro-forma Adjustment - Post TY Plant	597,543			(15,065)								(15,065)
33	Total Plant in Service - Adjusted	\$ 7,433,939	\$ 6,328	\$ 188,711	\$ (15,065)	\$ 7,458	\$ 10,094	\$ (169,679)	\$ 23,161	\$ -	\$ -	\$ -	\$ 7,613,913
34	Less: Accumulated Depreciation - Actual	\$ (3,071,420)				7,458	10,094	(169,679)					(3,063,962)
35	Less: Accumulated Depreciation - Post TY	(20,636)											(10,542)
36	Add: Accumulated Depreciation - 12 Mos TY	(6,983)											(176,672)
37	Less: Accumulated Depreciation - Retired Plant												23,161
38	Total Accumulated Depreciation - Adjusted	\$ (3,099,049)				\$ 7,458	\$ 10,094	\$ (169,679)	\$ 23,161	\$ -	\$ -	\$ -	\$ (3,228,015)
39	Plus: Construction Work in Progress												
40	Net Plant in Service	\$ 4,334,890	\$ 6,328	\$ 188,711	\$ (15,065)	\$ 7,458	\$ 10,094	\$ (169,679)	\$ 23,161	\$ -	\$ -	\$ -	\$ 4,365,898

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(J) ADJ.No.9	(K) ADJ.No.10	(M) STAFF ADJUSTED
41	LESS: Advances in Aid of Construction (AIAC)	\$ (190,083)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ (190,083)
42	Contributions in Aid of Construction (CIAC)	(372,133)	-	-	-	-	-	-	-	-	-	-	(372,133)
43	Less: Accumulated Amortization	55,613	-	-	-	-	-	-	-	-	-	-	55,613
44	Net CIAC (L25 - L26)	(316,520)	-	-	-	-	-	-	-	-	-	-	(316,520)
45	Total Advances and Contributions	(506,603)	-	-	-	-	-	-	-	-	-	-	(506,603)
46	Customer Deposits	-	-	-	-	-	-	-	-	-	-	-	-
47	Meter Advances	-	-	-	-	-	-	-	-	-	-	-	-
48	Deferred Income Tax Credits	(423,066)	-	-	-	-	-	-	-	-	-	-	(423,066)
ADD:													
49	Working Capital Allowance	100,985	-	-	-	-	-	-	-	-	-	-	100,985
50	Phoenix Office Allocation	189,951	-	-	-	-	-	-	-	(151,270)	-	-	189,951
51	Meter Shop Allocation	3,956	-	-	-	-	-	-	-	-	(170,650)	-	3,956
52	Projected Capital Expenditures	-	-	-	-	-	-	-	-	-	-	(3,520)	-
53	Deferred Debits	-	-	-	-	-	-	-	-	-	-	-	-
54	Other Additions	-	-	-	-	-	-	-	-	-	-	-	-
55	Total Rate Base	\$ 3,700,113	\$ 6,328	\$ 188,711	\$ (15,065)	\$ 7,458	\$ 10,094	\$ (168,679)	\$ 23,161	\$ (151,270)	\$ (170,650)	\$ (3,520)	\$ 3,425,681

Adjustments

- 1 \$6,328 Reclass from Purchased Pumping Power to Electrical Pumping Equipment
- 2 \$188,711 To record post-1st year additional plant in service
- 3 \$15,065 To record post-1st year plant retirements
- 4 \$7,458 To record Sleaf's negative variance to accumulated depreciation.

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1, 2 and 3 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 6,836,398	\$ 6,328	\$ 6,842,726
2	Post-Test Year Plant	\$ 597,543	\$ 188,711	\$ 786,254
3	Post-Test Year Retired Plant	\$ -	\$ (15,065)	\$ (15,065)
	Adjusted Test Year Plant	\$ 7,433,941	\$ 179,974	\$ 7,613,915

Arizona Water Company - Bisbee
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS. 4, 5, 6 AND 7 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (3,071,420)	\$ 7,458	\$ (3,063,962)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (20,636)	\$ 10,094	\$ (10,542)
3	Accumulated Depreciation, Test Year Plant	\$ (6,993)	\$ (169,679)	\$ (176,672)
3	Accumulated Depreciation, Retired Plant	\$ -	\$ 23,161	\$ 23,161
		<u>\$ (3,099,049)</u>	<u>\$ (128,966)</u>	<u>\$ (3,228,015)</u>

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 7

OPERATING INCOME ADJUSTMENT NO. 8 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Cash Working Capital	\$ 28,193	\$ (155,528)	\$ (127,335)
2	Materials and Supplies Inventory	31,166	4,258	35,424
3	Required Bank Balances	26,465	-	26,465
4	Prepayments and special Deposits	15,161	-	15,161
5	Total	<u>\$ 100,985</u>	<u>(151,270)</u>	<u>\$ (50,285)</u>

Arizona Water Company - Bisbee
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-8

RATE BASE ADJUSTMENT NOS. 9 and 10 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 189,951	\$ (162,554)	\$ 27,397
2	Meter Shop Allocations	\$ 3,956	\$ (3,520)	\$ 436
3	Phoenix Office Allocation - Retirements	\$ -	\$ (8,096)	\$ (8,096)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 193,907	\$ (174,170)	\$ 19,737

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Total Operating Revenues	\$ 1,256,950	\$ (347)	\$ 1,256,603	\$ 357,306	\$ 1,613,909
EXPENSES:						
Source of Supply Expenses:						
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	2,275	-	2,275	-	2,275
Pumping Expenses:						
4	Purchased Power	181,448	(3,783)	177,665	-	177,665
5	Purchased Gas	401	-	401	-	401
6	Other	43,218	-	43,218	-	43,218
7	Water Treatment Expenses	47,494	(6,143)	41,351	-	41,351
8	Transmission and Distribution Expenses	213,823	(4,261)	209,562	-	209,562
9	Customer Account Expenses	168,474	(3)	168,471	-	168,471
10	Sales Expenses	987	-	987	-	987
11	Administrative and General Expenses	235,785	(7,460)	228,325	726	229,051
12	Total Operation and Maintenance	\$ 893,905	(21,650)	872,255	726	872,981
13	Depreciation and Amortization	200,874	(5,632)	195,242	-	195,242
14	Ad Valorem (Property)	106,595	(6,934)	99,661	-	99,661
Taxes:						
15	Federal & State Income Tax	(452)	(8,921)	(9,373)	137,636	128,263
16	Other	24,319	-	24,319	-	24,319
17	Total Operating Expenses	\$ 1,225,241	\$ (43,138)	\$ 1,182,103	\$ 138,362	\$ 1,320,465
18	Operating Income (Loss)	\$ 31,709	\$ 42,791	\$ 74,500	\$ 218,944	\$ 293,444

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ #1	(C) ADJ #2	(D) ADJ #3	(E) ADJ #4	(F) ADJ #5	(G) ADJ #6	(H) ADJ #7	(J) ADJ #8	(K) ADJ #9	(L) ADJ #10	(M) ADJ #11	(N) ADJ #12	(O) ADJ #13	(P) STAFF ADJUSTED	
1	REVENUES:	\$ 1,256,950	\$ (347)														\$ 1,256,603
	Total Operating Revenues																
	EXPENSES:																
	Source of Supply Expenses:																
2	Purchased Water	\$ 2,275															\$ 2,275
3	Other																
4	Pumping Expenses:																
5	Purchased Power	181,448		(3,783)													177,665
6	Purchased Gas	401															401
7	Water Treatment Expenses	43,218															43,218
8	Transmission and Distribution Expenses	47,494															47,494
9	Customer Account Expenses	213,823			(353)	(5,790)											209,562
10	Sales Expenses	188,474															188,474
11	Administrative and General Expenses	987															987
12	Total Operation and Maintenance	893,905		(3,783)	(353)	(5,790)	(4,258)		(3)	(1,704)	(5,756)						228,325
13	Depreciation and Amortization	200,874															200,874
14	Ad Valorem (Property)	106,595															106,595
15	Taxes:																
16	Federal & State Income Tax	(452)															(452)
17	Other	24,319															24,319
	Total Operating Expenses	\$ 1,225,241	\$ (347)	\$ (3,783)	\$ (353)	\$ (5,790)	\$ (4,258)	\$ (3)	\$ (3)	\$ (1,704)	\$ (5,756)	\$ (5,632)	\$ (6,934)	\$ (8,526)	\$ (395)	\$ (9,373)	
18	Operating Income (Loss)	\$ 31,709	\$ (347)	\$ 3,783	\$ 353	\$ 5,790	\$ 4,258	\$ 3	\$ 3	\$ 1,704	\$ 5,756	\$ 5,632	\$ 6,934	\$ 8,526	\$ 395	\$ 74,500	

ADJ No.	References:
1	Revenue Annualization
2	Purchased Pumping Power Expense
3	Water Testing Expense
4	Water Treatment Expense
5	Transmission and Distribution Expense
6	Expense Annualization-Transmission/Distribution
7	Expense Annualization-Customer Accounting
8	Charitable Contribution
9	Rate Case Expense
10	Depreciation Expense
11	Property Tax Expense
12	Income Tax Expense
13	Income Tax Expense

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	\$ (6)	\$	(6)
2	Avg Annual Bill Per Customer for TY	311		369
3	Avg Annual Revenue for Additional Customers	\$ (1,866)	\$ (347)	\$ (2,213)

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-12

OPERATING INCOME ADJUSTMENT NO. 2 - PURCHASE PUMPING POWER EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Purchased Pumping Power	\$ 181,448	\$ (3,783)	\$ 177,665

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-13

OPERATING INCOME ADJUSTMENT NO. 3 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 3,610	\$ (353)	\$ 3,257

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 14

OPERATING INCOME ADJUSTMENT NO. 4 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Water Treatment	\$ 47,494	\$ (5,790)	\$ 41,704

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-15

OPERATING INCOME ADJUSTMENT NO. 5 - TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 213,823	\$ (4,258)	\$ 209,565

OPERATING INCOME ADJUSTMENT NO. 6 and 7 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Source of Supply	\$ (4)	\$ -	\$ (4)
2	Purchased Pumping Power	(396)	-	(396)
3	Water Treatment Expense	(61)	-	(61)
4	Transmission & Distribution Expense	(359)	(3)	(362)
5	Customer Accounting	(295)	(3)	(298)
6	Total	<u>\$ (1,115)</u>	<u>\$ (6)</u>	<u>\$ (1,121)</u>

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-17

OPERATING INCOME ADJUSTMENT NO. 8 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 1,704	\$ (1,704)	\$ -

OPERATING INCOME ADJUSTMENT NO. 9 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.11590		0.11590
3	Annual Rate Case Expense for Eastern Group	\$ 29,850	\$ (8,882)	\$ 20,968
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 9,950	\$ (5,756)	\$ 4,194

OPERATING INCOME ADJUSTMENT NO. 10 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 200,874	\$ 4,378	\$ 205,252
2	CIAC Amortization	-	(10,010)	(10,010)
		<u>\$ 200,874</u>	<u>\$ (5,632)</u>	<u>\$ 195,242</u>

OPERATING INCOME ADJUSTMENT NO. 11 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 1,322,741
2	2001 Annual Gross Revenues			\$ 1,258,793
3	2002 Annual Gross Revenues			\$ 1,304,641
4	Plus Staff's Recommended Increase			\$ 357,306
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 4,243,481
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 1,414,494
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 2,828,987
10	Plus: 10% of 2001 CWIP			-
11	Less: Net Book Vaule of Leased Vehicles (See Note A Below)			\$ 38,859
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 2,790,128
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 697,532
15	Composite Property Tax Rate (See Note B Below)			0.142877
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 106,595	\$ (6,934)	\$ 99,661

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 21

OPERATING INCOME ADJUSTMENT NOs 12 and 13 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ 845	\$ (8,526)	\$ (7,681)
2	State Income Taxes	(1,297)	(395)	(1,692)
3	Total Income Taxes	<u>\$ (452)</u>	<u>\$ (8,921)</u>	<u>\$ (9,373)</u>

RATE DESIGN

Monthly Usage Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

Minimum Monthly Usage Charge		
Present Rates	---Proposed Rates---	
	Company	Staff
\$ 13.47	\$ 20.11	\$ 15.87
\$ 24.86	\$ 43.64	\$ 41.50
\$ 62.15	\$ 126.89	\$ 133.27
\$ 155.37	\$ 266.86	\$ 267.25
\$ 207.16	\$ 406.02	\$ 449.50
\$ 362.53	\$ 773.43	\$ 662.53
\$ 362.53	\$ 1,075.08	\$ 891.27
\$ 673.27	\$ 1,759.42	\$ 1,200.36

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0

Fire Hydrants Used For Construction Water

1,000	0	0
-------	---	---

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)
Per 1,000 Gallons for 0 to 3,000 Gallons
Per 1,000 Gallons for 3,001 to 50,000 Gallons
Per 1,000 Gallons for Gallons in Excess of 50,000

\$ 2.4860	N/A	N/A
\$ 2.4860	\$ 3.1600	\$ 2.3696
\$ 2.4860	\$ 3.1600	\$ 2.9620
\$ 2.4860	\$ 3.1600	\$ 3.5544

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter

(a)	(a)	(a)
(a)	(a)	(a)
(b)	(b)	(b)

- (a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.
(b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
 CONTINUED**

Service Charges:

	Present Rates	---Proposed Rates---	
		Company	Staff
Establishment	\$ 16.00	\$ 16.00	\$ 16.00
Guarantee Deposit	(c)	(c)	(c)
Reconnection for Delinquency (per disconnection)	\$ 16.00	\$ 16.00	\$ 16.00
Re-establishment	(d)	(d)	(d)
Service Call Out (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00
Returned Check Charge	\$ 10.00	\$ 25.00	\$ 25.00
Meter Re-read (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00
Meter Test	\$ 50.00	\$ 50.00	\$ 50.00
Late Charge	N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **MIAMI SYSTEM**

2
3 **Summary of Proposed Revenue - Miami**

4 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
5 **and Staff's recommended revenue requirement?**

6 A. Yes, please refer to schedule REL-1. The Company proposes total annual operating
7 revenue of \$2,179,657 which represents an increase of \$722,718, or 49.61 percent, over
8 the Company adjusted test year revenue of \$1,456,939.

9
10 Staff's recommended total annual operating revenue for the Miami system is \$1,641,342.
11 Staff's recommendation represents an increase of \$184,620, or 12.67 percent, over Staff's
12 adjusted test year revenue of \$1,456,722.

13
14 **Rate Base - Miami**

15 Original Cost Rate Base

16 **Q. Did Staff prepare an Original Cost Rate Base Schedule?**

17 A. As shown on Schedule REL-3, Staff recommends a rate base of \$2,740,612. Staff's
18 recommended rate base is a decrease of \$1,829,584 from the Company's proposal of
19 \$4,570,196. Staff's rate base adjustments are described below.

20
21 Rate Base Adjustment No. 1 - Plant In Service

22 **Q. What adjustment to actual test year plant did Staff propose for the Miami system?**

23 A. Staff increased actual Plant In Service by \$1,130, from \$6,336,685 to \$6,337,815. Staff
24 increased Electrical Pumping Equipment by \$1,123 as result of the Company
25 inadvertently posting it to Purchased Pumping Power. Additionally, Staff increased plant
26 by \$7 as a result of rounding due to its analysis, as shown on Schedule REL-5.

1 Rate Base Adjustment No. 2 – Post-Test Year Plant In Service

2 **Q. Does Staff's recommended rate base include plant placed into service after the test**
3 **year?**

4 A. Yes. Staff included \$476,144 of plant in rate base that the Company placed into service
5 after the end of the test year but no later than December 31, 2002, a reduction of \$24,837
6 from the Company's figure of \$500,981 as shown on Schedule REL-5.

7
8 **Q. Why did Staff exclude \$24,837 of the Company's post-test year plant additions from**
9 **its recommended rate base?**

10 A. Staff excluded \$24,837 from the Company's post-test year plant additions in order to
11 exclude all plant that was not in service by December 31, 2002 or was not revenue
12 neutral.

13
14 Rate Base Adjustment No. 3 – Post-Test Year Plant Retirements

15 **Q. Did the Company make any adjustment for plant retired due to the 2002 post-test**
16 **year plant additions?**

17 A. No, the Company's application did not reflect plant retired due to the replaced plant by
18 the post-test year additions. Staff therefore removed \$43,151 from Plant In Service, as
19 shown on Schedule REL-5 and from Accumulated Depreciation as shown on REL-6.

20
21 **Q. Please summarize Staff's recommendation regarding Plant In Service.**

22 A. Staff recommended \$6,770,808 for Plant In Service, a \$66,858 decrease from the
23 Company's proposed \$6,837,666. The calculation of Staff's recommendation is shown
24 on Schedule REL-5.

25
26
27
28

1 Rate Base Adjustment Nos. 4, 5, 6 and 7 – Accumulated Depreciation

2 **Q. What pro forma adjustments did the Company propose for Accumulated**
3 **Depreciation?**

4 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
5 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 5 of 11 of the
6 filing, increased Accumulated Depreciation by \$13,951 to reflect twelve months of
7 depreciation expense on the Company's proposed post-test year plant additions that were
8 expected to be completed by December 31, 2002. The Company's pro forma adjustment
9 no. 3, as shown on Schedule B-2, page 5 of 11, of the filing, increased Accumulated
10 Depreciation by \$32,152 and represents six months of depreciation expenses on test year
11 plant additions.

12
13 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
14 **proper matching with the Company's pro forma adjustment to include all plant to**
15 **be in service by December 31, 2002?**

16 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
17 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
18 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
19 expense but only for the post-test year plant. Using the mid-year convention, this
20 adjustment should represent six months depreciation expense only. Pro forma adjustment
21 no. 3 increased accumulated depreciation by only six months for plant placed in service
22 during the test year and remaining in service through the December 31, 2002, cut-off
23 date.

24
25
26
27
28

1 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
2 **Service and Accumulated Depreciation cut-off dates?**

3 A. The Company's proposal violates the matching principle. It overstates rate base and
4 allows the Company to earn on investment it has already recovered from ratepayers via
5 depreciation expense.

6
7 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

8 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
9 used the same cut-off date, December 31, 2002, for calculating Accumulated
10 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
11 accumulation of depreciation expense on all plant included in rate base using the half-
12 year convention adopted by the Company. The depreciation accruals are calculated on
13 plant balances that are known and measurable, have been transferred out of the
14 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
15 have been sufficiently examined.

16
17 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

18 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff increased
19 Accumulated Depreciation by \$31,176, from \$1,713,977 to \$1,745,153. This adjustment
20 is made up of several components including a \$31,501 (adjustment no. 4) reduction as a
21 result of Staff's analysis. Staff recommended increasing the pro forma adjustment for
22 Accumulated Depreciation on test year plant by \$121,479 (adjustment no. 6) from
23 \$32,152 to \$153,631, and it recommended decreasing the pro forma adjustment for
24 Accumulated Depreciation on post-test year plant additions by \$7,418 (adjustment no. 5)
25 from \$13,951 to \$6,533. Additionally, Staff removed \$51,384 (adjustment no. 7) in
26 retired post-test year plant from Accumulated Depreciation in accordance with NARUC,
27 USOA accounting procedures.

28

CONFIDENTIAL

[REDACTED]

1 **Q. Why does Staff disagree with the Company's proposed cash working capital**
2 **component of working capital?**

3 A. The Company's proposed cash working capital is based on a lead-lag analysis that
4 contains several conceptual and methodological errors.

5
6 **Q. What is the result of Staff's lead-lag analysis?**

7 A. Staff's lead-lag analysis indicates a negative \$180,529 cash working capital component
8 or a reduction of \$210,688 below the Company's \$30,159 figure. In other words,
9 ratepayers are providing working capital to the system.

10
11 **Q. How else did Staff adjust Working Capital?**

12 A. Staff increased the Materials and Supply Inventory by \$6,259, from \$9,277 to \$15,536.
13 Staff's \$6,259 adjustment included \$3,787 reclassified from Miami's Transmission and
14 Distribution Expense, \$1,236 from Miami's Water Treatment Expense and \$1,236 from
15 the Superior system's Water Treatment Expense.

16
17 **Q. What Working Capital allowance is Staff recommending?**

18 A. Staff recommends a working capital allowance of negative \$122,662, as shown on
19 Schedule REL-8.

20
21 Rate Base Adjustment No. 11 and 12 – Allocated Post-Test Year Additions

22 **Q. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year**
23 **additions?**

24 A. Using the Company's allocation factors, Staff decreased the Phoenix Office allocation by
25 \$177,121, which included \$8,233 of post-test year retired plant. Additionally, Staff
26 reduced the Meter Shop allocation by \$3,580. Staff's adjustments reduced the Phoenix
27 Office and Meter Shop allocations by \$177,121, from \$197,194 to \$20,073, as shown on
28 Schedule REL-9.

1 **Operating Income - Miami**

2 Operating Income Summary

3 **Q. What is Staff's recommended test year revenue, expenses, and operating income?**

4 A. Staff's analysis resulted in test year revenue of \$1,456,722, expenses of \$1,335,089 and
5 an operating income of \$121,633 as shown on Schedule REL-10. Staff's adjustments are
6 discussed below.

7
8 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

9 **Q. How did the Company annualize revenue?**

10 A. The Company multiplied a negative two customers (that represents the average growth in
11 customers on the Miami system during the test year) by \$371 (which is the Company's
12 determination of annual revenue per customer) that resulted in a revenue decline of \$742.

13
14 **Q. Did Staff make an adjustment to annual revenue in the Company's calculation?**

15 A. Yes. Staff made a negative \$217 adjustment to increase the Company's proposed
16 annualization from \$742 to \$959. Staff's calculation of the adjustment is shown on
17 Schedule REL-12. Staff's recalculation recognizes revenue from all meter sizes to
18 properly match to the total expenses used by the Company to record the pro forma
19 expenses due to the annualization of customers. Staff's average annual revenue per
20 customer is \$480 rather than the Company's \$371.

21
22 Operating Income Adjustment No. 2 – Purchased Pumping Power

23 **Q. Did Staff adjust Purchased Pumping Power?**

24 A. Yes. Staff accepted the Company's Purchased Pumping Power with the exception of a
25 repaired pump inadvertently allocated and posted to Miami's Purchased Pumping Power
26 expense. The \$1,123 Purchased Pumping Power expense was reclassified and transferred
27 to Miami's Plant In Service, Electrical Pumping Equipment.

1 Additionally, as a result of the Miami systems settlement with the Pinal Creek Group, it
2 is Staff's opinion that Purchased Pumping Power should be reduced by \$39,000 per year.
3 Additional details of this adjustment may be found in Mr. Hammon's testimony.

4 Staff's reduced Purchased Pumping Power by \$40,123, from 151,322 to 111,199.

5
6 Operating Income Adjustment No. 4 and 5 – Water Treatment Expense

7 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages**
8 **Expense?**

9 A. Yes. Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
10 and found them not to be "known and measurable." Because of the uncertainties of the
11 Company estimates, Staff used actual 2002 expenses. The amount applicable to Miami
12 was decreased from the Company's pro forma adjustment by \$53,646, which included
13 \$1,236 of reclassified equipment charged to this account that properly belongs in the
14 Material and Supplies Inventory account. This adjustment reduced the Water Treatment
15 Expense, from \$95,544 to \$41,898, as shown on Schedule REL-14.

16
17
18 Operating Income Adjustment No. 4 – Water Testing Expense

19 **Q. What is Arizona Water's proposed Water Testing Expense?**

20 A. Arizona Water's proposed Water Testing Expense for the Miami system is \$13,894.
21 Water Testing Expense is a component of the Company's proposed \$95,544 Water
22 Treatment Expense shown on Schedule REL-15.

23
24 **Q. Does Staff agree with the Company's Water Testing Expense?**

25 A. No. Staff recommends this expense be based on Staff's water testing expense analysis of
26 \$4,548, which decreases the annual operating expenses by \$9,346. The adjustment is
27 discussed in greater detail in the testimony of Staff witness, Lyndon Hammon.

1 Operating Income Adjustment No. 7 and 9 – Expense Annualization Adjustment

2 **Q. Did Staff recalculate annualized expenses?**

3 A. Yes. Staff's calculations are shown as adjustments nos. 6 and 8 and are shown on
4 Schedule REL-17. Staff recommends an expense annualization adjustment of a negative
5 \$469, an increase in expenses of \$2 compared to the Company's negative adjustment of
6 \$467.

7
8 Operating Income Adjustment No. 7 – Transmission and Distribution Expense

9 **Q. What adjustment did Staff make to Transmission and Distribution Expense?**

10 A. Staff decreased Transmission and Distribution Expenses downward by \$3,787. The
11 Company inadvertently posted \$3,787 to Transmission and Distribution Expense that
12 should have been posted to Materials and Supplies Inventory. This adjustment reduced
13 Transmission and Distribution Expense from \$263,028 to \$259,241, as shown on
14 Schedule REL-17.

15
16 Operating Income Adjustment No. 10 – Rate Case Expense

17 **Q. What Rate Case Expense did Arizona Water propose for the Miami system?**

18 A. The Company proposed total Rate Case Expense of 30,365 for the Miami system. Rate
19 Case Expense is a component of the Company's proposed \$246,728 Administrative and
20 General Expense, shown on Schedule REL-18.

21
22 **Q. Do you agree that the Company's Rate Case Expense for the Miami system is**
23 **reasonable?**

24 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
25 reasonable.

1 **Q. What amount does Staff recommend allocating to the Miami system?**

2 A. Staff recommends allocating \$21,330 to the Miami system. Staff's recommended
3 allocation uses the Company-proposed allocation factor of 0.11790 percent ($\$180,913 \times$
4 $0.11790 = \$21,330$ rounded). Staff recommends annual Rate Case Expense of \$4,266
5 (\$21,330 amortized over five years), a decrease of \$5,856 from the Company's request
6 \$10,122, as shown on Schedule REL-18.

7
8 Operating Income Adjustment No. 11 – Charitable Contributions Expense

9 **Q. Did the Company remove charitable contributions from its test year expenses?**

10 A. No. Charitable contributions bear no relationship to the provision of water service.
11 Therefore, Staff removed \$1,733 from the Administrative and General account as shown
12 on REL-19.

13
14 Operating Income Adjustment Nos. 12 – Depreciation and Amortization Expense

15 **Q. What did the Company propose for depreciation expense?**

16 A. The Company proposed \$204,884 for depreciation expense. The Company's proposal
17 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as
18 shown on Schedule C-2, page 19 of 36 of the filing, increased depreciation expense by
19 \$32,152 to provide an additional six months of depreciation expense on test year plant
20 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
21 page 20 of 36 of the filing, increased depreciation expense by \$13,951 to provide twelve
22 months of depreciation expense on the Company's proposed post-test year plant additions
23 that were projected to be completed by December 31, 2002.

24
25 **Q. Does Staff agree with the Company's proposed depreciation expense?**

26 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
27 the authorized balance for each plant account. Previously, Staff recommended
28 disallowing a portion of the Company's proposed post-test year plant additions to remove

1 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not
2 revenue neutral. The difference between the Staff plant recommendation and the
3 Company's causes a corresponding difference in depreciation expense. In addition, the
4 Company calculated its depreciation expense using incorrect component depreciation
5 rates that it later corrected. Staff reviewed and accepted the new rates and Staff used the
6 new rates in calculating rates.

7
8 **Q. What are the components of Miami's proposed depreciation expense?**

9 A. The Company's proposed depreciation expense is composed of \$158,782 recorded in the
10 test year, a \$32,152 pro forma adjustment to recognize an additional half-year of
11 depreciation on test year plant additions, and a \$13,951 pro forma adjustment to
12 recognize twelve months of depreciation on post-test year plant additions for a total of
13 \$204,884.

14
15 **Q. Why is Staff's recommended depreciation expense different than the Company's
16 proposed amount?**

17 A. Staff's recommended depreciation expense is different for two reasons. First, the
18 Company's calculated depreciation expense used a dated component depreciation
19 schedule which it later changed during the course of Staff's analysis. Staff recommends
20 adopting the individual component account rates identified in the Company's late-filed
21 depreciation study which was reviewed and accepted by Staff who used it to calculate the
22 Staff's depreciation expense. Second, Staff calculated depreciation expense on its
23 recommended plant, which reflects adjustments previously discussed.

24
25 **Q. Please summarize Staff's recommendations for depreciation expense.**

26 A. Staff recommends \$139,114 for depreciation expense, a \$65,770 decrease from the
27 Company's proposed \$204,884. Staff's calculation includes the amortization of CIAC at
28

1 the weighted proposed depreciation rates. Staff recommendation is shown on Schedules
2 REL-20 and REL-21.

3
4 **Q. Does the Miami Depreciation and Amortization expense reflect the amortization of
5 the Pinal Creek Group settlement?**

6 A. Yes. Staff reduced the Depreciation and Amortization expense by \$50,000 to reflect the
7 amortization of the Company's Pinal Creek Group settlement, as shown on Schedule
8 REL-20.

9
10 Operating Income Adjustment No. 12 – Property Taxes

11 **Q. What is Arizona Water proposing for property tax expense?**

12 A. The Company is proposing property tax expense of \$121,044.

13
14 **Q. Do you agree with the Company's amount?**

15 A. No. Staff adopted the Department of Revenue's new method of calculating property
16 taxes.

17
18 **Q. What amount of property tax expense does Staff recommend?**

19 A. Staff recommends property tax expense of \$119,636, a decrease of \$1,408 compared to
20 the Company's proposal, as shown on Schedule REL-22.

21
22 Operating Income Adjustment No.8 – Income Taxes

23 **Q. What income tax expense did Arizona Water propose for the Miami system?**

24 A. The Company proposed negative \$8,496 in federal income taxes and a negative \$4,612 in
25 state income taxes for a combined income tax of \$13,108
26
27
28

1 **Q. Does Staff agree with the Company's amount?**

2 A. No. Staff does not agree with the Company's calculation because income tax expense is
3 a function of taxable income, and its recommended taxable income is different from the
4 Company's.

5
6 **Q. What amount is Staff recommending for test year income tax expense?**

7 A. As shown on Schedule REL-23, Staff recommends federal income tax of \$87,441 and
8 state income tax of \$19,263, for a combined income tax of \$106,704.

9
10 **Q. What amount of income tax expense has Staff calculated for its recommended
11 revenue?**

12 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$145,719 and
13 state income tax of \$32,101 for a combined income tax of \$177,820.

14
15 **Rate Design - Miami**

16 Rate Design

17 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and its
18 recommended rates and charges?**

19 A. Yes. Schedule REL-24 provides a summary of the present rates, Company-proposed
20 rates, and Staff's recommended rates.

21
22 **Q. Please summarize the present rate design.**

23 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
24 meter size and include 1,000 gallons and one commodity rate applies to all use.

25
26 **Q. Please summarize the Company's proposed rate design.**

27 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
28 meter size and include no gallons and one commodity rate applies to all use.

1 **Q. Please summarize Staff's rate design.**

2 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
3 meter size and include no gallons. The commodity rates are based on an inverted tier rate
4 design that includes three tiers with the first break-point at 3,000 gallons and the second
5 break-point at 50,000 gallons. The three-tier rate structure applies to all metered
6 customers.

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	[A] COMPANY ORIGINAL COST	[B] STAFF ORIGINAL COST
1	Adjusted Rate Base	\$ 4,570,196	\$ 2,740,612
2	Adjusted Operating Income (Loss)	\$ 59,991	\$ 121,633
3	Current Rate of Return (L2 / L1)	1.31%	4.44%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 502,722	\$ 234,761
6	Operating Income Deficiency (L5 - L2)	\$ 442,731	\$ 113,128
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 722,718	\$ 184,620
9	Adjusted Test Year Revenue	\$ 1,456,939	\$ 1,456,722
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 2,179,657	\$ 1,641,342
11	Require Increase in Revenue (%) (L8/L9)	49.61%	12.67%

GROSS REVENUE CONVERSION FACTOR

Line
No.

Calculation of Gross Revenue Conversion Factor:

1 Recommended Revenue Increase:		1.000000
2 Billings	38.59888%	
3 Combined Federal and State Income Tax Rate	0.12477%	
4 Uncollectible Rate After Income Taxes		<u>38.72365%</u>
5 Total Tax Rate		<u>1.631951</u>
6 Gross Revenue Conversion Factor		

Calculation of Effective Income Tax Rate:

7 Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8 Arizona State Income Tax Rate	<u>6.96800%</u>
9 Federal Taxable Income (L5 - L6)	93.03200%
10 Applicable Federal Income Tax Rate (Line 32)	<u>34.00000%</u>
11 Effective Federal Income Tax Rate (L7 x L8)	<u>31.63088%</u>
12 Combined Federal and State Income Tax Rate (L6 +L9)	<u>38.59888%</u>

Calculation of Uncollectible Rate After Income Taxes:

13 Uncollectible Rate	0.20320%
14 Combined Federal and State Income Tax Rate	38.59888%
15 1 minus Combined Federal and State Income Tax Rate	<u>61.40112%</u>
16 Uncollectible Rate After Income Taxes	<u>0.12477%</u>

Revenue Reconciliation:

17 Recommended Increase in Revenue (from REL-1, L8)	<u>\$ 184,620</u>	
18 Uncollectible Rate	0.203200%	
19 Required Increase in Revenue to Provide for Uncollectibles	\$ 375	
20 Recommended Increase in Revenue (from REL-1,L8)	<u>\$ 184,620</u>	
21 Required Increase in Revenue to Provide for Uncollectibles	375	
22 Incremental Taxable Income	\$ 184,244	
23 Combined Federal and State Income Tax Rate	<u>38.59888%</u>	
24 Required Increase in Revenue to Provide for Income Taxes	71,116	
25 Required Operating Income	\$ 234,761	
26 Adjusted Test Year Operating Income (Loss)	<u>121,633</u>	
27 Required Increase in Operating Income	113,128	
28 Total Required Increase In Revenue	<u>\$ 184,620</u>	

	<u>Test Year</u>	<u>STAFF Recommended</u>	
29 Revenue	<u>\$ 1,456,722</u>	\$ 1,641,342	
30 Less: Operating Expenses Excluding Income Taxes	\$ 1,108,749	\$ 1,109,124	
31 Less: Synchronized Interest	\$ 71,530	\$ 71,530	
32 Arizona Taxable Income	\$ 276,443	\$ 460,687	
33 Arizona State Income Tax Rate	6.968%	6.968%	
34 Arizona Income Tax	\$ 19,263	\$ 32,101	
35 Federal Taxable Income	\$ 257,180	\$ 428,587	
36 Federal Income Tax @ 34%	\$ 87,441	\$ 145,719	
37 Combined Federal and State Income Tax	<u>\$ 106,704</u>	<u>\$ 177,820</u>	
		\$ 71,116	

Calculation of Interest Synchronization:

38 Rate Base	<u>\$ 2,740,612</u>
39 Weighted Average Cost of Debt	2.610%
40 Synchronized Interest	<u>\$ 71,530</u>

CONFIDENTIAL

[REDACTED]

CONFIDENTIAL

[REDACTED]

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1, 2 and 3 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 6,336,685	\$ 1,130	\$ 6,337,815
2	Post-Test Year Plant	\$ 500,981	\$ (24,837)	\$ 476,144
3	Post Test Year Retired Plant	\$ -	\$ (43,151)	\$ (43,151)
4	Adjusted Test Year Plant	<u>\$ 6,837,666</u>	<u>\$ (66,858)</u>	<u>\$ 6,770,808</u>

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS. 4, 5, 6 AND 7 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (1,667,874)	\$ 31,501	\$ (1,636,373)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (13,951)	\$ 7,418	\$ (6,533)
3	Accumulated Depreciation, Test Year Plant	\$ (32,152)	\$ (121,479)	\$ (153,631)
4	Accumulated Depreciation, Retired Plant	\$ -	\$ 51,384	\$ 51,384
		<u>\$ (1,713,977)</u>	<u>\$ (31,176)</u>	<u>\$ (1,745,153)</u>

CONFIDENTIAL

[REDACTED]

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 8

OPERATING INCOME ADJUSTMENT NO. 10 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Cash Working Capital	\$ 30,159	\$ (210,688)	\$ (180,529)
2	Materials and Supplies Inventory	9,277	6,259	15,536
3	Required Bank Balances	26,913	-	26,913
4	Prepayments and special Deposit	15,418	-	15,418
5	Total	\$ 81,767	(204,429) \$	(122,662)

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-9

RATE BASE ADJUSTMENT NOS. 11 and 12 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 193,170	\$ (165,308)	\$ 27,862
2	Meter Shop Allocations	\$ 4,024	\$ (3,580)	\$ 444
3	Phoenix Office Allocation - Retirements	\$ -	\$ (8,233)	\$ (8,233)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 197,194	\$ (177,121)	\$ 20,073

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
<u>REVENUES:</u>						
1	Total Operating Revenues	\$ 1,456,939	\$ (217)	\$ 1,456,722	\$ 184,620	\$ 1,641,342
<u>EXPENSES:</u>						
Source of Supply Expenses:						
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	8,832	-	8,832	-	8,832
Pumping Expenses:						
4	Purchased Power	151,322	(40,123)	111,199	-	111,199
5	Purchased Gas	-	-	-	-	-
6	Other	97,770	-	97,770	-	97,770
7	Water Treatment Expenses	95,544	(62,992)	32,552	-	32,552
8	Transmission and Distribution Expenses	263,028	(3,788)	259,240	-	259,240
9	Customer Account Expenses	190,636	(1)	190,635	375	191,010
10	Sales Expenses	1,311	-	1,311	-	1,311
11	Administrative and General Expenses	246,728	(7,589)	239,139	-	239,139
12	Total Operation and Maintenance	\$ 1,055,171	(114,493)	940,678	375	941,053
13	Depreciation and Amortization	204,884	(65,770)	139,114	-	139,114
15	Ad Valorem (Property)	121,044	(1,408)	119,636	-	119,636
Taxes:						
14	Federal & State Income Tax	(13,108)	119,812	106,704	71,116	177,820
16	Other	28,957	-	28,957	-	28,957
17	Total Operating Expenses	\$ 1,396,948	\$ (61,859)	\$ 1,335,089	\$ 71,491	\$ 1,406,581
18	Operating Income (Loss)	\$ 59,991	\$ 61,642	\$ 121,633	\$ 113,128	\$ 234,761

Alabama Water Company - Miami
 Docket No. W-01459-02-0019
 Test Year Ended December 31, 2001

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ#1	(C) ADJ#2	(D) ADJ#3	(E) ADJ#4	(F) ADJ#5	(G) ADJ#6	(H) ADJ#7	(I) ADJ#8	(J) ADJ#9	(K) ADJ#10	(L) ADJ#11	(M) ADJ#12	(N) ADJ#13	(O) ADJ#14	(P) ADJ#15	(Q) STAFF ADJUSTED
1	REVENUES:																	
	Total Operating Revenues	\$ 1,456,939	\$ (217)															\$ 1,456,722
	EXPENSES:																	
2	Source of Supply Expenses:																	
	Purchased Water	\$ -	\$ -															\$ 8,632
3	Other	8,632																
4	Pumping Expenses:																	
	Purchased Power	151,322		(40,123)														111,199
5	Other	97,770																97,770
6	Purchased Gas	65,544																32,552
7	Water Treatment Expenses	263,028			(1,236)	(52,410)	(9,346)	(1)	(3,767)	(1)								259,240
8	Transmission and Distribution Expenses	190,636																180,635
9	Customer Account Expenses	1,311																1,311
10	Sales Expenses	249,729																239,139
11	Administrative and General Expenses	1,055,171		(40,123)	(1,236)	(52,410)	(9,346)	(1)	(3,767)	(1)	(5,856)	(1,733)						840,676
12	Total Operation and Maintenance	204,884									(5,856)	(1,733)	(50,000)	(19,770)	(1,409)			139,114
13	Depreciation and Amortization	121,044																119,638
14	Taxes:																	
	Federal & State Income Tax	(13,109)														86,937		106,704
16	Other	29,957																29,957
17	Total Operating Expenses	\$ 1,399,948	\$ -	\$ (40,123)	\$ (1,236)	\$ (52,410)	\$ (9,346)	\$ (1)	\$ (3,767)	\$ (1)	\$ (5,856)	\$ (1,733)	\$ (50,000)	\$ (19,770)	\$ (1,409)	\$ (86,937)	\$ (23,875)	\$ 1,335,069
18	Operating Income (Loss)	\$ 59,991	\$ (217)	\$ 40,123	\$ 1,236	\$ 52,410	\$ 9,346	\$ 1	\$ 3,767	\$ 1	\$ 5,856	\$ 1,733	\$ 50,000	\$ 15,770	\$ 1,409	\$ (95,937)	\$ (23,875)	\$ 121,633

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 12

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	(2)		(2)
2	Avg Annual Bill Per Customer for TY	371		480
3	Avg Annual Revenue for Additional Customers	\$ (742)	\$ (217)	\$ (959)

OPERATING INCOME ADJUSTMENT NO. 2 - PURCHASED PUMPING POWER EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Purchased Pumping Power Expense	\$ 151,322	\$ (1,123)	\$ 150,199
2	Purchased Pumping Power Expense	\$ -	\$ (39,000)	\$ (39,000)
3	Total Purchased Pumping Power Expense	<u>\$ 151,322</u>	<u>\$ (40,123)</u>	<u>\$ 111,199</u>

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-14

OPERATING INCOME ADJUSTMENT NOS. 4 and 5 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Water Treatment Expense	\$ 95,544	\$ (1,236)	\$ 94,308
2	Water Treatment Expense - Chlorine	-	(52,410)	(52,410)
	Water Treatment Expense	<u>\$ 95,544</u>	<u>\$ (53,646)</u>	<u>\$ 41,898</u>

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-15

OPERATING INCOME ADJUSTMENT NO. 6 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 13,894	\$ (9,346)	\$ 4,548

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 16

OPERATING INCOME ADJUSTMENT NOS. 7 and 9 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Source of Supply	\$ (6)	\$ -	\$ (6)
2	Purchased Pumping Power	(164)	-	(164)
3	Water Treatment Expense	(16)	-	(16)
4	Transmission & Distribution Expense	(156)	(1)	(157)
5	Customer Accounting	(125)	(1)	(126)
6	Total	<u>\$ (467)</u>	<u>\$ (2)</u>	<u>\$ (469)</u>

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-17

OPERATING INCOME ADJUSTMENT NO. 8 - TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 263,028	\$ (3,787)	\$ 259,241

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 18

OPERATING INCOME ADJUSTMENT NO. 10 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.11790		0.11790
3	Annual Rate Case Expense for Eastern Group	\$ 30,365	\$ (9,036)	\$ 21,330
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 10,122	\$ (5,856)	\$ 4,266

OPERATING INCOME ADJUSTMENT NO. 11 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 1,733	\$ (1,733)	\$ -

CONFIDENTIAL

[REDACTED]

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-21

OPERATING INCOME ADJUSTMENT NO. 12 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 204,884	\$ (10,363)	\$ 194,521
2	CIAC Amortization		(5,407)	(5,407)
		<u>\$ 204,884</u>	<u>\$ (15,770)</u>	<u>\$ 189,114</u>

OPERATING INCOME ADJUSTMENT NO. 13 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 1,522,007
2	2001 Annual Gross Revenues			\$ 1,456,934
3	2002 Annual Gross Revenues			\$ 1,484,061
4	Plus Staff's Recommended Increase			\$ 184,620
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 4,647,622
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 1,549,207
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 3,098,415
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Value of Leased Vehicles (See Note A Below)			\$ 56,228
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 3,042,187
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 760,547
15	Composite Property Tax Rate (See Note B Below)			0.157303
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 121,044	\$ (1,408)	\$ 119,636

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 23

OPERATING INCOME ADJUSTMENT NOS. 14 and 15 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ (8,496)	\$ 95,937	\$ 87,441
2	State Income Taxes	(4,612)	23,875	19,263
3	Total Income Taxes	\$ (13,108)	\$ 119,812	\$ 106,704

RATE DESIGN

Monthly Usage Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter
 8" Meter
 10" Meter

	Minimum Monthly Usage Charge		
	Present Rates	---Proposed Rates---	
		Company	Staff
5/8" x 3/4" Meter	\$ 13.47	\$ 20.22	\$ 16.36
1" Meter	\$ 24.86	\$ 43.88	\$ 36.80
2" Meter	\$ 62.15	\$ 127.59	\$ 123.96
3" Meter	\$ 103.58	\$ 229.29	\$ 238.19
4" Meter	\$ 207.16	\$ 408.24	\$ 511.03
6" Meter	\$ 362.53	\$ 777.66	\$ 1,006.31
8" Meter	\$ 362.53	\$ 1,080.96	\$ 1,163.12
10" Meter	\$ 673.27	\$ 1,769.05	\$ 1,305.25

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter
 8" Meter
 10" Meter

5/8" x 3/4" Meter	1,000	0	0
1" Meter	1,000	0	0
2" Meter	1,000	0	0
3" Meter	1,000	0	0
4" Meter	1,000	0	0
6" Meter	1,000	0	0
8" Meter	1,000	0	0
10" Meter	1,000	0	0
Fire Hydrants Used For Construction Water	1,000	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)
 Per 1,000 Gallons for 0 to 3,000 Gallons
 Per 1,000 Gallons for 3,001 to 50,000 Gallons
 Per 1,000 Gallons for Gallons in Excess of 50,000

Per 1,000 Gallons (In Excess of Minimum)	\$ 3.3040	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 3.3040	\$ 4.3300	\$ 2.4584
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 3.3040	\$ 4.3300	\$ 3.0730
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 3.3040	\$ 4.3300	\$ 3.6876

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter

5/8" x 3/4" Meter	(a)	(a)
1" Meter	(a)	(a)
2" Meter	(b)	(b)
3" Meter	(b)	(b)
4" Meter	(b)	(b)
6" Meter	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
 CONTINUED**

Service Charges:

	Present Rates	---Proposed Rates---	
		Company	Staff
Establishment	\$ 16.00	\$ 16.00	\$ 16.00
Guarantee Deposit	(c)	(c)	(c)
Reconnection for Delinquency (per disconnection)	\$ 16.00	\$ 16.00	\$ 16.00
Re-establishment	(d)	(d)	(d)
Service Call Out (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00
Returned Check Charge	\$ 10.00	\$ 25.00	\$ 25.00
Meter Re-read (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00
Meter Test	\$ 50.00	\$ 50.00	\$ 50.00
Late Charge	N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **ORACLE SYSTEM**

2
3 **Summary of Proposed Revenue - Oracle**

4 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
5 **and Staff's recommended revenue requirement?**

6 A. Yes, please refer to schedule REL-1. The Company proposes total annual operating
7 revenue of \$1,060,904 which represents an increase of \$233,327, or 28.19 percent, over
8 the Company adjusted test year revenue of \$827,577.

9
10 Staff's recommended total annual operating revenue for the Oracle system is \$828,768.
11 Staff's recommendation represents an increase of \$77,081, or 9.30 percent, over its
12 adjusted test year revenue of \$828,768. Schedule REL-1 presents the calculation of the
13 recommended revenue requirements.

14
15 **Rate Base - Oracle**

16 Original Cost Rate Base

17 **Q. Did Staff prepare an Original Cost Rate Base Schedule?**

18 A. Yes, shown on Schedule REL-3, Staff's recommended rate base is \$2,415,268. Staff's
19 recommended rate base is a decrease of \$404,132 from the Company's proposal of
20 \$2,819,400. Staff's rate base adjustments are described below.

21
22 Rate Base Adjustment No. 1 – Addition of Post-Test Year Plant

23 **Q. Does Staff's recommended rate base include plant placed into service after the test**
24 **year?**

25 A. Yes, Staff included \$224,542 of plant in rate base that the Company placed into service
26 after the end of the test year but no later than December 31, 2002, as shown on REL-5.
27 Staff decreased the Company's post-test year plant additions by \$106,365, from \$330,907
28 to \$224,542.

1 Rate Base Adjustment No. 2 – Post –Test Year Retired Plant

2 **Q. Did the Company make any adjustment for plant retired during the 2002 post-test**
3 **year period?**

4 A. No. Since the Company had requested the Plant In Service additions of certain plant, it is
5 proper that Staff remove the corresponding plant retired due to additions. Therefore,
6 Staff removed \$8,026 from Plant In Service also shown on Schedule REL-5 and from
7 Accumulated Depreciation.

8
9 **Q. Please summarize Staff's recommendations regarding Plant In Service.**

10 A. Staff recommends \$5,064,631 for Plant In Service, a \$114,391 decrease from the
11 Company's proposed \$5,179,022. The calculation of Staff's recommendation is shown
12 on Schedule REL-5

13
14 Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation

15 **Q. What pro forma adjustments did the Company propose for Accumulated**
16 **Depreciation?**

17 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
18 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 7 of 11 of the
19 filing, increased Accumulated Depreciation by \$8,034 to reflect twelve months of
20 depreciation expense on the Company's proposed post-test year plant additions that were
21 expected to be completed by December 31, 2002. The Company's pro forma adjustment
22 no. 3, as shown on Schedule B-2, page 7 of 11 of the filing, increased Accumulated
23 Depreciation by \$4,547 and represents six months of depreciation expenses on test year
24 plant additions.

1 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
2 **proper matching with the Company's pro forma adjustment to include all plant to**
3 **be in service by December 31, 2002?**

4 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
5 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
6 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
7 expense but only for the post-test year plant. Using the mid-year convention, this
8 adjustment should represent six months depreciation expense only. Pro forma adjustment
9 no. 3 increased accumulated depreciation by only six months for plant placed in service
10 during the test year and remaining in service through the December 31, 2002, cut-off date

11
12 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
13 **Service and Accumulated Depreciation cut-off dates?**

14 A. The Company's proposal violates the matching principle. It overstates rate base and
15 allows the Company to earn on investment it has already recovered from ratepayers via
16 depreciation expense.

17
18 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

19 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
20 used the same cut-off date, December 31, 2002, for calculating Accumulated
21 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
22 accumulation of depreciation expense on all plant included in rate base using the half-
23 year convention adopted by the Company. The depreciation accruals are calculated on
24 plant balances that are known and measurable, have been transferred out of the
25 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
26 have been sufficiently examined.

1 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

2 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff increased
3 Accumulated Depreciation by \$101,769, from \$1,468,545 to \$1,570,314. This
4 adjustment is made up of several components including a \$96 (adjustment no. 3) increase
5 as a result of Staff's analysis. Staff recommends increasing the pro forma adjustment for
6 Accumulated Depreciation on test year plant by \$118,613 (adjustment no. 5) from \$4,547
7 to \$123,160, and it recommends decreasing the pro forma adjustment for Accumulated
8 Depreciation on post-test year plant additions by \$4,950 (adjustment no. 4) from \$8,034
9 to \$3,084. Additionally, Staff removed \$11,990 (adjustment no. 6) in retired post-test
10 year plant from Accumulated Depreciation in accordance with NARUC – USOA
11 accounting procedures.

12
13 Rate Base Adjustment No. 7– Cash Working Capital Allowance

14 **Q. What did the Company propose for its working capital allowance?**

15 A. The Company proposed \$52,085 for working capital. Schedule B-5, page 2 of 2, of the
16 filing shows that the proposed amount is composed of cash working capital, materials and
17 supplies, required bank balances, and prepayments.

18
19 **Q. Does Staff agree with the Company calculation?**

20 A. No. Staff does not agree with the Company's proposed \$28,184 cash working capital
21 component of the working capital allowance.

22
23 **Q. Why does Staff disagree with the Company's proposed cash working capital
24 component of working capital allowance?**

25 A. The Company's proposed cash working capital is based on a lead-lag analysis that
26 contains several conceptual and methodological errors.

1 **Q. What is the result of Staff's lead-lag analysis?**

2 A. Staff's lead-lag analysis indicates a negative \$76,038 cash working capital component or
3 a reduction of \$104,422 compared to the Company's \$28,184 figure. In other words,
4 ratepayers are providing working capital to the system.

5
6 **Q. How else did Staff adjust Working Capital?**

7 A. Staff increased the Materials and Supply Inventory by \$1,729, from \$3,519 to \$5,248 as a
8 result of materials that were transferred from Transmission and Distribution Expense to
9 Materials and Supplies Inventory.

10
11 **Q. What Working Capital allowance is Staff recommending?**

12 A. Staff recommends a working capital allowance of negative \$50,608, as shown on
13 Schedule REL-7.

14
15 Rate Base Adjustment No. 8 and 9 – Allocated Post-Test Year Additions

16 **A. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year
17 additions?**

18 Q. Using the Company's allocation factors, Staff decreased the Phoenix Office allocation by
19 \$83,556, which included \$3,964 of post-test year retired plant. Additionally, Staff
20 reduced the Meter Shop allocation by \$1,723. Staff's total adjustment reduced the
21 Phoenix Office and Meter shop allocations by \$85,279, from \$94,945 to \$9,666. Staff's
22 analysis is shown on Schedule REL-8.

23

24

25

26

27

28

1 **Operating Income - Oracle**

2 Operating Income Summary

3 **Q. What are Staff's recommended test year revenue, expenses, and operating income?**

4 A. Staff's analysis resulted in test year revenue of \$828,768 as adjusted by Staff, expenses of
5 \$669,108, and an operating income of \$159,660, as shown on Schedules REL-9. Staff's
6 adjustments are discussed below.

7
8 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

9 **Q. How did the Company annualize revenue?**

10 A. The Company multiplied 15 customers (that represents the average growth in customers
11 on the Oracle system during the test year) by \$504 (which is the Company's
12 determination of annual revenue per customer) which resulted in a revenue increase of
13 \$7,560.

14
15 **Q. Did Staff make an adjustment to annual revenue?**

16 A. Yes. Staff made a \$1,191 adjustment to increase the Company's proposed annualization
17 from \$7,560 to \$8,751. Staff's calculation of the adjustment is shown on Schedule REL-
18 11. Staff's recalculation recognizes revenue from all meter sizes and calculates the
19 average annual revenue per customer to be \$583 rather than the Company's \$501.

20
21 Operating Income Adjustment No. 2 – Purchased Pumping Power

22 **Q. Did Staff adjust Purchased Pumping Power?**

23 A. Yes. Staff accepted the Company's Purchased Pumping Power with the exception of a
24 repaired pump inadvertently allocated and posted to Oracle expense. The \$916 was
25 reclassified from Oracle Purchased Pumping Power and transferred to San Manuel's
26 Plant In Service, Electrical Pumping Equipment account.

1 Operating Income Adjustment No. 3 – Water Treatment Expense

2 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages**
3 **Expense?**

4 A. Yes, Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
5 and found them not to be "known and measurable." Because of the uncertainties of the
6 Company estimates, Staff used actual 2002 expenses. The amount applicable to Oracle
7 was increased from the Company's pro forma by \$10,176, from \$13,318 to \$23,494, as
8 shown on Schedule REL-13.

9
10 Operating Income Adjustment No. 4 – Water Testing Expense

11 **Q. What is Arizona Water's proposed Water Testing Expense?**

12 A. Arizona Water's proposed water testing expense is \$2,942. Water testing expense is a
13 component of the Company's proposed \$13,318 Water Treatment Expense shown on
14 Schedule REL-14.

15
16 **Q. Does Staff agree with the Company's Water Testing Expense?**

17 A. No. Staff's recommends this expense be based on Staff's water testing expense analysis
18 of \$1,780 which decreases annual operating expenses by \$1,162. The adjustment is
19 discussed in greater detail in the testimony of Staff witness Lyndon Hammon.

20
21 Operating Income Adjustment No. 5 and 7 – Expense Annualization Adjustment

22 **Q. Has Staff recalculated the amount of annualized expenses?**

23 A. Yes. Staff's calculations are shown as adjustments nos. 5 and 7 and are shown on
24 Schedule REL-15. Staff recommends an expense annualization adjustment of \$3,301, an
25 increase of \$10 over the Company's adjustment of \$3,291.
26
27
28

1 Operating Income Adjustment No. 6– Transmission and Distribution Expense

2 **Q. What adjustment did Staff make to Transmission and Distribution Expense?**

3 A. The Company inadvertently posted \$1,729 to Transmission and Distribution Expense that
4 should have been posted to Materials and Supplies Inventory. This entry reduced the
5 Company's expense from \$89,698 to \$87,969, as shown on Schedule REL-16.

6
7 Operating Income Adjustment No. 8 – Rate Case Expense

8 **Q. What Rate Case Expenses did Arizona Water propose for the Oracle system?**

9 A. The Company proposed total Rate Case Expense of \$14,603 for the Oracle system. Rate
10 Case Expense is a component of the Company's proposed \$104,590 Administrative and
11 General Expense, shown on Schedule REL -17.

12
13 **Q. Does Staff agree that the Company's Rate Case Expenses for the Oracle system are**
14 **reasonable?**

15 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
16 reasonable.

17
18 **Q. What amount does Staff recommend allocating to the Oracle system?**

19 A. Staff recommends allocating \$10,258 to the Oracle system. Staff's recommended
20 allocation uses the Company-proposed allocation factor of 0.05670 percent ($\$180,913 \times$
21 $0.05670 = \$10,258$). Staff recommends annual Rate Case Expense of \$2,052 ($\$10,258$
22 amortized over five years), a decrease of \$2,816 from the Company's proposed \$4,868,
23 as shown on Schedule REL-17.
24
25
26
27
28

1 Operating Income Adjustment No. 8 – Charitable Contributions Expense

2 **Q. Did the Company remove charitable contributions from its test year expenses?**

3 A. No, even though charitable contributions bear no relationship to the provision of water
4 service. Therefore, Staff removed \$834 from the Administrative and General account as
5 shown on REL-18.

6
7 Operating Income Adjustment Nos. 10 – Depreciation and Amortization Expense

8 **Q. What did the Company propose for Depreciation Expense?**

9 A. The Company proposed \$129,495 for depreciation expense. The Company's proposal
10 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as
11 shown on Schedule C-2, page 27 of 36 of the filing, increased depreciation expense by
12 \$4,547 to provide an additional six months of depreciation expense on test year plant
13 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
14 page 28 of 36 of the filing, increased depreciation expense by \$8,034 to provide twelve
15 months of depreciation expense on the Company's proposed post-test year plant additions
16 that were projected to be completed by December 31, 2002.

17
18 **Q. Does Staff agree with the Company's proposed depreciation expense?**

19 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
20 the authorized balance for each plant account. Previously, Staff recommended
21 disallowing a portion of the Company's proposed post-test year plant additions to remove
22 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not
23 revenue neutral. The difference between Staff plant recommendation and the Company's
24 causes a corresponding difference in depreciation expense. In addition, the Company
25 calculated its depreciation expense using incorrect component depreciation rates that it
26 later corrected. Staff reviewed and accepted the new rates and Staff used the new rates in
27 calculating rates.

1 **Q. Please summarize Staff's recommendations for depreciation expense.**

2 A. Staff recommends \$132,704 for depreciation expense, a \$3,209 increase from the
3 Company's proposed \$129,495. Staff's calculation includes the amortization of CIAC at
4 the weighted proposed depreciation rates. Staff's recommendation is shown on Schedule
5 REL-19.

6
7 **Q. Why is Staff's recommended depreciation expense different than the Company's
8 proposed amount?**

9 A. Staff's recommended depreciation expense is different for two reasons. First, the
10 Company's calculated depreciation expense used an old component depreciation
11 schedule which it later changed during the course of Staff's analysis. Staff recommends
12 adopting the individual component account rates identified in the Company's late-filed
13 depreciation study which was reviewed and accepted by Staff and who used it to
14 calculate the Staff's depreciation expense. Second, Staff calculated depreciation expense
15 on its recommended plant, which reflects adjustments previously discussed.

16

17 Operating Income Adjustment No. 11 – Property Taxes

18 **Q. What is Arizona Water proposing for property tax expense?**

19 A. The Company is proposing property tax expense of \$57,070.

20

21 **Q. Does Staff agree with the Company's amount?**

22 A. No. The Department of Revenue Property Valuation and Equalization Section developed
23 a new method to calculate property taxes. Staff adopted this new method of calculating
24 property taxes.

25

26 **Q. What amount of property tax expense does Staff recommend?**

27 A. Staff recommends property tax expense of \$57,357, an increase of \$287 from the
28 Company's proposal, as shown on Schedule REL-21.

1 Operating Income Adjustment No.8 – Income Taxes

2 **Q. What income tax expense did the Oracle system propose?**

3 A. The Company proposed \$49,775 in federal income taxes and \$10,965 in state income
4 taxes for a combined income tax of \$60,739.

5
6 **Q. Does Staff agree with the Company's amount?**

7 A. No. Staff does not agree with the Company's calculation because income tax expense is
8 a function of taxable income, and Staff's recommended taxable income is different from
9 the Company's.

10
11 **Q. What amount is Staff recommending for test year income tax expense?**

12 A. As shown on Schedules REL-21, Staff recommends federal income tax of \$49,775 and
13 state income tax of \$10,965 for a combined income tax of \$60,739.

14
15 **Q. What amount of income tax expense has Staff calculated for its recommended
16 revenue?**

17 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$74,106 and
18 state income tax of \$16,325 for a combined income tax of \$90,431.

19
20 **Rate Design - Oracle**

21 Rate Design

22 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and
23 Staff's recommended rates and charges?**

24 A. Yes. Schedule REL-22 provides a summary of the present rates, Company-proposed
25 rates, and Staff's recommended rates.

26
27
28

1 **Q. Please summarize the present rate design.**

2 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
3 meter size and include 1,000 gallons and one commodity rate applies to all use.

4
5 **Q. Please summarize the Company's proposed rate design.**

6 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
7 meter size and include no gallons and one commodity rate applies to all use.

8
9 **Q. Please summarize Staff's rate design.**

10 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
11 meter size and include no gallons. The commodity rates are based on an inverted tier rate
12 design that includes three tiers with the first break-point at 3,000 gallons and the second
13 break-point at 50,000 gallons. The three-tier rate structure applies to all metered
14 customers.

15

16

17

18

19

20

21

22

23

24

25

26

27

28

Arizona WWater Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 2,819,400	\$ 2,415,268
2	Adjusted Operating Income (Loss)	\$ 167,200	\$ 159,660
3	Current Rate of Return (L2 / L1)	5.93%	6.61%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 310,134	\$ 206,892
6	Operating Income Deficiency (L5 - L2)	\$ 142,934	\$ 47,232
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 233,327	\$ 77,081
9	Adjusted Test Year Revenue	\$ 827,577	\$ 828,768
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 1,060,904	\$ 905,849
11	Require Increase in Revenue (%) (L8/L9)	28.19%	9.30%

GROSS REVENUE CONVERSION FACTOR

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		1.000000
2	Billings		
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		38.72365%
6	Gross Revenue Conversion Factor		<u>1.631951</u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	6.96800%
9	Federal Taxable Income (L5 - L6)	93.03200%
10	Applicable Federal Income Tax Rate (Line 32)	34.00000%
11	Effective Federal Income Tax Rate (L7 x L8)	31.63088%
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u>38.59888%</u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		61.40112%
16	Uncollectible Rate After Income Taxes		<u>0.12477%</u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	\$ 77,081	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles		\$ 157
20	Recommended Increase in Revenue (from REL-1,L8)	\$ 77,081	
21	Required Increase in Revenue to Provide for Uncollectibles	157	
22	Incremental Taxable Income	\$ 76,924	
23	Combined Federal and State Income Tax Rate	38.59888%	
24	Required Increase in Revenue to Provide for Income Taxes		29,692
25	Required Operating Income	\$ 206,892	
26	Adjusted Test Year Operating Income (Loss)	159,660	
27	Required Increase in Operating Income		47,232
28	Total Required Increase In Revenue		<u>\$ 77,081</u>

Calculation of Income Tax:

	Test Year	STAFF Recommended	
29	Revenue	\$ 828,768	\$ 905,849
30	Less: Operating Expenses Excluding Income Taxes	\$ 608,369	\$ 608,525
31	Less: Synchronized Interest	\$ 63,038	\$ 63,038
32	Arizona Taxable Income	\$ 157,361	\$ 234,285
33	Arizona State Income Tax Rate	6.968%	6.968%
34	Arizona Income Tax	\$ 10,965	\$ 16,325
35	Federal Taxable Income	\$ 146,396	\$ 217,960
36	Federal Income Tax @ 34%	\$ 49,775	\$ 74,106
37	Combined Federal and State Income Tax	<u>\$ 60,739</u>	<u>\$ 90,431</u>
			\$ 29,692

Calculation of Interest Synchronization:

38	Rate Base	\$ 2,415,268
39	Weighted Average Cost of Debt	2.610%
40	Synchronized Interest	<u>\$ 63,038</u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 5,179,022	\$ 5,064,631
2	Less: Accumulated Depreciation	(1,468,545)	(1,570,314)
3	Net Plant in Service	<u>\$ 3,710,477</u>	<u>\$ 3,494,317</u>
<u>LESS:</u>			
4	Advances in Aid of Construction (AIAC)	(473,356)	(473,356)
5	Contributions in Aid of Construction (CIAC)	\$ (258,151)	\$ (258,151)
6	Less: Accumulated Amortization	37,740	37,740
7	Net CIAC	<u>(220,411)</u>	<u>(220,411)</u>
8	Total Advances and Contributions	(693,767)	(693,767)
9	Customer Deposits	-	-
10	Meter Advances	-	-
11	Deferred Income Tax Credits	(344,341)	(344,341)
<u>ADD:</u>			
12	Working Capital	52,086	(50,607)
13	Phoenix Office Allocation	93,008	9,452
14	Meter Shop Allocation	1,937	214
15		-	-
16		-	-
17		-	-
18	Total Rate Base	<u>\$ 2,819,400</u>	<u>\$ 2,415,268</u>

Arizona Water Company - Oriole
 DocId: No. W-01445A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(J) ADJ.No.9	(K) STAFF ADJUSTED
1	PLANT IN SERVICE:											
2	Organization											
3	Franchises											
4	Other Intangibles	54,555										54,555
5	Water Rights	15,943										15,943
6	Other Source of Supply Land	244,509										244,509
7	Wells	2,742										2,742
8	Pumping Plant Land	22,043										22,043
9	Pumping Plant Structures & Improvements	723,785										723,785
10	Electric Pumping Equipment											
11	Gas Engine Equipment											
12	Water Treatment Structures & Improvements	35,054										35,054
13	Water Treatment Equipment	44,721										44,721
14	Transmission and Distribution Land	19,680										19,680
15	Storage Tanks	287,032										287,032
16	Transmission and Distribution Mains	2,712,853										2,712,853
17	Fire Sprinkler Taps											
18	Services	407,077										407,077
19	Meters	81,774										81,774
20	Hydrants	102,497										102,497
21	General Plant Land											
22	General Plant Structures	28,141										28,141
23	Leasehold Improvements											
24	Office Furniture and Improvements	1,440										1,440
25	Warehouse Equipment	32										32
26	Tools, Shop and Garage Equipment	12,557										12,557
27	Laboratory Equipment	146										146
28	Power Operated Equipment											
29	Communication Equipment	51,514										51,514
30	Miscellaneous Equipment											
31	Total Plant in Service - Actual	4,848,115										4,848,115
32	Pro-forma Adjustment - Post TY Plant	330,907										330,907
33	Accumulated Depreciation, Retired Plant		(106,365)	(8,026)								
34	Total Plant in Service - Adjusted	\$ 5,179,022	\$ (106,365)	\$ (8,026)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 5,064,631
35	Less: Accumulated Depreciation - Actual	\$ (1,455,964)			(86)							(1,456,050)
36	Less: Accumulated Depreciation - Post TY	(8,034)				4,950						(3,084)
37	Less: Accumulated Depreciation - 12 Mos TY	(4,547)					(118,613)					(123,160)
38	Less: Accumulated Depreciation - Retired Plant							11,990				11,990
39	Total Accumulated Depreciation - Adjusted	\$ (1,468,545)	\$ -	\$ -	\$ (86)	\$ 4,950	\$ (118,613)	\$ 11,990	\$ -	\$ -	\$ -	\$ (1,570,314)
40	Plus: Construction Work In Progress											
41	Net Plant in Service	\$ 3,710,477	\$ (106,365)	\$ (8,026)	\$ (86)	\$ 4,950	\$ (118,613)	\$ 11,990	\$ -	\$ -	\$ -	\$ 3,494,317
42	Advances in Aid of Construction (AMAC)	\$ (473,356)										(473,356)
43	Contributions in Aid of Construction (CIAC)	(258,151)										(258,151)
44	Less: Accumulated Amortization	37,740										37,740
45	Net CIAC (L25 - L26)	(220,411)										(220,411)
46	Total Advances and Contributions	(683,767)										(683,767)
47	Customer Deposits											
48	Meter Advances											
49	Deferred Income Tax Credits	(344,341)										(344,341)
50	Working Capital Allowance	52,086										52,086
51	Phoenix Office Allocation	93,008							(102,693)			9,315
52	Meter Shop Allocation	1,937										1,937
53	Projected Capital Expenditures											
54	Deferred Debts											
55	Other Additions											
56	Total Rate Base	\$ 2,819,400	\$ (106,365)	\$ (8,026)	\$ (86)	\$ 4,950	\$ (118,613)	\$ 11,990	\$ (102,693)	\$ (83,556)	\$ (1,723)	\$ 2,415,268

Arizona WWater Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1 and 2 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 4,848,115	\$ -	\$ 4,848,115
2	Post-Test Year Plant	\$ 330,907	\$ (106,365)	\$ 224,542
3	Post Test Year Retired Plant	\$ -	\$ (8,026)	\$ (8,026)
4	Adjusted Test Year Plant	\$ 5,179,022	\$ (114,391)	\$ 5,064,631

Arizona WWater Company - Oracle
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS. 3, 4, 5 and 6 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (1,455,964)	\$ (96)	\$ (1,456,060)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (8,034)	\$ 4,950	\$ (3,084)
3	Accumulated Depreciation, Test Year Plant	\$ (4,547)	\$ (118,613)	\$ (123,160)
4	Accumulated Deprec, Test Year Retired Plant	\$ -	\$ 11,990	\$ 11,990
		<u>\$ (1,468,545)</u>	<u>\$ (101,769)</u>	<u>\$ (1,570,314)</u>

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 7

OPERATING INCOME ADJUSTMENT NO. 7 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Cash Working Capital	\$ 28,184	\$ (104,422)	\$ (76,238)
2	Materials and Supplies Inventory	3,519	1,729	5,248
3	Required Bank Balances	12,958	-	12,958
4	Prepayments and special Deposits	7,424	-	7,424
5	Total	<u>\$ 52,085</u>	<u>\$ (102,693)</u>	<u>\$ (50,608)</u>

Arizona Water Company - Oracle
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-8

RATE BASE ADJUSTMENT NOS. 8 and 9 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 93,008	\$ (79,592)	\$ 13,416
2	Meter Shop Allocations	\$ 1,937	\$ (1,723)	\$ 214
3	Phoenix Office Allocation - Retirements	\$ -	\$ (3,964)	\$ (3,964)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 94,945	\$ (85,279)	\$ 9,666

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Total Operating Revenues	\$ 827,577	\$ 1,191	\$ 828,768	\$ 77,081	\$ 905,849
EXPENSES:						
Source of Supply Expenses:						
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	6,728	-	6,728	-	6,728
Pumping Expenses:						
4	Purchased Power	83,755	(916)	82,839	-	82,839
5	Purchased Gas	-	-	-	-	-
6	Other	29,003	-	29,003	-	29,003
7	Water Treatment Expenses	13,318	9,014	22,332	-	22,332
8	Transmission and Distribution Expenses	89,698	(1,724)	87,974	-	87,974
9	Customer Account Expenses	84,928	5	84,933	157	85,090
10	Sales Expenses	428	-	428	-	428
11	Administrative and General Expenses	104,590	(3,650)	100,940	-	100,940
12	Total Operation and Maintenance	\$ 412,448	2,729	415,177	157	415,333
13	Depreciation and Amortization	129,495	(3,555)	125,940	-	125,940
15	Ad Valorem (Property)	57,070	287	57,357	-	57,357
Taxes:						
14	Federal & State Income Tax	51,469	9,270	60,739	29,692	90,431
16	Other	9,895	-	9,895	-	9,895
17	Total Operating Expenses	\$ 660,377	\$ 8,731	\$ 669,108	\$ 29,848	\$ 698,957
18	Operating Income (Loss)	\$ 167,200	\$ (7,540)	\$ 159,660	\$ 47,232	\$ 206,892

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.#1	(C) ADJ.#2	(D) ADJ.#3	(E) ADJ.#4	(F) ADJ.#5	(G) ADJ.#6	(H) ADJ.#7	(I) ADJ.#8	(J) ADJ.#9	(K) ADJ.#10	(L) ADJ.#11	(M) ADJ.#12	(N) ADJ.#13	(O) ADJ.#14	(P) STAFF ADJUSTED	
1	REVENUES:																	
	Total Operating Revenues	\$ 827,577	\$ 1,191															\$ 828,768
	EXPENSES:																	
	Source of Supply Expenses:																	
2	Purchased Water	\$ -	\$ -															\$ 6,728
3	Other	6,728																82,839
4	Pumping Expenses:																	
	Purchased Power	83,755		(916)														29,003
5	Purchased Gas	29,003																22,332
6	Other	13,318			10,176	(1,162)												87,974
7	Water Treatment Expenses	89,696						(1,729)										84,933
8	Transmission and Distribution Expenses	84,928					5											428
9	Customer Account Expenses	428																100,940
10	Sales Expenses	104,590																415,177
11	Administrative and General Expenses	412,448		(916)	10,176	(1,162)	5	(1,729)	5	(2,816)	(834)							125,940
12	Total Operation and Maintenance	129,495										(3,555)						57,357
13	Depreciation and Amortization	57,070											287					60,739
14	Taxes:													5,360				9,695
	Federal & State Income Tax	51,469																60,739
15	Other	9,695																9,695
16	Total Operating Expenses	\$ 660,377	\$ -	\$ (916)	\$ 10,176	\$ (1,162)	\$ 5	\$ (1,729)	\$ 5	\$ (2,816)	\$ (834)	\$ (3,555)	\$ 287	\$ 5,360	\$ 3,911	\$ -	\$ -	\$ 689,108
17	Operating Income (Loss)	\$ 167,200	\$ 1,191	\$ 916	\$ (10,176)	\$ 1,162	\$ (5)	\$ 1,729	\$ (5)	\$ 2,816	\$ 834	\$ 3,555	\$ (287)	\$ (5,360)	\$ (3,911)	\$ -	\$ -	\$ 159,660

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 11

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	15		15
2	Avg Annual Bill Per Customer for TY	504		583
1	Avg Annual Revenue for Additional Customers	\$ 7,560	\$ 1,191	\$ 8,751

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-12

OPERATING INCOME ADJUSTMENT NO. 2 - PURCHASED PUMPING POWER EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Purchased Pumping Power	\$ 83,755	\$ (916)	\$ 82,839

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 13

OPERATING INCOME ADJUSTMENT NO. 3 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Water Treatment	\$ 13,318	\$ 10,176	\$ 23,494

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-14

OPERATING INCOME ADJUSTMENT NO. 4 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 2,942	\$ (1,162)	\$ 1,780

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 15

OPERATING INCOME ADJUSTMENT NO. 5 and 7 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Source of Supply	\$ 72	\$ -	\$ 72
2	Purchased Pumping Power	1,264	-	1,264
3	Water Treatment Expense	187	-	187
4	Transmission & Distribution Expense	865	5	870
5	Customer Accounting	903	5	908
6	Total	\$ 3,291	\$ 10	\$ 3,301

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-16

OPERATING INCOME ADJUSTMENT NO. 6 - TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 89,698	\$ (1,729)	\$ 87,969

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 17

OPERATING INCOME ADJUSTMENT NO. 8 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.05670		0.05670
3	Annual Rate Case Expense for Eastern Group	\$ 14,603	\$ (4,345)	\$ 10,258
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 4,868	\$ (2,816)	\$ 2,052

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 9 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 834	\$ (834)	\$ -

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-19

OPERATING INCOME ADJUSTMENT NO. 10 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 129,495	\$ 3,209	\$ 132,704
2	CIAC Amortization		(6,764)	(6,764)
		<u>\$ 129,495</u>	<u>\$ (3,555)</u>	<u>\$ 125,940</u>

OPERATING INCOME ADJUSTMENT NO. 11 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 834,637
2	2001 Annual Gross Revenues			\$ 808,847
3	2002 Annual Gross Revenues			\$ 934,278
4	Plus Staff's Recommended Increase			\$ 77,081
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 2,654,843
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 884,948
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 1,769,895
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Vaule of Leased Vehicles (See Note A Below)			\$ -
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 1,769,895
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 442,474
15	Composite Property Tax Rate (See Note B Below)			0.129628
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 57,070	\$ 287	\$ 57,357

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 21

OPERATING INCOME ADJUSTMENT NO. 12 and 13 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ 44,415	\$ 5,360	\$ 49,775
2	State Income Taxes	7,054	3,911	10,965
3	Total Income Taxes	<u>\$ 51,469</u>	<u>\$ 9,270</u>	<u>\$ 60,739</u>

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge		
	Present Rates	---Proposed Rates---	
		Company	Staff
5/8" x 3/4" Meter	\$ 15.54	\$ 20.05	\$ 18.75
1" Meter	\$ 38.84	\$ 50.13	\$ 38.63
2" Meter	\$ 103.58	\$ 146.97	\$ 181.73
3" Meter	\$ 155.37	\$ 250.63	\$ 220.51
4" Meter	\$ 207.16	\$ 384.36	\$ 286.45
6" Meter	\$ 492.01	\$ 818.64	\$ 335.79
8" Meter	\$ 621.48	\$ 1,203.00	\$ 625.36
10" Meter	\$ 673.27	\$ 1,687.41	\$ 837.19

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0
1" Meter	1,000	0	0
2" Meter	1,000	0	0
3" Meter	1,000	0	0
4" Meter	1,000	0	0
6" Meter	1,000	0	0
8" Meter	1,000	0	0
10" Meter	1,000	0	0
Fire Hydrants Used For Construction Water	1,000	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 5.7490	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 5.7490	\$ 6.2980	\$ 4.4640
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 5.7490	\$ 6.2980	\$ 5.5800
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 5.7490	\$ 6.2980	\$ 6.6960

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)
1" Meter	(a)	(a)
2" Meter	(b)	(b)
3" Meter	(b)	(b)
4" Meter	(b)	(b)
6" Meter	(b)	(b)

- (a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.
- (b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
CONTINUED**

Service Charges:

	Present Rates	---Proposed Rates---	
		Company	Staff
Establishment	\$ 16.00	\$ 16.00	\$ 16.00
Guarantee Deposit	(c)	(c)	(c)
Reconnection for Delinquency (per disconnection)	\$ 16.00	\$ 16.00	\$ 16.00
Re-establishment	(d)	(d)	(d)
Service Call Out (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00
Returned Check Charge	\$ 10.00	\$ 25.00	\$ 25.00
Meter Re-read (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00
Meter Test	\$ 50.00	\$ 50.00	\$ 50.00
Late Charge	N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **SAN MANUEL SYSTEM**

2 **Summary of Proposed Revenue – San Manuel**

3 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
4 **and Staff's recommended revenue requirement?**

5 A. Yes, please refer to schedule REL-1. The Company proposes total annual operating
6 revenue of \$921,119 which represents an increase of \$446,869, or 94.23 percent, over the
7 Company-filed adjusted test year revenue of \$474,250.

8
9 Staff's recommended total annual operating revenue for the San Manuel system is
10 \$821,535. Staff's recommendation represents an increase of \$347,419, or 73.28 percent,
11 over its adjusted test year revenue of \$474,116.

12
13 **Rate Base – San Manuel**

14 Original Cost Rate Base

15
16 **Q. Did Staff prepare an Original Cost Rate Base schedule?**

17 A. Yes, shown on Schedule REL-3. Staff recommends a rate base of \$641,450. Staff's
18 recommended rate base is a decrease of \$152,543 from the Company's proposal of
19 \$793,993. Staff's rate base adjustments are described below.

20 Rate Base Adjustment No. 1 – Plant In Service

21
22 **Q. What adjustment to actual test year plant did the Company propose for the San**
23 **Manuel system?**

24 A. The Company recommends increasing actual Plant In Service by \$99,591. This amount
25 represents all actual and projected plant additions placed in service or expected to be
26 placed in service by December 31, 2002, twelve months past the 2001 test year.

1 Rate Base Adjustment No. 1 – Reclassification of Expense to Plant

2 **Q. Did Staff make any adjustments to the Company's test year Plant In Service?**

3 A. Yes, Staff reclassified \$2,058 from Purchased Pumping Power Expense into the
4 Electrical Pumping Equipment plant account. This adjustment consisted of a
5 reclassification of \$1,024 from Purchased Pumping Power; a reclassification of \$916
6 from Purchased Pumping Power from the Oracle system and a reclassification of \$123 in
7 Purchased Pumping Power expense from the Winkelman system to Electric Pumping
8 Equipment. Further, Staff reduced the actual test year plant by \$5 due to rounding.
9 These adjustments increased test year plant from \$1,455,009 to \$1,457,067 as shown on
10 Schedule REL-5.

11
12 Rate Base Adjustment No. 2 – Post-Test Year Plant In Service

13 **Q. Does Staff's recommended rate base include plant placed into service after the test**
14 **year?**

15 A. Yes. Staff included \$68,291 of plant in rate base that the Company placed into service
16 after the end of the test year but no later than December 31, 2002, twelve months after the
17 test year.

18
19 **Q. Why did Staff exclude \$31,300 of the Company's post-test year plant additions from**
20 **its recommended rate base?**

21 A. Staff excluded \$31,300 from the Company's post-test year plant additions in order to
22 exclude all plant that was not in service by December 31, 2002 or was not revenue
23 neutral.

24
25
26
27
28

1 Rate Base Adjustment No. 3 – Post-Test Year Plant Retirements

2 **Q. Did the Company make any adjustment for plant retired during the 2002 post-test**
3 **year period?**

4 A. No, since the Company had requested the Plant In Service additions of post-test year
5 plant, it is proper that Staff remove the corresponding plant retired due to those additions.
6 Staff therefore removed \$10,517 from Plant In Service, as shown on Schedule REL-5,
7 and from Accumulated Depreciation.

8
9 **Q. Please summarize Staff's recommendations regarding Plant In Service.**

10 A. Staff recommends \$1,514,841 for Plant In Service, a \$39,759 decrease from the
11 Company's proposed \$1,554,600. The calculation of Staff's recommendation is shown
12 on Schedule REL-5.

13
14 Rate Base Adjustment Nos. 4, 5, 6 and 7 – Accumulated Depreciation

15 **Q. What pro forma adjustments did the Company propose for Accumulated**
16 **Depreciation?**

17 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
18 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 6 of 11 of the
19 filing, increased Accumulated Depreciation by \$4,209 to reflect twelve months of
20 depreciation expense on the Company's proposed post-test year plant additions that were
21 expected to be completed by December 31, 2002. The Company's pro forma adjustment
22 no. 3, as shown on Schedule B-2, page 6 of 11 of the filing, increased Accumulated
23 Depreciation by \$7,568 and represents six months of depreciation expenses on test year
24 plant additions.

25
26
27
28

1 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
2 **proper matching with the Company's pro forma adjustment to include all plant to**
3 **be in service by December 31, 2002?**

4 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
5 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
6 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
7 expense but only for the post-test year plant. Using the mid-year convention, this
8 adjustment should represent six months depreciation expense only. Pro forma adjustment
9 no. 3 increased accumulated depreciation by only six months for plant placed in service
10 during the test year and remaining in service through the December 31, 2002, cut-off
11 date.

12
13 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
14 **Service and Accumulated Depreciation cut-off dates?**

15 A. The Company's proposal violates the matching principle. It overstates rate base and
16 allows the Company to earn on investment it has already recovered from ratepayers via
17 depreciation expense.

18
19 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

20 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
21 used the same cut-off date, December 31, 2002, for calculating Accumulated
22 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
23 accumulation of depreciation expense on all plant included in rate base using the half-
24 year convention adopted by the Company. The depreciation accruals are calculated on
25 plant balances that are known and measurable, have been transferred out of the
26 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
27 have been sufficiently examined.

1 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

2 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff decreased
3 Accumulated Depreciation by \$27,119, from \$736,074 to \$708,955. This adjustment is
4 made up of several components including a \$36,235 (adjustment no. 4) reduction as a
5 result of Staff's analysis. Staff recommends increasing the pro forma adjustment for
6 Accumulated Depreciation on test year plant by \$25,177 (adjustment no. 6) from \$7,568
7 to \$33,745, and it recommends decreasing the pro forma adjustment for Accumulated
8 Depreciation on post-test year plant additions by \$3,175 (adjustment no. 5) from \$4,209
9 to \$1,034. Additionally, Staff removed \$13,886 (adjustment no. 7) in retired post-test
10 year plant from Accumulated Depreciation in accordance with NARUC - USOA
11 accounting procedures.

12
13 Rate Base Adjustment No. 8 – Cash Working Capital Allowance

14 **Q. What did the Company propose for its working capital allowance?**

15 A. The Company proposed \$28,714 for working capital. Schedule B-5, page 2 of 2, of the
16 filing shows that the proposed amount is composed of cash working capital, materials and
17 supplies, required bank balances, and prepayments.

18
19 **Q. Does Staff agree with the Company calculation?**

20 A. No. Staff does not agree with the Company's proposed \$7,402 cash working capital
21 component of the working capital allowance.

22
23 **Q. Why does Staff disagree with the Company's proposed cash working capital
24 component of working capital?**

25 A. The Company's proposed cash working capital is based on a lead-lag analysis that
26 contains several conceptual and methodological errors.

1 **Q. What is the result of Staff's lead-lag analysis?**

2 A. Staff's lead-lag analysis indicates a negative \$61,992 cash working capital component or
3 a reduction of \$69,394 compared to the Company's \$7,402 figure. In other words,
4 ratepayers are providing working capital to the system.

5
6 **Q. How else did Staff adjust Working Capital?**

7 A. Staff increased the Materials and Supply Inventory by \$1,980 from \$3,987 to \$5,967 as a
8 result of materials that were transferred from expense accounts.

9
10 **Q. What Working Capital allowance is Staff recommending?**

11 A. Staff recommends a working capital allowance of a negative \$38,700 as shown on
12 Schedule REL-7.

13
14 Rate Base Adjustment No. 9 and 10 – Allocated Post-Test Year Additions

15 **Q. Did Staff adjust the Phoenix Office and Meter Shop post-test year additions?**

16 A. Using the Company's allocation factors, Staff decreased the Phoenix Office allocation by
17 \$72,489, which included \$3,369 of post-test year retired plant and the Meter Shop
18 allocation of \$1,465. Staff's total adjustment reduced the Phoenix Office and Meter shop
19 allocations by \$72,489, from \$80,704 to \$8,215 as shown on Schedule REL-8.

20
21 **Operating Income – San Manuel**

22 Operating Income Summary

23 **Q. What is Staff's recommended test year revenue, expenses, and operating income?**

24 A. Staff's analysis resulted in test year revenue of \$474,116, expenses of \$632,055, and an
25 operating loss of \$157,939 as shown on Schedules REL-9. Staff's adjustments are
26 discussed below.

27
28

1 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

2 **Q. How did the Company annualize revenue?**

3 A. The Company multiplied a negative 5 customers (that represents the average decline in
4 customers on the San Manuel system during the test year) by \$271 (which is the
5 Company's determination of annual revenue per customer) which resulted in a revenue
6 decline of \$1,355.

7
8 **Q. Did Staff make an adjustment to annual revenue?**

9 A. Yes. Staff made a \$134 adjustment to increase the Company's proposed annualization
10 from a negative \$1,355 to negative \$1,489. Staff's calculation of the adjustment is shown
11 on Schedule REL-11. Staff's recalculation recognizes revenue from all meter sizes and
12 calculated the average annual revenue per customer to be \$298 rather than the
13 Company's \$271.

14
15 Operating Income Adjustment No. 3– BHP Purchased Water

16 **Q. Did Staff make any adjustments to Purchased Water Expense?**

17 A. Yes. During Staff's analysis, it found that \$7,875 of purchased water from BHP Copper,
18 Inc., inadvertently was recorded to Apache Junction's CAP water expense. Staff
19 corrected this error on the Apache Junction books and increased San Manuel's Purchased
20 Water Expense by \$7,875, from \$258,703 to \$266,578, as shown on Schedule REL-12.

21
22 Operating Income Adjustment No. 3– Purchased Pumping Power

23 **Q. Did Staff adjust Purchased Pumping Power?**

24 A. Yes. Staff accepted the Company's Purchased Pumping Power with the exception of a
25 repaired pump inadvertently allocated and posted to San Manuel expense. The \$1,024
26 was reclassified and transferred to Plant In Service – Electrical Pumping Equipment, as
27 shown on Schedule REL-13.

1 Operating Income Adjustment No. 4 – Water Treatment Expense

2 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages**
3 **Expense?**

4 A. Yes. Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
5 and found them not to be "known and measurable." Because of the uncertainties of the
6 Company estimates, Staff used actual 2002 expenses. The amount applicable to San
7 Manuel was decreased from the Company's pro forma by \$8,240, from \$30,393 to
8 \$22,153 as shown on Schedule REL-14. Please refer to Mr. Hammon's testimony.

9
10 Operating Income Adjustment No. 5– Water Testing Expense

11 **Q. What is San Manuel's proposed Water Testing Expense?**

12 A. The San Manuel proposed water testing expense is \$2,374, as shown on Schedule
13 REL-15. Water Testing Expense is a component of the Company's proposed \$30,393
14 Water Treatment Expense.

15
16 **Q. Does Staff agree with the Company's Water Testing Expense?**

17 A. No. Staff recommends this expense be based on Staff's water testing expense analysis of
18 \$1,345, which decreases annual operating expenses by \$1,029. The adjustment is
19 discussed in greater detail in the testimony of Staff witness Lyndon Hammon.
20

21
22 Operating Income Adjustment No. 6 and 8 – Expense Annualization Adjustment

23 **Q. Has Staff recalculated the amount of annualized expenses?**

24 A. Yes. Staff calculations are shown as adjustments nos. 6 and 8 and are shown on
25 Schedules REL-17. Staff recommends an expense annualization adjustment of a negative
26 \$1,287, this adjustment increased expenses by \$2 compared to the Company's adjustment
27 of a negative \$1,287, as shown on Schedule REL-16.
28

1 Operating Income Adjustment No. 7 – Transmission and Distribution Expense

2 **Q. What adjustment did Staff make to Transmission and Distribution Expense?**

3 A. Staff adjusted Transmission and Distribution Expense downward by \$1,980. The
4 Company inadvertently posted \$1,980 to Transmission and Distribution Expense that
5 should have been posted to Materials and Supplies Inventory, as is shown on Schedule
6 REL-17.

7
8 Operating Income Adjustment No. 10 – Charitable Contributions Expense

9 **Q. Did the Company remove charitable contributions from its test year expenses?**

10 A. No, even though charitable contributions bear no relationship to the provision of water
11 service. Therefore, Staff removed \$709 from the Administrative and General account as
12 shown on REL-18.

13
14 Operating Income Adjustment No. 10 - Rate Case Expense

15 **Q. What Rate Case Expense does Arizona Water propose for the San Manuel system?**

16 A. The Company proposed total Rate Case Expense of \$12,414. Rate Case Expense is a
17 component of the Company's proposed \$107,529 Administrative and General Expense,
18 shown on Schedule REL-19.

19
20 **Q. Does Staff agree that the Company's Rate Case Expense for the San Manuel system
21 are reasonable?**

22 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
23 reasonable.

24
25 **Q. What amount does Staff recommend allocating to the San Manuel system?**

26 A. Staff recommends allocating \$8,720 to the San Manuel system. Staff's recommended
27 allocation used the Company-proposed allocation factor of 0.04820 percent ($\$180,913 \times$
28 $0.04820 = \$8,720$). Staff recommends annual Rate Case Expense of \$1,744 ($\$8,720$

1 amortized over five years), a decrease of \$2,394 the Company's request of \$4,138, as
2 shown on Schedule REL-19.

3
4 Operating Income Adjustment Nos. 11 - Depreciation and Amortization Expense

5 **Q. What did the Company propose for depreciation expense?**

6 A. The Company proposed \$52,727 for depreciation expense. The Company's proposal
7 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as
8 shown on Schedule C-2, page 23 of 36 of the filing, increased depreciation expense by
9 \$7,568 to provide an additional six months of depreciation expense on test year plant
10 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
11 page 24 of 36 the filing, increased depreciation expense by \$4,209 to provide twelve
12 months of depreciation expense on the Company's proposed post-test year plant additions
13 that were projected to be completed by December 31, 2002.

14
15 **Q. Does Staff agree with the Company's proposed depreciation expense?**

16 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
17 the authorized balance for each plant account. Previously, Staff recommended
18 disallowing a portion of the Company's proposed post-test year plant additions to remove
19 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not
20 revenue neutral. The difference between Staff's plant recommendation and the
21 Company's causes a corresponding difference in depreciation expense. In addition, the
22 Company calculated its depreciation expense using incorrect component depreciation
23 rates that it later corrected. Staff reviewed and accepted the new rates and Staff used the
24 new rates in calculating rates.

25
26
27
28

1 **Q. Why is Staff's recommended depreciation expense different than the Company's**
2 **proposed amount?**

3 A. Staff's recommended depreciation expense is different for two reasons. First, the
4 Company's calculated depreciation expense used an incorrect component depreciation
5 schedule which it later changed during the course of Staff's analysis. Staff recommended
6 adopting the individual component account rates identified in the Company's late-filed
7 depreciation study which was reviewed and accepted by Staff and utilized to calculate the
8 Staff's depreciation expense. Second, Staff calculated depreciation expense on its
9 recommended plant, which reflects adjustments previously discussed.

10
11 **Q. Please summarize Staff's recommendations for depreciation expense.**

12 A. Staff recommends \$40,261 for depreciation expense, a \$12,466 decrease from the
13 Company's proposed \$52,727. Staff's calculation includes the amortization of CIAC at
14 the weighted proposed depreciation rates. Staff's recommendation is shown on Schedule
15 REL-20.

16
17 Operating Income Adjustment No. 12 – Property Taxes

18 **Q. What is Arizona Water proposing for property tax expense?**

19 A. The Company is proposing property tax expense of \$53,253.

20
21 **Q. Does Staff agree with the Company's amount?**

22 A. No. The Department of Revenue Property Valuation and Equalization Section developed
23 a new method to calculate property taxes. Staff adopted this new method of calculating
24 property taxes.

25
26 **Q. What amount of property tax expense does Staff recommend?**

27 A. Staff recommends property tax expense of \$59,612, an increase of \$6,359 from the
28 Company's proposal, as shown on Schedule REL-21.

1 Operating Income Adjustment Nos. 13 and 14 – Income Taxes

2 **Q. What income tax expense does Arizona Water propose for the San Manuel system?**

3 A. The Company proposed a negative \$78,713 in federal income taxes and a negative
4 \$16,642 in state income taxes for a negative \$95,355 combined income tax expense.

5
6 **Q. Does Staff agree with the Company's amount?**

7 A. No. Staff does not agree with the Company's calculation because income tax expense is
8 a function of taxable income, and Staff's recommended taxable income is different from
9 the Company's.

10
11 **Q. What amount is Staff recommending for test year income tax expense?**

12 A. As shown on Schedule REL-22, Staff recommends a negative federal income tax of
13 \$89,987 and a negative state income tax of \$19,823 for a combined negative income tax
14 of \$109,811.

15
16 **Q. What amount of income tax expense has Staff calculated for its recommended
17 revenue?**

18 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$19,681 and
19 state income tax of \$4,336 for a combined income tax of \$24,017.

20
21 **Rate Design – San Manuel**

22 Rate Design

23 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and
24 Staff's recommended rates and charges?**

25 A. Yes. Schedule REL-23 provides a summary of the present rates, Company-proposed
26 rates, and Staff's recommended rates.

27
28

1 **Q. Please summarize the present rate design.**

2 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
3 meter size and include 1,000 gallons and one commodity rate applies to all use.

4
5 **Q. Please summarize the Company's proposed rate design.**

6 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
7 meter size and include no gallons and one commodity rate applies to all use.

8
9 **Q. Please summarize Staff's rate design.**

10 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
11 meter size and include no gallons. The commodity rates are based on an inverted tier rate
12 design that includes three tiers with the first break-point at 3,000 gallons and the second
13 break-point at 50,000 gallons. The three-tier rate structure applies to all metered
14 customers.

15

16

17

18

19

20

21

22

23

24

25

26

27

28

Arizona Water Company - San Manuel
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 793,993	\$ 641,450
2	Adjusted Operating Income (Loss)	\$ (186,409)	\$ (157,939)
3	Current Rate of Return (L2 / L1)	-23.48%	-24.62%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 87,339	\$ 54,947
6	Operating Income Deficiency (L5 - L2)	\$ 273,748	\$ 212,886
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 446,869	\$ 347,419
9	Adjusted Test Year Revenue	\$ 474,250	\$ 474,116
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 921,119	\$ 821,535
11	Require Increase in Revenue (%) (L8/L9)	94.23%	73.28%

GROSS REVENUE CONVERSION FACTOR

Line
No.

Calculation of Gross Revenue Conversion Factor:

1 Recommended Revenue Increase:		
2 Billings		1.000000
3 Combined Federal and State Income Tax Rate	38.59888%	
4 Uncollectible Rate After Income Taxes	0.12477%	
5 Total Tax Rate		38.72365%
6 Gross Revenue Conversion Factor		<u>1.631951</u>

Calculation of Effective Income Tax Rate:

7 Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8 Arizona State Income Tax Rate	6.96800%
9 Federal Taxable Income (L5 - L6)	<u>93.03200%</u>
10 Applicable Federal Income Tax Rate (Line 32)	34.00000%
11 Effective Federal Income Tax Rate (L7 x L8)	<u>31.63088%</u>
12 Combined Federal and State Income Tax Rate (L6 +L9)	<u>38.59888%</u>

Calculation of Uncollectible Rate After Income Taxes:

13 Uncollectible Rate		0.20320%
14 Combined Federal and State Income Tax Rate	38.59888%	
15 1 minus Combined Federal and State Income Tax Rate		61.40112%
16 Uncollectible Rate After Income Taxes		<u>0.12477%</u>

Revenue Reconciliation:

17 Recommended Increase in Revenue (from REL-1, L8)	\$ 347,419	
18 Uncollectible Rate	0.203200%	
19 Required Increase in Revenue to Provide for Uncollectibles	\$ 706	
20 Recommended Increase in Revenue (from REL-1,L8)	\$ 347,419	
21 Required Increase in Revenue to Provide for Uncollectibles	706	
22 Incremental Taxable Income	\$ 346,713	
23 Combined Federal and State Income Tax Rate	38.59888%	
24 Required Increase in Revenue to Provide for Income Taxes		133,827
25 Required Operating Income	\$ 54,947	
26 Adjusted Test Year Operating Income (Loss)	(157,939)	
27 Required Increase in Operating Income		212,886
28 Total Required Increase In Revenue	\$ 347,419	

Calculation of Income Tax:

	Test Year	STAFF Recommended
29 Revenue	\$ 474,116	\$ 821,535
30 Less: Operating Expenses Excluding Income Taxes	\$ 741,866	\$ 742,572
31 Less: Synchronized Interest	\$ 16,742	\$ 16,742
32 Arizona Taxable Income	\$ (284,492)	\$ 62,222
33 Arizona State Income Tax Rate	6.968%	6.968%
34 Arizona Income Tax	\$ (19,823)	\$ 4,336
35 Federal Taxable Income	\$ (264,668)	\$ 57,886
36 Federal Income Tax @ 34%	\$ (89,987)	\$ 19,681
37 Combined Federal and State Income Tax	\$ (109,811)	\$ 24,017
		\$ 133,827

Calculation of Interest Synchronization:

38 Rate Base	\$ 641,450
39 Weighted Average Cost of Debt	2.610%
40 Synchronized Interest	\$ 16,742

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 1,554,600	\$ 1,514,841
2	Less: Accumulated Depreciation	(736,074)	(708,955)
3	Net Plant in Service	<u>\$ 818,526</u>	<u>\$ 805,886</u>
<u>LESS:</u>			
4	Advances in Aid of Construction (AIAC)	(23,194)	(23,194)
5	Contributions in Aid of Construction (CIAC)	\$ (20,375)	\$ (20,375)
6	Less: Accumulated Amortization	2,990	2,990
7	Net CIAC	<u>(17,385)</u>	<u>(17,385)</u>
8	Total Advances and Contributions	(40,579)	(40,579)
9	Customer Deposits	-	-
10	Meter Advances	-	-
11	Deferred Income Tax Credits	(93,372)	(93,372)
<u>ADD:</u>			
12	Working Capital	28,714	(38,700)
13	Phoenix Office Allocation	79,057	8,033
14	Meter Shop Allocation	1,647	182
15		-	-
16		-	-
17		-	-
18	Total Rate Base	<u>\$ 793,993</u>	<u>\$ 641,450</u>

Arizona Water Company - San Manuel
 Docket No. W-01465A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(J) ADJ.No.9	(K) ADJ.No.10	(L) STAFF ADJUSTED
PLANT IN SERVICE:													
1	Organization												
2	Franchises												154,157
3	Other Intangibles	154,157											
4	Water Rights												
5	Other Source of Supply Land												
6	Wells												457
7	Pumping Plant Land												6,711
8	Pumping Plant Structures & Improvements		2,058										
9	Electric Pumping Equipment	4,653											
10	Gas Engine Equipment												411
11	Water Treatment Land												3,303
12	Water Treatment Structures & Improvements												
13	Water Treatment Equipment	3,303											
14	Transmission and Distribution Land												98,349
15	Storage Tanks	98,349											
16	Transmission and Distribution Mains	520,125											520,125
17	Fire Sprinkler Taps	100											100
18	Services	235,142											235,142
19	Meters	120,289											120,289
20	Hydrants	53,666											53,666
21	General Plant Land												12,496
22	General Plant Structures	12,496											35,214
23	Leasehold Improvements	35,214											86,811
24	Office Furniture and Improvements	86,811											1,128
25	Warehouse Equipment	1,128											61,006
26	Tools, Shop and Garage Equipment	61,006											2,618
27	Laboratory Equipment	2,618											2,695
28	Power Operated Equipment	2,695											55,305
29	Communication Equipment	55,305											7,084
30	Miscellaneous Equipment	7,084											1,457,067
31	Total Plant in Service - Actual	1,455,009	2,058	(31,300)	(10,517)								88,291
32	Post Test Year Retired Plant	99,591											(10,517)
33	Total Plant in Service - Adjusted	\$ 1,554,600	\$ 2,058	\$ (31,300)	\$ (10,517)	\$	\$	\$	\$	\$	\$	\$	\$ 1,514,841
34	Less: Accumulated Depreciation - Actual	\$ (724,297)											(688,062)
35	Less: Accumulated Depreciation - Post TY	(4,209)					3,175						(1,034)
36	Less: Accumulated Depreciation - 12 Mos TY	(7,568)						(26,177)					(33,745)
37	Less: Accumulated Depreciation - Retired Plant								13,886				13,886
38	Total Accumulated Depreciation - Adjusted	\$ (736,074)	\$	\$	\$	\$ 36,235	\$ 3,175	\$ (26,177)	\$ 13,886	\$	\$	\$	\$ (706,955)
39	Plus: Construction Work in Progress	\$ 818,526	\$ 2,058	\$ (31,300)	\$ (10,517)	\$ 36,235	\$ 3,175	\$ (26,177)	\$ 13,886	\$	\$	\$	\$ 805,866
40	Net Plant in Service	\$ (23,194)	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$ (23,194)
41	Advances in Aid of Construction (AIAC)	(20,375)											(20,375)
42	Contributions in Aid of Construction (CIAC)	2,990											2,990
43	Less: Accumulated Amortization	(17,385)											(17,385)
44	Net CIAC (L25 - L26)	(40,579)											(40,579)
45	Total Advances and Contributions	(93,372)											(93,372)
46	Customer Deposits												
47	Meter Advances												
48	Deferred Income Tax Credits												
49	Working Capital Allowance	28,714								(67,414)			(38,700)
50	Phoenix Office Allocation	79,057									(71,024)		8,033
51	Meter Shop Allocation	1,647											182
52	Projected Capital Expenditures												
53	Deferred Debts												
54	Other Additions												
55	Total Rate Base	\$ 793,993	\$ 2,058	\$ (31,300)	\$ (10,517)	\$ 36,235	\$ 3,175	\$ (26,177)	\$ 13,886	\$ (67,414)	\$ (71,024)	\$ (1,465)	\$ 641,450

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1, 2 and 3- PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 1,455,009	\$ 2,058	\$ 1,457,067
	Post-Test Year Plant	\$ 99,591	\$ (31,300)	\$ 68,291
2	Post Test Year Retired Plant	\$ -	\$ (10,517)	\$ (10,517)
3	Adjusted Test Year Plant	\$ 1,554,600	\$ (39,759)	\$ 1,514,841

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS. 4, 5, 6 and 7 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (724,297)	\$ 36,235	\$ (688,062)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (4,209)	\$ 3,175	\$ (1,034)
3	Accumulated Depreciation, Test Year Plant	\$ (7,568)	\$ (26,177)	\$ (33,745)
4	Accumulated Depreciation, Retired Plant	\$ -	\$ 13,886	\$ 13,886
		<u>\$ (736,074)</u>	<u>\$ 27,119</u>	<u>\$ (708,955)</u>

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 7

OPERATING INCOME ADJUSTMENT NO. 8 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Cash Working Capital	\$ 7,402	\$ (69,394)	\$ (61,992)
2	Materials and Supplies Inventory	3,987	1,980	5,967
3	Required Bank Balances	11,015	-	11,015
4	Prepayments and special Deposit	6,310	-	6,310
5	Total	<u>\$ 28,714</u>	<u>\$ (67,414)</u>	<u>\$ (38,700)</u>

Arizona Water Company - San Manuel
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-8

RATE BASE ADJUSTMENT NOS. 9 and 10 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 79,057	\$ (67,655)	\$ 11,402
2	Meter Shop Allocations	\$ 1,647	\$ (1,465)	\$ 182
3	Phoenix Office Allocation - Retirements	\$ -	\$ (3,369)	\$ (3,369)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 80,704	\$ (72,489)	\$ 8,215

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Total Operating Revenues	\$ 474,250	\$ (134)	\$ 474,116	\$ 347,419	\$ 821,535
EXPENSES:						
Source of Supply Expenses:						
2	Purchased Water	\$ 258,703	\$ 7,875	\$ 266,578	\$ -	\$ 266,578
3	Other	6,246	-	6,246	-	6,246
Pumping Expenses:						
4	Purchased Power	31,358	(1,024)	30,334	-	30,334
5	Purchased Gas	-	-	-	-	-
6	Other	32,609	-	32,609	-	32,609
7	Water Treatment Expenses	30,393	(9,269)	21,124	-	21,124
8	Transmission and Distribution Expenses	83,146	(1,981)	81,165	-	81,165
9	Customer Account Expenses	86,740	(1)	86,739	706	87,445
10	Sales Expenses	472	-	472	-	472
11	Administrative and General Expenses	107,529	(3,103)	104,426	-	104,426
12	Total Operation and Maintenance	\$ 637,196	(7,503)	629,693	706	630,399
13	Depreciation and Amortization	52,727	(13,004)	39,723	-	39,723
14	Ad Valorem (Property)	53,253	6,359	59,612	-	59,612
Taxes:						
15	Federal & State Income Tax	(95,355)	(14,456)	(109,811)	133,827	24,017
16	Other	12,838	-	12,838	-	12,838
17	Total Operating Expenses	\$ 660,659	\$ (28,604)	\$ 632,055	\$ 134,533	\$ 766,589
18	Operating Income (Loss)	\$ (186,409)	\$ 28,470	\$ (157,939)	\$ 212,886	\$ 54,947

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.#1	(C) ADJ.#2	(D) ADJ.#3	(E) ADJ.#4	(F) ADJ.#5	(G) ADJ.#6	(H) ADJ.#7	(I) ADJ.#8	(J) ADJ.#9	(K) ADJ.#10	(L) ADJ.#11	(M) ADJ.#12	(N) ADJ.#13	(O) ADJ.#14	(P) STAFF ADJUSTED	
1	REVENUES:																	
	Total Operating Revenues	\$ 474,250	\$ (134)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 474,116
	EXPENSES:																	
	Source of Supply Expenses:																	
2	Purchased Water	\$ 258,703	-	\$ 7,875	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 266,578
3	Other	6,246	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6,246
4	Pumping Expenses:																	
5	Purchased Power	31,358	-	-	(1,024)	-	-	-	-	-	-	-	-	-	-	-	-	30,334
6	Other	32,609	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	32,609
7	Water Treatment Expenses	30,393	-	-	-	(8,240)	-	-	-	-	-	-	-	-	-	-	-	21,124
8	Transmission and Distribution Expenses	83,146	-	-	-	-	(1,029)	-	(1,980)	-	-	-	-	-	-	-	-	81,165
9	Customer Account Expenses	86,740	-	-	-	-	-	-	-	(1)	-	-	-	-	-	-	-	86,739
10	Sales Expenses	472	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	472
11	Administrative and General Expenses	107,529	-	-	-	-	-	-	-	-	(709)	(2,394)	-	-	-	-	-	104,426
12	Total Operation and Maintenance	637,196	-	7,875	(1,024)	(8,240)	(1,029)	(1)	(1,980)	(1)	(709)	(2,394)	(13,004)	-	-	-	-	629,693
13	Depreciation and Amortization	52,727	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	52,727
14	Ad Valorem (Property)	53,253	-	-	-	-	-	-	-	-	-	-	-	6,359	-	-	-	59,612
15	Taxes:																	
16	Federal & State Income Tax	(95,355)	-	-	-	-	-	-	-	-	-	-	-	-	(11,274)	(3,181)	-	(109,811)
17	Other	12,838	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12,838
	Total Operating Expenses	\$ 660,659	\$ -	\$ 7,875	\$ (1,024)	\$ (8,240)	\$ (1,029)	\$ (1)	\$ (1,980)	\$ (1)	\$ (709)	\$ (2,394)	\$ (13,004)	\$ 6,359	\$ (11,274)	\$ (3,181)	\$ -	\$ 632,035
18	Operating Income (Loss)	\$ (186,409)	\$ (134)	\$ (7,875)	\$ 1,024	\$ 8,240	\$ 1,029	\$ 1	\$ 1,980	\$ 1	\$ 709	\$ 2,394	\$ 13,004	\$ (6,359)	\$ 11,274	\$ 3,181	\$ -	\$ (157,939)

Arizona Water Company - Sam Manuel
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL- 11

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	\$ (5)	\$	(5)
2	Avg Annual Bill Per Customer for TY	271		298
1	Avg Annual Revenue for Additional Customers	\$ (1,355)	\$ (134)	\$ (1,489)

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-12

OPERATING INCOME ADJUSTMENT NO. 2 - BHP PURCHASED WATER ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Purchased Water - BHP Copper Mine - Actual	\$ 135,178	\$ -	\$ 135,178
2	BHP Contract Increase - Pro-forma Adjustment	\$ 123,525	\$ -	\$ 123,525
4	Purchased Water - Unreconciled Amount	\$ -	\$ 7,875	\$ 7,875
5	Total Purchased Water	\$ 258,703	\$ 7,875	\$ 266,578

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-13

OPERATING INCOME ADJUSTMENT NO. 3 - PURCHASED PUMPING POWER EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Purchased Pumping Power	\$ 31,358	\$ (1,024)	\$ 30,334

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 14

OPERATING INCOME ADJUSTMENT NO. 4 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Water Treatment	\$ 30,393	\$ (8,240)	\$ 22,153

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-15

OPERATING INCOME ADJUSTMENT NO. 5 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 2,374	\$ (1,029)	\$ 1,345

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 16

OPERATING INCOME ADJUSTMENT NOS. 6 and 8 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Source of Supply	\$ (454)	\$ -	\$ (454)
2	Purchased Pumping Power	(209)	-	(209)
3	Water Treatment Expense	(60)	-	(60)
4	Transmission & Distribution Expense	(285)	(1)	(286)
5	Customer Accounting	(277)	(1)	(278)
6	Total	<u>\$ (1,285)</u>	<u>\$ (2)</u>	<u>\$ (1,287)</u>

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-17

OPERATING INCOME ADJUSTMENT NO. 7 - TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 83,146	\$ (1,980)	\$ 81,166

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 9 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 709	\$ (709)	\$ -

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 19

OPERATING INCOME ADJUSTMENT NO. 10 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.04820		0.04820
3	Annual Rate Case Expense for Eastern Group	\$ 12,414	\$ (3,694)	\$ 8,720
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 4,138	\$ (2,394)	\$ 1,744

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-20

OPERATING INCOME ADJUSTMENT NO. 11 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 52,727	\$ (12,466)	\$ 40,261
2	CIAC Amortization	-	(538)	(538)
		<u>\$ 52,727</u>	<u>\$ (13,004)</u>	<u>\$ 39,723</u>

OPERATING INCOME ADJUSTMENT NO. 12 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 540,035
2	2001 Annual Gross Revenues			\$ 524,678
3	2002 Annual Gross Revenues			\$ 676,557
4	Plus Staff's Recommended Increase			\$ 347,419
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 2,088,689
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 696,230
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 1,392,459
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Value of Leased Vehicles (See Note A Below)			\$ 43,939
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 1,348,520
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 337,130
15	Composite Property Tax Rate (See Note B Below)			0.176821
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 53,253	\$ 6,359	\$ 59,612

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 22

OPERATING INCOME ADJUSTMENT NOS. 13 and 14 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ (78,713)	(11,274)	\$ (89,987)
2	State Income Taxes	(16,642)	(3,181)	(19,823)
3	Total Income Taxes	<u>\$ (95,355)</u>	<u>\$ (14,456)</u>	<u>\$ (109,811)</u>

RATE DESIGN

Monthly Usage Charge:

Minimum Monthly Usage Charge			
Present Rates	---Proposed Rates---		
	Company	Staff	
\$ 13.98	\$ 27.47	\$ 19.26	
\$ 31.07	\$ 64.83	\$ 41.60	
\$ 93.22	\$ 201.36	\$ 183.76	
\$ 155.37	\$ 358.76	\$ 212.35	
\$ 269.31	\$ 607.91	\$ 443.74	
\$ 362.53	\$ 1,043.04	\$ 526.78	
\$ 362.53	\$ 1,455.09	\$ 854.56	
\$ 673.27	\$ 2,378.35	\$ 1,228.50	

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0
1" Meter	1,000	0	0
2" Meter	1,000	0	0
3" Meter	1,000	0	0
4" Meter	1,000	0	0
6" Meter	1,000	0	0
8" Meter	1,000	0	0
10" Meter	1,000	0	0
Fire Hydrants Used For Construction Water	1,000	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 0.9220	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 0.9220	\$ 1.6220	\$ 1.3600
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 0.9220	\$ 1.6220	\$ 1.7000
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 0.9220	\$ 1.6220	\$ 2.0400

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)
1" Meter	(a)	(a)
2" Meter	(b)	(b)
3" Meter	(b)	(b)
4" Meter	(b)	(b)
6" Meter	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
 CONTINUED**

Service Charges:

Establishment
 Guarantee Deposit
 Reconnection for Delinquency (per disconnection)
 Re-establishment
 Service Call Out (After Regular Working Hours Only)
 Returned Check Charge
 Meter Re-read (After Regular Working Hours Only)
 Meter Test
 Late Charge

Present Rates	---Proposed Rates---	
	Company	Staff
\$ 16.00 (c)	\$ 16.00 (c)	\$ 16.00 (c)
\$ 16.00 (d)	\$ 16.00 (d)	\$ 16.00 (d)
\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00
\$ 20.00	\$ 20.00	\$ 20.00
N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **SIERRA VISTA**

2 **Summary of Proposed Revenue – Sierra Vista**

3 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
4 **and Staff's recommended revenue requirement?**

5 A. Yes, please refer to schedule REL-1. The Company proposes total annual operating
6 revenue of \$1,308,079 which represents an increase of \$411,594, or 45.91 percent, over
7 the Company adjusted test year revenue of \$896,485.

8
9 Staff's recommended total annual operating revenue for the Sierra Vista system is
10 \$1,105,272. Staff's recommendation represents an increase of \$208,109, or 23.20
11 percent, over Staff's adjusted test year revenue of \$897,163.

12
13 **Rate Base – Sierra Vista**

14 Original Cost Rate Base

15 **Q. Did Staff prepare an Original Cost Rate Base schedule?**

16 A. Yes, shown on Schedule REL-3, Staff recommends rate base of \$2,200,445. Staff's
17 recommended rate base is a decrease of \$374,242 from the Company's proposal of
18 \$2,574,687. Staff's rate base adjustments are described below.

19
20 Rate Base Adjustment No. 1 – Plant In Service

21 **Q. What adjustment to actual test year plant did the Company propose for the Sierra**
22 **Vista system?**

23
24 A. The Company recommended increasing actual Plant In Service by \$160,557. This
25 amount represents all actual and projected plant additions placed in service or expected to
26 be placed in service by December 31, 2002, twelve months past the test year.

1 **Q. Does Staff's recommended rate base include plant placed into service after the test**
2 **year?**

3 A. Yes. Staff included \$106,477 of plant in rate base that the Company placed into service
4 after the end of the test year but not later than December 31, 2002, a reduction of \$54,080
5 from the Company's figure of \$160,557 as shown on Schedule REL-5.

6
7 Rate Base Adjustment No. 2 – Post-Test Year Plant Retirements

8 **Q. Did the Company make any adjustment for plant retired during the 2002 post-test**
9 **year period?**

10 A. No, since the Company had requested the Plant In Service additions of certain plant, it is
11 proper to remove corresponding plant that was replaced by the post-test year additions.
12 Staff therefore removed \$8,986 from Plant In Service as shown on Schedule REL- 5, and
13 from Accumulated Depreciation.

14
15 **Q. Please summarize Staff's recommendations regarding Plant In Service.**

16 A. Staff recommends \$5,219,298 for Plant In Service, a \$63,066 decrease from the
17 Company's proposed \$5,282,364. The calculation of Staff's recommendation is shown
18 on Schedule REL-5.

19
20 Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation

21 **Q. What pro forma adjustments did the Company propose for Accumulated**
22 **Depreciation?**

23 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
24 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 4 of 11 of the
25 filing, increased Accumulated Depreciation by \$5,537 to reflect twelve months of
26 depreciation expense on the Company's proposed post-test year plant additions that were
27 expected to be completed by December 31, 2002. The Company's pro forma adjustment
28 no. 3, as shown on Schedule B-2, page 4 of 11 of the filing, increased Accumulated

1 Depreciation by \$20,152 and represents six months of depreciation expenses on test year
2 plant additions.

3
4 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
5 **proper matching with the Company's pro forma adjustment to include all plant to**
6 **be in service by December 31, 2002?**

7 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
8 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
9 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
10 expense but only for the post-test year plant. Using the mid-year convention, this
11 adjustment should represent six months depreciation expense only. Pro forma adjustment
12 no. 3 increased accumulated depreciation by only six months for plant placed in service
13 during the test year and remaining in service through the December 31, 2002, cut-off
14 date.

15
16 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
17 **Service and Accumulated Depreciation cut-off dates?**

18 A. The Company's proposal violates the matching principle. It overstates rate base and
19 allows the Company to earn on investment it has already recovered from ratepayers via
20 depreciation expense.

21
22 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

23 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
24 used the same cut-off date, December 31, 2002, for calculating Accumulated
25 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
26 accumulation of depreciation expense on all plant including in rate base using the half-
27 year convention adopted by the Company. The depreciation accruals are calculated on
28 plant balances that are known and measurable, have been transferred out of the

1 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
2 have been sufficiently examined.

3
4 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

5 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff increased
6 Accumulated Depreciation by \$92,722, from \$1,406,900 to \$1,499,622. This adjustment
7 is made up of several components including a \$946 (adjustment no. 3) reduction to actual
8 Accumulated Depreciation as a result of Staff's analysis. Staff recommends increasing
9 the pro forma adjustment for Accumulated Depreciation on test year plant by \$112,131
10 (adjustment no. 5) from \$20,152 to \$132,283, and it recommends decreasing the pro
11 forma adjustment for Accumulated Depreciation on post-test year plant additions by
12 \$3,912 (adjustment no. 4) from \$5,537 to \$1,625. Additionally, Staff removed \$14,551
13 (adjustment no. 6) in retired post-test year plant from Accumulated Depreciation in
14 accordance with NARUC – USOA accounting procedures.

15
16 Rate Base Adjustment No. 7 – Cash Working Capital Allowance

17 **Q. What did the Company propose for its working capital allowance?**

18 A. The Company proposed \$70,439 for working capital. Schedule B-5, page 1 of 2, of the
19 filing shows that the proposed amount is composed of cash working capital, materials and
20 supplies, required bank balances, and prepayments.

21
22 **Q. Does Staff agree with the Company calculation?**

23 A. No. Staff does not agree with the Company's proposed \$24,193 cash working capital
24 component of working capital.

25
26
27
28

1 **Q. Why does Staff disagree with the Company's proposed cash working capital**
2 **component of the working capital allowance?**

3 A. The Company's proposed cash working capital is based on a lead-lag analysis that
4 contains several conceptual and methodological errors.

5
6 **Q. What is the result of Staff's lead-lag analysis?**

7 A. Staff's lead-lag analysis indicates a negative \$74,539 cash working capital component or
8 a reduction of \$98,732 below the Company's \$24,193 figure. In other words, ratepayers
9 are providing working capital to the system.

10
11 **Q. What Working Capital allowance is Staff recommending?**

12 A. Staff recommends a working capital allowance of negative \$28,293, as shown on
13 Schedule REL-7.

14
15 Rate Base Adjustment No. 8 and 9 – Allocated Post-Test Year Additions

16 **Q. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year**
17 **additions?**

18 A. Using the Company's allocation factors, Staff decreased the Phoenix Office allocation by
19 \$117,737, which included \$5,565 of post-test year retired plant. Additionally, Staff
20 reduced the Meter Shop allocation by \$2,420. Staff's total adjustment reduced the
21 Phoenix Office and Meter Shop allocations by \$119,722, from \$133,289 to \$13,567 as
22 shown on Schedule REL-8.

23
24
25
26
27
28

1 **Operating Income –Sierra Vista**

2 Operating Income Summary

3 **Q. What are Staff's recommended test year revenue, expenses, and operating income?**

4 A. Staff's analysis resulted in test year revenue of \$897,163, expenses of \$836,195, and an
5 operating income of \$60,968 as shown on Schedules REL-9. Staff's adjustments are
6 discussed below.

7
8 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

9 **Q. How did the Company annualize revenue?**

10 A. The Company multiplied 11 (that represents the average growth in customers on the
11 Sierra Vista's system during the test year) by \$326 (which is the Company's
12 determination of annual revenue per customer) that resulted in a revenue increase of
13 \$3,586.

14
15 **Q. Did Staff make an adjustment to annual revenue in the Company's calculation?**

16 A. Yes. Staff made a \$678 adjustment to increase the Company's proposed annualization
17 from \$3,586 to \$4,264. Staff's calculation of the adjustment is shown on Schedule REL-
18 11. Staff's recalculation recognizes revenue from all meter sizes and calculated the
19 average annual revenue per customer to be \$388 rather than the Company's \$326.

20
21 Operating Income Adjustment No. 2 – Purchased Pumping Power

22 **Q. Did Staff adjust Purchased Pumping Power?**

23 A. Yes. Staff accepted the Company's Purchased Pumping Power with the exception of a
24 repaired pump inadvertently allocated and posted to Sierra Vista expense. Staff
25 reclassified and transferred the \$2,545 Purchased Pumping Power expense to the Bisbee
26 system Plant In Service - Electrical Pumping Power account, thereby reducing Sierra
27 Vistas' Purchased Pumping Power expense by \$2,545, from \$162,283 to \$159,738, as
28 shown on Schedule REL-12.

1 Operating Income Adjustment Nos. 3, 6, and 7 – Expense Annualization Adjustment

2 **Q. Did Staff recalculate annualized expenses?**

3 A. Yes. Staff's calculations are shown as adjustments nos. 3, 6 and 7 and are shown on
4 Schedule REL-13. Staff recommends an expense annualization adjustment of \$2,288,
5 increasing expenses by \$9 compared to the Company's expense adjustment of \$2,279.

6
7 Operating Income Adjustment No. 4 – Water Treatment Expense

8 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages
9 Expense?**

10 A. Yes. Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
11 and found them not to be "known and measurable." Because of the uncertainties of the
12 Company estimates, Staff used actual 2002 expenses. The amount applicable to Sierra
13 Vista was decreased from the Company's pro forma adjustment by \$639, from \$26,475 to
14 \$25,836, as shown on Schedule REL-14. Please refer to Mr. Hammon's testimony.

15
16
17 Operating Income Adjustment No. 5 – Water Testing Expense

18 **Q. What is Arizona Water's proposed Water Testing Expense for the Sierra Vista
19 system?**

20 A. Sierra Vista's proposed Water Testing Expense is \$7,102. Water Testing Expense is a
21 component of the Company's proposed \$26,475 Water Treatment Expense, as shown on
22 Schedule REL-15.

23
24 **Q. Does Staff agree with the Company's Water Testing Expense?**

25 A. No. Staff recommends this expense be based on Staff's water testing expense analysis of
26 \$2,710, which decreases annual operating expenses by \$4,392. The adjustment is
27 discussed in greater detail in the testimony of Staff witness Lyndon Hammon.

1 Operating Income Adjustment No. 5 – Rate Case Expense

2 **Q. What Rate Case Expense does Arizona Water propose for the Sierra Vista system?**

3 A. The Company proposed total Rate Case Expense of \$20,527. Rate Case Expense is a
4 component of the Company's proposed \$158,596 Administrative and General Expense,
5 shown on Schedule REL-16.

6
7 **Q. Does Staff agree that the Company's Rate Case Expense for the Sierra Vista system
8 is reasonable?**

9 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
10 reasonable.

11
12 **Q. What amount does Staff recommend allocating to the Sierra Vista system?**

13 A. Staff recommends allocating \$14,419 to the Sierra Vista system. Staff's recommended
14 allocation uses the Company-proposed allocation factor of 0.07970 percent ($\$180,913 \times$
15 $0.07970 = \$14,419$). Staff's recommended annual Rate Case Expense of \$2,884 ($\$14,419$
16 amortized over five years), is a decrease of \$3,958 compared to the Company's request of
17 6,842, as shown on Schedule REL-16.

18
19 Operating Income Adjustment No. 9 – Charitable Contributions Expense

20 **Q. Did the Company remove charitable contributions from its test year expenses?**

21 A. No, even though charitable contributions bear no relationship to the provision of water
22 service. Therefore, Staff removed \$1,171 from the Administrative and General account,
23 as shown on REL-17.

24
25 Operating Income Adjustment No. 10 – Depreciation and Amortization Expense

26 **Q. What did the Company propose for depreciation expense?**

27 A. The Company proposed \$142,473 for depreciation expense. The Company's proposal
28 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as

1 shown on Schedule C-2, page 15 of 36 of the filing, increased depreciation expense by
2 \$20,152 to provide an additional six months of depreciation expense on test year plant
3 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
4 page 16 of 36 of the filing, increased depreciation expense by \$5,537 to provide twelve
5 months of depreciation expense on the Company's proposed post-test year plant additions
6 that were projected to be completed by December 31, 2002

7
8 **Q. Does Staff agree with the Company's proposed depreciation expense?**

9 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
10 the authorized balance for each plant account. Previously, Staff recommended
11 disallowing a portion of the Company's proposed post-test year plant additions to remove
12 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not
13 revenue neutral. The difference between Staff's plant recommendation and the
14 Company's causes a corresponding difference in depreciation expense. In addition, the
15 Company calculated its depreciation expense using dated component depreciation rates
16 that it later corrected. Staff reviewed and accepted the new rates which were used in this
17 calculation.

18
19 **Q. What are the components of Sierra Vista's proposed depreciation expense?**

20 A. The Company proposed depreciation expense is composed of \$116,754 recorded in the
21 test year, a \$20,152 pro forma adjustment to recognize an additional half-year of
22 depreciation of test year plant additions, and a positive \$5,537 pro forma adjustment to
23 recognize twelve months of depreciation and amortization of post-test year plant
24 additions for a total of \$142,443.

1 **Q. Why is Staff's recommended depreciation expense different than the Company's**
2 **proposed amount?**

3 A. Staff's recommended depreciation expense is different for two reasons. First, the
4 Company's calculated depreciation expense used a dated component depreciation
5 schedule which it later changed during the course of Staff's analysis. Staff recommends
6 adopting the individual component account rates identified in the Company's late-filed
7 depreciation study which was reviewed and accepted by Staff who used it to calculate
8 Staff's depreciation expense. Second, Staff calculated depreciation expense on its
9 recommended plant, which reflects adjustments previously discussed.

10

11 **Q. Please summarize Staff's recommendations for depreciation expense.**

12 A. Staff recommends \$154,176 for depreciation expense, a \$11,733 increase from the
13 Company's proposed \$142,443. Staff's calculation includes the amortization of CIAC at
14 the weighted proposed depreciation rates. Staff's recommendation is shown on Schedule
15 REL-18.

16

17 Operating Income Adjustment No. 11 – Property Taxes

18 **Q. What is Arizona Water proposing for property tax expense?**

19 A. The Company is proposing property tax expense of \$63,555.

20

21 **Q. Does Staff agree with the Company's amount?**

22 A. No. The Department of Revenue Property Valuation and Equalization Section developed
23 a new method to calculate property taxes. Staff adopted this new method of calculating
24 property taxes.

25

26 **Q. What amount of property tax expense does Staff recommend?**

27 A. Staff recommends property tax expense of \$57,518, a decrease of \$6,037 from the
28 Company's proposal, as shown on Schedule REL-19.

Operating Income Adjustment No. 12 and 13 – Income Taxes

1
2 **Q. What income tax expense does Arizona Water propose for the Sierra Vista system?**

3 A. The Company proposed \$4,033 in federal income taxes and a negative \$231 in state
4 income taxes for a combined income tax of \$3,802.

5
6 **Q. Does Staff agree with the Company's amount?**

7 A. No. Staff does not agree with the Company's calculation because income tax expense is
8 a function of taxable income, and its recommended taxable income is different from the
9 Company's.

10
11 **Q. What amount is Staff recommending for test year income tax expense?**

12 A. As shown on Schedules REL-20, Staff recommends a federal income tax of \$1,822 and a
13 state income tax of \$401 for a combined income tax of \$2,223.

14
15 **Q. What amount of income tax expense has Staff calculated for its recommended
16 revenue?**

17 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$67,515 and
18 state income tax of \$14,873 for a combined income tax of \$82,388.

19
20 **Rate Design – Sierra Vista**

21 Rate Design

22 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and
23 Staff's recommended rates and charges?**

24 A. Yes. Schedule REL -21 provides a summary of the present rates, Company-proposed
25 rates, and Staff's recommended rates.

26
27
28

1 **Q. Please summarize the present rate design.**

2 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
3 meter size and include 1,000 gallons and one commodity rate applies to all use.
4

5 **Q. Please summarize the Company's proposed rate design.**

6 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
7 meter size and include no gallons and one commodity rate applies to all use.
8

9 **Q. Please summarize Staff's rate design.**

10 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
11 meter size and include no gallons. The commodity rates are based on an inverted tier rate
12 design that includes three tiers with the first break-point at 3,000 gallons and the second
13 break-point at 50,000 gallons. The three-tier rate structure applies to all metered
14 customers.
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 2,574,687	\$ 2,200,445
2	Adjusted Operating Income (Loss)	\$ 31,077	\$ 60,968
3	Current Rate of Return (L2 / L1)	1.21%	2.77%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 283,216	\$ 188,490
6	Operating Income Deficiency (L5 - L2)	\$ 252,139	\$ 127,522
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 411,594	\$ 208,109
9	Adjusted Test Year Revenue	\$ 896,485	\$ 897,163
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 1,308,079	\$ 1,105,272
11	Require Increase in Revenue (%) (L8/L9)	45.91%	23.20%

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		1.000000
2	Billings		
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		<u>38.72365%</u>
6	Gross Revenue Conversion Factor		<u><u>1.631951</u></u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	<u>6.96800%</u>
9	Federal Taxable Income (L5 - L6)	93.03200%
10	Applicable Federal Income Tax Rate (Line 32)	<u>34.00000%</u>
11	Effective Federal Income Tax Rate (L7 x L8)	<u>31.63088%</u>
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u><u>38.59888%</u></u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		<u>61.40112%</u>
16	Uncollectible Rate After Income Taxes		<u><u>0.12477%</u></u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	<u>\$ 208,109</u>	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles		\$ 423
20	Recommended Increase in Revenue (from REL-1,L8)	<u>\$ 208,109</u>	
21	Required Increase in Revenue to Provide for Uncollectibles		<u>423</u>
22	Incremental Taxable Income		<u>\$ 207,686</u>
23	Combined Federal and State Income Tax Rate	38.59888%	
24	Required Increase in Revenue to Provide for Income Taxes		80,165
25	Required Operating Income		
26	Adjusted Test Year Operating Income (Loss)		
27	Required Increase in Operating Income		127,522
28	Total Required Increase In Revenue		<u><u>\$ 208,109</u></u>

Calculation of Income Tax:

	Test Year	STAFF Recommended	
29	Revenue	\$ 897,163	\$ 1,105,272
30	Less: Operating Expenses Excluding Income Taxes	\$ 833,971	\$ 834,394
31	Less: Synchronized Interest	\$ 57,432	\$ 57,432
32	Arizona Taxable Income	<u>\$ 5,760</u>	<u>\$ 213,446</u>
33	Arizona State Income Tax Rate	6.968%	6.968%
34	Arizona Income Tax	\$ 401	\$ 14,873
35	Federal Taxable Income	\$ 5,359	\$ 198,573
36	Federal Income Tax @ 34%	\$ 1,822	\$ 67,515
37	Combined Federal and State Income Tax	<u>\$ 2,223</u>	<u>\$ 82,388</u>
			\$ 80,165

Calculation of Interest Synchronization:

38	Rate Base	<u>\$ 2,200,445</u>
39	Weighted Average Cost of Debt	2.610%
40	Synchronized Interest	<u>\$ 57,432</u>
		<u>\$ 188,490</u>
		<u>\$ 60,968</u>
		\$ 127,522
		1.631951
		<u>\$ 208,109</u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	\$ 5,282,359	\$ (63,066)	\$ 5,219,293
2	(1,406,900)	(92,722)	(1,499,622)
3	<u>\$ 3,875,459</u>	<u>\$ (155,788)</u>	<u>\$ 3,719,671</u>
<u>LESS:</u>			
4	(587,611)	-	(587,611)
5	\$ (699,448)	\$ -	\$ (699,448)
6	113,980	-	113,980
7	<u>(585,468)</u>	<u>-</u>	<u>(585,468)</u>
8	(1,173,079)	-	(1,173,079)
9	-	-	-
10	-	-	-
11	(331,421)	-	(331,421)
<u>ADD:</u>			
12	70,439	(98,732)	(28,293)
13	130,569	(117,302)	13,267
14	2,720	(2,420)	300
15	-	-	-
16	-	-	-
17	-	-	-
18	<u>\$ 2,574,687</u>	<u>\$ (374,242)</u>	<u>\$ 2,200,445</u>

Arizona Water Company - Sierra Vista
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED (331,421)	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(K) ADJ.No.10	(L) STAFF ADJUSTED (331,421)
48	Deferred Income Tax Credits											
	ADD:											
49	Working Capital Allowance	70,439							(98,732)			(28,293)
50	Phoenix Office Allocation	130,569								(117,302)		13,267
51	Meter Shop Allocation	2,720									(2,420)	300
52	Projected Capital Expenditures											
53	Deferred Debits											
54	Other Additions											
55	Total Rate Base	\$ 2,574,687	\$ (54,080)	\$ (8,986)	\$ 946	\$ 3,912	\$ (112,131)	\$ 14,551	\$ (98,732)	\$ (117,302)	\$ (2,420)	\$ 2,200,445

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NO. 1 and 2 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 5,121,807	\$ -	\$ 5,121,807
2	Post-Test Year Plant	\$ 160,557	\$ (54,080)	\$ 106,477
3	Post-Test Year Retired Plant	\$ -	\$ (8,986)	\$ (8,986)
4	Adjusted Test Year Plant	\$ 5,282,364	\$ (63,066)	\$ 5,219,298

Arizona Water Company - Sierra Vista
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS. 3, 4, 5 AND 6 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (1,381,211)	\$ 946	\$ (1,380,265)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (5,537)	\$ 3,912	\$ (1,625)
3	Accumulated Depreciation, Test Year Plant	\$ (20,152)	\$ (112,131)	\$ (132,283)
4	Accumulated Depreciation, Retired Plant	\$ -	\$ 14,551	\$ 14,551
		<u>\$ (1,406,900)</u>	<u>\$ (92,722)</u>	<u>\$ (1,499,622)</u>

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 7

OPERATING INCOME ADJUSTMENT NO. 7 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Cash Working Capital	\$ 24,193	\$ (98,732)	\$ (74,539)
2	Materials and Supplies Inventory	17,633	-	17,633
3	Required Bank Balances	18,191	-	18,191
4	Prepayments and special Deposits	10,422	-	10,422
5	Total	<u>\$ 70,439</u>	<u>\$ (98,732)</u>	<u>(28,293)</u>

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-8

RATE BASE ADJUSTMENT NO. 8 and 9 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 130,569	\$ (111,737)	\$ 18,832
2	Meter Shop Allocations	\$ 2,720	\$ (2,420)	\$ 300
3	Phoenix Office Allocation - Retirements	\$ -	\$ (5,565)	\$ (5,565)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 133,289	\$ (119,722)	\$ 13,567

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Total Operating Revenues	\$ 896,485	\$ 678	\$ 897,163	\$ 208,109	\$ 1,105,272
EXPENSES:						
Source of Supply Expenses:						
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	1,540	-	1,540	-	1,540
Pumping Expenses:						
4	Purchased Power	162,283	(2,544)	159,739	-	159,739
5	Purchased Gas	504	-	504	-	504
6	Other	27,471	-	27,471	-	27,471
7	Water Treatment Expenses	26,475	(5,031)	21,444	-	21,444
8	Transmission and Distribution Expenses	139,484	4	139,488	-	139,488
9	Customer Account Expenses	122,643	4	122,647	423	123,070
10	Sales Expenses	666	-	666	-	666
11	Administrative and General Expenses	158,596	(5,129)	153,467	-	153,467
12	Total Operation and Maintenance	\$ 639,662	(12,696)	626,966	423	627,388
13	Depreciation and Amortization	142,443	(8,901)	133,542	-	133,542
15	Ad Valorem (Property)	63,555	(6,037)	57,518	-	57,518
Taxes:						
14	Federal & State Income Tax	3,802	(1,579)	2,223	80,165	82,388
16	Other	15,946	-	15,946	-	15,946
17	Total Operating Expenses	\$ 865,408	\$ (29,213)	\$ 836,195	\$ 80,588	\$ 916,782
18	Operating Income (Loss)	\$ 31,077	\$ 29,891	\$ 60,968	\$ 127,522	\$ 188,490

Arizona Water Company - Sierra Vista
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.#1	(C) ADJ.#2	(D) ADJ.#3	(E) ADJ.#4	(F) ADJ.#5	(G) ADJ.#6	(H) ADJ.#7	(I) ADJ.#8	(J) ADJ.#9	(K) ADJ.#10	(L) ADJ.#11	(M) ADJ.#12	(N) ADJ.#13	(O) STAFF ADJUSTED
1	REVENUES: Total Operating Revenues	\$ 895,485	\$ 678	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 897,163
2	EXPENSES: Source of Supply Expenses: Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	1,540	-	-	-	-	-	-	-	-	-	-	-	-	-	1,540
4	Pumping Expenses: Purchased Power	162,283	-	(2,545)	1	-	-	-	-	-	-	-	-	-	-	159,739
5	Purchased Gas	504	-	-	-	-	-	-	-	-	-	-	-	-	-	504
6	Other	27,471	-	-	-	-	-	-	-	-	-	-	-	-	-	27,471
7	Water Treatment Expenses	26,475	-	-	-	-	-	-	-	-	-	-	-	-	-	26,475
8	Transmission and Distribution Expenses	139,484	-	(639)	-	(4,392)	-	-	-	-	-	-	-	-	-	139,488
9	Customer Account Expenses	122,643	-	-	-	-	-	-	4	-	-	-	-	-	-	122,647
10	Sales Expenses	666	-	-	-	-	-	-	-	-	-	-	-	-	-	666
11	Administrative and General Expenses	158,596	-	-	-	-	-	-	-	(3,958)	(1,171)	-	-	-	-	153,467
12	Total Operation and Maintenance	639,662	-	(2,545)	1	(639)	(4,392)	-	4	(3,958)	(1,171)	-	-	-	-	626,966
13	Depreciation and Amortization	142,443	-	-	-	-	-	-	-	-	-	-	-	-	-	142,443
14	Ad Valorem (Property)	63,555	-	-	-	-	-	-	-	-	-	(8,901)	(6,037)	-	-	57,518
15	Taxes: Federal & State Income Tax	3,802	-	-	-	-	-	-	-	-	-	-	-	(2,211)	632	2,223
16	Other	15,946	-	-	-	-	-	-	-	-	-	-	-	-	-	15,946
17	Total Operating Expenses	\$ 865,408	\$ -	\$ (2,545)	\$ 1	\$ (639)	\$ (4,392)	\$ -	\$ 4	\$ (3,958)	\$ (1,171)	\$ (8,901)	\$ (6,037)	\$ (2,211)	\$ 632	\$ 836,195
18	Operating Income (Loss)	\$ 31,077	\$ 678	\$ 2,545	\$ (1)	\$ 639	\$ 4,392	\$ -	\$ (4)	\$ 3,958	\$ 1,171	\$ 8,901	\$ 6,037	\$ 2,211	\$ (632)	\$ 60,968

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 11

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	11		11
2	Avg Annual Bill Per Customer for TY	326		388
1	Avg Annual Revenue for Additional Customers	\$ 3,586	\$ 678	\$ 4,264

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-12

OPERATING INCOME ADJUSTMENT NO. 2 - PURCHASED PUMPING POWER EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Purchased Pumping Power Expense	\$ 162,283	\$ (2,545)	\$ 159,738

Arizona Water Company - Sierra Vista
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL- 13

OPERATING INCOME ADJUSTMENT NO. 3, 6 and 7 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Source of Supply	\$ 7	\$ -	\$ 7
2	Purchased Pumping Power	914	1	915
3	Water Treatment Expense	105	-	105
4	Transmission & Distribution Expense	670	4	674
5	Customer Accounting	583	4	587
6	Total	<u>\$ 2,279</u>	<u>\$ 9</u>	<u>\$ 2,288</u>

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-14

OPERATING INCOME ADJUSTMENT NO. 4 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Water Treat Water Treatment	\$ 26,475	\$ (639)	\$ 25,836

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-15

OPERATING INCOME ADJUSTMENT NO. 5 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 7,102	\$ (4,392)	\$ 2,710

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 16

OPERATING INCOME ADJUSTMENT NO. 8 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.07970		0.07970
3	Annual Rate Case Expense for Eastern Group	\$ 20,527	\$ (6,108)	\$ 14,419
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 6,842	\$ (3,958)	\$ 2,884

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-17

OPERATING INCOME ADJUSTMENT NO. 9 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 1,171	\$ (1,171)	\$ -

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 10 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 142,443	\$ 11,733	\$ 154,176
2	CIAC Amortization		(20,634)	(20,634)
		<u>\$ 142,443</u>	<u>\$ (8,901)</u>	<u>\$ 133,542</u>

OPERATING INCOME ADJUSTMENT NO. 11 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 923,693
2	2001 Annual Gross Revenues			\$ 900,775
3	2002 Annual Gross Revenues			\$ 987,194
4	Plus Staff's Recommended Increase			\$ 208,109
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 3,019,771
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 1,006,590
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 2,013,181
10	Plus: 10% of 2001 CWIP			-
11	Less: Net Book Value of Leased Vehicles (See Note A Below)			\$ 27,613
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 1,985,568
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 496,392
15	Composite Property Tax Rate (See Note B Below)			0.115872
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 63,555	\$ (6,037)	\$ 57,518

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 20

OPERATING INCOME ADJUSTMENT NO. 12 and 13 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Federal Income Taxes	\$ 4,033	\$ (2,211)	\$ 1,822
2	State Income Taxes	(231)	632	401
3	Total Income Taxes	<u>\$ 3,802</u>	<u>\$ (1,579)</u>	<u>\$ 2,223</u>

RATE DESIGN

Monthly Usage Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

	Minimum Monthly Usage Charge		
	Present Rates	---Proposed Rates---	
		Company	Staff
5/8" x 3/4" Meter	\$ 12.43	\$ 18.25	\$ 16.20
1" Meter	\$ 24.86	\$ 41.06	\$ 33.01
2" Meter	\$ 62.15	\$ 118.63	\$ 154.12
3" Meter	\$ 103.58	\$ 212.98	\$ 296.19
4" Meter	\$ 207.16	\$ 380.15	\$ 419.16
6" Meter	\$ 362.53	\$ 722.34	\$ 604.72
8" Meter	\$ 362.53	\$ 996.09	\$ 725.66
10" Meter	\$ 673.27	\$ 1,634.84	\$ 907.08

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

5/8" x 3/4" Meter	1,000	0	0
1" Meter	1,000	0	0
2" Meter	1,000	0	0
3" Meter	1,000	0	0
4" Meter	1,000	0	0
6" Meter	1,000	0	0
8" Meter	1,000	0	0
10" Meter	1,000	0	0
Fire Hydrants Used For Construction Water	1,000	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)
Per 1,000 Gallons for 0 to 3,000 Gallons
Per 1,000 Gallons for 3,001 to 50,000 Gallons
Per 1,000 Gallons for Gallons in Excess of 50,000

Per 1,000 Gallons (In Excess of Minimum)	\$ 1.5950	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 1.5950	\$ 2.1130	\$ 1.3580
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 1.5950	\$ 2.1130	\$ 1.6980
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 1.5950	\$ 2.1130	\$ 2.0380

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter

5/8" x 3/4" Meter	(a)	(a)
1" Meter	(a)	(a)
2" Meter	(b)	(b)
3" Meter	(b)	(b)
4" Meter	(b)	(b)
6" Meter	(b)	(b)

- (a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.
(b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
 CONTINUED**

Service Charges:

Establishment
 Guarantee Deposit
 Reconnection for Delinquency (per disconnection)
 Re-establishment
 Service Call Out (After Regular Working Hours Only)
 Returned Check Charge
 Meter Re-read (After Regular Working Hours Only)
 Meter Test
 Late Charge

Present Rates	---Proposed Rates---	
	Company	Staff
\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **SUPERIOR SYSTEM**

2
3 **Summary of Proposed Revenue- Superior**

4 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
5 **and Staff's recommended revenue requirement?**

6 A. Yes, please refer to schedule REL-1. The Company proposes total annual operating
7 revenue of \$1,190,319 which represents an increase of \$491,351, or 70.30 percent, over
8 the Company adjusted test year revenue of \$698,968. However, the Company's Schedule
9 A-1 shows an increase in revenue of \$61,063 that when added to the adjusted test year
10 revenue of \$698,968 results in annual revenue of \$760,031 or a difference of \$430,288.

11
12 Staff's recommended total annual operating revenue for the Superior system is
13 \$1,024,222. Staff's recommendation represents an increase of \$325,633, or 46.61
14 percent, over its adjusted test year revenue of \$698,589.

15
16 **Rate Base - Superior**

17 Original Cost Rate Base

18 **Q. Did Staff prepare an Original cost Rate Base schedule?**

19 A. Yes, shown on Schedule REL-3, Staff recommends a rate base of \$2,400,573. Staff's
20 recommended rate base is a decrease of \$273,003 from the Company's proposal of
21 \$2,673,576. Staff's rate base adjustments are described below.

22
23 Rate Base Adjustment No. 1 – Addition of Post-Test Year Plant

24 **Q. Does Staff's recommended rate base include plant placed into service after the test**
25 **year?**

26 A. Yes, Staff included \$276,104 of plant in rate base that the Company placed into service
27 after the end of the test year but no later than December 31, 2002 as shown on REL-5.

1 Staff decreased the Company's post-test year plant additions by \$27,773, from \$303,877
2 to \$276,104.

3
4 Rate Base Adjustment No. 2 – Post –Test Year Retired Plant

5 **Q. Did the Company make any adjustment for plant retired during the 2002 post-test**
6 **year period?**

7 A. No, since the Company had requested the Plant In Service additions of certain plant, it is
8 proper to remove the corresponding plant that was replaced by the plant additions. Staff
9 therefore removed \$700 from Plant In Service also shown on Schedule REL-5, and from
10 Accumulated Depreciation.

11
12 **Q. Please summarize Staff's recommendations regarding Plant In Service.**

13 A. Staff recommends \$4,299,052 for Plant In Service, a \$28,473 decrease from the
14 Company's proposed \$4,327,525. Staff's recommendation is shown on Schedule REL-5

15
16 Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation

17 **Q. What pro forma adjustments did the Company propose for Accumulated**
18 **Depreciation?**

19 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
20 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 9 of 11 of the
21 filing, increased Accumulated Depreciation by \$6,515 to reflect twelve months of
22 depreciation expense on the Company's proposed post-test year plant additions that were
23 expected to be completed by December 31, 2002. The Company's pro forma adjustment
24 no. 3, as shown on Schedule B-2, page 9 of 11 of the filing, increased Accumulated
25 Depreciation by \$9,524 and represents six months of depreciation expenses on test year
26 plant additions.

1 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
2 **proper matching with the Company's pro forma adjustment to include all plant to**
3 **be in service by December 31, 2002?**

4 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
5 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
6 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
7 expense but only for the post-test year plant. Using the mid-year convention, this
8 adjustment should represent six months depreciation expense only. Pro forma adjustment
9 no. 3 increased accumulated depreciation by only six months for plant placed in service
10 during the test year and remaining in service through the December 31, 2002 cut-off date.

11
12 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
13 **Service and Accumulated Depreciation cut-off dates?**

14 A. The Company's proposal violates the matching principle. It overstates rate base and
15 allows the Company to earn on investment it has already recovered from ratepayers via
16 depreciation expense.

17
18 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

19 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
20 used the same cut-off date, December 31, 2002, for calculating Accumulated
21 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
22 accumulation of depreciation expense on all plant included in rate base using the half-
23 year convention adopted by the Company. The depreciation accruals are calculated on
24 plant balances that are known and measurable, have been transferred out of the
25 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
26 have been sufficiently examined.

27
28

1 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

2 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff increased
3 accumulated depreciation by \$80,890, from \$986,086 to \$1,066,976. This adjustment is
4 made up of several components including a \$5,364 (adjustment no. 3) decrease as a result
5 of Staff's analysis. Staff recommends increasing the pro forma adjustment for
6 Accumulated Depreciation on test year plant by \$93,550 (adjustment no. 5) from \$9,524
7 to \$103,074, and it recommends decreasing the pro forma adjustment for Accumulated
8 Depreciation on post-test year plant additions by \$2,769 (adjustment no. 4) from \$6,515
9 to \$3,746. Additionally, Staff removed \$4,527 (adjustment no. 6) in retired post-test year
10 plant from Accumulated Depreciation in accordance with NARUC - USOA accounting
11 procedures.

12
13 Rate Base Adjustment No. 5 – Cash Working Capital Allowance

14 **Q. What did the Company propose for its working capital allowance?**

15 A. The Company proposed \$27,887 for working capital. Schedule B-5, page 2 of 2, of the
16 filing shows that the proposed amount is composed of cash working capital, materials and
17 supplies, required bank balances, and prepayments.

18
19 **Q. Does Staff agree with the Company calculation?**

20 A. No. Staff does not agree with the Company's proposed \$7,767 cash working capital
21 component of the working capital allowance.

22
23 **Q. Why does Staff disagree with the Company's proposed cash working capital
24 component of working capital?**

25 A. The Company's proposed cash working capital is based on a lead-lag analysis that
26 contains several conceptual and methodological errors.

1 **Q. What is the result of Staff's lead-lag analysis?**

2 A. Staff lead-lag analysis indicates a negative \$75,180 cash working capital component or a
3 reduction of \$82,947 compared the Company's \$7,767 figure. In other words, ratepayers
4 are providing working capital to the system.

5
6 **Q. How else did Staff adjust Cash Working Capital?**

7 A. Staff increased the Materials and Supply Inventory by \$1,635, from \$443 to \$2,078 as a
8 result of materials that were transferred from Transmission and Distribution Expense to
9 Working Capital.

10
11 **Q. What Working Capital allowance does Staff recommend?**

12 A. Staff recommends a working capital allowance of negative \$53,425 as shown on
13 Schedule REL-7.

14
15 Rate Base Adjustment No. 8 and 9 – Allocated Post-Test Year Additions

16 **Q. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year
17 additions?**

18 A. Using the Company's allocation factors, Staff decreased the Phoenix Office allocation by
19 \$80,665, which included \$3,827 of post-test year retired plant. The Meter Shop
20 allocation was reduced by \$1,663. Staff's total adjustment reduced the Phoenix Office
21 and Meter shop allocations by \$82,328, from \$91,658 to \$9,330. Staff's analysis is
22 shown on Schedule REL-8.

23
24
25
26
27
28

1 **Operating Income - Superior**

2 Operating Income Summary

3 **Q. What are Staff's recommended test year revenue, expenses, and operating income?**

4 A. Staff's analysis resulted in test year revenue of \$698,589, expenses of \$692,492 and an
5 operating income of \$6,097 as shown on Schedules REL-9. Staff's adjustments are
6 discussed below.

7
8 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

9 **Q. How did the Company annualize revenue?**

10 A. The Company multiplied a negative 7 (that represents the average loss in customers on
11 the Superior system during the test year) by \$379 (which is the Company's determination
12 of annual revenue per customer) that resulted in a revenue decrease of \$3,367.

13
14 **Q. Did Staff make an adjustment to annual revenue in the Company's calculation?**

15 A. Yes. Staff made a \$481 adjustment to decrease the Company's proposed annualization
16 from negative \$3,367 to negative \$3,746. Staff's calculation of the adjustment is shown
17 on Schedule REL-11. Staff's recalculation recognizes revenue from all meter sizes and
18 calculated the average annual revenue per customer to be \$481 rather than the
19 Company's \$379.

20
21 Operating Income Adjustment No. 2 – Water Treatment Expense

22 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages
23 Expense?**

24 A. Yes, Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
25 and found them not to be "known and measurable." Because of the uncertainties of the
26 Company estimates, Staff used actual 2002 expenses. (See Mr. Hammon's testimony).
27 The amount applicable to Superior was decreased from the Company's pro forma
28 expense by \$7,104. Additionally, Staff removed \$1,236 of Superior's Water Treatment

1 Expense and transferred it to the Miami system and reclassified it as Material and
2 Supplies Inventory. This adjustment, totaling \$8,340 reduced Water Treatment Expense
3 from \$30,792 to \$22,452 as shown on Schedule REL-12.

4
5 Operating Income Adjustment No. 3 – Water Testing Expense

6 **Q. What is Arizona Water's proposed Water Testing Expense?**

7 A. Arizona Water's proposed Water Testing Expense of \$2,125 for the Superior system.
8 Water Testing Expense is a component of the Company's proposed \$30,792 Water
9 Treatment Expense, shown on Schedule REL -13.

10
11 **Q. Did Staff agree with the Company's Water Testing Expense?**

12 A. No. Staff recommended this expense be based on Staff's water testing expense analysis
13 of \$1,618, which decreases annual operating expenses by \$507. The adjustment is
14 discussed in greater detail in the testimony of Staff witness Lyndon Hammon.

15
16 Operating Income Adjustment No. 4– Transmission and Distribution Expense

17 **Q. What adjustment did Staff make to Transmission and Distribution Expense?**

18 A. Staff adjusted Transmission and Distribution Expenses downward by \$1,635. The
19 Company inadvertently posted \$1,635 to Transmission and Distribution Expense that
20 should have been posted to Materials and Supplies Inventory. This entry reduced the
21 account from \$159,574 to \$157,939 and corrects the misclassification as shown on
22 Schedule REL-14.

23
24
25
26
27
28

1 Operating Income Adjustment No. 5 and 6 – Expense Annualization Adjustment

2 **Q. Has Staff recalculated the amount of annualized expenses?**

3 A. Yes. Staff calculations are shown as adjustments nos. 5 and 6 and are shown on Schedule
4 REL-15. Staff recommended an expense annualization adjustment of a negative \$2,130,
5 a decrease of \$6 from the Company's adjustment of a negative \$2,121.
6

7 Operating Income Adjustment No. 7 – Rate Case Expense

8 **Q. What Rate Case Expense did Arizona Water propose for the Superior system?**

9 A. The Company proposed total Rate Case Expense of \$14,114 for the Superior system.
10 Rate Case Expense is a component of the Company's proposed \$98,965 Administrative
11 and General Expense, shown on Schedule REL-16.
12

13 **Q. Does Staff agree that the Company's Rate Case Expense for the Superior system is**
14 **reasonable?**

15 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
16 reasonable.
17

18 **Q. What amount does Staff recommend allocating to the Superior system?**

19 A. Staff recommends allocating \$9,914 to the Superior system. Staff's recommended
20 allocation uses the Company-proposed allocation factor of 0.05480 percent ($\$180,913 \times$
21 $0.05480 = \$9,914$). Staff recommends annual Rate Case Expense of \$1,983 ($\$9,914$
22 amortized over five years), a decrease of \$2,722 from the Company's request of \$4,705,
23 as shown on Schedule REL-16
24
25
26
27
28

1 Operating Income Adjustment No. 8 – Charitable Contributions Expense

2 **Q. Did the Company remove charitable contributions from its test year expenses?**

3 A. No, even though charitable contributions bear no relationship to the provision of water
4 service. Therefore, Staff removed \$805 from the Administrative and General account, as
5 shown on REL-17.

6
7 Operating Income Adjustment No. 9 – Depreciation and Amortization Expense

8 **Q. What did the Company propose for depreciation expense?**

9 A. The Company proposed \$118,817 for depreciation expense. The Company's proposal
10 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as
11 shown on Schedule C-2, page 31 of 36 of the filing, increased depreciation expense by
12 \$2,532 provide an additional six months of depreciation expense on test year plant
13 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
14 page 32 of 36 of the filing, increased depreciation expense by \$516 to provide twelve
15 months of depreciation expense on the Company's proposed post-test year plant additions
16 that were projected to be completed by December 31, 2002.

17
18 **Q. Does Staff agree with the Company's proposed depreciation expense?**

19 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
20 the authorized balance for each plant account. Previously, Staff recommended
21 disallowing a portion of the Company's proposed post-test year plant additions to remove
22 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not
23 revenue neutral. The difference between Staff's plant recommendation and the
24 Company's causes a corresponding difference in depreciation expense. In addition, the
25 Company calculated its depreciation expense using dated component depreciation rates
26 that it later corrected. Staff reviewed and accepted the new depreciation rates which were
27 used in calculating rates.
28

1 **Q. Please summarize Staff's recommendations for depreciation expense.**

2 A. Staff recommends \$118,359 for depreciation expense, a \$458 decrease from the
3 Company's proposed \$118,817. Staff's calculation includes the amortization of CIAC at
4 the weighted proposed depreciation rates. Staff's recommendation is shown on Schedule
5 REL-18.

6
7 Operating Income Adjustment No. 10 – Property Taxes

8 **Q. What is Arizona Water proposing for property tax expense?**

9 A. The Company is proposing property tax expense of \$64,071.

10
11 **Q. Does Staff agree with the Company's amount?**

12 A. No. The Department of Revenue Property Valuation and Equalization Section developed
13 a new method to calculate property taxes. Staff adopted this new method of calculating
14 property taxes.

15
16 **Q. What amount of property tax expense does Staff recommend?**

17 A. Staff recommends property tax expense of \$74,875, an increase of \$10,805 from the
18 Company's proposal of \$64,071 as shown on Schedule REL-19.

19
20 Operating Income Adjustment Nos. 10 and 11 – Income Taxes

21 **Q. What income tax expense did Arizona Water propose?**

22 A. The Company proposed a negative \$22,627 in federal income taxes and a negative
23 \$5,474 in state income taxes for a combined negative income tax of \$28,101.

24
25 **Q. Does Staff agree with the Company's amount?**

26 A. No. Staff does not agree with the Company's calculation because income tax expense is
27 a function of taxable income, and Staff's recommended taxable income is different from
28 the Company's.

1 **Q. What amount is Staff recommending for test year income tax expense?**

2 A. As shown on Schedules REL-20, Staff recommends negative federal income tax of
3 \$29,136 and negative state income tax of \$6,418 for a combined negative income tax of
4 \$35,554.

5
6 **Q. What amount of income tax expense has Staff calculated for its recommended
7 revenue?**

8 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$73,655 and
9 state income tax of \$16,226 for a combined income tax of \$89,881.

10
11 **Rate Design – Superior**

12 Rate Consolidation

13 **Q. Did Staff review the Company's proposal to consolidate rates for the Apache
14 Junction and Superior systems?**

15 A. Yes. Staff has reviewed the rate consolidation plan.

16
17 **Q. What is the Company's rationale for the rate consolidation plan?**

18 A. The Company seeks an interconnection between the two systems which it believes will
19 provide increased reliability for customers of both systems. The Company proposes to do
20 this in two phases. Phase one would equalize the two systems basic monthly charge.
21 Step two, to be considered in the Eastern Groups next rate case would combine the
22 commodity charges of the two systems. (See Direct Testimony of Ralph Kennedy, pages
23 11 and 12.)

24
25 **Q. Does Staff recommend approval of the Company's rate consolidation plan?**

26 A. No. According to Staff Engineering there is no interconnection between Apache Junction
27 and Superior, and there are CC&N voids between the Apache Junction system and the
28 well field at Florence Junction. Additionally, the Apache Junction and Superior systems

1 exhibit differences in revenue requirements due to the age of the respective infrastructure,
2 maintenance costs, power costs and growth rates. Staff recommends that each of the
3 Eastern Group's eight systems have their own unique rates based upon the characteristics
4 of each system. Rate consolidation causes cross-subsidization among systems and results
5 in unfair rates.

6
7 Rate Design

8 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and**
9 **Staff's recommended rates and charges?**

10 A. Yes. Schedule REL-21 provides a summary of the present rates, Company-proposed
11 rates, and Staff's recommended rates.

12
13 **Q. Please summarize the present rate design.**

14 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
15 meter size and include 1,000 gallons and one commodity rate applies to all use.

16
17 **Q. Please summarize the Company's proposed rate design.**

18 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
19 meter size and include no gallons and one commodity rate applies to all use.

20
21 **Q. Please summarize Staff's rate design.**

22 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
23 meter size and include no gallons. The commodity rates are based on an inverted tier rate
24 design that includes three tiers with the first break-point at 3,000 gallons and the second
25 break-point at 50,000 gallons. The three-tier rate structure applies to all metered
26 customers.

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 2,673,576	\$ 2,400,573
2	Adjusted Operating Income (Loss)	\$ (6,904)	\$ 6,097
3	Current Rate of Return (L2 / L1)	-0.26%	0.25%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 294,093	\$ 205,633
6	Operating Income Deficiency (L5 - L2)	\$ 300,997	\$ 199,536
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 491,351	\$ 325,633
9	Adjusted Test Year Revenue	\$ 698,968	\$ 698,589
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 1,190,319	\$ 1,024,222
11	Require Increase in Revenue (%) (L8/L9)	70.30%	46.61%

GROSS REVENUE CONVERSION FACTOR

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		
2	Billings		1.000000
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		<u>38.72365%</u>
6	Gross Revenue Conversion Factor		<u><u>1.631951</u></u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	6.96800%
9	Federal Taxable Income (L5 - L6)	<u>93.03200%</u>
10	Applicable Federal Income Tax Rate (Line 32)	34.00000%
11	Effective Federal Income Tax Rate (L7 x L8)	<u>31.63088%</u>
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u><u>38.59888%</u></u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		<u>61.40112%</u>
16	Uncollectible Rate After Income Taxes		<u><u>0.12477%</u></u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	\$ 325,633	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles		\$ 662
20	Recommended Increase in Revenue (from REL-1,L8)	\$ 325,633	
21	Required Increase in Revenue to Provide for Uncollectibles	662	
22	Incremental Taxable Income	\$ 324,972	
23	Combined Federal and State Income Tax Rate	38.59888%	
24	Required Increase in Revenue to Provide for Income Taxes		125,435
25	Required Operating Income	\$ 205,633	
26	Adjusted Test Year Operating Income (Loss)	6,097	
27	Required Increase in Operating Income		199,536
28	Total Required Increase In Revenue		<u><u>\$ 325,633</u></u>

Calculation of Income Tax:

	Test Year		STAFF Recommended	
29	Revenue	\$ 698,589	\$	1,024,222
30	Less: Operating Expenses Excluding Income Taxes	\$ 728,046	\$	728,708
31	Less: Synchronized Interest	\$ 62,655	\$	62,655
32	Arizona Taxable Income	\$ (92,112)	\$	232,859
33	Arizona State Income Tax Rate	6.968%		6.968%
34	Arizona Income Tax	\$ (6,418)	\$	16,226
35	Federal Taxable Income	\$ (85,694)	\$	216,634
36	Federal Income Tax @ 34%	\$ (29,136)	\$	73,655
37	Combined Federal and State Income Tax	<u><u>\$ (35,554)</u></u>	<u><u>\$</u></u>	<u><u>89,881</u></u>
			\$	125,435

Calculation of Interest Synchronization:

38	Rate Base	\$ 2,400,573
39	Weighted Average Cost of Debt	2.610%
40	Synchronized Interest	<u><u>\$ 62,655</u></u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 4,327,525	\$ 4,299,052
2	Less: Accumulated Depreciation	(986,086)	(1,066,976)
3	Net Plant in Service	<u>\$ 3,341,439</u>	<u>\$ 3,232,076</u>
<u>LESS:</u>			
4	Advances in Aid of Construction (AIAC)	(384,759)	(384,759)
5	Contributions in Aid of Construction (CIAC)	\$ (82,088)	\$ (82,088)
6	Less: Accumulated Amortization	11,961	11,961
7	Net CIAC	<u>(70,127)</u>	<u>(70,127)</u>
8	Total Advances and Contributions	(454,886)	(454,886)
9	Customer Deposits	-	-
10	Meter Advances	-	-
11	Deferred Income Tax Credits	(332,521)	(332,521)
<u>ADD:</u>			
12	Working Capital	27,886	(53,426)
13	Phoenix Office Allocation	89,788	9,123
14	Meter Shop Allocation	1,870	207
15		-	-
18	Total Rate Base	<u>\$ 2,673,576</u>	<u>\$ 2,400,573</u>

Arizona Water Company - Superior
 Docket No. W-01465A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	[A] COMPANY AS FILED	[B] ADJ.No.1	[C] ADJ.No.2	[D] ADJ.No.3	[E] ADJ.No.4	[F] ADJ.No.5	[G] ADJ.No.6	[H] ADJ.No.7	[I] ADJ.No.8	[J] ADJ.No.9	[K] ADJ.No.10	[L] STAFF ADJUSTED
PLANT IN SERVICE:													
1	Organization	\$ 4,209											\$ 4,209
2	Franchises												
3	Other Intangibles	24,009											24,009
4	Water Rights	13,752											13,752
5	Other Source of Supply Land	137,393											137,393
6	Wells												
7	Pumping Plant Land	47,905											47,905
8	Pumping Plant Structures & Improvements	583,864											583,864
9	Electric Pumping Equipment												
10	Gas Engine Equipment												
11	Water Treatment Land	8,061											8,061
12	Water Treatment Structures & Improvements	127,455											127,455
13	Water Treatment Equipment	1,975											1,975
14	Transmission and Distribution Land	180,378											180,378
15	Storage Tanks	1,988,797											1,988,797
16	Transmission and Distribution Mains	8,318											8,318
17	Fire Sprinkler Taps	507,179											507,179
18	Services	97,206											97,206
19	Meters	104,732											104,732
20	Hydrants												
21	General Plant Land	17,311											17,311
22	General Plant Structures	1,609											1,609
23	Leasehold Improvements	56,051											56,051
24	Office Furniture and Improvements	59											59
25	Warehouse Equipment	39,884											39,884
26	Tools, Shop and Garage Equipment	3,725											3,725
27	Laboratory Equipment	5,261											5,261
28	Power Operated Equipment	62,109											62,109
29	Communication Equipment	2,406											2,406
30	Miscellaneous Equipment	4,023,648											4,023,648
31	Total Plant in Service - Actual	303,877	(27,773)	(700)									276,104
32	Pro-forma Adjustment - Post TY Plant												(700)
33	Total Plant in Service - Adjusted	\$ 4,327,525	\$ (27,773)	\$ (700)	\$ 5,364	\$ 2,769	\$ (93,550)	\$ 4,527	\$ -	\$ -	\$ -	\$ -	\$ 4,295,052
34	Less: Accumulated Depreciation - Actual	\$ (970,047)			5,364	2,769							(964,683)
35	Less: Accumulated Depreciation - Pro Forma	(6,515)					(93,550)						(3,746)
36	Less: Accumulated Depreciation - 12 Mos TY	(9,524)						4,527					(103,074)
37	Less: Accumulated Depreciation - Pro Forma												4,527
38	Total Accumulated Depreciation - Adjusted	\$ (986,086)											\$ (1,066,976)
39	Plus: Construction Work In Progress	\$ 3,341,439											\$ 3,232,076
40	Net Plant In Service	\$ (384,759)											\$ (384,759)
LESS:													
41	Advances in Aid of Construction (AIAC)	(82,088)											(82,088)
42	Contributions in Aid of Construction (CIAC)	31,951											11,961
43	Less: Accumulated Amortization	(70,127)											(70,127)
44	Net CIAC (L25 - L26)	(454,886)											(454,886)
45	Total Advances and Contributions												
46	Customer Deposits												
47	Meter Advances												
48	Deferred Income Tax Credits												
ADD:													
49	Working Capital Allowance	27,866											(53,426)
50	Phoenix Office Allocation	89,788											9,123
51	Meter Shop Allocation	1,870											207
52	Projected Capital Expenditures												
53	Deferred Debits												
54	Other Additions												
55	Total Rate Base	\$ 2,673,576	\$ (27,773)	\$ (700)	\$ 5,364	\$ 2,769	\$ (93,550)	\$ 4,527	\$ (81,312)	\$ (80,865)	\$ (1,663)	\$ -	\$ 2,400,673

Arizona Water Company - Superior
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1 and 2 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 4,023,648	\$ -	\$ 4,023,648
2	Post-Test Year Plant	\$ 303,877	\$ (27,773)	\$ 276,104
3	Post Test Year Retired Plant	\$ -	\$ (700)	\$ (700)
4	Adjusted Test Year Plant	\$ 4,327,525	\$ (28,473)	\$ 4,299,052

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS. 3, 4, 5 and 6 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (970,047)	\$ 5,364	\$ (964,683)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (6,515)	\$ 2,769	\$ (3,746)
3	Accumulated Depreciation, 12 Mos Test Year	\$ (9,524)	\$ (93,550)	\$ (103,074)
4	Accumulated Depreciation, Retired Plant	\$ -	\$ 4,527	\$ 4,527
		<u>\$ (986,086)</u>	<u>\$ (80,890)</u>	<u>\$ (1,066,976)</u>

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 7

OPERATING INCOME ADJUSTMENT NO. 7 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Cash Working Capital	\$ 7,767	\$ (82,947)	\$ (75,180)
2	Materials and Supplies Inventory	443	1,635	2,078
3	Required Bank Balances	12,510	-	12,510
4	Prepayments and special Deposits	7,167	-	7,167
5	Total	<u>\$ 27,887</u>	<u>\$ (81,312)</u>	<u>\$ (53,425)</u>

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-8

RATE BASE ADJUSTMENT NOS. 8 and 9 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 89,788	\$ (76,838)	\$ 12,950
2	Meter Shop Allocations	\$ 1,870	\$ (1,663)	\$ 207
3	Phoenix Office Allocation - Retirements	\$ -	\$ (3,827)	\$ (3,827)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 91,658	\$ (82,328)	\$ 9,330

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Total Operating Revenues	\$ 698,968	\$ (379)	\$ 698,589	\$ 325,633	\$ 1,024,222
EXPENSES:						
Source of Supply Expenses:						
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	4,729	-	4,729	-	4,729
Pumping Expenses:						
4	Purchased Power	76,290	-	76,290	-	76,290
5	Purchased Gas	-	-	-	-	-
6	Other	54,189	-	54,189	-	54,189
7	Water Treatment Expenses	30,792	(8,847)	21,945	-	21,945
8	Transmission and Distribution Expenses	159,574	(1,639)	157,935	-	157,935
9	Customer Account Expenses	114,326	(4)	114,322	662	114,984
10	Sales Expenses	872	-	872	-	872
11	Administrative and General Expenses	98,965	(3,527)	95,438	-	95,438
12	Total Operation and Maintenance	\$ 539,737	(14,017)	525,720	662	526,382
13	Depreciation and Amortization	118,817	(2,715)	116,102	-	116,102
15	Ad Valorem (Property)	64,071	10,805	74,876	-	74,876
Taxes:						
14	Federal & State Income Tax	(28,101)	(7,453)	(35,554)	125,435	89,881
16	Other	11,348	-	11,348	-	11,348
17	Total Operating Expenses	<u>\$ 705,872</u>	<u>\$ (13,380)</u>	<u>\$ 692,492</u>	<u>\$ 126,097</u>	<u>\$ 818,589</u>
18	Operating Income (Loss)	<u>\$ (6,904)</u>	<u>\$ 13,001</u>	<u>\$ 6,097</u>	<u>\$ 199,536</u>	<u>\$ 205,633</u>

Arizona Water Company - Superior
 Docket No. W-0145A-02-0819
 Test Year Ended December 31, 2001

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.#1	(C) ADJ.#2	(D) ADJ.#3	(E) ADJ.#4	(F) ADJ.#5	(G) ADJ.#6	(H) ADJ.#7	(I) ADJ.#8	(J) ADJ.#9	(K) ADJ.#10	(L) ADJ.#11	(M) ADJ.#12	(N) ADJ.#13	(O) ADJ.#14	(P) STAFF ADJUSTED
1	REVENUES:																
	Total Operating Revenues	\$ 698,968	\$ (379)														\$ 698,589
	EXPENSES:																
2	Source of Supply Expenses:																
3	Purchased Water																
4	Other	4,729															4,729
5	Pumping Expenses:																
6	Purchased Power	76,290															76,290
7	Purchased Gas	54,189															54,189
8	Other	30,792															21,945
9	Water Treatment Expenses	159,574		(8,340)	(507)	(1,635)	(4)										157,985
10	Transmission and Distribution Expenses	114,326						(4)									114,322
11	Customer Account Expenses	872															872
12	Sales Expenses	98,965															98,965
13	Administrative and General Expenses	539,737		(8,340)	(507)	(1,635)	(4)		(2,722)	(805)							525,720
14	Total Operation and Maintenance	118,817									(2,715)	10,805					116,102
15	Depreciation and Amortization	64,071															64,071
16	Ad Valorem (Property)																
17	Taxes:																
18	Federal & State Income Tax	(28,101)											(6,509)	(944)			(35,554)
19	Other	11,348															11,348
20	Total Operating Expenses	\$ 705,872	\$ -	\$ (8,340)	\$ (507)	\$ (1,635)	\$ (4)	\$ (4)	\$ (2,722)	\$ (805)	\$ (2,715)	\$ 10,805	\$ (6,509)	\$ (944)	\$ -	\$ -	\$ 692,482
21	Operating Income (Loss)	\$ (6,904)	\$ (379)	\$ 8,340	\$ 507	\$ 1,635	\$ 4	\$ 4	\$ 2,722	\$ 805	\$ 2,715	\$ (10,805)	\$ 6,509	\$ 944	\$ -	\$ -	\$ 6,087

Arizona Water Company - Superior
 Doclet No. W-01445A-02-0819
 Test Year Ended December 31, 2001

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ #1	(C) ADJ #2	(D) ADJ #3	(E) ADJ #4	(F) ADJ #5	(G) ADJ #6	(H) ADJ #7	(I) ADJ #8	(J) ADJ #9	(K) ADJ #10	(L) ADJ #11	(M) ADJ #12	(N) ADJ #13	(O) ADJ #14	(P) STAFF ADJUSTED	
1	REVENUES:																	
	Total Operating Revenues	\$ 698,968	\$ (379)															\$ 698,589
2	EXPENSES:																	
	Source of Supply Expenses:																	
3	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 4,729
4	Other	4,729																76,290
5	Pumping Expenses:																	
6	Purchased Power	76,290																54,189
7	Purchased Gas																	21,945
8	Other	54,189																157,935
9	Water Treatment Expenses	30,792																114,322
10	Transmission and Distribution Expenses	159,574		(8,340)		(1,635)	(4)	(4)										872
11	Customer Account Expenses	114,326																95,438
12	Sales Expenses	872																525,720
13	Administrative and General Expenses	98,965		(8,340)	(507)	(1,635)	(4)	(4)	(2,722)	(805)								116,102
14	Total Operation and Maintenance	539,737																74,876
15	Depreciation and Amortization	116,917																
16	Ad Valorem (Property)	64,071										10,805						
17	Taxes:																	
18	Federal & State Income Tax	(28,101)											(6,509)	(944)				(35,554)
19	Other	11,348																11,348
20	Total Operating Expenses	\$ 705,872	\$ -	\$ (8,340)	\$ (507)	\$ (1,635)	\$ (4)	\$ (4)	\$ (2,722)	\$ (805)	\$ (2,715)	\$ 10,805	\$ (6,509)	\$ (944)	\$ -	\$ -	\$ -	\$ 682,492
21	Operating Income (Loss)	\$ (6,904)	\$ (379)	\$ 8,340	\$ 507	\$ 1,635	\$ 4	\$ 4	\$ 2,722	\$ 805	\$ 2,715	\$ (10,805)	\$ 6,509	\$ 944	\$ -	\$ -	\$ -	\$ 6,097

Arizona Water Company - Superior
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL- 11

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	\$ (7)		\$ (7)
2	Avg Annual Bill Per Customer for TY	481		535
3	Avg Annual Revenue for Additional Customers	\$ (3,367)	\$ (379)	\$ (3,746)

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 12

OPERATING INCOME ADJUSTMENT NO. 2 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Water Treatment Expense	\$ 30,792	\$ (1,236)	\$ 29,556
2	Water Treatment - Chlorine	-	(7,104)	(7,104)
		<u>\$ 30,792</u>	<u>\$ (8,340)</u>	<u>\$ 22,452</u>

Pro-forma adjustment to actual

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-13

OPERATING INCOME ADJUSTMENT NO. 3 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 2,125	\$ (507)	\$ 1,618

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-14

OPERATING INCOME ADJUSTMENT NO. 4 - TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution	\$ 159,574	\$ (1,635)	\$ 157,939

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 15

OPERATING INCOME ADJUSTMENT NOS. 5 and 6 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Source of Supply	\$ (26)	\$ -	\$ (26)
2	Purchased Pumping Power	(706)	-	(706)
3	Water Treatment Expense	(106)	-	(106)
4	Transmission & Distribution Expense	(665)	(4)	(669)
5	Customer Accounting	(618)	(4)	(622)
6	Total	\$ (2,121)	\$ (8)	\$ (2,129)

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 16

OPERATING INCOME ADJUSTMENT NO. 7 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.05480		0.05480
3	Annual Rate Case Expense for Eastern Group	\$ 14,114	\$ (4,200)	\$ 9,914
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 4,705	\$ (2,722)	\$ 1,983

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-17

OPERATING INCOME ADJUSTMENT NO. 8 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 805	\$ (805)	\$ -

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 9 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 118,817	\$ (458)	\$ 118,359
2	CIAC Amortization	-	(2,257)	(2,257)
		<u>\$ 118,817</u>	<u>\$ (2,715)</u>	<u>\$ 116,102</u>

OPERATING INCOME ADJUSTMENT NO. 10 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 744,641
2	2001 Annual Gross Revenues			\$ 698,408
3	2002 Annual Gross Revenues			\$ 733,703
4	Plus Staff's Recommended Increase			\$ 325,633
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 2,502,385
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 834,128
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 1,668,257
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Value of Leased Vehicles (See Note A Below)			\$ 2,768
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 1,665,489
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 416,372
15	Composite Property Tax Rate (See Note B Below)			0.17983
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 64,071	\$ 10,805	\$ 74,876

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 20

OPERATING INCOME ADJUSTMENT NOS. 11 and 12 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ (22,627)	\$ (6,509)	\$ (29,136)
2	State Income Taxes	(5,474)	(944)	(6,418)
3	Total Income Taxes	<u>\$ (28,101)</u>	<u>\$ (7,453)</u>	<u>\$ (35,554)</u>

RATE DESIGN

Monthly Usage Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter
 8" Meter
 10" Meter

Minimum Monthly Usage Charge		
Present Rates	---Proposed Rates---	
	Company	Staff
\$ 18.13	\$ 18.13	\$ 20.05
\$ 38.84	\$ 40.79	\$ 70.20
\$ 103.58	\$ 117.85	\$ 150.26
\$ 155.37	\$ 211.58	\$ 432.93
\$ 207.16	\$ 377.65	\$ 519.52
\$ 362.53	\$ 717.59	\$ 623.42
\$ 362.53	\$ 989.54	\$ 748.10
\$ 673.27	\$ 1,624.09	\$ 935.13

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter
 8" Meter
 10" Meter

1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0
1,000	0	0

Fire Hydrants Used For Construction Water

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)
 Per 1,000 Gallons for 0 to 3,000 Gallons
 Per 1,000 Gallons for 3,001 to 50,000 Gallons
 Per 1,000 Gallons for Gallons in Excess of 50,000

\$ 4.0600	N/A	N/A
\$ 4.0600	\$ 4.0600	\$ 5.1040
\$ 4.0600	\$ 4.0600	\$ 6.3800
\$ 4.0600	\$ 4.0600	\$ 7.6560

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter

(a)	(a)
(a)	(a)
(b)	(b)

- (a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.
 (b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
CONTINUED**

Service Charges:

Establishment
Guarantee Deposit
Reconnection for Delinquency (per disconnection)
Re-establishment
Service Call Out (After Regular Working Hours Only)
Returned Check Charge
Meter Re-read (After Regular Working Hours Only)
Meter Test
Late Charge

Present Rates	---Proposed Rates---	
	Company	Staff
\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **WINKELMAN SYSTEM**

2
3 **Summary of Proposed Revenue - Winkelman**

4 **Q. Did Staff prepare a schedule representative of the Company's proposed increase**
5 **and Staff's recommended revenue requirement?**

6 A. Yes, please refer to schedule REL-1. The Company proposes total annual operating
7 revenue of \$129,358 as shown on Schedule REL-1. This represents an increase of
8 \$32,343, or 31.97 percent, over the Company adjusted test year revenue of \$98,022.

9
10 Staff recommends total annual operating revenue for the Winkelman system of \$115,659.

11 Staff's recommendation represents an increase of \$16,935 or 17.15 percent, over its
12 adjusted test year revenue of \$98,724.

13
14 **Rate Base - Winkelman**

15 Original Cost Rate Base

16 **Q. Did Staff prepare an Original Cost Rate Base schedule?**

17 A. Yes, shown on Schedule REL-3, Staff's recommends a rate base of \$232,924. Staff's
18 recommended rate base is a decrease of \$32,975 from the Company's proposal of
19 \$265,899. Staff's rate base adjustments are described below

20 Rate Base Adjustment No. 1 – Addition of Post-Test Year Plant

21
22 **Q. Does Staff's recommended rate base include plant placed into service after the test**
23 **year?**

24 A. Yes. Staff included \$21,541 of plant in rate base that the Company placed into service
25 after the end of the test year but no later than December 31, 2002 as shown on REL-5.
26 Staff increased the Company's post-test year plant additions by \$4,675, from \$17,166 to
27 \$21,541.

1 Rate Base Adjustment No. 1 –Post-Test Year Retired Plant

2 **Q. Did the Company make any adjustment for plant retired during the 2002 post-test**
3 **year period?**

4 A. No, since the Company had requested the Plant In Service additions of certain plant, it is
5 proper to remove the corresponding plant that was replaced by post-test year plant
6 additions. Staff therefore removed \$11,669 from Plant In Service also shown on
7 Schedule REL-5, and from Accumulated Depreciation.

8
9 **Q. Please summarize Staff's recommendations regarding Plant In Service.**

10 A. Staff recommended \$421,127 for Plant In Service, a \$7,294 decrease from the
11 Company's proposed \$428,421.

12
13 Rate Base Adjustment Nos. 3, 4, 5 and 6 – Accumulated Depreciation

14 **Q. What pro forma adjustments did the Company propose for Accumulated**
15 **Depreciation?**

16 A. The Company proposed two pro forma adjustments for Accumulated Depreciation. The
17 Company's pro forma adjustment no. 2, as shown on Schedule B-2, page 8 of 11 of the
18 filing, increased Accumulated Depreciation by \$516 to reflect twelve months of
19 depreciation expense on the Company's proposed post-test year plant additions that were
20 expected to be completed by December 31, 2002. The Company's pro forma adjustment
21 no. 3, as shown on Schedule B-2, page 8 of 11 of the filing, increased Accumulated
22 Depreciation by \$2,532 and represents six months of depreciation expenses on test year
23 plant additions.

24
25
26
27
28

1 **Q. Does the Company's pro forma adjustments to Accumulated Depreciation provide**
2 **proper matching with the Company's pro forma adjustment to include all plant to**
3 **be in service by December 31, 2002?**

4 A. No. Proper matching of Plant In Service and Accumulated Depreciation requires
5 recognition of depreciation expense accumulated to the cut-off date for all plant that is in
6 service. The Company's pro forma adjustment no. 2 reflects 12 months of depreciation
7 expense but only for the post-test year plant. Using the mid-year convention, this
8 adjustment should represent six months depreciation expense only. Pro forma adjustment
9 no. 3 increased accumulated depreciation by only six months for plant placed in service
10 during the test year and remaining in service through the December 31, 2002, cut-off
11 date.

12
13 **Q. What is the consequence of the Company's proposal that fails to match Plant In**
14 **Service and Accumulated Depreciation cut-off dates?**

15 A. The Company's proposal violates the matching principle. It overstates rate base and
16 allows the Company to earn on investment it has already recovered from ratepayers via
17 depreciation expense.

18
19 **Q. How did Staff calculate its recommended Accumulated Depreciation balance?**

20 A. To provide a proper matching of Plant In Service with Accumulated Depreciation, Staff
21 used the same cut-off date, December 31, 2002, for calculating Accumulated
22 Depreciation as it used for recognizing post-test year plant additions. Staff calculated the
23 accumulation of depreciation expense on all plant included in rate base using the half-
24 year convention adopted by the Company. The depreciation accruals are calculated on
25 plant balances that are known and measurable, have been transferred out of the
26 Construction Work in Progress ("CWIP") accounts to the appropriate plant accounts, and
27 have been sufficiently examined.
28

1 **Q. What adjustment is Staff recommending for Accumulated Depreciation?**

2 A. Calculation of Staff's recommendation is shown on Schedule REL-6. Staff decreased
3 Accumulated Depreciation by \$4,934, from \$119,404 to \$114,470. This adjustment is
4 made up of several components including a \$620 (adjustment no. 3) reduction as a result
5 of Staff's analysis. Staff recommends increasing the pro forma adjustment for
6 Accumulated Depreciation on test year plant by \$8,044 (adjustment no. 5) from \$2,532 to
7 \$10,576, and it recommends decreasing the pro forma adjustment for Accumulated
8 Depreciation on post-test year plant additions by \$216 (adjustment no. 4) from \$516 to
9 \$300. Additionally, Staff removed \$12,142 (adjustment no. 6) in retired post-test year
10 plant from Accumulated Depreciation in accordance with NARUC - USOA accounting
11 procedures.

12
13 Rate Base Adjustment No. 7 - Cash Working Capital Allowance

14 **Q. What did the Company propose for its working capital allowance?**

15 A. The Company proposed \$2,906 for working capital. Schedule B-5, page 2 of 2, of the
16 filing shows that the proposed amount is composed of cash working capital, materials and
17 supplies, required bank balances, and prepayments.

18
19 **Q. Does Staff agree with the Company calculation?**

20 A. No. Staff does not agree with the Company's proposed zero cash working capital
21 component of the working capital allowance.

22
23 **Q. Why does Staff disagree with the Company's proposed cash working capital
24 component of the working capital?**

25 A. The Company's proposed cash working capital is based on a lead-lag analysis that
26 contains several conceptual and methodological errors.

1 **Q. What is the result of Staff's lead-lag analysis?**

2 A. Staff's lead-lag analysis indicates a negative \$22,134 cash working capital component or
3 a reduction of \$22,134 compared to the Company's zero amount. In other words,
4 ratepayers are providing working capital to the system.

5
6 **Q. How else did Staff adjust Working Capital?**

7 A. Staff increased the Materials and Supply Inventory by \$235, from \$476 to \$711 as a
8 result of materials that were transferred from Transmission and Distribution Expense to
9 Working Capital.

10
11 **Q. What Working Capital allowance is Staff recommending?**

12 A. Staff recommends a working capital allowance of negative \$18,993, as shown on
13 Schedule REL-7.

14
15 Rate Base Adjustment No. 8 – Allocated Post-Test Year Additions

16 **Q. Did Staff adjust the Company's Phoenix Office and Meter Shop post-test year
17 additions?**

18 A. Using the Company's allocation factors, Staff increased the Phoenix Office allocation by
19 \$1,600, and decreased the allocation by \$473 which represents retired post-test year
20 plant. Staff increased the Meter Shop allocation by \$25. Staff's total adjustment
21 increased the Phoenix Office and Meter shop allocations by \$1,625, from \$11,320 to
22 \$12,945. Staff's analysis is shown on Schedule REL-8.

1 **Operating Income - Winkelman**

2 Operating Income Summary

3 **Q. What are Staff's recommended test year revenue, expenses, and operating income?**

4 A. Staff's analysis resulted in test year revenue of \$98,724 as adjusted by Staff, expenses of
5 \$89,149 and an operating income of \$9,575 as shown on Schedules REL-9. Staff's
6 adjustments are discussed below.

7
8 Operating Income Adjustment No. 1 – Revenue Annualization Adjustment

9 **Q. How did the Company annualize revenue?**

10 A. The Company multiplied 3 (that represent the average growth in customers on the
11 Winkelman system during the test year) by \$281 (which is the Company's determination
12 of annual revenue per customer) which resulted in a revenue increase of \$843.

13
14 **Q. Did Staff make an adjustment to annual revenue in the Company's calculation?**

15 A. Yes. Staff made a \$702 adjustment to increase the Company's proposed annualization
16 from \$843 to \$1,545. Staff's calculation of the adjustment is shown on Schedule
17 REL-11. Staff's recalculation recognizes revenue from all meter sizes and calculates the
18 average annual revenue per customer to be \$515 rather than the Company's \$281.

19
20 Operating Income Adjustment No. 2 – Purchased Pumping Power

21 **Q. Did Staff adjust Purchased Pumping Power?**

22 A. Yes. Staff accepted the Company's Purchased Pumping Power with the exception of a
23 repaired pump inadvertently allocated and posted to Winkelman's expense. The \$123
24 was reclassified and transferred to San Manuel's Plant In Service, Electric Pumping
25 Equipment.

1 Operating Income Adjustment No. 3, 6 and 7 – Expense Annualization Adjustment

2 **Q. Did Staff recalculate annualized expenses?**

3 A. Yes. Staff's calculations for adjustments nos.3, 6 and 7 and are shown on Schedule REL-
4 13. Staff recommends an expense annualization adjustment of a \$605, decreasing
5 expenses by \$4 compared to the Company's proposed adjustment of \$609.

6
7 Operating Income Adjustment No. 4 – Water Treatment Expense

8 **Q. Has Staff reviewed the Company's pro forma Chlorination Labor and Wages**
9 **Expense?**

10 A. Yes, Staff reviewed the Company's pro forma Chlorination Labor and Wages Expenses
11 and found them not to be "known and measurable." Because of the uncertainties of the
12 Company estimates, Staff used actual 2002 expenses. The amount applicable to
13 Winkelman was increased from the Company's pro forma expense adjustment by \$620,
14 from \$2,994 to \$3,614, as shown on Schedule REL-14.

15
16 Operating Income Adjustment No. 5 – Water Testing Expense

17 **Q. What is Arizona Water's proposed Water Testing Expense?**

18 A. Arizona Water's proposed Water Testing Expense is \$1,600 for the Winkelman system.
19 Water Testing Expense is a component of the Company's \$2,994 Water Treatment
20 Expense shown on Schedule REL -9.

21
22 **Q. Did Staff agree with the Company's Water Testing Expense?**

23 A. No. Staff recommends this expense be based on Staff's water testing expense analysis of
24 \$1,222, which decreases annual operating expenses by \$378. The adjustment is
25 discussed in greater detail in the testimony of Staff witness Lyndon Hammon.

1 Operating Income Adjustment No. 7 – Transmission and Distribution Expense

2 **Q. What adjustment did Staff make to Transmission and Distribution Expense?**

3 A. Staff adjusted Transmission and Distribution Expense downward by \$235. The Company
4 inadvertently posted \$235 to Transmission and Distribution Expense that should have
5 been posted to Materials and Supplies Inventory. This entry reduces Transmission and
6 Distribution Expense from \$14,855 to \$14,620, as shown on Schedule REL-16.

7
8 Operating Income Adjustment No. 9 – Rate Case Expense

9 **Q. What Rate Case Expense did Arizona Water propose for the Winkelman system?**

10 A. The Company proposed total Rate Case Expense of \$1,751 for the Winkelman system.
11 Rate Case Expense is a component of the Company's proposed \$13,395 Administrative
12 and General Expense shown on Schedule REL-9.

13
14 **Q. Does Staff agree that the Company's Rate Case Expense for the Winkelman system
15 is reasonable?**

16 A. No. Staff does not agree that the Company's proposed Rate Case Expense amount is
17 reasonable.

18
19 **Q. What amount does Staff recommend allocating to the Winkelman system?**

20 A. Staff recommends allocating \$1,230 to the Winkelman system. Staff's recommended
21 allocation uses the Company-proposed allocation factor of 0.00680 percent ($\$180,913 \times$
22 $0.00680 = \$1,230$). Staff's recommended annual Rate Case Expense of \$246 ($\$1,230$
23 amortized over five years), is a decrease of \$338 from the Company's request, as shown
24 on Schedule REL-17.

25
26
27
28

1 Operating Income Adjustment No. 10 – Charitable Contributions Expense

2 **Q. Did the Company remove charitable contributions from its test year expenses?**

3 A. No, even though charitable contributions bear no relationship to the provision of water
4 service. Therefore, Staff removed \$99 from the Administrative and General account as
5 shown on REL-18.

6
7 Operating Income Adjustment Nos. 11 – Depreciation and Amortization Expense

8 **Q. What did the Company propose for depreciation expense?**

9 A. The Company proposed \$13,888 for depreciation expense. The Company's proposal
10 includes two pro forma adjustments. The Company's pro forma adjustment no. 17, as
11 shown on Schedule C-2, page 31 of 36 of the filing, increased depreciation expense by
12 \$2,532 provide an additional six months of depreciation expense on test year plant
13 additions. The Company's pro forma adjustment no. 18, also shown on Schedule C-2,
14 page 32 of 36 of the filing, increased depreciation expense by \$516 to provide twelve
15 months of depreciation expense on the Company's proposed post-test year plant additions
16 that were projected to be completed by December 31, 2002.

17
18 **Q. Does Staff agree with the Company's proposed depreciation expense?**

19 A. No. Depreciation expense should reflect application of the depreciation rate applicable to
20 the authorized balance for each plant account. Previously, Staff recommended
21 disallowing a portion of the Company's proposed post-test year plant additions to remove
22 plant that was not in service by Staff's cut-off date, December 31, 2002, or was not
23 revenue neutral. The difference between Staff's plant recommendation and the
24 Company's causes a corresponding difference in depreciation expense. In addition, the
25 Company calculated its depreciation expense using dated component depreciation rates
26 that it later corrected. Staff reviewed and accepted the new depreciation rates which were
27 used in calculating rates.
28

1 **Q. Please summarize Staff's recommendations for depreciation expense.**

2 A. Staff recommends \$13,706 for depreciation expense, a \$182 decrease from the
3 Company's proposed \$13,888. Staff's calculation includes the amortization of CIAC at
4 the weighted proposed depreciation rates. Staff's recommendation is shown on Schedule
5 REL-19.

6
7 Operating Income Adjustment No. 14— Property Taxes

8 **Q. What is Arizona Water proposing for property tax expense?**

9 A. The Company is proposing property tax expense of \$15,730.
10

11 **Q. Does Staff agree with the Company's amount?**

12 A. No. The Department of Revenue Property Valuation and Equalization Section developed
13 a new method to calculate property taxes. Staff adopted this new method of calculating
14 property taxes.
15

16 **Q. What amount of property tax expense does Staff recommend?**

17 A. Staff recommends property tax expense of \$16,751, an increase of \$1,021 from the
18 Company's proposal of \$15,730, as shown on Schedule REL-20.
19

20 Operating Income Adjustment No. 13 – Income Taxes

21 **Q. What income tax expense does Arizona Water propose?**

22 A. The Company proposed \$1,732 in federal taxes and \$126 in state income tax for a
23 combined federal and state income tax of \$1,858.
24
25
26
27
28

1 **Q. Does Staff agree with the Company's amount?**

2 A. No. Staff does not agree with the Company's calculation because income tax expense is
3 a function of taxable income, and Staff's recommended taxable income is different from
4 the Company's.

5
6 **Q. What amount is Staff recommending for test year income tax expense?**

7 A. As shown on Schedules REL-21, Staff recommends a federal income tax of \$1,801 and
8 state income tax of \$397 for a combined income tax of \$2,198.

9
10 **Q. What amount of income tax expense has Staff calculated for its recommended
11 revenue?**

12 A. As shown on Schedules REL-2, Staff recommends federal income tax of \$7,147 and state
13 income tax of \$1,574 for a combined income tax of \$8,721.

14
15 **Rate Design - Winkelman**

16 Rate Design

17 **Q. Did Staff prepare a schedule summarizing the present, Company-proposed, and
18 Staff's recommended rates and charges?**

19 A. Yes. Schedule REL-22 provides a summary of the present rates, Company-proposed
20 rates, and Staff's recommended rates.

21
22 **Q. Please summarize the present rate design.**

23 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
24 meter size and include 1,000 gallons and one commodity rate applies to all use.

25
26 **Q. Please summarize the Company's proposed rate design.**

27 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
28 meter size and include no gallons and one commodity rate applies to all use.

1 **Q. Please summarize Staff's rate design.**

2 A. Customer class is distinguished by meter size. The monthly minimum charges vary by
3 meter size and include no gallons. The commodity rates are based on an inverted tier rate
4 design that includes three tiers with the first break-point at 3,000 gallons and the second
5 break-point at 50,000 gallons. The three-tier rate structure applies to all metered
6 customers.

7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28

Arizona Water Company - Winkelman
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-1

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 265,899	\$ 232,924
2	Adjusted Operating Income (Loss)	\$ 9,436	\$ 9,575
3	Current Rate of Return (L2 / L1)	3.55%	4.11%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 29,249	\$ 19,952
6	Operating Income Deficiency (L5 - L2)	\$ 19,813	\$ 10,377
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 32,343	\$ 16,935
9	Adjusted Test Year Revenue	\$ 98,022	\$ 98,724
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 129,358	\$ 115,659
11	Require Increase in Revenue (%) (L8/L9)	31.97%	17.15%

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		
2	Billings		1.000000
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		<u>38.72365%</u>
6	Gross Revenue Conversion Factor		<u><u>1.631951</u></u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	<u>6.96800%</u>
9	Federal Taxable Income (L5 - L6)	<u>93.03200%</u>
10	Applicable Federal Income Tax Rate (Line 32)	<u>34.00000%</u>
11	Effective Federal Income Tax Rate (L7 x L8)	<u>31.63088%</u>
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u><u>38.59888%</u></u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		<u>61.40112%</u>
16	Uncollectible Rate After Income Taxes		<u><u>0.12477%</u></u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	<u>\$ 16,935</u>	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles		\$ 34
20	Recommended Increase in Revenue (from REL-1,L8)	<u>\$ 16,935</u>	
21	Required Increase in Revenue to Provide for Uncollectibles	<u>34</u>	
22	Incremental Taxable Income	<u>\$ 16,900</u>	
23	Combined Federal and State Income Tax Rate	<u>38.59888%</u>	
24	Required Increase in Revenue to Provide for Income Taxes		6,523
25	Required Operating Income	<u>\$ 19,952</u>	
26	Adjusted Test Year Operating Income (Loss)	<u>9,575</u>	
27	Required Increase in Operating Income		10,377
28	Total Required Increase In Revenue		<u><u>\$ 16,935</u></u>

Calculation of Income Tax:

	Test Year		STAFF Recommended	
29	Revenue	<u>\$ 98,724</u>	\$	115,659
30	Less: Operating Expenses Excluding Income Taxes	<u>\$ 86,951</u>	\$	86,986
31	Less: Synchronized Interest	<u>\$ 6,079</u>	\$	6,079
32	Arizona Taxable Income	<u>\$ 5,694</u>	\$	22,594
33	Arizona State Income Tax Rate	6.968%		6.968%
34	Arizona Income Tax		\$	397
35	Federal Taxable Income	<u>\$ 5,297</u>	\$	21,020
36	Federal Income Tax @ 34%	<u>\$ 1,801</u>	\$	7,147
37	Combined Federal and State Income Tax	<u><u>\$ 2,198</u></u>	<u><u>\$</u></u>	<u><u>8,721</u></u>
			\$	6,523

Calculation of Interest Synchronization:

38	Rate Base	<u>\$ 232,924</u>
39	Weighted Average Cost of Debt	<u>2.610%</u>
40	Synchronized Interest	<u><u>\$ 6,079</u></u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	\$ 428,421	\$ (7,294)	\$ 421,127
2	(119,404)	(4,934)	(124,338)
3	<u>\$ 309,017</u>	<u>\$ (12,228)</u>	<u>\$ 296,789</u>
<u>LESS:</u>			
4	(20,855)	-	(20,855)
5	\$ (1,835)	\$ -	\$ (1,835)
6	264	-	264
7	<u>(1,571)</u>	<u>-</u>	<u>(1,571)</u>
8	(22,426)	-	(22,426)
9	-	-	-
10	-	-	-
11	(34,918)	-	(34,918)
<u>ADD:</u>			
12	2,906	(21,899)	(18,993)
13	11,089	1,127	12,216
14	231	25	256
17	-	-	-
18	<u>\$ 265,899</u>	<u>\$ (32,975)</u>	<u>\$ 232,924</u>

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.7	(I) ADJ.No.8	(J) ADJ.No.9	(L) STAFF ADJUSTED
46	Customer Deposits	-	-	-	-	-	-	-	-	-	-	-
47	Meter Advances	-	-	-	-	-	-	-	-	-	-	-
48	Deferred Income Tax Credits	(34,918)	-	-	-	-	-	-	-	-	-	(34,918)
<i>ADD:</i>												
49	Working Capital Allowance	2,906	-	-	-	-	-	-	(21,899)	-	-	(18,993)
50	Phoenix Office Allocation	11,089	-	-	-	-	-	-	1,127	-	-	12,216
51	Meter Shop Allocation	231	-	-	-	-	-	-	-	-	25	256
52	Projected Capital Expenditures	-	-	-	-	-	-	-	-	-	-	-
53	Deferred Debits	-	-	-	-	-	-	-	-	-	-	-
54	Other Additions	-	-	-	-	-	-	-	-	-	-	-
55	Total Rate Base	\$ 265,899	\$ 4,375	\$ (11,669)	\$ (620)	\$ (216)	\$ 8,044	\$ (12,142)	\$ (21,899)	\$ 1,127	\$ 25	\$ 232,924

Arizona Water Company - Winkelman
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1 and 2 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 411,255	\$ -	\$ 411,255
2	Post-Test Year Plant	\$ 17,166	\$ 4,375	\$ 21,541
3	Post-Test Year Retired Plant	\$ -	\$ (11,669)	\$ (11,669)
	Adjusted Test Year Plant	\$ 428,421	\$ (7,294)	\$ 421,127

Arizona Water Company - Winkelman
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-6

RATE BASE ADJUSTMENT NOS.3, 4, 5 AND 6 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (116,356)	\$ 620	\$ (115,736)
2	Accumulated Depreciation, Post-Test Year Plant	\$ (516)	\$ 216	\$ (300)
3	Accumulated Depreciation, Test Year Plant	\$ (2,532)	\$ (8,044)	\$ (10,576)
4	Accumulated Depreciation, Retired Plant	\$ -	\$ 12,142	\$ 12,142
		\$ (119,404)	\$ 4,934	\$ (114,470)

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 7

OPERATING INCOME ADJUSTMENT NO. 7 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Cash Working Capital	\$ -	\$ (22,134)	\$ (22,134)
2	Materials and Supplies Inventory	476	235	711
3	Required Bank Balances	1,545	-	1,545
4	Prepayments and special Deposits	885	-	885
5	Total	\$ 2,906	\$ (21,899)	\$ (18,993)

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-8

RATE BASE ADJUSTMENT NOS. 8 and 9 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation	\$ 11,089	\$ 1,600	\$ 12,689
2	Meter Shop Allocations	\$ 231	\$ 25	\$ 256
3	Phoenix Office Allocation - Retirements	\$ -	\$ (473)	\$ (473)
4	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 11,320	\$ 1,152	\$ 12,472

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
REVENUES:						
1	Total Operating Revenues	\$ 98,022	\$ 702	\$ 98,724	\$ 16,935	\$ 115,659
EXPENSES:						
Source of Supply Expenses:						
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	759	-	759	-	759
Pumping Expenses:						
4	Purchased Power	7,793	(122)	7,671	-	7,671
5	Purchased Gas	-	-	-	-	-
6	Other	4,034	-	4,034	-	4,034
7	Water Treatment Expenses	2,994	242	3,236	-	3,236
8	Transmission and Distribution Expenses	14,855	(237)	14,618	-	14,618
9	Customer Account Expenses	11,844	(2)	11,842	34	11,876
10	Sales Expenses	56	-	56	-	56
11	Administrative and General Expenses	13,395	(437)	12,958	-	12,958
12	Total Operation and Maintenance	55,730	(556)	55,174	34	55,209
13	Depreciation and Amortization	13,888	(242)	13,646	-	13,646
15	Ad Valorem (Property)	15,730	1,021	16,751	-	16,751
Taxes:						
14	Federal & State Income Tax	1,858	340	2,198	6,523	8,721
16	Other	1,380	-	1,380	-	1,380
17	Total Operating Expenses	\$ 88,586	\$ 563	\$ 89,149	\$ 6,558	\$ 95,707
18	Operating Income (Loss)	\$ 9,436	\$ 139	\$ 9,575	\$ 10,377	\$ 19,952

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.#1	(C) ADJ.#2	(D) ADJ.#3	(E) ADJ.#4	(F) ADJ.#5	(G) ADJ.#6	(H) ADJ.#7	(I) ADJ.#8	(J) ADJ.#9	(K) ADJ.#10	(L) ADJ.#11	(M) ADJ.#12	(N) ADJ.#13	(O) ADJ.#14	(P) STAFF ADJUSTED	
1	REVENUES:																	
	Total Operating Revenues	\$ 98,022	\$ 702	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 98,724
	EXPENSES:																	
	Source of Supply Expenses:																	
2	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 759
3	Other	759	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Pumping Expenses:																	
5	Purchased Power	7,793	-	(123)	1	-	-	-	-	-	-	-	-	-	-	-	-	7,671
6	Purchased Gas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4,034
7	Water Treatment Expenses	4,034	-	-	-	-	(378)	-	-	-	-	-	-	-	-	-	-	3,236
8	Transmission and Distribution Expenses	2,994	-	-	-	620	-	(2)	-	-	-	-	-	-	-	-	-	14,618
9	Customer Account Expenses	14,855	-	-	-	-	-	-	(235)	(2)	-	-	-	-	-	-	-	11,842
10	Sales Expenses	11,844	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	56
11	Administrative and General Expenses	56	-	-	-	-	-	-	-	-	(338)	(99)	-	-	-	-	-	12,958
12	Total Operation and Maintenance	13,395	-	(123)	1	620	(378)	(2)	(235)	(2)	(338)	(99)	(242)	-	-	-	-	55,174
13	Depreciation and Amortization	13,888	-	-	-	-	-	-	-	-	-	-	-	1,021	-	-	-	13,646
14	Taxes:																	
15	Federal & State Income Tax	1,858	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,858
16	Other	1,380	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,380
17	Total Operating Expenses	\$ 88,586	\$ -	\$ (123)	\$ 1	\$ (620)	\$ (378)	\$ (2)	\$ (235)	\$ (2)	\$ (338)	\$ (99)	\$ (242)	\$ 1,021	\$ 69	\$ 271	\$ -	\$ 89,149
18	Operating Income (Loss)	\$ 9,436	\$ 702	\$ 123	\$ (1)	\$ (620)	\$ 378	\$ 2	\$ 235	\$ 2	\$ 338	\$ 99	\$ 242	\$ (1,021)	\$ (69)	\$ (271)	\$ -	\$ 9,575

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 11

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	3		3
2	Avg Annual Bill Per Customer for TY	281		515
3	Avg Annual Revenue for Additional Customers	\$ 843	\$ 702	\$ 1,545

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-12

OPERATING INCOME ADJUSTMENT NO. 2 - PURCHASED PUMPING POWER EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Purchased Pumping Power Expense	\$ 7,793	\$ (123)	\$ 7,670

Arizona Water Company - Winkelman
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL- 13

OPERATING INCOME ADJUSTMENT NOS. 3, 6 and 8 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Source of Supply	\$ 12	\$ -	\$ 12
2	Purchased Pumping Power	188	1	189
3	Water Treatment Expense	55	-	55
4	Transmission & Distribution Expense	166	(2)	164
5	Customer Accounting	188	(2)	186
6	Total	<u>\$ 609</u>	<u>\$ (3)</u>	<u>\$ 606</u>

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 14

OPERATING INCOME ADJUSTMENT NO. 4 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Water Treatment	\$ 2,994	\$ 620	\$ 3,614

1 Actual 2002 chlorine expense - supercedes company pro-forma.

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-15

OPERATING INCOME ADJUSTMENT NO. 5 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 1,600	\$ (378)	\$ 1,222

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-16

OPERATING INCOME ADJUSTMENT NO. 7 - TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 14,855	\$ (235)	\$ 14,620
1	Expense reclassified to Materials and Supplies Inventory.			

Arizona Water Company - Winkelman
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL- 17

OPERATING INCOME ADJUSTMENT NO. 9 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.00680		0.00680
3	Annual Rate Case Expense for Eastern Group	\$ 1,751	\$ (521)	\$ 1,230
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 584	\$ (338)	\$ 246

Arizona Water Company - Winkleman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 10 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 99	\$ (99)	\$ -

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-19

OPERATING INCOME ADJUSTMENT NO. 11 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 13,888	\$ (182)	\$ 13,706
2	CIAC Amortization		(60)	(60)
		<u>\$ 13,888</u>	<u>\$ (242)</u>	<u>\$ 13,646</u>

OPERATING INCOME ADJUSTMENT NO. 12 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 88,776
2	2001 Annual Gross Revenues			\$ 97,628
3	2002 Annual Gross Revenues			\$ 93,460
4	Plus Staff's Recommended Increase			\$ 16,935
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 296,799
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 98,933
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 197,866
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Vaule of Leased Vehicles (See Note A Below)			\$ -
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 197,866
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 49,467
15	Composite Property Tax Rate (See Note B Below)			0.33863
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 15,730	\$ 1,021	\$ 16,751

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Winkelman
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 21

OPERATING INCOME ADJUSTMENT NOS.13 and 14 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Federal Income Taxes	\$ 1,732	\$ 69	\$ 1,801
2	State Income Taxes	126	271	397
3	Total Income Taxes	<u>\$ 1,858</u>	<u>\$ 340</u>	<u>\$ 2,198</u>

RATE DESIGN

Monthly Usage Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter
 8" Meter
 10" Meter

	Minimum Monthly Usage Charge		
	Present Rates	---Proposed Rates---	
		Company	Staff
5/8" x 3/4" Meter	\$ 12.95	\$ 17.30	\$ 12.95
1" Meter	\$ 24.86	\$ 38.23	\$ 39.66
2" Meter	\$ 62.15	\$ 110.72	\$ 57.90
3" Meter	\$ 103.58	\$ 198.95	\$ 227.22
4" Meter	\$ 207.16	\$ 354.65	\$ 494.41
6" Meter	\$ 362.53	\$ 674.70	\$ 616.16
8" Meter	\$ 362.53	\$ 934.20	\$ 764.18
10" Meter	\$ 673.27	\$ 1,530.88	\$ 935.02

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter
 8" Meter
 10" Meter

Fire Hydrants Used For Construction Water

5/8" x 3/4" Meter	1,000	0	0
1" Meter	1,000	0	0
2" Meter	1,000	0	0
3" Meter	1,000	0	0
4" Meter	1,000	0	0
6" Meter	1,000	0	0
8" Meter	1,000	0	0
10" Meter	1,000	0	0
Fire Hydrants Used For Construction Water	1,000	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)
 Per 1,000 Gallons for 0 to 3,000 Gallons
 Per 1,000 Gallons for 3,001 to 50,000 Gallons
 Per 1,000 Gallons for Gallons in Excess of 50,000

Per 1,000 Gallons (In Excess of Minimum)	\$ 1.2330	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 1.2330	\$ 1.4910	\$ 1.0240
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 1.2330	\$ 1.4910	\$ 1.2800
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 1.2330	\$ 1.4910	\$ 1.5360

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter
 1" Meter
 2" Meter
 3" Meter
 4" Meter
 6" Meter

5/8" x 3/4" Meter	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

**RATE DESIGN
 CONTINUED**

Service Charges:

Establishment
 Guarantee Deposit
 Reconnection for Delinquency (per disconnection)
 Re-establishment
 Service Call Out (After Regular Working Hours Only)
 Returned Check Charge
 Meter Re-read (After Regular Working Hours Only)
 Meter Test
 Late Charge

Present Rates	---Proposed Rates---	
	Company	Staff
\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge, or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

1 **ARSENIC REMOVAL RECOVERY MECHANISM**

2
3 **ARSENIC**

4
5 **Q. Has Staff addressed the Arsenic issues associated with certain systems within the**
6 **Eastern Group?**

7 A. Yes, as noted in Mr. Hammon's direct testimony, no post-test year plant or test year
8 capital additions for arsenic were included in this case, and there is currently no arsenic
9 removal plant constructed in the Eastern Group. However, the recommended order for
10 the Northern Group is pending and therefore Staff's recommendation regarding a arsenic
11 cost recovery system can not be finalized until the Commission determines what action it
12 accepts in dealing with this issue for the Northern Group.

13
14 **Q. Does this conclude Staff's direct testimony?**

15 A. Yes, it does.
16
17
18
19
20
21
22
23
24
25
26
27
28

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER
Chairman
JIM IRVIN
Commissioner
WILLIAM A. MUNDELL
Commissioner
JEFF HATCH-MILLER
Commissioner
MIKE GLEASON
Commissioner

IN THE MATTER OF THE APPLICATION OF) DOCKET NO. W-01445A-02-0619
ARIZONA WATER COMPANY, AN)
ARIZONA CORPORATION, FOR)
ADJUSTMENTS TO ITS RATES AND)
CHARGES FOR UTILITY SERVICE)
FURNISHED BY ITS EASTERN GROUP)
AND FOR CERTAIN RELATED)
APPROVALS)
_____)

SURREBUTTAL
TESTIMONY
OF
RONALD E. LUDDERS
PUBLIC UTILITIES ANALYST V
UTILITIES DIVISION
ARIZONA CORPORATION COMMISSION

SEPTEMBER 3, 2003

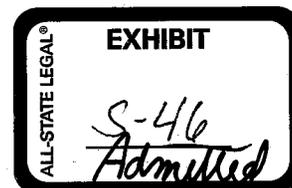


TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
SUMMARY OF COMPANY'S REBUTTAL TESTIMONY	1
Plant In Service	2
Accumulated Depreciation	3
Working Capital Allowance	3
Deferred CAP Charges	4
Revenue Annualization	6
Purchased Power Adjustment Mechanism	7
Purchased Water Adjustor Mechanism	7
Capital and Delivery Charges	8
CAP Purchased Water Expense, Annualization Adjustment	9
Rate Case Expense	10
CIAC Amortization Rate	11
Pinal Creek Group Issue	11

EXHIBITS

<i>Revenue Requirements/Eastern Group & System Pages 1-9s</i>	<i>Surrebuttal Exhibit RFI-1</i>
<i>Arizona Department of Revenue Memo Pages 1 & 2</i>	<i>Surrebuttal Exhibit REL-2</i>
<i>Comparison- Present Rates, Company Proposed Rates, Staff's Direct Testimony RATES, Staff's Surrebuttal Rates Pages 1-16</i>	<i>Surrebuttal Exhibit REL-3</i>

EXECUTIVE SUMMARY
ARIZONA WATER COMPANY CORPORATION
EASTERN GROUP
Docket No. W-01445A-02-0619

The surrebuttal testimony of Ronald E. Ludders responds to Arizona Water Company's rebuttal on the following issues:

1. Plant in Service - Phoenix Office and Meter Shop Allocations
2. Accumulated Depreciation
3. Working Capital Allowance
4. Deferred Central Arizona Project ("CAP") Charges
5. Revenue Annualization
6. Purchased Power Adjustment Mechanism ("PPAM")
7. Purchased Water Adjustment Mechanism ("PWAM")
8. CAP Capital and Delivery Charges
9. Rate Case Expense
10. Contributions in Aid of Construction Amortization Rate
11. Pinal Creek Group Issue

Staff's position on each of the adjustments and issues remains unchanged from its direct testimony with the exception of these revisions.

1 **INTRODUCTION**

2 **Q. Please state your name, occupation, and business address.**

3 A. My name is Ronald E. Ludders. I am a Public Utilities Analyst V employed by the
4 Arizona Corporation Commission ("ACC" or "Commission") in the Utilities Division
5 ("Division"). My business address is 1200 West Washington Street, Phoenix, Arizona
6 85007.

7
8 **Q. Are you the same Ronald E. Ludders who filed direct testimony in this case?**

9 A. Yes, I am.

10

11 **Q. What is the purpose of your surrebuttal testimony in this proceeding?**

12 A. The purpose of my surrebuttal testimony in this proceeding is to respond, on behalf of the
13 Division Staff ("Staff"), to the rebuttal testimony of various Arizona Water Company
14 ("Arizona Water", "AWC", or "Company") witnesses in the areas of rate base, operating
15 income, and revenue requirement.

16

17 **Q. Did Staff attempt to address every issue raised by the Company in its rebuttal
18 testimony?**

19 A. No. Staff limited its discussion to certain issues as outlined below.

20

21 **SUMMARY OF COMPANY'S REBUTTAL TESTIMONY**

22 **Q. Please summarize the Company's rebuttal testimony.**

23 A. The Company indicated in its rebuttal testimony that it is in disagreement with Staff in the
24 following issues:

25

26

27

1. Plant in Service - Phoenix Office and Meter Shop Allocations
2. Accumulated Depreciation

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25

3. Working Capital Allowance
4. Deferred Central Arizona Project ("CAP") Charges
5. Revenue Annualization
6. Purchased Power Adjustment Mechanism ("PPAM")
7. Purchased Water Adjustment Mechanism ("PWAM")
8. CAP Capital and Delivery Charges
9. Water Testing Expenses
10. Rate Case Expense
11. Amortization of Contributions in Aid of Construction
12. Pinal Creek Group

Q. Please explain how Staff organizes its surrebuttal testimony.

A. Staff organizes its testimony following the Company's major points of disagreement listed above.

Plant In Service

Q. Has Staff reviewed the Company's rebuttal testimony regarding the Phoenix Office and Meter Shop Plant In Service allocations?

A. Yes it has.

Q. Does Staff agree with the Company that Staff erroneously removed all of the actual test year plant in service balances associated with the Phoenix Office and Meter Shop plant.

A. Yes it does. Consequently Staff increased Plant In Service by \$1,502,908.

1 **Accumulated Depreciation**

2 **Q. Did the Company raise any concerns about Staff's pro forma adjustments to**
3 **accumulated depreciation for actual and post-test year plant additions?**

4 A. Yes. Consistent with Staff's adjustment to Plant In Service, Staff increased Accumulated
5 Depreciation by \$227,756.

6
7 **Q. Has Staff prepared schedules to reflect the changes made and its effect on the**
8 **revenue requirement?**

9 A. Yes. Staff has prepared schedules REL-1 for each system which show Staff's direct
10 testimony and its surrebuttal position and the effect of Staff's surrebuttal adjustments on
11 the revenue requirement.

12
13 **Working Capital Allowance**

14 **Q. Did the Company take exception to Staff's lead/lag adjustment to property taxes?**

15 A. Yes. The Company disagreed with the lag-day factor used by Staff to calculate the Cash
16 Working Capital component related to property taxes.

17
18 The Company used 212 lag days while Staff used 592 lag days to arrive at its proposed
19 adjustments. Actually, both figures are incorrect. In order to determine the correct lag
20 days Staff obtained a January 7, 1997, memo from the Arizona Department of Revenue.
21 This memo describes the change brought about by the new law, which states that the
22 valuation year will precede the tax year. The memo includes a calendar which shows that
23 the lag created by this new law totals 532.5 days. This memo is attached as Surrebuttal
24 Exhibit REL-2. Staff has adjusted its Cash Working Capital figure accordingly.

25

1 **Q. Does Staff agree with the Company's characterization that Staff used expense**
2 **amounts and expense lag days for each individual system to mean the Company did**
3 **not use the individual approach?**

4 A. No. Staff simply stated how it completed its analysis and should not have been
5 interpreted by the Company in any other context.

6
7 **Q. Does Staff agree with the Company's assertion that depreciation expenses and**
8 **deferred income taxes were not included in its calculations?**

9 A. No. The Company removed depreciation expense and deferred income taxes from the
10 expense lag days but did not remove them from its calculation of revenue days. It is
11 improper to include the depreciation expense and deferred tax figures in the revenue side
12 of the equation but remove them from the expense side. This mismatch results in an
13 overstatement of Cash Working Capital and the Company's calculations are not accurate.

14
15 **Q. Did Staff's lead/lag study incorporate all its adjustments to operating expenses?**

16 A. No. Staff incorporated those adjustments it felt were material such as property taxes and
17 synchronized interest. However, since rebuttal and surrebuttal testimonies can draw the
18 parties closer to a consensus, Staff has also adjusted its Federal and state income tax as
19 well as its property tax and rate base figures and recalculated its Cash Working Capital
20 allowance accordingly.

21
22 **Deferred CAP Charges**

23 **Q. Did the Company raise concerns about the number of years Staff used to amortize**
24 **the deferred CAP balance?**

25 A. Yes. The Company raised two concerns: First, the Company indicated that it could not
26 determine whether Staff amortized the deferred CAP balance over 32 or 34 years

1 (Hubbard, Rebuttal at 12, line 4.) Second, the Company disagreed with Staff's
2 recommendation to amortize the deferred CAP balance over the remaining life of the CAP
3 contract because it "extends well beyond the periods of time authorized by the
4 Commission for recovery of these same deferred charges by other water utilities . . ."
5 (Garfield, Rebuttal, at 4, line 10).

6
7 **Q. What is Staff's recommended amortization period?**

8 A. Staff's recommended amortization period is 32 years or 384 months. This number is
9 shown in Staff's direct testimony on Schedule REL 14. Line 12.

10
11 **Q. Please explain why Staff recommended an amortization period of 32 years.**

12 A. In Decision No. 58120, dated December 23, 1992, the Commission ordered Arizona
13 Water Company to amortize the \$60,000 in deferred CAP-Municipal and Industrial
14 ("M&I") charges (that were accrued in the 1990 test year and prior years) over 44 years
15 (i.e., the remaining life of the contract). This method is consistent with Generally
16 Accepted Accounting Principles ("GAAP") which requires that all deferred charges be
17 amortized over the estimated benefit period.

18
19 In addition, the Company provided an amortization schedule of its \$60,000 deferred CAP
20 M&I charges in response to Staff's data request REL 7-6. The schedule shows 43 annual
21 amortization expense periods of \$1,380 beginning in the year 1993 and one final expense
22 amount of \$660 ending in the year 2036, for total payments of \$60,000 ($\$1,380 \times 43 +$
23 \$660) amortized over 44 years.

24

25

1 **Q. Does Staff believe the Company's proposed amortization period of three years is**
2 **appropriate?**

3 A. No, it does not. A three-year amortization period is not in the public interest nor is it
4 consistent with Decision No. 58120, or the Company's present method of amortizing its
5 deferred CAP balance over the remaining life of the CAP contract. Additionally, a three-
6 year period is not consistent with GAAP.

7

8 **Revenue Annualization**

9 **Q. Did the Company accept Staff's pro forma adjustment to increase revenue**
10 **annualization?**

11 A. No it did not. The Company computed average cost per customer using only its 5¹⁰-inch
12 meter size because the majority of the growth is in the 5/8-inch meter group.

13

14 **Q. Does Staff agree with the Company's argument?**

15 A. No, it does not. The Company did not rectify the fact that in computing the corresponding
16 expenses to the additional revenues provided by their annualization of year-end customers,
17 they used total expenses rather than the expenses for the 5/8-inch meter group, thus
18 creating a mismatch.

19

20 **Q. What is the effect of the Company's position?**

21 A. By using the expense annualization that includes all meter sizes the resulting operation
22 income is understated.

23

24

1 **Purchased Power Adjustment Mechanism**

2 **Q. Did the Company agree with Staff's proposal to eliminate the Purchased Power**
3 **Adjustment Mechanism ("PPAM")?**

4 A. No, although Arizona Water is the only water provider that still uses the Purchased
5 Pumping Power Adjustor it still believes it needs such an adjustor. Such adjustors have
6 been used where power costs are by far the largest single cost item and are highly volatile.
7 In the instant case, purchased power for the Eastern Group represents only 9.9 per cent of
8 its total cost and can not be considered the Company's largest single cost item.

9
10 **Q. Does the Company cite examples of other companies adjustor mechanisms?**

11 A. Yes, the Company has chosen to use energy providers as the example of companies that
12 maintain adjustors. This comparison is inappropriate. The companies that Arizona Water
13 referred to are energy resellers and as such purchased fuel is by far the biggest expense in
14 their cost of service and the price is highly volatile. Arizona Water does not meet either of
15 these criteria.

16
17 **Purchased Water Adjustor Mechanism**

18 **Q. Did the Company agree with Staff's proposal to eliminate the Purchased Water**
19 **Adjustment Mechanism ("PWAM")?**

20 A. No. The Company objected to the removal of the Purchased Water Adjustor Mechanism.

21
22 **Q. How many water companies currently have a PWAM?**

23 A. Arizona Water is the only water company with this form of adjustor and, it only applies to
24 three of its eighteen systems. Of these, only the San Manuel and Superior systems are
25 located in the Eastern Division. The Superior system's purchased water expense accounts
26 for less than one percent of its total operation and maintenance expense. The Company

1 stated that its purchased water expense is twenty-nine percent (29%) of its operation and
2 maintenance expense for San Manuel.

3
4 **Q. Does the Company have a source of production in the San Manuel system?**

5 A. No. The Company owns no wells in its San Manuel system and relies solely on water
6 purchased from BHP Copper ("BHP").

7
8 **Q. Does Arizona Water have a contract with BHP?**

9 A. Yes. The Company entered into a ten (10) year contract in March of 1999 which has an
10 annual adjustment clause. Since the Company has agreed to file another rate case in 2006,
11 Staff believes its proposed rates are sufficient to provide the Company sufficient revenue
12 to cover its purchased water expense.

13
14 **Q. What is the effect of purchasing all the Company's water needs?**

15 A. The Company has no investment in wells and is totally reliant on purchased water. With
16 the PWAM in effect, the Company has transferred its risk of providing water to its
17 ratepayers rather than its shareholder where such risk properly belongs. The Commission
18 should eliminate the PWAM.

19
20 **Capital and Delivery Charges**

21 **Q. Did the Company propose any changes to its CAP Purchased Water Expense?**

22 A. Yes. In its rebuttal testimony (Hubbard at 22, lines 4 - 21) the Company proposes
23 to use CAP contract rates that will go into effect in the year 2004.

24

25

1 **Q. Given that the Company's test year is 2001, does Staff believe it is appropriate to use**
2 **contract rates that become effective in the year 2004?**

3 A. No, Staff does not believe that it is appropriate to use 2004 expenses.
4

5 **Q. Please explain why it is inappropriate to use 2004 expenses?**

6 A. CAP 2004 expenses are inappropriate because they go too far beyond the 2001 test year.
7
8

9 **CAP Purchased Water Expense, Annualization Adjustment**
10

11 **Q. The Company expressed a concern that Staff understated its purchased water**
12 **expense by \$31,604 (Rebuttal, Hubbard, at 31, line 4). Does Staff agree with the**
13 **Company's concern?**

14 A. Staff does not agree that its recommended purchased water expense is understated;
15 however, Staff does agree that the number should be revised.
16

17 **Q. Please state Staff's revised purchased water expense amount?**

18 A. Staff's revised purchased water expense amount is \$965,689. This amount is \$9,367 less
19 than the \$975,056 recommended in Staff's direct testimony.
20

21 **Q. Please discuss the revisions made to Staff's recommended purchased water expense**
22 **calculation?**

23 A. Staff made three changes to the purchased water expense calculation in order to show the
24 consistency between Schedules REL-13 and REL-15.

25 First, Staff reduced its recommended amount of CAP purchased water expense (shown on
26 line 1 of Schedule REL-13) by \$25,188, from \$728,497 in its direct testimony to \$703,309

1 in order to reflect the 2001 purchased water expense. Second, Staff re-instated the
2 Company's \$10,982 pro forma adjustment (shown on line 5 of Schedule REL-13);
3 increasing it by \$10,982, from \$0 in Staff's direct testimony to \$10,982 to reflect an
4 additional month of M&I capital cost that was not included in the 2001 purchased water
5 expense of \$703,309. Third, Staff reflected the 2001 M&I costs (shown on line 6 of
6 Schedule REL-13), increasing the amount by \$4,839, from \$109,100 in Staff's direct
7 testimony to \$113,939. These three revisions result in a net decrease of \$9,367 from
8 Staff's direct testimony (i.e. [$\$25,188$] + $\$10,982$ + $\$4,839$ = [$\$9,367$]).
9

10 **Rate Case Expense**

11 **Q. Does the Company disagree with Staff's analysis of its requested rate case Expenses?**

12 A. Yes. The Company disagrees with Staff's Recommendation.
13

14 **Q. Did the Company increase its requested rate case expense in its Rebuttal Testimony?**

15 A. Yes. The Company is requesting an additional unknown amount in its rebuttal testimony
16 that includes legal expenses regarding the Arsenic Cost Recovery Mechanism ("ACRM"),
17 Phase Two of the Northern Group. Staff recommends that legal expenses from the
18 Northern Group not be included in Eastern Group rates.
19

20 **Q. Did Staff compare the rate case expense level incurred in 1990 with the cost of the
21 instant case?**

22 A. Yes, Staff did compare the two expense levels and found this case's expenses to be
23 excessive. However, according to the Company, they should not be compared because in
24 the 1990 proceeding the Company did not retain the services of outside consultants. Staff
25 believes that while use of outside consultants is appropriate in many instances, the outside

1 consultant expenses in this case are unnecessarily costly and shareholders should bear
2 some of that additional cost.

3 **CIAC Amortization Rate**

4 **Q. Did the Company express any concerns regarding Staff's Contributions in Aid of**
5 **Construction ("CIAC") amortization?**

6 A. Yes. The Company disagrees with the 2.34 per cent CIAC amortization rate used by
7 Staff. (Rebuttal, Hubbard at 26, lines 25, 26 and at 27 lines 1-4.) Staff's rate was
8 determined consistent with the methodology used in the Company's 1990 rate case and its
9 Northern Group's 1999 rate case. Staff calculates the composite depreciation rate by
10 dividing each depreciation expense by its depreciable plant. In Staff's Data Request REL-
11 1-9, the Company was asked to explain "The calculations used to determine CIAC
12 amortization rates" and responded that "the CIAC amortization rate is based on the
13 composite depreciation rate. It is not calculated separately."

14
15 In its testimony, the Company includes only the following five plant accounts in
16 determining its CIAC amortization rate: 1) Transmission and Distribution Mains, 2) Fire
17 Sprinkler Taps, 3) Services, 4) Meters and, 5) Hydrants.

18
19 If the Company had wished to deviate from the method used in its last two rate cases it
20 then should have requested such a change in its application and not in its rebuttal
21 testimony. This would have given Staff the opportunity to review this change.

22
23 **Pinal Creek Group Issue**

24 **Q. Has the Company expressed concern regarding Staff's handling of the Pinal Creek**
25 **Group ("PCG") matter?**

1 A. Yes it has. Both Mr. Garfield and Mr. Kennedy have addressed the benefits their Miami
2 customers have received as a result of the Company's efforts.

3 **Q. Are the benefits discussed the result of the efforts in the Pinal Creek Settlement?**

4 A. The benefits discussed by the Company are those that a well managed Company such as
5 Arizona Water should be seeking for itself and its customers. However, in spite of all the
6 alleged benefits the Company secured for its customers, the Company failed to quantify
7 them so they could be passed on to its customers.

8
9 **Q. Does this conclude your surrebuttal testimony?**

10 A. Yes. However, Staff's silence on any particular issue raised in the Company's rebuttal
11 testimony does not necessarily indicate that Staff agrees with the Company's stated
12 rebuttal position on the issue.

13

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	32,403,018	\$	33,798,525	\$	1,395,507	4.31%
2	Adjusted Operating Income (Loss)	\$	2,398,379	\$	2,425,092	\$	26,713	1.11%
3	Current Rate of Return (L2 / L1)		7.40%		7.18%		-0.23%	-3.06%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	2,775,643	\$	2,895,182	\$	119,539	4.31%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	377,263	\$	470,089	\$	92,826	24.61%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	615,676	\$	767,163	\$	151,487	24.60%
9	Adjusted Test Year Revenue	\$	14,749,327	\$	14,749,327	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	15,365,003	\$	15,516,490	\$	151,487	0.99%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		4.17%		5.20%		1.03%	24.60%

REVENUE REQUIREMENT

Surrebuttal Exhibit REL-1
Page 2 of 9

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	18,346,065	\$	19,071,140	\$	725,075	3.95%
2	Adjusted Operating Income (Loss)	\$	2,123,885	\$	2,145,383	\$	21,498	1.01%
3	Current Rate of Return (L2 / L1)		11.58%		11.25%		-0.33%	-2.85%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	1,571,524	\$	1,633,634	\$	62,110	3.95%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	(552,362)	\$	(511,749)	\$	40,613	-7.35%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	(901,427)	\$	(835,149)	\$	66,278	-7.35%
9	Adjusted Test Year Revenue	\$	9,038,642	\$	9,038,642	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	8,137,215	\$	8,203,493	\$	66,278	0.81%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		-9.97%		-9.24%		0.73%	-7.32%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	3,425,681	\$	3,590,535	\$	164,854	4.81%
2	Adjusted Operating Income (Loss)	\$	74,500	\$	75,856	\$	1,356	1.82%
3	Current Rate of Return (L2 / L1)		2.17%		2.11%		-0.06%	-2.76%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	293,444	\$	307,565	\$	14,121	4.81%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	218,944	\$	231,709	\$	12,765	5.83%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	357,306	\$	378,139	\$	20,833	5.83%
9	Adjusted Test Year Revenue	\$	1,256,603	\$	1,256,603	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	1,613,909	\$	1,634,742	\$	20,833	1.29%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		28.43%		30.09%		1.66%	5.84%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony	Surrebuttal	Variance to Direct Testimony	% Variance
1	Adjusted Rate Base	\$ 2,740,612	\$ 2,918,090	\$ 177,478	6.48%
2	Adjusted Operating Income (Loss)	\$ 121,633	\$ 122,821	\$ 1,188	0.98%
3	Current Rate of Return (L2 / L1)	4.44%	4.21%	-0.23%	-5.18%
4	Required Rate of Return	8.5660%	8.5660%	0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$ 234,761	\$ 249,964	\$ 15,203	6.48%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$ 113,128	\$ 127,143	\$ 14,015	12.39%
7	Gross Revenue Conversion Factor	1.63195	1.63195	-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$ 184,620	\$ 207,490	\$ 22,870	12.39%
9	Adjusted Test Year Revenue	\$ 1,456,722	\$ 1,456,722	\$ -	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$ 1,641,342	\$ 1,664,212	\$ 22,870	1.39%
11	Require Increase/Decrease in Revenue (%) (L8/L9)	12.67%	14.24%	1.57%	12.39%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	2,415,268	\$	2,495,716	\$	80,448	3.33%
2	Adjusted Operating Income (Loss)	\$	159,660	\$	160,336	\$	676	0.42%
3	Current Rate of Return (L2 / L1)		6.61%		6.42%		-0.19%	-2.87%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	206,892	\$	213,783	\$	6,891	3.33%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	47,232	\$	53,447	\$	6,215	13.16%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	77,081	\$	87,224	\$	10,143	13.16%
9	Adjusted Test Year Revenue	\$	828,768	\$	828,768	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	905,849	\$	915,992	\$	10,143	1.12%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		9.30%		10.52%		1.22%	13.12%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	641,450	\$	699,272	\$	57,822	9.01%
2	Adjusted Operating Income (Loss)	\$	(157,939)	\$	(157,490)	\$	449	-0.28%
3	Current Rate of Return (L2 / L1)		-24.62%		-22.52%		2.10%	-8.53%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	54,947	\$	59,900	\$	4,953	9.01%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	212,886	\$	217,389	\$	4,503	2.12%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	347,419	\$	354,769	\$	7,350	2.12%
9	Adjusted Test Year Revenue	\$	474,116	\$	474,116	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	821,535	\$	828,885	\$	7,350	0.89%
11	Require increase/Decrease in Revenue (%) (L8/L9)		73.28%		74.83%		1.55%	2.12%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	2,200,445	\$	2,317,537	\$	117,092	5.32%
2	Adjusted Operating Income (Loss)	\$	60,968	\$	61,973	\$	1,005	1.65%
3	Current Rate of Return (L2 / L1)		2.77%		2.67%		-0.10%	-3.61%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	188,490	\$	198,520	\$	10,030	5.32%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	127,522	\$	136,547	\$	9,025	7.08%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	208,109	\$	222,838	\$	14,729	7.08%
9	Adjusted Test Year Revenue	\$	897,163	\$	897,163	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	1,105,272	\$	1,120,001	\$	14,729	1.33%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		23.20%		24.84%		1.64%	7.07%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	2,400,573	\$	2,463,731	\$	63,158	2.63%
2	Adjusted Operating Income (Loss)	\$	6,097	\$	6,585	\$	488	8.00%
3	Current Rate of Return (L2 / L1)		0.25%		0.27%		0.02%	8.00%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	205,633	\$	211,043	\$	5,410	2.63%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	199,536	\$	204,458	\$	4,922	2.47%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	325,633	\$	333,665	\$	8,032	2.47%
9	Adjusted Test Year Revenue	\$	698,589	\$	698,589	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	1,024,222	\$	1,032,254	\$	8,032	0.78%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		46.61%		47.76%		1.15%	2.47%

REVENUE REQUIREMENT

LINE NO.	DESCRIPTION	Direct Testimony		Surrebuttal		Variance to Direct Testimony		% Variance
1	Adjusted Rate Base	\$	232,924	\$	242,504	\$	9,580	4.11%
2	Adjusted Operating Income (Loss)	\$	9,575	\$	9,628	\$	53	0.55%
3	Current Rate of Return (L2 / L1)		4.11%		3.97%		-0.14%	-3.41%
4	Required Rate of Return		8.5660%		8.5660%		0.00%	0.00%
5	Required Operating Income (L4 * L1)	\$	19,952	\$	20,773	\$	821	4.11%
6	Operating Income Deficiency/Sufficiency (L5 - L2)	\$	10,377	\$	11,145	\$	768	7.40%
7	Gross Revenue Conversion Factor		1.63195		1.63195		-	0.00%
8	Increase/Decrease In Gross Revenue (L7 * L6)	\$	16,935	\$	18,187	\$	1,252	7.39%
9	Adjusted Test Year Revenue	\$	98,724	\$	98,724	\$	-	0.00%
10	Proposed Annual Revenue (L8 + L9)	\$	115,659	\$	116,911	\$	1,252	1.08%
11	Require Increase/Decrease in Revenue (%) (L8/L9)		17.15%		18.42%		1.27%	7.41%

ARIZONA DEPARTMENT OF REVENUE
1600 WEST MONROE - PHOENIX, ARIZONA 85007-2650

January 7, 1997

FIFE SYMINGTON
GOVERNOR



MARK W. KILLIAN
DIRECTOR

NOTICE TO ALL TAXPAYERS WHOSE PROPERTY IS VALUED BY THE DEPARTMENT OF REVENUE

The 1996 Arizona Legislature passed House Bill 2007 modifying the assessment and appeals calendar for taxpayers whose property is valued by the Department of Revenue for property tax purposes (i.e., utilities, mines, railroads, pipelines, airlines, and telecommunications companies). This bill changed the date by which the Department (DOR) must determine values and the appeals calendar pertaining to those properties. The new law requires that full cash values established in 1997 will be used for property tax purposes in tax years 1997 and 1998, in order to permit the transition to the new calendar.

The new calendar will not take effect until 1998; the assessment and appeals calendar is unchanged for the 1997 (current) calendar year. The following is a comparison of the significant dates in the two calendars:

	<u>Current Calendar</u>	<u>New Calendar</u>
Calendar Year	1997	1998
Valuation Date	Jan. 1, 1997	Jan. 1, 1998
Annual taxpayer reports due to the DOR	April 1	April 1
DOR notifies taxpayers of value	May 3	June 15
Deadline for appeals to DOR	May 20	July 15
Deadline for DOR to rule on appeals	June 16	August 31
Deadline for appeals to State Board of Equalization	June 23*	October 1
Deadline for State Board of Equalization to rule on appeals	July 31	November 15
Tax Year(s)	1997 & 1998	1999
Due date for first half of taxes for tax year(s)	October 1 (1997 & 1998)	October 1 (1999)
Due date for second half of taxes for tax year(s)	March 1 (1998 & 1999)	March 1 (2000)

*Or 15 days after the DOR mails its decision, whichever is later.

The most significant change brought about by the new law is that the valuation year will precede the tax year. The "valuation date" will continue to be January 1 of the valuation year. For example, the valuation date for values established during calendar year 1998 will be January 1, 1998, but those values will not be used for property tax purposes until the 1999 tax year.

Assessed values for Class one and two properties (utilities, local telecommunications companies, pipelines, and mines) will be lower in 1998 as the assessment ratio for those properties continues to drop. The 1997 assessment ratio will be 27% and the 1998 assessment ratio will be 26%. Therefore, if the 1997 full cash value is \$1,000,000, the 1997 assessed value will be \$270,000 and the 1998 assessed value will be \$260,000.

Should you have any questions, please feel free to call either Susan Husij or Cheryl Murray Leyba at 602-542-3529.

OTHER LOCATIONS: Tucson Government Mall - 400 W. CONGRESS - TUCSON
East Valley - 1440/1460 E. SOUTHERN - TEMPE

**Centrally Valued Property Calendar
2003 Calendar (Valuation) Year
(2004 Tax Year)**

January 1	Valuation date for 2004 tax year; lien date for 2003 tax year.
March 1	Due date for second half of property taxes for the <u>2002 tax year</u> (except private car companies). Delinquent after May 1 at 5:00 p.m.
March 20	Deadline for requests for extension of time for filing property tax reporting forms.
April 1	Property tax reporting forms due to the Department of Revenue.
May 20	Right of appeal of the valuation and classification forfeited if property tax reporting forms not filed by this date (for companies operating in air commerce; producing and closed mines, mills and smelters; oil, gas and geothermal resource interests; gas, water, sewer and wastewater, and electric utilities and pipelines).
June 15	The Department notifies taxpayers of preliminary value of their property in Arizona.
July 15	Deadline for property owner to request an informal conference with the Department (first level of appeal).
July 21 - August 14	Informal conferences held with taxpayers dissatisfied with the Department's valuations.
August 31	Deadline for the Department to rule on appeals presented at informal conferences. Final Notices of Value mailed (for those taxpayers whose value has changed from the Preliminary Notice).
October 1	Deadline for appeals to the State Board of Equalization.
October 1	Due date for first half of property taxes for <u>2003 tax year</u> . Delinquent after November 1 at 5:00 p.m.
November 15	Deadline for State Board of Equalization to rule on appeals. An appeal from State Board of Equalization's decision to court must be filed within sixty days after the date of the State Board's final decision.
Dec. 15th	Deadline for appeal of Department's valuation directly to the superior court.

2004 Calendar Year

March 1	Due date for second half of property taxes for the <u>2003 tax year</u> . Delinquent after May 1 at 5:00 p.m.
October 1	Due date for first half of property taxes for <u>2004 tax year</u> . Delinquent after November 1 at 5:00 p.m.

2005 Calendar Year

March 1	Due date for second half of property taxes for the <u>2004 tax year</u> . Delinquent after May 1 at 5:00 p.m.
---------	---------------------------------------------------------------------------------------------------------------

ARIZONA WATER COMPANY - APACHE JUNCTION
DOCKET NO. W-0144 A-02-0619
TEST YEAR ENDED DECEMBER 31, 2001

Schedule REL-26
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge			
	Present Rates	---Proposed Rates---		
		Staff		
	Company	Dir. Testimony	Surrebuttal	
5/8" x 3/4" Meter	\$ 12.43	\$ 18.13	\$ 12.43	\$ 12.43
1" Meter	\$ 24.86	\$ 40.79	\$ 35.71	\$ 35.71
2" Meter	\$ 62.15	\$ 117.85	\$ 113.80	\$ 113.80
3" Meter	\$ 103.58	\$ 211.58	\$ 283.79	\$ 283.79
4" Meter	\$ 207.16	\$ 377.65	\$ 532.97	\$ 532.97
6" Meter	\$ 362.53	\$ 717.59	\$ 717.50	\$ 717.50
8" Meter	\$ 362.53	\$ 989.54	\$ 862.25	\$ 862.25
10" Meter	\$ 673.27	\$ 1,624.09	\$ 1,003.50	\$ 1,003.50

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 2.5690	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 2.5690	\$ 2.5250	\$ 1.5008	\$ 1.5248
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 2.5690	\$ 2.5250	\$ 1.8760	\$ 1.9060
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 2.5690	\$ 2.5250	\$ 2.2512	\$ 2.2872

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

ARIZONA WATER COMPANY - APACHE JUNCTION
DOCKET NO. W-01445A-02-0619
TEST YEAR ENDED DECEMBER 31, 2001

Schedule REL-26
Page 2 of 2

**RATE DESIGN
CONTINUED**

Service Charges:

	Present Rates	---Proposed Rates---		
		Staff		
		Company	Dir. Testimony	Surrebuttal
Establishment	\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
Guarantee Deposit	(c)	(c)	(c)	(c)
Reconnection for Delinquency (per disconnection)	\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
Re-establishment	(d)	(d)	(d)	(d)
Service Call Out (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
Returned Check Charge	\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
Meter Re-read (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
Meter Test	\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
Late Charge	N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-22
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

Minimum Monthly Usage Charge				
Present Rates	---Proposed Rates---			
	Staff			
	Company	Dir. Testimony	Surrebuttal	
\$ 13.47	\$ 20.11	\$ 15.87	\$ 15.87	
\$ 24.86	\$ 43.64	\$ 41.50	\$ 41.50	
\$ 62.15	\$ 126.89	\$ 133.27	\$ 133.27	
\$ 155.37	\$ 266.86	\$ 267.25	\$ 267.25	
\$ 207.16	\$ 406.02	\$ 449.50	\$ 449.50	
\$ 362.53	\$ 773.43	\$ 662.53	\$ 662.53	
\$ 362.53	\$ 1,075.08	\$ 891.27	\$ 891.27	
\$ 673.27	\$ 1,759.42	\$ 1,200.36	\$ 1,200.36	

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter
1" Meter
2" Meter
3" Meter
4" Meter
6" Meter
8" Meter
10" Meter

1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0
1,000	0	0	0

Fire Hydrants Used For Construction Water

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 2.4860	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 2.4860	\$ 3.1600	\$ 2.3696	\$ 2.4280
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 2.4860	\$ 3.1600	\$ 2.9620	\$ 3.0350
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 2.4860	\$ 3.1600	\$ 3.5544	\$ 3.6420

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

Arizona Water Company - Bisbee
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-22
Page 2 of 2

**RATE DESIGN
CONTINUED**

Service Charges:

Establishment
Guarantee Deposit
Reconnection for Delinquency (per disconnection)
Re-establishment
Service Call Out (After Regular Working Hours Only)
Returned Check Charge
Meter Re-read (After Regular Working Hours Only)
Meter Test
Late Charge

Present Rates	---Proposed Rates---		
	Staff		
	Company	Dir. Testimony	Surrebuttal
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 25.00	\$ 25.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-24
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge			
	Present Rates	---Proposed Rates---		
		Staff		
	Company	Dir. Testimony	Surrebuttal	
5/8" x 3/4" Meter	\$ 13.47	\$ 20.22	\$ 16.36	\$ 16.36
1" Meter	\$ 24.86	\$ 43.88	\$ 36.80	\$ 36.80
2" Meter	\$ 62.15	\$ 127.59	\$ 123.96	\$ 123.96
3" Meter	\$ 103.58	\$ 229.29	\$ 238.19	\$ 238.19
4" Meter	\$ 207.16	\$ 408.24	\$ 511.03	\$ 511.03
6" Meter	\$ 362.53	\$ 777.66	\$ 1,006.31	\$ 1,006.31
8" Meter	\$ 362.53	\$ 1,080.96	\$ 1,163.12	\$ 1,163.12
10" Meter	\$ 673.27	\$ 1,769.05	\$ 1,305.25	\$ 1,305.25

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 3.3040	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 3.3040	\$ 4.3300	\$ 2.4584	\$ 2.5184
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 3.3040	\$ 4.3300	\$ 3.0730	\$ 3.1480
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 3.3040	\$ 4.3300	\$ 3.6876	\$ 3.7776

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

Arizona Water Company - Miami
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-24
Page 2 of 2

**RATE DESIGN
CONTINUED**

Service Charges:

Establishment
Guarantee Deposit
Reconnection for Delinquency (per disconnection)
Re-establishment
Service Call Out (After Regular Working Hours Only)
Returned Check Charge
Meter Re-read (After Regular Working Hours Only)
Meter Test
Late Charge

Present Rates	---Proposed Rates---		
	Staff		
	Company	Dir. Testimony	Surrebuttal
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-22
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge			
	Present Rates	---Proposed Rates---		
		Staff		
	Company	Dir. Testimony	Surrebuttal	
5/8" x 3/4" Meter	\$ 15.54	\$ 20.05	\$ 18.75	\$ 18.75
1" Meter	\$ 38.84	\$ 50.13	\$ 38.63	\$ 38.63
2" Meter	\$ 103.58	\$ 146.97	\$ 181.73	\$ 181.73
3" Meter	\$ 155.37	\$ 250.63	\$ 220.51	\$ 220.51
4" Meter	\$ 207.16	\$ 384.36	\$ 286.45	\$ 286.45
6" Meter	\$ 492.01	\$ 818.64	\$ 335.79	\$ 335.79
8" Meter	\$ 621.48	\$ 1,203.00	\$ 625.36	\$ 625.36
10" Meter	\$ 673.27	\$ 1,687.41	\$ 837.19	\$ 837.19

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 5.7490	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 5.7490	\$ 6.2980	\$ 4.4640	\$ 4.5460
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 5.7490	\$ 6.2980	\$ 5.5800	\$ 5.6820
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 5.7490	\$ 6.2980	\$ 6.6960	\$ 6.8180

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

Arizona Water Company - Oracle
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-22
Page 2 of 2

**RATE DESIGN
CONTINUED**

Service Charges:

Establishment
Guarantee Deposit
Reconnection for Delinquency (per disconnection)
Re-establishment
Service Call Out (After Regular Working Hours Only)
Returned Check Charge
Meter Re-read (After Regular Working Hours Only)
Meter Test
Late Charge

Present Rates	---Proposed Rates---		
	Staff		
	Company	Dir. Testimony	Surrebuttal
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B.

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

Arizona Water Company - San Manuel
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-23
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge			
	Present Rates	---Proposed Rates---		
		Staff		
	Company	Dir. Testimon	Surrebuttal	
5/8" x 3/4" Meter	\$ 13.98	\$ 27.47	\$ 19.26	\$ 19.26
1" Meter	\$ 31.07	\$ 64.83	\$ 41.60	\$ 41.60
2" Meter	\$ 93.22	\$ 201.36	\$ 183.76	\$ 183.76
3" Meter	\$ 155.37	\$ 358.76	\$ 212.35	\$ 212.35
4" Meter	\$ 269.31	\$ 607.91	\$ 443.74	\$ 443.74
6" Meter	\$ 362.53	\$ 1,043.04	\$ 526.78	\$ 526.78
8" Meter	\$ 362.53	\$ 1,455.09	\$ 854.56	\$ 854.56
10" Meter	\$ 673.27	\$ 2,378.35	\$ 1,228.50	\$ 1,228.50

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 0.9220	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 0.9220	\$ 1.6220	\$ 1.3600	\$ 1.3930
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 0.9220	\$ 1.6220	\$ 1.7000	\$ 1.7410
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 0.9220	\$ 1.6220	\$ 2.0400	\$ 2.0890

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

Arizona Water Company - San Manuel
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-23
 Page 2 of 2

**RATE DESIGN
 CONTINUED**

Service Charges:

Establishment
 Guarantee Deposit
 Reconnection for Delinquency (per disconnection)
 Re-establishment
 Service Call Out (After Regular Working Hours Only)
 Returned Check Charge
 Meter Re-read (After Regular Working Hours Only)
 Meter Test
 Late Charge

Present Rates	---Proposed Rates---		
	Staff		
	Company	Dir. Testimon	Surrebuttal
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 20.00	\$ 20.00	\$ 20.00	\$ 20.00
N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

Arizona Water Company - Sierra Vista
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-21
 Page 2 of 2

**RATE DESIGN
 CONTINUED**

Service Charges:

Establishment
 Guarantee Deposit
 Reconnection for Delinquency (per disconnection)
 Re-establishment
 Service Call Out (After Regular Working Hours Only)
 Returned Check Charge
 Meter Re-read (After Regular Working Hours Only)
 Meter Test
 Late Charge

Present Rates	---Proposed Rates---		
	Staff		
	Company	Dir. Testimony	Surrebuttal
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

Arizona Water Company - Sierra Vista
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-21
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

Present Rates	Minimum Monthly Usage Charge			
	---Proposed Rates---			
	Staff			
	Company	Dir. Testimony	Surrebuttal	
5/8" x 3/4" Meter	\$ 12.43	\$ 18.25	\$ 16.20	\$ 16.20
1" Meter	\$ 24.86	\$ 41.06	\$ 33.01	\$ 33.01
2" Meter	\$ 62.15	\$ 118.63	\$ 154.12	\$ 154.12
3" Meter	\$ 103.58	\$ 212.98	\$ 296.19	\$ 296.19
4" Meter	\$ 207.16	\$ 380.15	\$ 419.16	\$ 419.16
6" Meter	\$ 362.53	\$ 722.34	\$ 604.72	\$ 604.72
8" Meter	\$ 525.53	\$ 996.09	\$ 725.66	\$ 725.66
10" Meter	\$ 673.27	\$ 1,634.84	\$ 907.08	\$ 907.08

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 1.5950	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 1.5950	\$ 2.1130	\$ 1.3580	\$ 1.3940
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 1.5950	\$ 2.1130	\$ 1.6980	\$ 1.7420
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 1.5950	\$ 2.1130	\$ 2.0380	\$ 2.0900

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-21
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge			
	Present Rates	---Proposed Rates---		
		Staff		
	Company	Dir. Testimony	Surrebittal	
5/8" x 3/4" Meter	\$ 18.13	\$ 18.13	\$ 20.05	\$ 20.05
1" Meter	\$ 38.84	\$ 40.79	\$ 70.20	\$ 70.20
2" Meter	\$ 103.58	\$ 117.85	\$ 150.26	\$ 150.26
3" Meter	\$ 155.37	\$ 211.58	\$ 432.93	\$ 432.93
4" Meter	\$ 207.16	\$ 377.65	\$ 519.52	\$ 519.52
6" Meter	\$ 362.53	\$ 717.59	\$ 623.42	\$ 623.42
8" Meter	\$ 362.53	\$ 989.54	\$ 748.10	\$ 748.10
10" Meter	\$ 673.27	\$ 1,624.09	\$ 935.13	\$ 935.13

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 4.0600	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 4.0600	\$ 4.0600	\$ 5.1040	\$ 5.1640
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 4.0600	\$ 4.0600	\$ 6.3800	\$ 6.4550
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 4.0600	\$ 4.0600	\$ 7.6560	\$ 7.7460

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

Arizona Water Company - Superior
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-21
Page 2 of 2

**RATE DESIGN
CONTINUED**

Service Charges:

Establishment
Guarantee Deposit
Reconnection for Delinquency (per disconnection)
Re-establishment
Service Call Out (After Regular Working Hours Only)
Returned Check Charge
Meter Re-read (After Regular Working Hours Only)
Meter Test
Late Charge

Present Rates	---Proposed Rates---		
	Staff		
	Company	Dir. Testimony	Surrebuttal
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(c)	(c)	(c)	(c)
\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
(d)	(d)	(d)	(d)
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

(e) 1.5 percent after 15 days

ARIZONA WATER COMPANY - WINKELMAN
DOCKET NO. W-01445A-02-0619
TEST YEAR ENDED DECEMBER 31, 2001

Schedule REL-22
Page 1 of 2

RATE DESIGN

Monthly Usage Charge:

	Minimum Monthly Usage Charge			
	Present Rates	---Proposed Rates---		
		Staff		
	Company	Dir. Testimony	Surrebuttal	
5/8" x 3/4" Meter	\$ 12.95	\$ 17.30	\$ 12.95	\$ 12.95
1" Meter	\$ 24.86	\$ 38.23	\$ 39.66	\$ 39.66
2" Meter	\$ 62.15	\$ 110.72	\$ 57.90	\$ 57.90
3" Meter	\$ 103.58	\$ 198.95	\$ 227.22	\$ 227.22
4" Meter	\$ 207.16	\$ 354.65	\$ 494.41	\$ 494.41
6" Meter	\$ 362.53	\$ 674.70	\$ 616.16	\$ 616.16
8" Meter	\$ 362.53	\$ 934.20	\$ 764.18	\$ 764.18
10" Meter	\$ 673.27	\$ 1,530.88	\$ 935.02	\$ 935.02

Gallons Included In Minimum Charge:

5/8" x 3/4" Meter	1,000	0	0	0
1" Meter	1,000	0	0	0
2" Meter	1,000	0	0	0
3" Meter	1,000	0	0	0
4" Meter	1,000	0	0	0
6" Meter	1,000	0	0	0
8" Meter	1,000	0	0	0
10" Meter	1,000	0	0	0
Fire Hydrants Used For Construction Water	1,000	0	0	0

Commodity Rates :

Per 1,000 Gallons (In Excess of Minimum)	\$ 1.2330	N/A	N/A	N/A
Per 1,000 Gallons for 0 to 3,000 Gallons	\$ 1.2330	\$ 1.4910	\$ 1.0240	\$ 1.0400
Per 1,000 Gallons for 3,001 to 50,000 Gallons	\$ 1.2330	\$ 1.4910	\$ 1.2800	\$ 1.3000
Per 1,000 Gallons for Gallons in Excess of 50,000	\$ 1.2330	\$ 1.4910	\$ 1.5360	\$ 1.5600

Service Line and Meter Installation Charge:

5/8" x 3/4" Meter	(a)	(a)	(a)	(a)
1" Meter	(a)	(a)	(a)	(a)
2" Meter	(b)	(b)	(b)	(b)
3" Meter	(b)	(b)	(b)	(b)
4" Meter	(b)	(b)	(b)	(b)
6" Meter	(b)	(b)	(b)	(b)

(a) No charge for 5/8" and 1" if on existing pipelines. Full cost for 5/8" and 1" if on new pipelines.

(b) Full cost for 2" and larger if on existing or new pipelines.

ARIZONA WATER COMPANY - WINKELMAN
 DOCKET NO. W-01445A-02-0619
 TEST YEAR ENDED DECEMBER 31, 2001

Schedule REL-22
 Page 2 of 2

**RATE DESIGN
 CONTINUED**

Service Charges:

Present Rates	---Proposed Rates---			
	Staff			
	Company	Dir. Testimony	Surrebuttal	
Establishment	\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
Guarantee Deposit	(c)	(c)	(c)	(c)
Reconnection for Delinquency (per disconnection)	\$ 16.00	\$ 16.00	\$ 16.00	\$ 16.00
Re-establishment	(d)	(d)	(d)	(d)
Service Call Out (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
Returned Check Charge	\$ 10.00	\$ 25.00	\$ 25.00	\$ 25.00
Meter Re-read (After Regular Working Hours Only)	\$ 35.00	\$ 35.00	\$ 35.00	\$ 35.00
Meter Test	\$ 50.00	\$ 50.00	\$ 50.00	\$ 50.00
Late Charge	N/A	(e)	(e)	(e)

(c) Per Commission Rule A.A.C. R14-2-403B

(d) Eight (8) times the customer's monthly minimum charge,
 or payment of the minimums since disconnection, whichever is less.

N/A No current tariff.

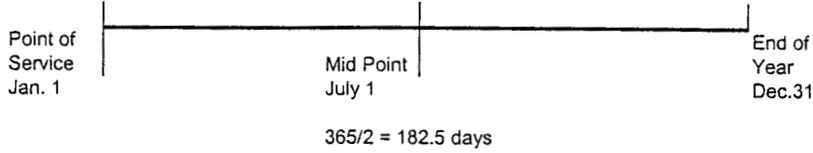
(e) 1.5 percent after 15 days

Eastern Group Summary

Line No.	Accumulated Depreciation - Summary	Company Rebuttal	Staff Surrebuttal	Staff + (or) - Company
	<u>Test Year</u>			
1	Beginning Balance - 1990	\$	6,865,968	
2	Accum Depr - 1991-1992 @ 2.42%	\$	1,350,806	
3	Accum Depr - 1993-2001 @ 2.59%	\$	11,537,845	
4	6 Months Depreciation on 2001 Additions	\$	625,597	
5	6 Months Depreciation on 1991 - 2001 Retirements	\$	(30,288)	
6	1991 - 2001 Retirements	\$	(2,357,785)	
7	Line 1 + 2 + 3 + 4 + 5 + 6 - Accumulated Depreciation <u>TY</u>	\$ 18,068,863	\$ 17,992,143	\$ (76,720)
	<u>Post-Test Year</u>			
8	12 Mos Depr on plant in Service as of 12/31/01, Staff adjusted in 2002	\$	2,037,594	\$ 1,912,810
9	6 Months Depreciation on Post Test Year (2002) - Additions	\$	40,254	\$ (53,419)
10	6 Months Depreciation on Post Test Year (2002) - Retirements	\$	(2,690)	\$ (2,690)
11	Post Test Year (2002) - Retirements	\$	(207,764)	\$ -
12	Line 8 + 9 + 10 + 11 - <u>Post-Test Year</u> Accumulated Depreciation	\$ 10,693	\$ 1,867,394	\$ 1,856,701
13	Line 7 + 12 - Eastern Group Accumulated Depreciation (1990-2002)	\$ 18,079,556	\$ 19,859,537	\$ 1,779,981
	<u>Test Year - Phoenix Office and Meter Shop</u>			
14	Phoenix Office Accumulated Depreciation	\$	207,666	\$ 1
15	Meter Shop Accumulated Depreciation	\$	11,269	\$ -
16	Line 14 + 15 - Phoenix Office/Meter Shop Accum. Depreciation <u>TY</u>	\$ 218,935	\$ 218,936	\$ 1
	<u>Post-Test Year - Phoenix Office and Meter Shop</u>			
17	Post Test Year Phoenix Office Accumulated Depreciation	\$	16,076	\$ 10,951
18	Post Test Year Phoenix Office Retirements	\$	(69,859)	\$ (69,859)
19	Post test Year Meter Shop Accumulated Depreciation	\$	121	\$ 122
20	Line 17 + 18 + 19 - Phoenix Office/Meter Shop Accum. Depr. <u>P-TY</u>	\$ (53,662)	\$ (58,786)	\$ (5,124)
21	Line 13 + 16 + 20 - All Accumulated Depreciation	\$ 18,244,829	\$ 20,019,687	\$ 1,774,858

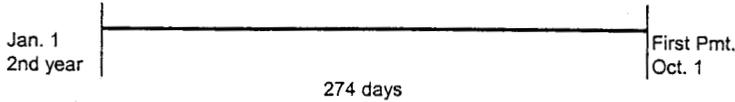
Arizona Water Company - Property Tax Due Date Calculation
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Service Year (year one)



182.5 days

First Payment of tax due Oct. 1 (second year)



274 days

182.5 days plus 274 days = 456.5 days / 2 = 228.25 days 1/2 tax due

456.5 days
 50 % TAX DUE

228.25 DAYS

Jan	31
Feb	28
Mar	31
Apr	30
May	31
Jun	30
Jul	31
Aug	31
Sep	30
Oct	1
	0
	<u>274</u>

Second Payment of tax due March 1 (third year)



152 days

152 days after the first payment the second payment is due

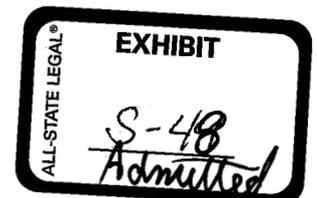
608.5 days
 50 TAX DUE

304.25 DAYS

Oct	31
Nov	30
Dec	31
Jan	31
Feb	28
March	1
	0
	<u>152</u>

228.25 First pmt. due
 304.25 Second pmt. due

532.50 Lead days



ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
JANUARY 31, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		463,274	249,446	52,416	35,442	48,690	31,579	24,015	2,876	18,810
TOTAL MAINTENANCE		95,463	42,971	10,667	7,475	15,686	3,933	3,449	446	10,836
TOTAL OPERATION & MAINTENANCE EXPS		558,737	292,417	63,083	42,917	64,376	35,512	27,464	3,322	29,646

DEPRECIATION & AMORTIZATION

Depreciation-Utility Plant	403.1	163,259	102,928	14,825	9,887	12,948	2,808	10,095	918	8,850
Amort Lhold/Ltd Term Invest	404	3,709	1,563	351	120	793	673	102	12	95
Total Depreciation & Amort		166,968	104,491	15,176	10,007	13,741	3,481	10,197	930	8,945

TAXES

Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	59,650	36,322	5,237	3,620	5,561	2,091	3,541	350	2,928
City sales & occupation	408.21	28,698	15,982	4,887	1,410	2,673	360	619	204	2,563
FICA	408.22	16,167	7,205	2,553	887	2,447	1,038	938	127	972
State unemployment	408.23	539	241	85	30	81	35	31	4	32
Federal unemployment	408.24	1,653	736	261	91	250	106	96	13	100
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		195,807	114,586	20,323	10,438	20,012	7,230	9,525	1,898	11,795



ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
FEBRUARY 28, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		466,133	248,365	53,154	34,087	49,787	30,863	22,939	3,282	23,656
TOTAL MAINTENANCE		124,285	61,596	12,477	8,635	18,083	5,043	4,460	591	13,400
TOTAL OPERATION & MAINTENANCE EXPS		590,418	309,961	65,631	42,722	67,870	35,906	27,399	3,873	37,056
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,582	103,266	14,821	9,887	12,942	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invst	404	3,709	1,563	351	120	793	673	102	12	95
Total Depreciation & Amort		167,291	104,829	15,172	10,007	13,735	3,482	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	61,638	38,392	5,342	3,621	5,899	2,200	3,119	336	2,729
City sales & occupation	408.21	27,061	16,698	2,537	1,392	2,926	378	546	196	2,388
FICA	408.22	15,689	6,993	2,478	860	2,374	1,007	910	123	944
State unemployment	408.23	420	188	66	23	64	27	24	3	25
Federal unemployment	408.24	1,296	579	204	71	196	83	75	10	78
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		195,204	116,950	17,927	10,367	20,459	7,295	8,974	1,868	11,364

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
MARCH 31, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		531,390	288,235	54,922	37,865	53,274	41,604	26,868	3,033	25,589
TOTAL MAINTENANCE		98,545	40,473	10,748	7,539	19,825	5,006	4,417	580	9,957
TOTAL OPERATION & MAINTENANCE EXPS		629,935	328,708	65,670	45,404	73,099	46,610	31,285	3,613	35,546
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,505	103,189	14,821	9,887	12,942	2,809	10,095	917	8,845
Amort Lhold/ld Term Invest	404	3,709	1,563	351	120	793	673	102	12	95
Total Depreciation & Amort		167,214	104,752	15,172	10,007	13,735	3,482	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	63,836	38,640	5,560	3,839	6,054	2,795	3,693	338	2,917
City sales & occupation	408.21	27,939	17,105	2,628	1,496	2,835	483	643	197	2,552
FICA	408.22	16,166	7,206	2,553	886	2,446	1,038	938	127	972
State unemployment	408.23	135	59	22	7	21	9	8	1	8
Federal unemployment	408.24	418	187	66	23	63	27	24	3	25
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		197,594	117,297	18,129	10,651	20,419	7,952	9,606	1,866	11,674

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
APRIL 30, 2002

	Account Number	Total Co Current Month	Apache Junction	E. sbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		575,165	299,287	60,509	42,839	58,259	52,477	26,121	3,327	32,346
TOTAL MAINTENANCE		95,752	38,280	11,248	7,831	17,996	5,255	4,824	630	9,688
TOTAL OPERATION & MAINTENANCE EXPS		670,917	337,567	71,757	50,670	76,255	57,732	30,945	3,957	42,034
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,507	103,191	14,821	9,887	12,942	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invest	404	3,709	1,563	351	120	793	673	102	12	95
Total Depreciation & Amort		167,216	104,754	15,172	10,007	13,735	3,482	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	86,700	54,100	4,900	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	67,140	39,763	6,146	4,420	6,360	3,011	3,925	341	3,174
City sales & occupation	408.21	31,243	17,127	5,294	1,707	2,940	520	683	198	2,774
FICA	408.22	16,066	7,162	2,537	881	2,431	1,031	932	126	966
State unemployment	408.23	30	12	5	2	5	2	2	0	2
Federal unemployment	408.24	92	40	15	5	14	6	5	1	6
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		201,271	118,204	18,897	11,415	20,750	8,170	9,847	1,866	12,122

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
MAY 31, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		652,344	337,035	68,157	46,808	66,804	58,348	34,866	3,825	36,501
TOTAL MAINTENANCE		142,978	55,378	14,712	10,208	40,256	7,329	6,437	850	7,808
TOTAL OPERATION & MAINTENANCE EXPS		795,322	392,413	82,869	57,016	107,060	65,677	41,303	4,675	44,309

DEPRECIATION & AMORTIZATION

Depreciation-Utility Plant	403.1	163,507	103,191	14,821	9,887	12,942	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invst	404	3,709	1,563	351	120	793	673	102	12	95
Total Depreciation & Amort		167,216	104,754	15,172	10,007	13,735	3,482	10,197	929	8,940

TAXES

Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	77,356	45,107	6,978	5,335	7,455	3,646	4,946	463	3,426
City sales & occupation	408.21	33,120	19,660	3,266	2,063	3,380	626	862	268	2,995
FICA	408.22	24,425	10,887	3,857	1,339	3,696	1,568	1,417	192	1,469
State unemployment	408.23	15	7	2	1	2	1	1	0	1
Federal unemployment	408.24	42	19	7	2	6	3	2	0	3
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		224,058	129,780	21,410	13,140	23,539	9,444	11,528	2,123	13,094

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
JUNE 30, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		612,689	305,700	66,080	46,971	62,459	64,873	31,955	3,358	31,293
TOTAL MAINTENANCE		121,285	43,220	10,926	7,602	32,648	8,034	7,071	927	10,857
TOTAL OPERATION & MAINTENANCE EXPS		733,974	348,920	77,006	54,573	95,107	72,907	39,026	4,285	42,150
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,497	103,181	14,821	9,887	12,942	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invest	404	3,709	1,563	351	120	793	673	102	12	95
Total Depreciation & Amort		167,206	104,744	15,172	10,007	13,735	3,482	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	88,775	51,617	8,013	6,373	8,437	4,101	5,863	481	3,890
City sales & occupation	408.21	37,907	22,452	3,772	2,461	3,822	702	1,023	277	3,398
FICA	408.22	16,435	7,325	2,595	901	2,487	1,055	954	129	989
State unemployment	408.23	7	5	1	0	1	0	0	0	0
Federal unemployment	408.24	21	11	3	1	3	1	1	0	1
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		232,245	135,510	21,684	14,136	23,750	9,459	12,141	2,087	13,478

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
JULY 31, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		611,005	303,706	66,787	42,309	64,051	63,896	33,978	4,092	32,186
TOTAL MAINTENANCE		111,428	40,438	13,860	9,618	26,024	5,340	4,664	603	10,881
TOTAL OPERATION & MAINTENANCE EXPS		722,433	344,144	80,647	51,927	90,075	69,236	38,642	4,695	43,067
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,069	102,761	14,821	9,887	12,934	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invst	404	2,989	1,563	221	120	793	83	102	12	95
Total Depreciation & Amort		166,058	104,324	15,042	10,007	13,727	2,892	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	91,500	54,100	9,700	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	89,560	49,830	8,360	6,179	9,141	4,573	6,616	593	4,268
City sales & occupation	408.21	35,420	21,492	1,572	2,338	4,022	782	1,155	341	3,718
FICA	408.22	16,723	7,453	2,641	917	2,531	1,073	970	132	1,006
State unemployment	408.23	8	6	1	0	1	0	0	0	0
Federal unemployment	408.24	19	9	3	1	3	1	1	0	1
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		233,230	132,890	22,277	13,835	24,698	10,029	13,042	2,266	14,193

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
AUGUST 31, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		592,097	313,713	54,351	38,042	64,199	56,102	30,825	3,979	30,886
TOTAL MAINTENANCE		132,310	56,530	10,083	7,066	35,397	6,765	5,952	775	9,742
TOTAL OPERATION & MAINTENANCE EXPS		724,407	370,243	64,434	45,108	99,596	62,867	36,777	4,754	40,628
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,071	102,763	14,821	9,887	12,934	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invst	404	2,989	1,563	221	120	793	83	102	12	95
Total Depreciation & Amort		166,060	104,326	15,042	10,007	13,727	2,892	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	81,509	49,475	5,962	4,508	9,229	3,728	4,651	502	3,454
City sales & occupation	408.21	34,820	21,372	2,825	1,730	4,136	641	811	290	3,015
FICA	408.22	15,762	7,026	2,489	864	2,385	1,012	914	124	948
State unemployment	408.23	8	3	1	0	1	1	1	0	1
Federal unemployment	408.24	25	10	4	1	4	2	2	0	2
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		221,224	131,986	18,581	11,503	24,755	8,984	10,679	2,116	12,620

ARIZONA WATER COMPANY
OPERATING STATEMENT DETAIL
SEPTEMBER 30, 2002

	Account Number	Total Co Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
OTAL OPERATIONS		577,427	304,726	60,020	39,614	59,480	50,488	27,847	3,408	31,844
OTAL MAINTENANCE		114,463	52,039	11,510	8,052	20,322	6,343	5,550	707	9,940
OTAL OPERATION & MAINTENANCE EXPS		691,890	356,765	71,530	47,666	79,802	56,831	33,397	4,115	41,784
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,063	102,755	14,821	9,887	12,934	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invest	404	2,989	1,563	221	120	793	83	102	12	95
Total Depreciation & Amort		166,052	104,318	15,042	10,007	13,727	2,892	10,197	929	8,940

TAXES

Other than income:										
Property	408.1	89,100	54,100	7,300	4,400	9,000	3,600	4,300	1,200	5,200
State sales	408.20	81,288	48,430	6,428	5,182	8,345	3,881	4,933	545	3,544
City sales & occupation	408.21	34,453	20,612	3,042	1,995	3,877	664	860	313	3,090
FICA	408.22	15,829	7,054	2,500	868	2,396	1,016	919	124	952
State unemployment	408.23	8	5	1	0	1	1	0	0	0
Federal unemployment	408.24	24	10	4	1	4	2	1	0	2
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		220,702	130,211	19,275	12,446	23,623	9,164	11,013	2,182	12,788

ARIZONA WATER COMPANY
EASTERN GROUP OPERATING STATEMENT DETAIL
OCTOBER 31, 2002

	Account Number	Total Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		627,862	326,270	70,176	46,723	65,333	49,025	31,488	3,572	35,275
TOTAL MAINTENANCE		137,378	50,664	17,614	12,217	34,530	6,599	5,786	734	9,234
TOTAL OPERATION & MAINTENANCE EXPS		765,240	376,934	87,790	58,940	99,863	55,624	37,274	4,306	44,509
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,063	102,755	14,821	9,887	12,934	2,809	10,095	917	8,845
Amort Lhdold/Ltd Term Invst	404	2,989	1,563	221	120	793	83	102	12	95
Total Depreciation & Amort		166,052	104,318	15,042	10,007	13,727	2,892	10,197	929	8,940
TAXES										
Other than income:										
Property	408.1	88,830	50,829	7,255	4,127	7,251	5,458	3,742	1,310	8,858
State sales	408.20	71,299	42,479	6,029	4,598	7,080	3,216	4,210	399	3,288
City sales & occupation	408.21	30,404	18,121	2,858	1,770	3,265	554	733	231	2,872
FICA	408.22	23,116	10,303	3,650	1,268	3,498	1,484	1,341	182	1,390
State unemployment	408.23	13	5	2	1	2	1	1	0	1
Federal unemployment	408.24	37	17	6	2	6	2	2	0	2
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		213,699	121,754	19,800	11,766	21,102	10,715	10,029	2,122	16,411

ARIZONA WATER COMPANY
EASTERN GROUP OPERATING STATEMENT DETAIL
NOVEMBER 30, 2002

	Account Number	Total Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS		548,154	275,947	55,090	53,114	56,852	41,852	29,127	2,998	33,174
TOTAL MAINTENANCE		116,893	38,214	10,667	7,464	29,568	9,534	8,348	1,041	12,057
TOTAL OPERATION & MAINTENANCE EXPS		665,047	314,161	65,757	60,578	86,420	51,386	37,475	4,039	45,231

	Account Number	Total Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	163,064	102,756	14,821	9,887	12,934	2,809	10,095	917	8,845
Amort Lhold/Ltd Term Invest	404	2,989	1,563	221	120	793	83	102	12	95
Total Depreciation & Amort		166,053	104,319	15,042	10,007	13,727	2,892	10,197	929	8,940

	Account Number	Total Current Month	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TAXES										
Other than income:										
Property	408.1	88,833	50,826	7,255	4,127	7,252	5,459	3,743	1,310	8,861
State sales	408.20	70,490	43,705	5,695	4,561	6,008	2,924	3,952	366	3,279
City sales & occupation	408.21	30,201	18,693	2,702	1,756	2,809	504	688	212	2,837
FICA	408.22	14,671	6,539	2,317	805	2,220	942	851	115	882
State unemployment	408.23	7	5	1	0	1	0	0	0	0
Federal unemployment	408.24	21	11	3	1	3	1	1	0	1
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		204,223	119,779	17,973	11,250	18,293	9,830	9,235	2,003	15,860

ARIZONA WATERCOMPANY
General Ledger
2001

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES MISCELLANEOUS	JV14 JV20	173,500.00		
DEBITS/CREDITS			173,500.00	0.00	
JANUARY					173,500.00
Y-T-D					173,500.00

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES MISCELLANEOUS	JV14 JV20	173,500.00		
DEBITS/CREDITS			173,500.00	0.00	
FEBRUARY					173,500.00
Y-T-D					347,000.00

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES MISCELLANEOUS	JV14 JV20	173,500.00		
DEBITS/CREDITS			173,500.00	0.00	
MARCH					173,500.00
Y-T-D					520,500.00

ARIZONA WATER COMPANY
General Ledger
2001

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	ACCOUNTS PAYAABLE	JV05			
	PROPERTY TAXES	JV14	173,500.00		
	MISCELLANEOUS	JV20			
DEBITS/CREDITS			173,500.00	0.00	
APRIL					173,500.00
Y-T-D					694,000.00

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES	JV14	173,500.00		
	MISCELLANEOUS	JV20			
DEBITS/CREDITS			173,500.00	0.00	
MAY					173,500.00
Y-T-D					867,500.00

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	CASH RECEIPTS	JV03			
	PROPERTY TAXES	JV14	173,500.00		
DEBITS/CREDITS			173,500.00	0.00	
JUNE					173,500.00
Y-T-D					1,041,000.00

ARIZONA WATER COMPANY
General Ledger
2001

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES	JV14	173,500.00		
	MISCELLANEOUS	JV20			
DEBITS/CREDITS			173,500.00	0.00	
JULY					173,500.00
Y-T-D					1,214,500.00

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES	JV14	173,500.00		
	MISCELLANEOUS	JV20			
DEBITS/CREDITS			173,500.00	0.00	
AUGUST					173,500.00
Y-T-D					1,388,000.00

408.1 TAXES - PROPERTY

408.1

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	CASH RECEIPTS	JV03		21.49	
	PROPERTY TAXES	JV14	173,500.00		
	MISCELLANEOUS	JV20			
DEBITS/CREDITS			173,500.00	21.49	
SEPTEMBER					173,478.51
Y-T-D					1,561,478.51

ARIZONA WATER COMPANY
General Ledger
2001

408.1

408.1 TAXES - PROPERTY

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	ACCOUNTS PAYABLE	JV05	8.77		
	PROPERTY TAXES	JV14	157,994.28		
DEBITS/CREDITS			158,003.05	0.00	158,003.05
OCTOBER					1,719,481.56
Y-T-D					

408.1

408.1 TAXES - PROPERTY

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	PROPERTY TAXES	JV14	157,993.00		
	MISCELLANEOUS	JV20			
DEBITS/CREDITS			157,993.00	0.00	157,993.00
NOVEMBER					1,877,474.56
Y-T-D					

408.1

408.1 TAXES - PROPERTY

DATE	DESCRIPTION	JV #	DEBIT	CREDIT	BALANCE
	CASH RECEIPTS	JV03		14.60	
	ACCOUNTS PAYABLE	JV05	2,450.00		
	PROPERTY TAXES	JV14	158,108.00		
	MISCELLANEOUS	JV20		115.00	
	ADJUSTING ENTRY	JV27			
DEBITS/CREDITS			160,558.00	129.60	160,428.40
DECEMBER					2,037,902.96
Y-T-D					

ARIZONA WATER COMPANY
WESTERN GROUP OPERATING STATEMENT DETAIL
DECEMBER 31, 2002

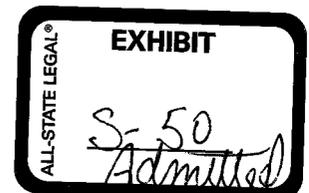
Account Number	Total	Apache Junction	Bisbee	Sierra Vista	Miami	San Manuel	Oracle	Winkelman	Superior
TOTAL OPERATIONS	579,029	334,047	55,547	35,496	62,444	34,721	27,622	2,863	26,289
TOTAL MAINTENANCE	125,412	43,749	19,099	13,297	24,013	7,153	6,270	765	11,066
TOTAL OPERATION & MAINTENANCE EXPS	704,441	377,796	74,646	48,793	86,457	41,874	33,892	3,628	37,355

DEPRECIATION & AMORTIZATION										
Depreciation-Utility Plant	403.1	142,419	72,946	18,626	12,151	14,257	3,356	10,754	849	9,480
Amort Lhold/Ltd Term Invest	404	3,206	1,563	221	120	842	83	102	12	263
Total Depreciation & Amort		145,625	74,509	18,847	12,271	15,099	3,439	10,856	861	9,743

TAXES										
Other than income:										
Property	408.1	88,819	50,812	7,255	4,127	7,252	5,459	3,743	1,310	8,861
State sales	408.20	65,997	41,390	5,303	4,053	5,722	2,740	3,481	339	2,969
City sales & occupation	408.21	30,927	17,852	4,924	1,585	2,722	473	606	198	2,567
FICA	408.22	16,086	7,169	2,540	882	2,434	1,033	933	127	968
State unemployment	408.23	8	3	1	0	1	1	1	0	1
Federal unemployment	408.24	26	11	4	1	4	2	2	0	2
Miscellaneous	408.25	0	0	0	0	0	0	0	0	0
Total Taxes Other Than Income		201,863	117,237	20,027	10,648	18,135	9,708	8,766	1,974	15,368

REVENUE REQUIREMENT

<u>LINE NO.</u>	<u>DESCRIPTION</u>	<u>[A] COMPANY ORIGINAL COST</u>	<u>[B] STAFF ORIGINAL COST</u>
1	Adjusted Rate Base	\$ 24,207,016	\$ 19,071,140
2	Adjusted Operating Income (Loss)	\$ 1,862,934	\$ 1,967,252
3	Current Rate of Return (L2 / L1)	7.70%	10.32%
4	Required Rate of Return	11.0000%	8.5660%
5	Required Operating Income (L4 * L1)	\$ 2,662,772	\$ 1,633,634
6	Operating Income Deficiency (L5 - L2)	\$ 799,838	\$ (333,619)
7	Gross Revenue Conversion Factor	1.63241	1.63195
8	Increase In Gross Revenue (L7 * L6)	\$ 1,305,663	\$ (544,449)
9	Adjusted Test Year Revenue	\$ 8,943,927	\$ 9,038,642
10	Proposed Annual Revenue (L8 + L9) Note A	\$ 10,249,590	\$ 8,494,193
11	Require Increase in Revenue (%) (L8/L9)	14.60%	-6.02%



GROSS REVENUE CONVERSION FACTOR

Line
No.

Calculation of Gross Revenue Conversion Factor:

1	Recommended Revenue Increase:		
2	Billings		1.000000
3	Combined Federal and State Income Tax Rate	38.59888%	
4	Uncollectible Rate After Income Taxes	0.12477%	
5	Total Tax Rate		38.72365%
6	Gross Revenue Conversion Factor		<u>1.631951</u>

Calculation of Effective Income Tax Rate:

7	Operating Income Before Taxes (Arizona Taxable Income)	100.00000%
8	Arizona State Income Tax Rate	6.96800%
9	Federal Taxable Income (L5 - L6)	93.03200%
10	Applicable Federal Income Tax Rate (Line 32)	34.00000%
11	Effective Federal Income Tax Rate (L7 x L8)	31.63088%
12	Combined Federal and State Income Tax Rate (L6 +L9)	<u>38.59888%</u>

Calculation of Uncollectible Rate After Income Taxes:

13	Uncollectible Rate		0.20320%
14	Combined Federal and State Income Tax Rate	38.59888%	
15	1 minus Combined Federal and State Income Tax Rate		61.40112%
16	Uncollectible Rate After Income Taxes		<u>0.12477%</u>

Revenue Reconciliation:

17	Recommended Increase in Revenue (from REL-1, L8)	\$ (544,449)	
18	Uncollectible Rate	0.203200%	
19	Required Increase in Revenue to Provide for Uncollectibles	\$ (1,106)	
20	Recommended Increase in Revenue (from REL-1,L8)	\$ (544,449)	
21	Required Increase in Revenue to Provide for Uncollectibles	(1,106)	
22	Incremental Taxable Income	\$ (543,343)	
23	Combined Federal and State Income Tax Rate	38.59888%	
24	Required Increase in Revenue to Provide for Income Taxes	(209,724)	
25	Required Operating Income	\$ 1,633,634	
26	Adjusted Test Year Operating Income (Loss)	1,967,252	
27	Required Increase in Operating Income	(333,619)	
28	Total Required Increase In Revenue	<u>\$ (544,449)</u>	

Calculation of Income Tax:

	Test Year	STAFF Recommended	
29	Revenue	\$ 9,038,642	\$ 8,494,193
30	Less: Operating Expenses Excluding Income Taxes	\$ 6,147,614	\$ 6,146,507
31	Less: Synchronized Interest	\$ 497,757	\$ 497,757
32	Arizona Taxable Income	\$ 2,393,272	\$ 1,849,929
33	Arizona State Income Tax Rate	6.968%	6.968%
34	Arizona Income Tax	\$ 166,763	\$ 128,903
35	Federal Taxable Income	\$ 2,226,509	\$ 1,721,026
36	Federal Income Tax @ 34%	\$ 757,013	\$ 585,149
37	Combined Federal and State Income Tax	<u>\$ 923,776</u>	<u>\$ 714,052</u>
			\$ (209,724)

Calculation of Interest Synchronization:

38	Rate Base	<u>\$ 19,071,140</u>
39	Weighted Average Cost of Debt	2.610%
40	Synchronized Interest	<u>\$ 497,757</u>

RATE BASE - ORIGINAL COST

LINE NO.	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENTS	(C) STAFF AS ADJUSTED
1	Plant in Service	\$ 55,226,791	\$ 51,814,226
2	Less: Accumulated Depreciation	(8,791,705)	(9,912,253)
4	Net Plant in Service	<u>\$ 46,435,086</u>	<u>\$ 41,901,973</u>
	<u>LESS:</u>		
5	Advances in Aid of Construction (AIAC)	(15,443,377)	(15,443,377)
6	Contributions in Aid of Construction (CIAC)	\$ (6,228,486)	\$ (6,228,486)
7	Less: Accumulated Amortization	713,806	713,806
8	Net CIAC	<u>(5,514,680)</u>	<u>(5,514,680)</u>
9	Total Advances and Contributions	(20,958,057)	(20,958,057)
10	Customer Deposits	-	-
11	Meter Advances	-	-
12	Deferred Income Tax Credits	(2,699,309)	(2,699,309)
	<u>ADD:</u>		
13	Deferred Central Arizona Project Charges	-	691,522
14	Less: Accumulated Amortization	-	(20,118)
	Net Deferred CAP Charges	<u>-</u>	<u>671,404</u>
13	Working Capital	559,087	(605,949)
14	Phoenix Office Allocation	852,453	852,453
	Phoenix Office Accumulated Depreciation	-	(104,662)
15	Meter Shop Allocation	17,756	17,756
	Meter Shop Accumulated Depreciation	-	(4,469)
17	Total Rate Base	<u>\$ 24,207,016</u>	<u>\$ 19,071,140</u>

SUMMARY OF RATE BASE ADJUSTMENTS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ.No.1	(C) ADJ.No.2	(D) ADJ.No.3	(E) ADJ.No.4	(F) ADJ.No.5	(G) ADJ.No.6	(H) ADJ.No.8	(J) ADJ.No.9	(K) ADJ.No.10	(L) ADJ.No.11	(M) ADJ.No.12	(N) ADJ.No.13	(O) STAFF ADJUSTED
PLANT IN SERVICE:															
1	Organization	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
2	Franchises	1,435	-	-	-	-	-	-	-	-	-	-	-	-	1,435
3	Other Intangibles	-	-	-	-	-	-	-	-	-	-	-	-	-	-
4	Water Rights	113,956	-	-	-	-	-	-	-	-	-	-	-	-	113,956
5	Other Source of Supply Land	49,438	-	-	-	-	-	-	-	-	-	-	-	-	49,438
6	Wells	2,505,438	-	-	-	-	-	-	-	-	-	-	-	-	2,505,438
7	Pumping Plant Land	14,187	-	-	-	-	-	-	-	-	-	-	-	-	14,187
8	Pumping Plant Structures & Improvements	43,621	-	-	-	-	-	-	-	-	-	-	-	-	43,621
9	Electric Pumping Equipment	2,461,590	6,292	-	-	-	-	-	-	-	-	-	-	-	2,467,882
10	Gas Engine Equipment	-	-	-	-	-	-	-	-	-	-	-	-	-	-
11	Water Treatment Land	-	-	-	-	-	-	-	-	-	-	-	-	-	-
12	Water Treatment Structures & Improvements	9,760	-	-	-	-	-	-	-	-	-	-	-	-	9,760
13	Water Treatment Equipment	122,743	-	-	-	-	-	-	-	-	-	-	-	-	122,743
14	Transmission and Distribution Land	183,798	-	-	-	-	-	-	-	-	-	-	-	-	183,798
15	Storage Tanks	3,755,335	-	-	-	-	-	-	-	-	-	-	-	-	3,755,335
16	Transmission and Distribution Mains	28,329,468	-	-	-	-	-	-	-	-	-	-	-	-	28,329,468
17	Fire Sprinkler Taps	352,430	-	-	-	-	-	-	-	-	-	-	-	-	352,430
18	Services	7,442,934	-	-	-	-	-	-	-	-	-	-	-	-	7,442,934
19	Meters	1,263,272	-	-	-	-	-	-	-	-	-	-	-	-	1,263,272
20	Hydrants	2,422,487	-	-	-	-	-	-	-	-	-	-	-	-	2,422,487
21	General Plant Land	47,015	-	-	-	-	-	-	-	-	-	-	-	-	47,015
22	General Plant Structures	412,571	-	-	-	-	-	-	-	-	-	-	-	-	412,571
23	Leasehold Improvements	164,370	-	-	-	-	-	-	-	-	-	-	-	-	164,370
24	Office Furniture and Improvements	177,890	-	-	-	-	-	-	-	-	-	-	-	-	177,890
25	Warehouses Equipment	3,469	-	-	-	-	-	-	-	-	-	-	-	-	3,469
26	Tools, Shop and Garage Equipment	147,593	-	-	-	-	-	-	-	-	-	-	-	-	147,593
27	Laboratory Equipment	8,708	-	-	-	-	-	-	-	-	-	-	-	-	8,708
28	Power Operated Equipment	30,448	-	-	-	-	-	-	-	-	-	-	-	-	30,448
29	Communication Equipment	671,660	-	-	-	-	-	-	-	-	-	-	-	-	671,660
30	Miscellaneous Equipment	32,926	-	-	-	-	-	-	-	-	-	-	-	-	32,926
31	Total Plant in Service - Actual	50,768,542	6,292	(2,604,304)	(109,650)	(704,903)	(22,296)	(1,307,339)	1,420	109,650	-	-	-	-	50,774,834.00
32	Post-Term Adjustment - Post TY Plant	-	-	-	-	-	-	-	-	-	-	-	-	-	-
33	Post-Term Year - Retired Plant	3,753,346	-	(2,604,304)	(109,650)	(704,903)	(22,296)	(1,307,339)	-	-	-	-	-	-	1,149,042
34	Deferred Central Arizona Project Charges	704,903	-	-	-	-	-	-	-	-	-	-	-	-	(109,650)
35	Less: Accumulated Depreciation - Actual	\$ (8,661,694)	-	-	-	-	(22,296)	(1,307,339)	-	-	-	-	-	-	(8,703,990)
36	Less: Accumulated Depreciation - 12 Mos. TY	2,866	-	-	-	-	-	-	-	-	-	-	-	-	(1,304,453)
37	Less: Accumulated Depreciation - Post TY	(112,897)	-	-	-	-	-	-	98,017	-	-	-	-	-	(14,880)
38	Less: Accum Post-Test Year Retirements	-	-	-	-	-	-	-	-	-	-	-	-	-	1,420
39	Less: Accumulated Depreciation - Retired Plant	\$ (8,791,705)	-	-	-	-	(22,296)	(1,307,339)	1,420	109,650	-	-	-	-	109,650
40	Total Accumulated Depreciation - Adjusted	\$ (8,791,705)	-	-	-	-	(22,296)	(1,307,339)	1,420	109,650	-	-	-	-	(9,912,253)
41	Plus: Construction Work in Progress	\$ 46,435,086	6,292	(2,604,304)	(109,650)	(704,903)	(22,296)	(1,307,339)	1,420	109,650	-	-	-	-	41,901,973
42	Net Plant in Service	\$ 15,443,377	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	(15,443,377)
LESS:															
43	Advances in Aid of Construction (AMAC)	(6,228,486)	-	-	-	-	-	-	-	-	-	-	-	-	(6,228,486)
44	Contributions in Aid of Construction (CIAC)	713,806	-	-	-	-	-	-	-	-	-	-	-	-	713,806
45	Less: Accumulated Amortization	(5,514,660)	-	-	-	-	-	-	-	-	-	-	-	-	(5,514,660)
46	Net CIAC (L23 - L26)	(20,958,057)	-	-	-	-	-	-	-	-	-	-	-	-	(20,958,057)
47	Total Advances and Contributions	(11,072,737)	-	-	-	-	-	-	-	-	-	-	-	-	(11,072,737)
48	Customer Deposits	-	-	-	-	-	-	-	-	-	-	-	-	-	-
49	Meter Advances	(2,699,309)	-	-	-	-	-	-	-	-	-	-	-	-	(2,699,309)
50	Deferred Income Tax Credits	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ADD:															
51	Deferred Central Arizona Project Charges	691,522	-	-	-	-	691,522	(20,118)	-	-	-	-	-	-	691,522
52	Less: Accumulated Amortization	(20,118)	-	-	-	-	-	(20,118)	-	-	-	-	-	-	(20,118)
53	Net Deferred CAP Charges	671,404	-	-	-	-	671,404	-	-	-	-	-	-	-	671,404
54	Working Capital Allowance	559,087	-	-	-	-	-	-	-	-	-	-	-	-	559,087
55	Phoenix Office Allocation	852,453	-	-	-	-	-	-	-	-	-	-	-	-	852,453
56	Meter Shop Allocation	17,756	-	-	-	-	-	-	-	-	-	-	(104,662)	(86,906)	
57	Projected Capital Expenditures	-	-	-	-	-	-	-	-	-	-	-	-	-	-
58	Deferred Debits	-	-	-	-	-	-	-	-	-	-	-	-	-	-
59	Other Adjustments	-	-	-	-	-	-	-	-	-	-	-	-	-	-
60	Total Rate Base	\$ 24,207,016	\$ 6,292	\$ (2,604,304)	\$ (109,650)	\$ (704,903)	\$ 689,226	\$ (1,327,457)	\$ 98,017	\$ 109,650	\$ (1,165,036)	\$ (104,662)	\$ (4,469)	\$ (19,071,140)	

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-5

RATE BASE ADJUSTMENT NOS. 1, 2, 3 and 4 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Actual Test Year Plant	\$ 50,768,542	\$ 6,292	\$ 50,774,834
2	Post-Test Year Plant	\$ 3,753,346	\$ (2,604,304)	\$ 1,149,042
3	Post-Test Year Retired Plant	\$ -	\$ (109,650)	\$ (109,650)
4	Deferred CAP Charges	\$ 704,903	\$ (704,903)	\$ -
5	Adjusted Test Year Plant	\$ 55,226,791	\$ (3,412,565)	\$ 51,814,226

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-7

RATE BASE ADJUSTMENT NOS. 7, 8, 9 and 10 - ACCUMULATED DEPRECIATION

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accumulated Depreciation, Actual	\$ (8,681,694)	\$ (22,296)	\$ (8,703,990)
2	Accum Depr 12 Months Test Year Plant	\$ 2,886	\$ (1,307,339)	\$ (1,304,453)
3	Accum Depr Post-Test Additions, 6 Months	\$ (112,897)	\$ 98,017	\$ (14,880)
4	Accum Depr Post-Test Year Retirements 6 Mos	\$ -	\$ 1,420	\$ 1,420
5	Accum Depr Reduction - Retired Plant	\$ -	\$ 109,650	\$ 109,650
		<u>\$ (8,791,705)</u>	<u>\$ (1,120,548)</u>	<u>\$ (9,912,253)</u>

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 6

RATE BASE ADJUSTMENT NOS. 5 and 6 - CAP DEFERRALS

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Deferred CAP Charges	\$ -	\$ 691,522	\$ 691,522
2	Less Amortization	-	(20,118)	(20,118)
3	Total	\$ -	\$ 671,404	\$ 671,404

Staff amortized its recommended annual recovery of the deferred CAP charges over the life of the CAP contract rather than over three years as requested by the Company.

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 8

OPERATING INCOME ADJUSTMENT NO. 11 - CASH WORKING CAPITAL

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Cash Working Capital	\$ 328,417	\$ (1,184,339)	\$ (855,922)
2	Materials and Supplies Inventory	43,863	19,303	63,166
3	Required Bank Balances	118,768	-	118,768
4	Prepayments and special Deposits	68,040	-	68,040
5	Total	<u>\$ 559,088</u>	<u>\$ (1,165,036)</u>	<u>(605,948)</u>

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-9

RATE BASE ADJUSTMENT NOS. 12 and 13 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Phoenix Office Allocation Test Year	\$ 852,453	\$ (86,620)	\$ 765,833
2	Meter Shop Allocations Test Year	\$ 17,756	\$ (1,960)	\$ 15,796
3	Phoenix Office Allocations Retirements TY	\$ -	\$ -	\$ -
4	Phoenix Office Allocation Post-Test Year	\$ -	\$ 122,952	\$ 122,952
5	Meter Shop Allocations Post-Test Year	\$ -	\$ 1,960	\$ 1,960
6	Phx Office Allocation-Retirements Post-TY	\$ -	\$ (36,332)	\$ (36,332)
7	Meter Shop Allocation - Retirements	\$ -	\$ -	\$ -
	Adjusted Test Year Plant	\$ 870,209	\$ -	\$ 870,209

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL-9

RATE BASE ADJUSTMENT NOS. 12 and 13 - PLANT IN SERVICE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Accum Depr Phoenix Office Test Year	\$ -	\$ (98,966)	\$ (98,966)
2	Accum Depr Meter Shop Test Year	\$ -	\$ (4,406)	\$ (4,406)
3	Accum Depr Phoenix Office Post-Test Year	\$ -	\$ (5,696)	\$ (5,696)
4	Accum Depr Meter Shop Post-Test Year	\$ -	\$ (63)	\$ (63)
	Adjusted Test Year Plant	\$ -	\$ (109,131)	\$ (109,131)

OPERATING INCOME - TEST YEAR AND STAFF PROPOSED

LINE NO.	DESCRIPTION	[A] COMPANY TEST YEAR AS FILED	[B] STAFF TEST YEAR ADJUSTMENTS	[C] STAFF TEST YEAR AS ADJUSTED	[D] STAFF PROPOSED CHANGES	[E] STAFF RECOMMENDED
<u>REVENUES:</u>						
1	Total Operating Revenues	\$ 8,943,927	\$ 94,715	\$ 9,038,642	\$ (544,449)	\$ 8,494,193
<u>EXPENSES:</u>						
Source of Supply Expenses:						
2	Purchased Water	\$ 1,003,040	\$ (5,747)	\$ 997,293	\$ -	\$ 997,293
3	Other	23,251	-	23,251	-	23,251
Pumping Expenses:						
4	Purchased Power	618,711	(6,251)	612,460	-	612,460
5	Purchased Gas	-	-	-	-	-
6	Other	117,465	-	117,465	-	117,465
7	Water Treatment Expenses	191,642	5,320	196,962	-	196,962
8	Transmission and Distribution Expenses	758,594	(19,050)	739,544	-	739,544
9	Customer Account Expenses	636,246	225	636,471	(1,106)	635,365
10	Sales Expenses	2,059	-	2,059	-	2,059
11	Administrative and General Expenses	896,828	(33,499)	863,329	-	863,329
12	Total Operation and Maintenance	\$ 4,247,836	(59,002)	4,188,834	(1,106)	4,187,728
13	Depreciation and Amortization	1,425,605	(337,635)	1,087,970	-	1,087,970
15	Ad Valorem (Property)	751,447	48,909	800,356	-	800,356
Taxes:						
14	Federal & State Income Tax	585,651	338,125	923,776	(209,724)	714,052
16	Other	70,454	-	70,454	-	70,454
17	Total Operating Expenses	<u>\$ 7,080,993</u>	<u>\$ (9,603)</u>	<u>\$ 7,071,390</u>	<u>\$ (210,831)</u>	<u>\$ 6,860,559</u>
18	Operating Income (Loss)	<u>\$ 1,862,934</u>	<u>\$ 104,318</u>	<u>\$ 1,967,252</u>	<u>\$ (333,619)</u>	<u>\$ 1,633,634</u>

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF OPERATING INCOME ADJUSTMENTS - TEST YEAR

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJ #1	(C) ADJ #2	(D) ADJ #3	(E) ADJ #4	(F) ADJ #5	(G) ADJ #6	(H) ADJ #7	(I) ADJ #8	(J) ADJ #9	(K) ADJ #10	(L) ADJ #11
1	<u>REVENUES:</u> Total Operating Revenues	\$ 8,943,927	\$ 94,715	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
	<u>EXPENSES:</u>												
	Source of Supply Expenses:												
2	Purchased Water	\$ 1,003,040	\$ -	\$ (5,747)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
3	Other	23,251	-	-	-	-	-	-	-	-	-	-	-
	Pumping Expenses:												
4	Purchased Power	618,711	-	-	-	25	(6,276)	-	-	-	-	-	-
5	Purchased Gas	-	-	-	-	-	-	-	-	-	-	-	-
6	Other	117,465	-	-	-	-	-	-	-	-	-	-	-
7	Water Treatment Expenses	181,642	-	-	-	-	-	12	(2,868)	8,176	-	-	
8	Transmission and Distribution Expenses	758,594	-	-	-	-	-	-	-	-	253	(19,303)	
9	Customer Account Expenses	636,246	-	-	-	-	-	-	-	-	-	-	
10	Sales Expenses	2,059	-	-	-	-	-	-	-	-	-	-	
11	Administrative and General Expenses	896,828	-	-	-	-	-	-	-	-	-	-	
12	Total Operation and Maintenance	4,247,836	-	(5,747)	-	25	(6,276)	12	(2,868)	8,176	253	(19,303)	225
13	Depreciation and Amortization	1,425,605	-	-	-	-	-	-	-	-	-	-	-
15	Ad Valorem (Property)	751,447	-	-	-	-	-	-	-	-	-	-	-
	Taxes												
14	Federal & State Income Tax	585,651	-	-	-	-	-	-	-	-	-	-	-
16	Other	70,454	-	-	-	-	-	-	-	-	-	-	-
17	Total Operating Expenses	\$ 7,080,993	\$ -	\$ (5,747)	\$ -	\$ 25	\$ (6,276)	\$ 12	\$ (2,868)	\$ 8,176	\$ 253	\$ (19,303)	\$ 225
18	Operating Income (Loss)	\$ 1,862,934	\$ 94,715	\$ 5,747	\$ -	\$ (25)	\$ 6,276	\$ (12)	\$ 2,868	\$ (8,176)	\$ (253)	\$ 19,303	\$ (225)

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

SUMMARY OF OPERATING INCOME ADJUSTMENT

LINE NO.	DESCRIPTION	(M) ADJ #12	(N) ADJ #13	(O) ADJ #14	(P) ADJ #15	(Q) ADJ #16	(R) ADJ #17	(S) ADJ #18	(T) STAFF ADJUSTED
1	REVENUES: Total Operating Revenues	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 9,038,642
	EXPENSES:								
2	Source of Supply Expenses:								
3	Purchased Water	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 997,293
3	Other	-	-	-	-	-	-	-	23,251
4	Pumping Expenses:								612,460
5	Purchased Power	-	-	-	-	-	-	-	117,465
6	Purchased Gas	-	-	-	-	-	-	-	196,962
7	Other	-	-	-	-	-	-	-	739,544
8	Water Treatment Expenses	-	-	-	-	-	-	-	636,471
9	Transmission and Distribution Expenses	-	-	-	-	-	-	-	2,059
10	Customer Account Expenses	-	-	-	-	-	-	-	863,329
11	Sales Expenses	(20)	(7,647)	(25,832)	-	-	-	-	4,188,834
12	Administrative and General Expenses	(20)	(7,647)	(25,832)	(337,635)	-	-	-	1,087,970
13	Total Operation and Maintenance								800,356
14	Depreciation and Amortization	-	-	-	-	48,909	-	-	-
15	Ad Valorem (Property)	-	-	-	-	-	248,803	89,322	-
16	Taxes	-	-	-	-	-	-	-	923,776
17	Federal & State Income Tax	-	-	-	-	-	-	-	70,454
17	Other	(20)	(7,647)	(25,832)	(337,635)	48,909	248,803	89,322	7,071,390
	Total Operating Expenses	\$ (20)	\$ (7,647)	\$ (25,832)	\$ (337,635)	\$ 48,909	\$ 248,803	\$ 89,322	\$ -
18	Operating Income (Loss)	\$ 20	\$ 7,647	\$ 25,832	\$ 337,635	\$ (48,909)	\$ (248,803)	\$ (89,322)	\$ 1,967,252

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 12

OPERATING INCOME ADJUSTMENT NO. 1 - REVENUE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Avg No. of Additional Cust. Served During TY	\$ 591		\$ 591
2	Avg Annual Bill Per Customer for TY	350		510
3	Avg Annual Revenue for Additional Customers	\$ 206,850	\$ 94,715	\$ 301,565

OPERATING INCOME ADJUSTMENT NO. 2 - CAP PURCHASED WATER ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Purchased Water - CAP & City of Mesa Treatment	\$ 703,309	\$ -	\$ 703,309
2	Purchased Water - Effluent	\$ 94,027	\$ -	\$ 94,027
3	Purchased Water - Unreconciled Amount	\$ 7,875	\$ (7,875)	\$ -
4	Subtotal	\$ 805,211	\$ (7,875)	\$ 797,336
5	November 2001 Mesa Treatment Cost	\$ 10,982	\$ -	\$ 10,982
6	M&I Capital Costs (Currently Deferred)	\$ 113,939	\$ -	\$ 113,939
7	Increase in CAWCD Charge Per Acre-Foot	\$ 41,304	\$ 2,128	\$ 43,432
8	Subtotal	\$ 166,225	\$ 2,128	\$ 168,353
9	Expense Annualization Adjustment	\$ 31,604	\$ -	\$ 31,604
10	Subtotal	\$ 197,829	\$ 2,128	\$ 199,957
11	Total Purchased Water (L4+L10)	\$ 1,003,040	\$ (5,747)	\$ 997,293

OPERATING INCOME ADJUSTMENT NO. 3 - CAP AMORTIZATION ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	2002 Unamortized Balance of \$60,000 Deferred CAP	\$ 46,315	\$ -	\$ 46,315
2	2002 Deferred CAP Balance (Accrued from 1986 to 2002)	\$ 658,588	\$ (13,381)	\$ 645,207
3	Total Deferred CAP Balance To Be Amortized	\$ 704,903	\$ (13,381)	\$ 691,522
4	Proposed Amortization Period (In Months)	36	350	386
5	Monthly Deferred CAP Amortization Expense	\$ 19,581	\$ (17,789)	\$ 1,792
6	Multiplied by 12 Months	12	-	12
7	Annual Deferred CAP Amortization Expense	\$ 234,968	\$ (213,470)	\$ 21,498
8	Less: Test year Amort Exp on \$60,000 Deferred CAP	\$ 1,380	-	\$ 1,380
	Total Annual CAP Amortization Expense	\$ 233,588	\$ (213,470)	\$ 20,118

9	<u>Calculation of Staff Proposed Amortization Period (In Months)</u>	
10	2035	End of CAP Contract (March 15, 2035)
11	- 2003	Beginning of Amortization Period
12	32	Full Years Remaining on Life of Contract (Jan 2003 to Dec 2034)
13	x 12	Multiplied by 12 months
14	384	Number of Months From Jan 2003 to Dec 2034
15	+ 2	Plus 2 Months (Jan 2035 to March 15, 2035)
16	386	Staff Proposed Amortization Period (In Months)

Arizona Water Company - Apache Junction
 Docket No. W-01445A-02-0619
 Test Year Ended December 31, 2001

Schedule REL- 15

OPERATING INCOME ADJUSTMENT NOS. 4, 6, 9, 11 and 12 - EXPENSE ANNUALIZATION

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Source of Supply	\$ 31,604	\$ (20)	\$ 31,584
2	Purchased Pumping Power	26,903	25	26,928
3	Water Treatment Expense	7,226	12	7,238
4	Transmission & Distribution Expense	26,012	253	26,265
5	Customer Accounting	23,104	225	23,329
6	Total	<u>\$ 114,849</u>	<u>\$ 495</u>	<u>\$ 115,344</u>

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-16

OPERATING INCOME ADJUSTMENT NO. 5 - PURCHASED PUMPING POWER ADJUSTMENT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Purchased Pumping Power	\$ 618,711	\$ (6,276)	\$ 612,435

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 17

OPERATING INCOME ADJUSTMENT NO. 7 - WATER TREATMENT EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Water Treatment	\$ 191,642	\$ (2,868)	\$ 188,774

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-18

OPERATING INCOME ADJUSTMENT NO. 8 - WATER TESTING EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Annual Water Testing Expense	\$ 28,693	\$ 8,176	\$ 36,869

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-19

OPERATING INCOME ADJUSTMENT NO. 10 TRANSMISSION AND DISTRIBUTION EXPENSE

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Transmission and Distribution Expense	\$ 758,594	\$ (19,303)	\$ 739,291

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-20

OPERATING INCOME ADJUSTMENT NO. 13 - CHARITABLE CONTRIBUTIONS

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENTS	STAFF AS ADJUSTED
1	Charitable Contributions, Gifts, Awards, Etc.	\$ 7,647	\$ (7,647)	\$ -

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 21

OPERATING INCOME ADJUSTMENT NO. 14 - RATE CASE EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) ADJUSTMENT	(C) STAFF AS ADJUSTED
1	Rate Case Expense for Eastern Group	\$ 257,550	\$ (76,637)	\$ 180,913
2	Allocation Factor	0.52010		0.52010
3	Annual Rate Case Expense for Eastern Group	\$ 133,952	\$ (39,859)	\$ 94,093
4	Number of Years Amortized	3		5
5	Annual Rate Case Expense	\$ 44,651	\$ (25,832)	\$ 18,819

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL-22

OPERATING INCOME ADJUSTMENT NO. 15 - DEPRECIATION EXPENSE INCL. POST-TEST YEAR PLANT

LINE NO.	DESCRIPTION	[A]	[B]	[C]
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Depreciation Expense	\$ 1,425,605	\$ (212,006)	\$ 1,213,599
2	Amortization of CAP	\$ -	\$ 20,118	\$ 20,118
3	CIAC Amortization	-	(145,747)	(145,747)
		<u>\$ 1,425,605</u>	<u>\$ (337,635)</u>	<u>\$ 1,087,970</u>

OPERATING INCOME ADJUSTMENT NO. 16 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A) COMPANY AS FILED	(B) STAFF ADJUSTMENT	(C) STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 1,273,158
2	2001 Annual Gross Revenues			\$ 1,289,733
3	2002 Annual Gross Revenues			\$ 1,403,919
4	Plus Staff's Recommended Increase			\$ (81,667)
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 3,885,143
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 1,295,048
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 2,590,095
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Vaule of Leased Vehicles (See Note A Below)			\$ 31,814
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 2,558,281
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 639,570
15	Composite Property Tax Rate (See Note B Below)			0.235069
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 112,717	\$ 37,626	\$ 150,343

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

OPERATING INCOME ADJUSTMENT NO. 16 - PROPERTY TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTMENT
1	2000 Annual Gross Revenues			\$ 7,214,564
2	2001 Annual Gross Revenues			\$ 7,303,486
3	2002 Annual Gross Revenues			\$ 7,955,543
4	Plus Staff's Recommended Increase			\$ (462,782)
5	Subtotal (Lines 1 + 2 + 3 + 4)			\$ 22,010,811
6	Three Year Average Calculation			3
7	Three Year Average (Line 5 / Line 6)			\$ 7,336,937
8	Department of Revenue Multiplier			2
9	Revenue Base Value (Line 7 x Line 8)			\$ 14,673,874
10	Plus: 10% of 2001 CWIP			
11	Less: Net Book Value of Leased Vehicles (See Note A Below)			\$ 180,278
12	Full Cash Value (Line 9 + Line 10 - Line 11)			\$ 14,493,596
13	Assessment Ratio			0.25
14	Assessed Value (Line 12 x Line 13)			\$ 3,623,399
15	Composite Property Tax Rate (See Note B Below)			0.179393
16	Staff Proposed Property Tax Expense (Line 14 x Line 15)	\$ 638,730	\$ 11,282	\$ 650,012

Note A: Net Book Value of Licensed Vehicles provided by Arizona Water in Data Request REL 24-1.

Note B: Property tax rate provided by Arizona Dept. of Revenue.

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

Schedule REL- 25

OPERATING INCOME ADJUSTMENT NOS. 17 and 18 - INCOME TAX EXPENSE

LINE NO.	DESCRIPTION	(A)	(B)	(C)
		COMPANY AS FILED	STAFF ADJUSTMENT	STAFF AS ADJUSTED
1	Federal Income Taxes	\$ 508,210	\$ 248,803	\$ 757,013
2	State Income Taxes	77,441	\$ 89,322	166,763
3	Total Income Taxes	<u>\$ 585,651</u>	<u>\$ 338,125</u>	<u>\$ 923,776</u>

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER
Chairman

JIM IRVIN
Commissioner

WILLIAM A. MUNDELL
Commissioner

JEFF HATCH-MILLER
Commissioner

MIKE GLEASON
Commissioner

IN THE MATTER OF THE APPLICATION OF)
ARIZONA WATER COMPANY, AN ARIZONA)
CORPORATION, FOR ADJUSTMENTS TO ITS)
RATES AND CHARGES FOR UTILITY)
SERVICE FURNISHED BY ITS EASTERN)
GROUP AND FOR CERTAIN RELATED)
APPROVALS)

DOCKET NO. W-01445A-02-0619

DIRECT

TESTIMONY

OF

LYNDON R. HAMMON

UTILITIES ENGINEER

UTILITIES DIVISION

JULY 8, 2003



TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1
DESCRIPTION OF THE WATER SYSTEMS	2
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY COMPLIANCE	3
DEPARTMENT OF WATER RESOURCES COMPLIANCE	3
WATER USE.....	4
GROWTH.....	6
DEPRECIATION RATES.....	6
POST TEST YEAR IMPROVEMENTS.....	7
<i>PRO FORMA</i> EXPENSES – WATER TESTING.....	8
<i>PRO FORMA</i> EXPENSES – TANK MAINTENANCE	10
<i>PRO FORMA</i> EXPENSES – CHLORINATION LABOR AND WAGES.....	11
RATE CONSOLIDATION	11
ARSENIC	12
CURTAILMENT TARIFF	13
TARIFF FOR NON-POTABLE CENTRAL ARIZONA PROJECT WATER	14
PINAL CREEK GROUP	17
PRO FORMA EXPENSES – MIAMI POWER ADJUSTMENT	17

FIGURES AND EXHIBITS

LOCATION OF EASTERN DIVISION WATER COMPANIES	EXHIBIT A
SUMMARY OF MAJOR EQUIPMENT	EXHIBIT B
PROCESS SCHEMATICS.....	EXHIBIT C
WATER USE.....	EXHIBIT D
DEPRECIATION RATES.....	EXHIBIT E
POST TEST YEAR PLANT IN SERVICE	EXHIBIT F
CURTAILMENT TARIFF	EXHIBIT G
NON POTABLE CAP WATER TARIFF	EXHIBIT H
BILLING EXAMPLE UNDER NP-260 TARIFF.....	EXHIBIT I
STAFF'S PROPOSED NP-260 TARIFF	EXHIBIT J

Redacted Exhibits

<i>PINAL CREEK GROUP SETTLEMENT AGREEMENT.....</i>	EXHIBIT K
-----------------------------------------------------------	------------------

**EXECUTIVE SUMMARY
ARIZONA WATER COMPANY
DOCKET NO. W-01445A-02-0619**

- (1) The Arizona Department of Environmental Quality ("DEQ") reported that all eight water systems are in **total** compliance with its rules and regulations. DEQ determined that all eight systems are currently delivering water that meets State and Federal drinking water quality standards required by the Arizona Administrative Code, Title 18, Chapter 4.
- (2) For Bisbee, Oracle, San Manuel, and Superior, Staff recommends that the Company perform a water audit and system analysis to determine if loss reductions to less than 10 percent are feasible or cost effective. If the reduction of water losses to less than 10 percent is feasible and cost effective, the Company shall submit to the Utilities Division Director, a plan which outlines the procedures, steps, and schedules to achieve acceptable water losses. If the reduction of water losses to less than 10 percent is not cost-effective, the Company shall submit a report, containing a detailed cost analysis and explanation demonstrating why a water loss reduction to less than 10 percent or, as an alternative, incremental reduction, is prohibitive. Such water loss plans or reports shall be submitted to the Director of Utilities within one year of a Decision in this rate case.
- (3) Staff recommends the adoption of the depreciation rates contained in Exhibit E of this direct testimony. These new component rates, by NARUC account, will be applicable to all 18 water systems of the Arizona Water Company.
- (4) *Pro Forma* Expenses:
 - (a) Routine water testing expenses were estimated on an annual basis and the adjustments are delineated on page 10 of this direct testimony. Staff recommends that the MA-262 tariff, "Monitoring Assistance Program Surcharge", be revised to conform with the new ADEQ MAP fee structure. Staff also recommends that the revised MA-262 tariff be filed with the Director of the Utilities Division for review and certification, and the filing of that revised tariff shall be made within 60 days of a decision in this matter, but no later than the Company's annual surcharge calculation for each water system participating in MAP.
 - (b) Staff accepts the Company's *pro forma* expense for tank maintenance (adjustment # 15).
 - (c) Staff recommends that actual 2002 labor and material expenses be used instead of the Company's *pro forma* expense adjustment #11 for chlorination.
 - (d) Staff recommends that the purchased power expense for Miami, be adjusted downward (decreased) by \$39,000.
- (5) Staff recommends that the Company file a curtailment tariff for each of the eight water systems within the Eastern Division, within 120 days after the effective date of any decision and order pursuant to this application. The tariff shall be submitted to the Director of Utilities Division for his review and certification. Staff also recommends that the tariff shall generally conform to the sample tariff found in Exhibit G of this direct testimony.

(recommendations continued on next page)

(6) Staff recommends that the existing Non-Potable Central Arizona Project Water tariff (herein "NP-260") be replaced with a new NP-260 tariff. Staff's proposed tariff is presented in Exhibit J.

- The new NP-260 tariff shall eliminate the fixed meter charge.
- The new NP-260 tariff shall eliminate the depreciation charge.
- The new NP-260 tariff shall contain a provision which indemnifies the customer from maintenance, repair, or replacement charges, when the damage or injuries to the CAP facilities are a result of the failure of the Company to operate the facilities or install protective devices in accordance with customary or sound construction and engineering practices.
- The customer shall continue to be responsible for repair or replacement of the meter.
- The new NP-260 tariff shall contain administrative charges, which are representative of the Company's actual costs, but the charges shall be fixed and defined as actual dollar amounts. Actual administrative costs notwithstanding, the total administrative charges in the new tariff, shall not be more than 50 dollars per month per CAP non-potable meter.

1 **INTRODUCTION**

2 **Q. Please state your name and place of employment.**

3 A. My name is Lyndon R. Hammon. My place of employment is the Arizona Corporation
4 Commission ("Commission"), Utilities Division, 1200 West Washington Street, Phoenix,
5 Arizona 85007.

6
7 **Q. Please list your duties and responsibilities and provide your title.**

8 A. I am employed as a Utilities Engineer, specializing in water and wastewater engineering.
9 My responsibilities include: the inspection, investigation, and evaluation of water and
10 wastewater systems; obtaining data and preparing original cost studies and investigative
11 reports; providing technical recommendations and suggesting corrective action for water
12 and wastewater systems; and providing written and oral testimony on rate applications and
13 other cases before the Commission.

14
15 **Q. Briefly describe your pertinent educational background and work experience.**

16 A. I have a Bachelor of Science Degree in Chemical Engineering from the University of
17 Missouri at Rolla. After graduation, I was employed by the Skelly Oil Company as a
18 process and environmental engineer. In 1973, I joined the Arizona Department of Health
19 Services, which later became the Arizona Department of Environmental Quality ("DEQ").
20 My responsibilities with DEQ included approval and inspection for the construction of
21 water and wastewater facilities, and the issuance of discharge permits. I remained with
22 DEQ until transferring to the Commission in January 1993.

23
24 **Q. Do you maintain any professional registrations or memberships?**

25 A. I am a licensed professional engineer in the State of Arizona. I am also a member of the
26 Arizona Water and Pollution Control Federation.

1 **Q. Were you assigned to provide an engineering analysis and recommendation for the**
2 **Arizona Water Company, Eastern Division (herein "Arizona Water" or**
3 **"Company")?**

4 A. Yes. I reviewed the Company's application and responses to data requests. I visited the
5 water systems during January 20 through 27, 2003. My testimony will present the
6 findings of my engineering evaluation.

7
8 **DESCRIPTION OF THE WATER SYSTEMS**

9 **Q. Please describe the water systems.**

10 A. The Eastern Group consists of eight independent water systems. They are named as, and
11 located in the towns of: Apache Junction, Bisbee, Miami, Oracle, San Manuel, Sierra
12 Vista, Superior, and Winkelman. Exhibit A depicts the location of the eight water systems
13 within Arizona.

14
15 The water systems are typically designed for well and gravity feed operation, with storage
16 "floating" on a single pressure zone or on each of multiple pressure zones. ("Floating"
17 means that the storage tank is elevated and directly pressurizes the water distribution
18 zone.) This configuration is very reliable and simple to operate. There are also some very
19 small booster pump and pressure tank systems where the homes are too close to the
20 storage tanks or where the topography dictates this design for a small number of homes.
21 Well and storage summaries are presented in Exhibit B. Simple process schematics are
22 presented in Exhibit C. All water systems have adequate production and storage capacity
23 to meet their respective needs. Statistical information for the eight water systems is
24 tabulated below:

	<u>System</u>	<u>Customers</u>	<u>Certificated Area (square miles)</u>
1			
2	Apache Junction	16,680	93
3	Bisbee	3,408	41
4	Miami	3,039	31
5	Oracle	1,406	23
6	San Manuel	1,577	6
7	Sierra Vista	2,308	5
8	Superior	1,306	35
9	Winkelman	192	3

10

11 **ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY COMPLIANCE**

12 **Q. Please discuss Arizona Water Company's compliance with the Arizona Department**
13 **of Environmental Quality ("DEQ") rules.**

14 A. DEQ reported that all eight water systems are in **total** compliance with its rules and
15 regulations. DEQ determined that all eight systems are currently delivering water that
16 meets State and Federal drinking water quality standards required by the Arizona
17 Administrative Code, Title 18, Chapter 4.

18

19 **DEPARTMENT OF WATER RESOURCES COMPLIANCE**

20 **Q. Please discuss Department of Water Resources ("DWR") Compliance.**

21 A. Bisbee, Miami, San Manuel, Sierra Vista, and Winkelman are not located in active
22 management areas ("AMA") and are not subject to conservation and reporting
23 requirements. Apache Junction and Superior are located within the Phoenix AMA, and
24 Oracle is located within the Tucson AMA. At this time, Apache Junction, Superior, and
25 Oracle are only required to monitor and report their water usage, and DWR reported that
26 they are in compliance with those reporting requirements.

27

1 **WATER USE**

2 **Q. Please discuss water use.**

3 A. Based on information provided by the Company, water use for 2001 is presented in
4 Exhibit D, for all eight water systems. The annual average, the average during the peak
5 month, and the average during the minimum month are denoted as gallons per day per
6 service.

7
8 **Q. Please discuss non-account water.**

9 A. Based on information provided by the Company, non-account water is tabulated below
10 (for the period August 2001 through July 2002):

<u>System</u>	<u>% non-account</u>
11 Apache Junction	9.9 %
12 Bisbee	20.5 %
13 Miami	9.3 %
14 Oracle	13.3 %
15 San Manuel	10.8 %
16 Sierra Vista	7.6 %
17 Superior	26.5 %
18 Winkelman	0.1 %
19	

20
21 The cost to obtain, treat, and pressurize is embedded in lost water. When water escapes
22 before it reaches the consumer, the utility loses revenue and incurs unnecessary expense.
23 Non-account water should be 10 percent or less and never more than 15 percent. Only
24 Apache Junction, Miami, Sierra Vista, and Winkelman are within acceptable limits.

25
26 **Q. Can it be inferred from your testimony that the water systems are poorly operated?**

27 A. Not necessarily. All eight water systems appear to be well maintained and operated. It
28 should be remembered that in some cases, the water lines pre-date Arizona statehood, and
29 given the age of the distribution system, some of these findings are not unexpected. Also,

1 some losses may be occurring in transmission lines not owned and maintained by Arizona
2 Water Company.

3
4 **Q. What are your recommendations for those water systems with high water losses?**

5 A. For Bisbee, Oracle, San Manuel, and Superior, Staff recommends that the Company
6 perform a water audit and system analysis to determine if loss reductions to less than 10
7 percent are feasible or cost effective. The analysis might consider the following:

- 8
- 9 ■ A water audit which identifies, measures, and verifies sources, users and losses. For
10 example, the estimation of flushing or construction amounts may bring some system
11 losses within an acceptable range. (Such losses are really not lost water, but “non-
12 metered, non-revenue” water.) Significant losses might also be found in long
13 transmission lines, where it is not cost effective to reduce losses, or where the lines are
14 not under the ownership or control of the Company.
 - 15 ■ The cost to implement or improve a meter testing and replacement program.
 - 16 ■ The cost (including personnel and equipment) to identify leaks, and the cost to repair
17 or replace mains after the leaks are found.
 - 18 ■ The benefits and savings from incremental reductions in water losses.
 - 19 ■ Any unique circumstances such as disruptions to service, historical preservation
20 constraints, and age of distribution lines.

21 If the reduction of water losses to less than 10 percent is feasible and cost effective, the
22 Company shall submit to the Director of the Utilities Division, a plan which outlines the
23 procedures, steps, and time frames to achieve acceptable water losses. If the reduction of
24 water losses to less than 10 percent is not cost-effective, the Company shall prepare a
25 report, containing a detailed cost analysis and explanation demonstrating why a water loss
26 reduction to less than 10 percent or, as an alternative, incremental reduction, is prohibitive.

Such water loss plans or reports shall be submitted to the Director of the Utilities Division

1 within one year of a Decision in this rate case. If the Director finds the report
2 unsatisfactory, the Director may institute a formal proceeding before the Commission to
3 require modifications to the plan(s).

4
5 **GROWTH**

6 **Q. Please discuss growth.**

7 A. Based on the past six years, this Company has experienced the following average annual
8 growth rates. It is reasonable to assume that growth will continue at these rates.

9
10

<u>System</u>	<u>Services</u>				<u>Annual Growth</u>
	<u>1996</u>	<u>1998</u>	<u>2000</u>	<u>2002</u>	
11 Apache Jct.	8,854	11,539	14,910	16,198	+ 10.59 %
12 Bisbee	3,386	3,379	3,405	3,388	00.00 %
13 Miami	3,052	3,061	3,030	3,031	- 00.12 %
14 Oracle	1,310	1,350	1,370	1,403	+ 01.15 %
15 San Manuel	1,762	1,713	1,561	1,544	- 02.22 %
16 Sierra Vista	2,139	2,161	2,272	2,295	+ 01.18 %
17 Superior	1,341	1,319	1,302	1,278	- 00.80 %
18 Winkelman	190	195	182	192	+ 00.17 %

19
20

21 **DEPRECIATION RATES**

22 **Q. Please discuss depreciation rates for plant in service.**

23 A. In the previous rate case for the Northern Group, Arizona Water Company was required to
24 include in its next rate application, a schedule of depreciation rates by NARUC account.
25 (NARUC is an acronym for National Association of Regulatory Utility Commissioners.)
26 These new component rates would be applicable to all 18 water systems. The schedule
27 contained in Mr. Ralph Kennedy's direct testimony on page 16, has been refined and
28 updated. The final depreciation rates have been received by Staff and are contained in
29 Exhibit E of my direct testimony. These rates were developed from Arizona Water
30 Company's internal equipment records, audits, or field experience, and represent actual
31 present service lives. These depreciation rates are reasonable and closely approximate the

1 customary rates used by Staff. Staff recommends the adoption of the depreciation
2 schedule developed by the Company and presented in my Exhibit E.

3
4 **POST TEST YEAR IMPROVEMENTS**

5 **Q. Has Arizona Water Company made post test year improvements?**

6 A. Yes. Arizona Water Company is requesting the inclusion of certain capital improvements
7 through December 31, 2002. The test year ended December 31, 2001.

8
9 **Q. What are the post test year improvements?**

10 A. The post test year improvements are delineated in Exhibit F of this direct testimony. Post
11 test year improvements were inspected between January 20 and January 27, 2003 and
12 represent calendar year 2002 additions.

13
14 **Q. How should post test year improvements be treated in this rate proceeding?**

15 A. The post test year improvements in Exhibit F were in service at the time of my visit and
16 appear to be used and useful. However, this "used and useful" determination does not
17 imply a specific treatment for rate base or rate making purposes. The direct testimony of
18 Mr. Ludders will discuss the post test year rate base and rate making treatment in this
19 case.

20
21 **Q. Blanket accounts are excluded in Exhibit F. What are blanket accounts?**

22 A. Blanket accounts are not ledger items for thermal beddings and linen. Instead, a blanket
23 account represents a budget allowance for unforeseen or small capital expenditures
24 (generally individual expenditures of less than \$5,000). They are annually estimated,
25 based upon the historical experience of each individual water system. Several anticipated
26 improvements cost less than estimated and were subsequently "rolled" into the blanket

1 accounts. Due to the Company's accounting and time constraints, data for the blanket
2 additions were received by Staff later in the discovery process. However, it is Staff's
3 intent to include revenue neutral blanket additions if project descriptions, work
4 authorizations, and capital costs can be correlated and audited. This is discussed at further
5 length in Mr. Ludders' direct testimony.

6
7 **PRO FORMA EXPENSES – WATER TESTING**

8 **Q. Please describe the DEQ Monitoring Assistance Program (herein "MAP").**

9 A. On December 8, 1998, DEQ adopted rules which provide for a monitoring assistance
10 program. The MAP program was fully implemented in 1999. On October 16, 2001 rule
11 amendments were promulgated, which changed the fee structure and some sampling
12 protocol. Starting January 1, 2002, water companies began paying a fixed \$250 per year
13 fee, plus an additional fee of \$2.57 per service connection, regardless of meter size.
14 Participation in MAP is mandatory for all the water systems in the Eastern Group, except
15 Apache Junction.

16
17 **Q. How did Staff calculate water testing costs?**

18 A. Water testing costs were calculated based on the following assumptions:

- 19
- 20 ▪ MAP will do baseline testing on all parameters except copper, lead, nitrates, and
coliform bacteria.
 - 21 ▪ ADEQ testing is performed in 3 year compliance cycles. Therefore, monitoring costs
22 are estimated for a 3 year compliance period and then presented as a *pro forma*
23 expense on an annualized basis.
 - 24 ▪ MAP fees were calculated from the DEQ MAP rules.
 - 25 ▪ All monitoring expenses are based on Staff's best knowledge of lab costs and
26 methodology.

- 1 ▪ The estimated water testing expenses represent a minimum cost based on no “hits”. If
2 any constituents were found, then the testing costs would dramatically increase.
3

4 **Q. What is Staff’s recommendation for the treatment of the expense from DEQ’s**
5 **Monitoring Assistance Program?**

6 A. MAP fees are recovered by the Company pursuant to Tariff MA-262, entitled “Monitoring
7 Assistance Program Surcharge”. In October of each year, an annual filing is made with
8 the Commission to establish the surcharge amount. It is my understanding of the
9 Company’s direct testimony, that Arizona Water Company wishes to retain this MAP
10 adjuster mechanism or surcharge (See the direct testimony of Ms. Sheryl L. Hubbard,
11 “Adjustment 4”, page 23 and “Adjustment 12”, page 29.). Therefore, MAP fees are
12 excluded in Staff’s estimation of testing expenses. With a single qualification, Staff has
13 no objection to the preservation of a MAP surcharge mechanism.
14

15 **Q. What is Staff’s qualification to the MA-262 tariff, (MAP surcharge)?**

16 A. The MA-262 tariff provides for the recovery of fees based on a meter multiplier. Since
17 the MAP fees are no longer based upon meter size, the tariff should be revised to reflect
18 the new DEQ fee schedule (a fixed \$250 per year fee, plus an additional fee of \$2.57 per
19 service connection, regardless of meter size). Staff recommends that the MA-262 tariff,
20 “Monitoring Assistance Program Surcharge”, be revised to conform with the new DEQ
21 MAP fee structure. Staff also recommends that the revised MA-262 tariff be filed with
22 the Director of the Utilities Division for review and certification, and the filing of that
23 revised tariff shall be made within 60 days of a decision in this matter, but no later than
24 the Company’s annual surcharge calculation for each water system participating in MAP.
25

1 **Q. What is Staff's recommended accounting adjustment to the *pro forma* annual testing**
2 **expense?**

3 A. Following is a summary which includes Staff's estimate of the *pro forma* annual water
4 testing expense:

5
6 Summary Of Water Testing Costs

7
8
9

10 System	2001 Test Year Expense	Staff Estimated <i>Pro Forma</i> Expense	Staff Adjustment	Company Estimated <i>Pro Forma</i> Expense	Company Adjustment
12 Apache Junction	34,120	36,869	2,749	28,693	(5,427)
13 Bisbee	3,540	3,257	(283)	3,610	70
14 Miami	3,068	4,548	1,480	13,894	10,826
15 Oracle	1,954	1,780	(174)	2,942	988
16 San Manuel	2,100	1,345	(755)	2,374	274
17 Sierra Vista	2,564	2,710	146	7,102	4,538
18 Superior	1,748	1,618	(130)	2,125	377
19 Winkelman	1,160	1,222	62	1,600	440
21 Total	50,254	53,349	3,095	62,340	12,086

22

23 Staff's difference from the Company's *pro forma* expense is mainly due to DEQ rule changes for
24 the inclusion of radio-chemicals in the MAP program.

25
26 ***PRO FORMA* EXPENSES – TANK MAINTENANCE**

27 **Q. Please discuss the Company's proposed expense adjustment # 15, Tank Maintenance.**

28 A. The Company has implemented a scheduled maintenance program for all storage and
29 pressure tanks. The interior of the tanks are abrasively cleaned to a near white and then
30 repainted. The exterior is either power washed or abrasively cleaned and then repainted.
31 The Company expects a 14 year life for the interiors and a 7 year life for the exteriors.

32
33 **Q. What methodology did you use to review the adjustment?**

34 A. Based on the interior and exterior areas of the entire tank inventory, an estimate of the cost
35 was made using "Richardson Process Plant Construction Estimating Standards". The

1 estimate was then annualized and compared with the Company's adjustment, after
2 subtracting the 2001 expenses.

3
4 **Q. What are your conclusions concerning the tank maintenance adjustment?**

5 A. Staff's computed adjustment was comparable to the Company's and therefore, Staff
6 accepts the Company's adjustment. As a side note, the maintenance account contains a
7 component for "other" maintenance, which includes cleaning and painting of piping,
8 control panels, and other miscellaneous equipment, maintenance of small structures, and
9 grounds keeping. This category represents actual 2001 expenses, and the Company is
10 proposing no adjustment to the "other" category, except for inflation. Staff's analysis of
11 the tank maintenance is separate and does not relate to this "other" component.

12
13 **PRO FORMA EXPENSES – CHLORINATION LABOR AND WAGES**

14 **Q. Please discuss Arizona Water Company's proposed *pro forma* expense adjustment #**
15 **11 for chlorination costs.**

16 A. The Company is proposing a *pro forma* chlorination expense adjustment for 2002. This
17 adjustment contains a component for materials and a component for labor. Because of the
18 uncertainties of this estimation, Staff believes that this adjustment does not meet the
19 "known and measurable" test. Instead, Staff recommends that the actual 2002 expenses be
20 used instead of relying on an estimate and extrapolation. Most well sites were chlorinated
21 in 2001, and by the end of 2002, virtually all well sites had chlorinators installed.

22
23 **RATE CONSOLIDATION**

24 **Q. Has the Company requested rate consolidation?**

25 A. Arizona Water Company has requested rate consolidation between the Superior and
26 Apache Junction water systems. At this time there is no interconnection between Superior

1 and Apache Junction, and there are CC&N voids between Apache Junction and the well
2 field at Florence Junction. Additionally, the Apache Junction and Superior water systems
3 must exhibit significant differences in revenue requirements due to the age of the
4 respective infrastructures, maintenance costs, power costs, and growth rates. A stronger
5 case for rate consolidation would have been achieved if the systems were interconnected
6 and if a detailed cost of service study was presented which addressed the inequalities.
7 Lacking these circumstances and information, consolidation may be premature. Final
8 recommendations and rate designs for Apache Junction and Superior will be presented in
9 the direct testimony of Mr. Ludders.
10

11 **ARSENIC**

12 **Q. Has the drinking water standard for arsenic changed?**

13 A. The U.S. Environmental Protection Agency ("EPA") reduced the arsenic maximum
14 contaminant level ("MCL") in drinking water from 50 micrograms per liter ($\mu\text{g}/\text{l}$) to 10
15 ($\mu\text{g}/\text{l}$). The date for compliance with the new MCL is January 23rd, 2006. Arsenic
16 concentrations are tabulated in Exhibit B.
17

18 **Q. Will the Eastern Group be facing arsenic problems?**

19 A. Based upon analytical data, it appears that Arizona Water Company will have to construct
20 arsenic removal equipment at Apache Junction, San Manuel, and Superior. The Company
21 anticipates using either adsorption or ion exchange as the treatment process for these
22 systems. At Miami, the few high arsenic wells are low producers, and the Company will
23 meet the standard by either leaving the wells out of service or by blending. Arsenic
24 concentrations are listed for each well in Exhibit B.
25

1 **Q. What is Staff recommending for the arsenic treatment costs in this rate case?**

2 A. No post test year plant or test year capital additions for arsenic are included in this rate
3 application, and there are no arsenic removal plants constructed and operating in the
4 Eastern Group. However, there is an open docket (Docket No. W-01445A-00-0962)
5 which will recommend and approve the cost recovery method for capital and operating
6 expenses for the Northern Group. Staff's recommendation will likely be based upon the
7 result of the final order regarding arsenic in Docket No. W-01445A-00-0962.

8
9 **CURTAILMENT TARIFF**

10 **Q. Should Arizona Water Company implement a curtailment tariff?**

11 A. A curtailment tariff is an effective tool to allow a water company to manage its resources
12 during periods of shortages due to pump breakdowns, droughts, or other unforeseeable
13 events. Arizona Water Company does not have any curtailment tariffs for the water
14 systems within its Eastern Group. This rate application provides an opportune time to
15 prepare and file tariffs for the remaining systems. Staff recommends that the Company
16 file a curtailment tariff within 120 days after the effective date of any decision and order
17 pursuant to this application. The Company shall file separate tariffs for each DEQ
18 designated public water system. The tariff(s) shall be submitted to the Director of the
19 Utilities Division for review and certification.

20
21 Staff also recommends that the tariff(s) shall generally conform to the sample tariff found
22 in Exhibit G, of this direct testimony. Exhibit G is offered as a template and Staff
23 recognizes that the Company may need to modify Exhibit G according to their specific
24 management, operational, and design requirements. For example, it may not be
25 practicable to deliver notices to over 6,000 customers in the main system. Instead, the

1 company may want to consider substituting notice by the local radio and the newspaper of
2 general circulation for stage 4 conditions.

3
4 **TARIFF FOR NON-POTABLE CENTRAL ARIZONA PROJECT WATER**

5 **Q. What is the tariff for "Non-Potable Central Arizona Project Water" (herein "NP-**
6 **260").**

7 A. The NP-260 tariff provides the terms and conditions for non-potable Central Arizona
8 Project ("CAP") water service. It was originally approved in March 1994 under Decision
9 No. 61579. Under this tariff, the customer accepts untreated CAP water for subsequent
10 non-potable use, generally landscape or golf course irrigation. Decision No. 65755
11 ordered the Utilities Division to "...review the NP-260 Tariff of Arizona Water Company
12 during the pending general rate application for its Apache Junction system and
13 recommend changes or revisions as required.". Pursuant to that Decision, Staff has
14 reviewed the NP-260 tariff. (A copy of the present tariff is attached as Exhibit H.)

15
16 **Q. What are Staff's concerns about the NP-260 tariff as it now stands?**

17 A. Staff has many concerns:
18 ▪ First of all, the Company is collecting a depreciation expense from the customer for
19 the facilities which the customer has contributed. This is equivalent to Staff
20 purchasing a car for an individual, and then that person demanding car payments in
21 addition to the gift. Even worse, under this tariff, Staff are never even able to pay off
22 the car (for the second time), because the payments go on forever. That is why, in this
23 jurisdiction, a depreciation expense for contributed assets has been treated in such a
24 manner to have a zero net effect on the revenue requirement. Exhibit I is attached
25 which shows a copy of a typical bill, itemizing a depreciation charge to the customer.

- 1 ▪ Second, the Company is collecting a fixed monthly meter charge of \$362.53. In rate
2 design theory, the fixed monthly charge is supposed to reflect, at least partially, the
3 fixed investment necessary to meet the potential demand of a customer. Such fixed
4 investments would include wells, distribution mains, and storage tanks. These fixed
5 costs occur whether the customer takes zero or 10,000 gallons of water. (Since the
6 potential demand is higher for larger meters, the fixed charge is proportionate to meter
7 size.) There is simply no evidence that this \$362.53, which was derived for the
8 Apache Junction drinking water system and not the CAP system, is relevant to the
9 fixed costs of the CAP delivery system. Moreover, the CAP fixed costs are already
10 recovered in the Central Arizona Water Conservation District (herein "CAWCD")
11 Capital Charges, which are passed on directly to the customer with a percentage
12 administrative fee collected by Arizona Water Company. In other words, the fixed
13 charges are embedded in the CAP Demand Charge and already collected. Similarly,
14 costs which are directly proportional to the volume of water used, are recovered in the
15 commodity charge and this commodity charge is represented by the CAWCD
16 Commodity Rate, which is passed through with a percentage administrative fee
17 collected by Arizona Water Company.
- 18 ▪ Third, Arizona Water Company collects administrative costs, which are directly
19 proportional to the volume of water used, with no upper limits. Staff does not believe
20 that the administrative costs are linear with the volume of use. The cost to read a
21 meter and bill is the same, whether the customer uses 100 gallons or 10,000 gallons.
22 The typical bill in Exhibit I contains approximately \$95 in such administrative costs.
- 23 ▪ Fourth, the customers' rights are ill defined and unprotected during unusual
24 maintenance episodes. This was illustrated by the complaint filed by SLV properties
25 against Arizona Water Company (Docket No W-01445A-02-0198, Decision No.
26 65755). The tariff does not define either maintenance or replacement, and in the

1 complaint it was found that SLV paid more in the sum of two maintenance charges
2 than the original cost of the meter. Moreover, while Arizona Water Company failed to
3 act reasonably and prudently in the operation of the meter facility by failing to install a
4 surge suppression system to prevent electrical damage, SLV properties had to pay the
5 repair costs even though Arizona Water Company owned and had complete control
6 over the meter. As the situation now exists, Arizona Water has no duty or incentive to
7 protect the CAP equipment when the customer bears the consequences of the
8 Company's inactivity. However, it is not necessary to revisit or retry totally the SLV
9 equity issues in this document, and more background information on this topic can be
10 found in the SLV docket.

11
12 **Q. What is Staff's recommendation concerning the NP-260 tariff?**

13 A. Staff recommends that Arizona Water Company propose and file a new Non-Potable
14 Central Arizona Project Water tariff within 60 days of the date of a final decision in this
15 rate case. The proposed tariff shall generally conform to Exhibit J of this direct testimony.

16 As a summary of the major provisions of the proposed tariff in Exhibit J:

- 17 ■ The new NP-260 tariff will eliminate the fixed meter charge.
- 18 ■ The new NP-260 tariff will eliminate the depreciation charge.
- 19 ■ The new NP-260 tariff will contain a provision which indemnifies the customer from
20 maintenance, repair, or replacement charges, when the damage or injuries to the CAP
21 facilities are a result of the failure of the Company to operate the facilities or install
22 protective devices in accordance with customary or sound construction and
23 engineering practices.
- 24 ■ The customer will continue to be responsible for repair or replacement of the meter.

CONFIDENTIAL

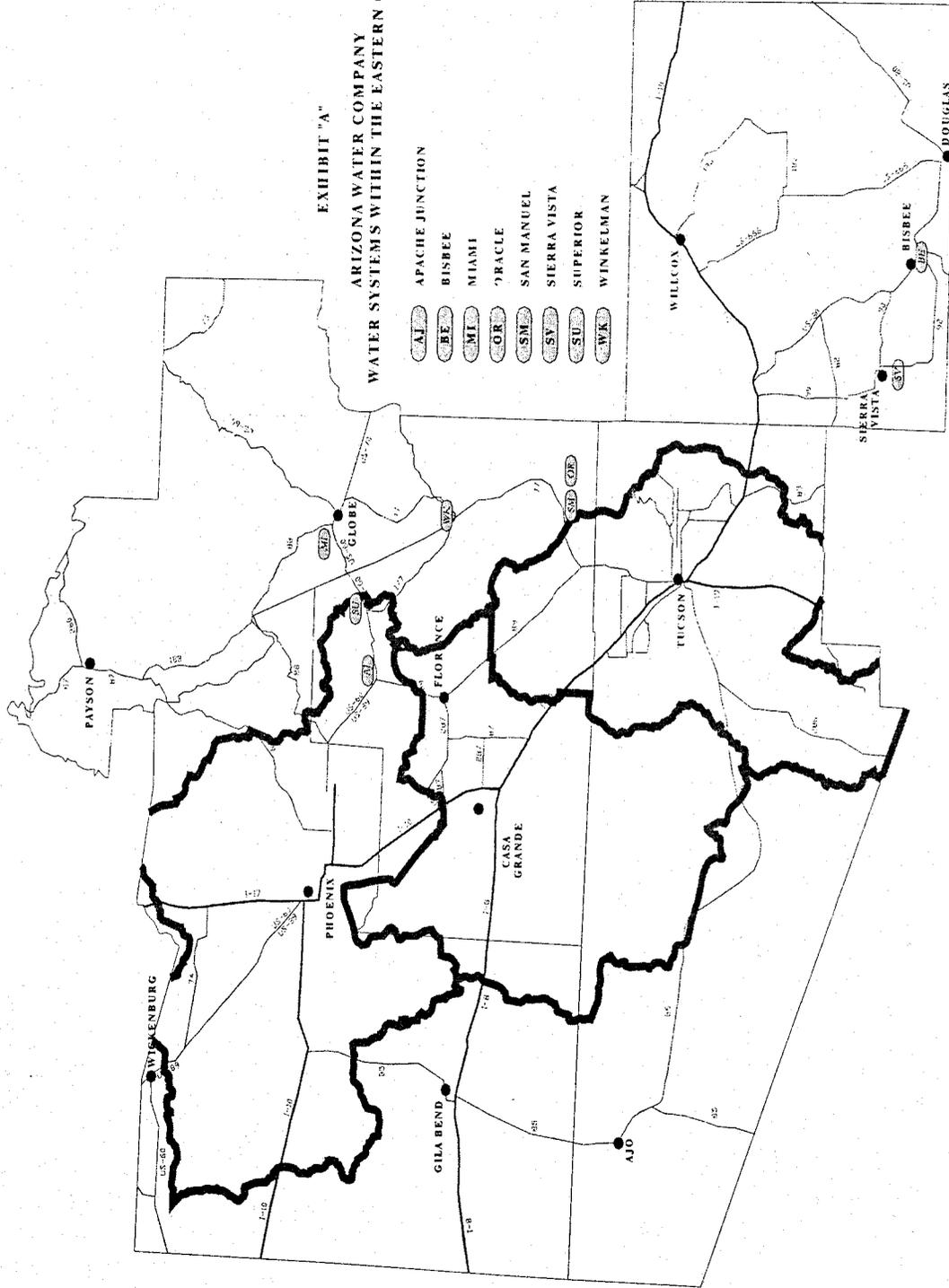
[REDACTED]

CONFIDENTIAL

[REDACTED]

EXHIBIT "A"
ARIZONA WATER COMPANY
WATER SYSTEMS WITHIN THE EASTERN GROUP

- APACHE JUNCTION (AJ)
- BISBEE (BE)
- MIAMI (MI)
- TRACLE (OR)
- SAN MANUEL (SM)
- SIERRA VISTA (SY)
- SUPERIOR (SU)
- WINNEUMAN (WK)



SUMMARY OF MAJOR PLANT IN SERVICE & FACT SHEET

Apache Junction

- Total system well production = 8,210 gallons per minute
- Purchased capacity from City of Mesa surface water treatment plant is 1,000 gallons per minute. The Company plans to purchase an additional 1,000 gallons per minute of capacity from Mesa's phase III expansion.
- Water is also wheeled from Mesa to the Apache Junction Water District (formerly Consolidated Water Co.).
- Well # 3 at Superior will be shared with Apache Junction when Superior and Apache Junction are interconnected.

Well Number	Arsenic Concentration ($\mu\text{g/l}$)
11	26
12	13
13	12
14	19
15	16
16	33

Mining camp tanks - 1,000,000 and 150,000 gallons
University tanks – 4,000,000, 1,000,000, and 500,000 gallons
Vista del Corazon – 1,000,000 gallons
Gold Canyon tank – 2,000,000 gallons
UDC tank – 500,000 gallons
County line tanks – 1,000,000, and 4,000,000 gallons
Lost dutchman tank – 2,000,000 gallons
Superstition tank – 300,000 gallons
Oasis tank – 550,000 gallons

Bisbee

- Total system well production = 2,405 gallons per minute.
- Without new well #5, Bisbee could not meet demand with the loss of either well 3 or 4.

Well Number	Arsenic Concentration ($\mu\text{g/l}$)	Yield
2	4	115 gal/min
3	5	840 gal/min
4	4	850 gal/min
5	5	600 gal/min

Naco tank – 100,000 gallons
Warehouse tank – 450,000 gallons

Warren tank – 100,000 gallons
Tin town tank – 1,000,000 gallons
Tombstone tank – 600,000 gallons
Spring canyon tank – 100,000 gallons

Miami

- All wells are chlorinated by erosion feed back to well casing.
- System has emergency interconnect with the City of Globe.
- Total system well production = 1,044 gallons per minute.
- Additional 600 gallons per minute is available from Pinal Creek Group
- High arsenic wells are low producers. Arsenic standard can be met by leaving high arsenic wells out of service or by blending.

Well Number	DWR #	Arsenic Concentration (µg/l)
3	55-616619	15
6	55-616621	9
7	55-616622	2
8	55-616623	2
9	55-616624	2
10	55-616625	11
11	55-616626	3
12	55-616627	6
17	55-616631	2
18	55-616632	4
19	55-616633	2
20	55-616634	2
21	55-526519	2
22	55-527760	2
23	55-528263	5
24	55-534905	2
25	55-548894	2
26	55-561712	2

Bandy heights tank – 40,000 gallons
Dalton tank - 15,000 gallons
Section 26 tanks – 1,000,000 and 44,000 gallons
Claypool tank – 100,000 gallons
Cottonwood tank – 200,000 gallons
Miami tank – 500,000 gallons
Pershing tank – 20,000 gallons
Central heights tanks – 500,000, 250,000, and 120,000 gallons

Oracle

- Well field is within Tucson AMA. No GPCD's. Reporting only.
- Oracle is served through 13 mile transmission line from well field.

Well Number	Arsenic Concentration ($\mu\text{g/l}$)	Yield
2	3	500 gal/min
3	2	430 gal/min
4	4	210 gal/min

Transmission line tanks – three 100,000 gallons
Cherry tank – 136,000 gallons
Town tank – 1,000,000 gallons
Coronado tank – 100,000 gallons

San Manuel

- Company owns no sources. Water is purchased from BHP mine.
- About 12 pressure control valves allow flow down from upper pressure zone.
- Upper zone storage tank is 750,000 gallons
- Lower zone storage tank is 250,000 gallons
- Three 50 horsepower pumps boost water from lower to upper zone.
- About 12 homes are served by mini booster system at top of upper zone.
- Arsenic concentration is 22 ($\mu\text{g/l}$).

Sierra Vista

- System consists of 4 pressure zones, with Sulger City being the fourth zone.
- Sulger city is normally "stand alone", but water can be moved from zone 3 to Sulger if needed.
- Total system well production = 2,150 gallons per minute.

Well Number	Arsenic Concentration ($\mu\text{g/l}$)
fuller	2
stewart	2
graves	2
VM1	2
VM2	2
Sulger W #1	2
Sulger W #3	2
Sulger E #2	2

Fuller tanks – 1,000,000 and 130,000 gallons
Village meadows #1 tank – 250,000 gallons
Sulger west tank – 100,000 gallons
Sulger east tanks – 13,000, and 16,000 gallons

Superior

- Superior is served through 23 mile transmission line from well field to Queen Creek tank.
- Transmission line is steel and above ground. During the summer a chiller is operated when water temperatures can reach 110 degrees Fahrenheit.
- Well # 3 at Superior will be shared with Apache Junction when Superior and Apache Junction are interconnected.

Well Number	Arsenic Concentration ($\mu\text{g/l}$)	Yield
1	10	280 gal/min
2	22	600 gal/min
3	10	800 gal/min

Transmission line tank – 376,000 gallons
Queen Creek tank – 2,000,000 gallons
Town tank – 500,000 gallons

Winkelman

- Winkelman is served by three submersible wells near the Gila River.
- Storage floats on system.
- Town tanks are – 100,000 and 10,000 gallons

Well Number	Arsenic Concentration ($\mu\text{g/l}$)	Yield
1	3	165 gal/min
2	2	300 gal/min
3	4	305 gal/min

Apache Junction Process Schematic

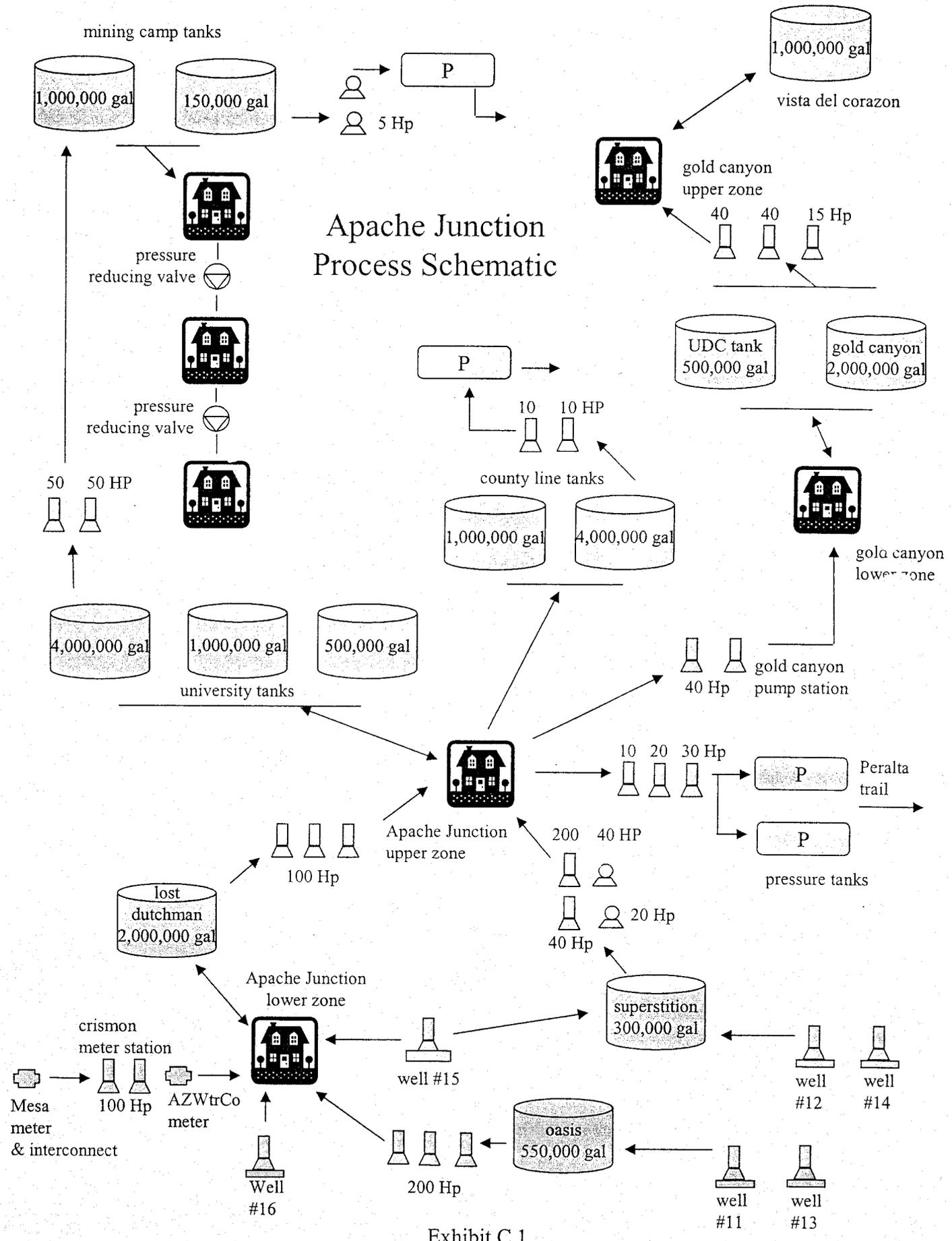
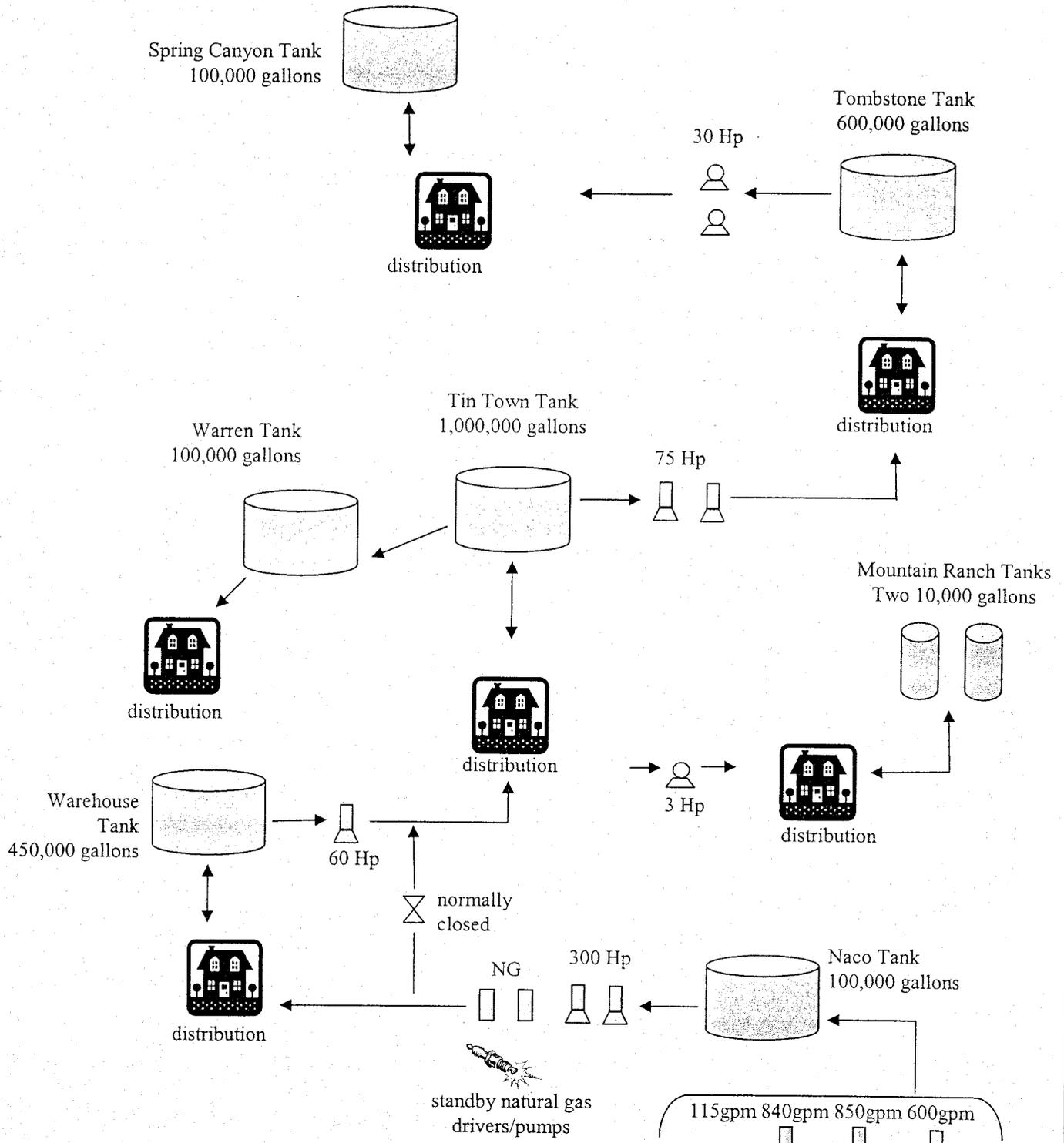
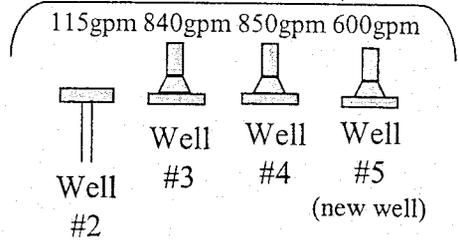


Exhibit C 1



Bisbee Process Schematic

Exhibit C 2



Well #3 has additional
standby natural gas driver
All wells are chlorinated

Miami Process Schematic

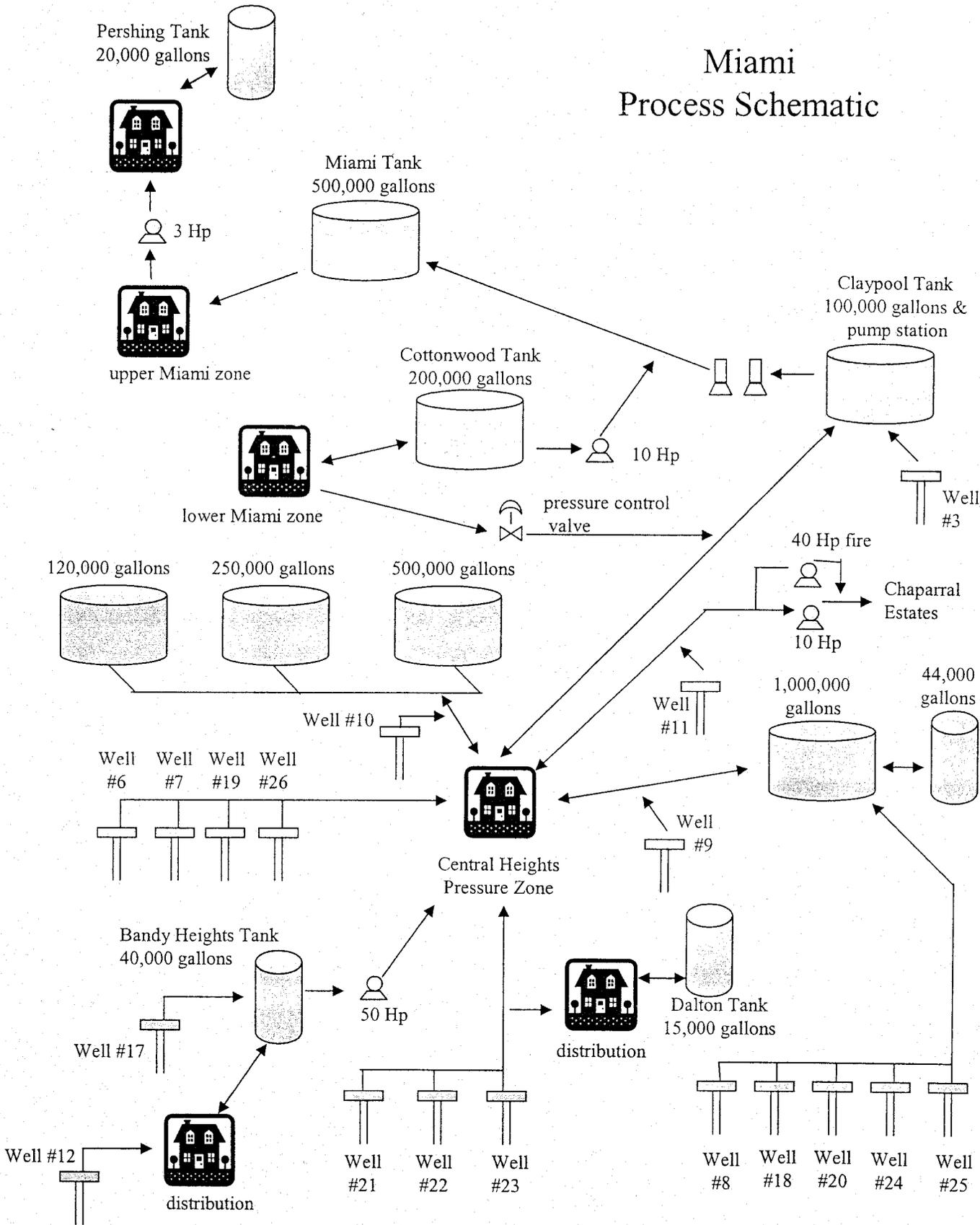


Exhibit C 3

Oracle Process Schematic

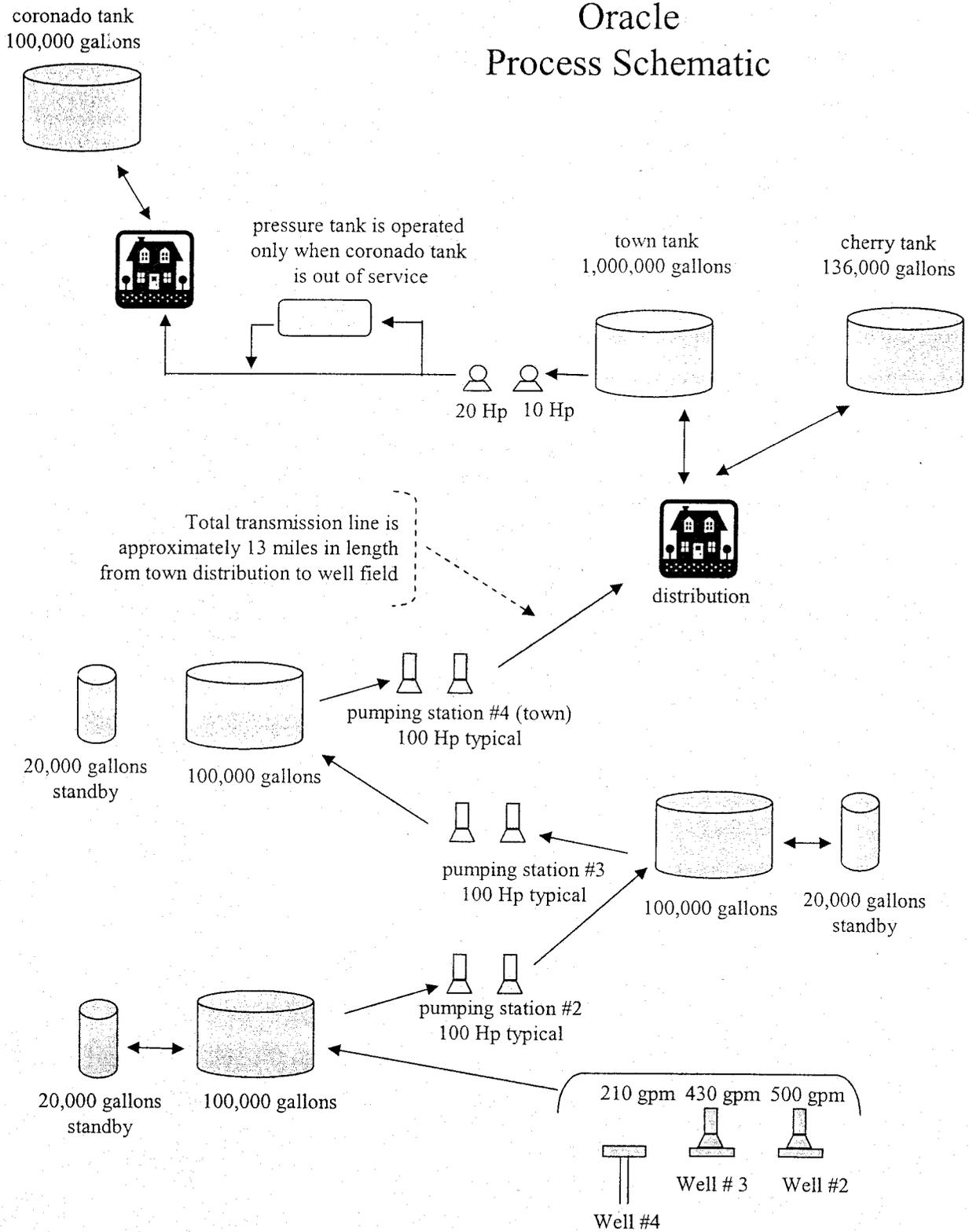
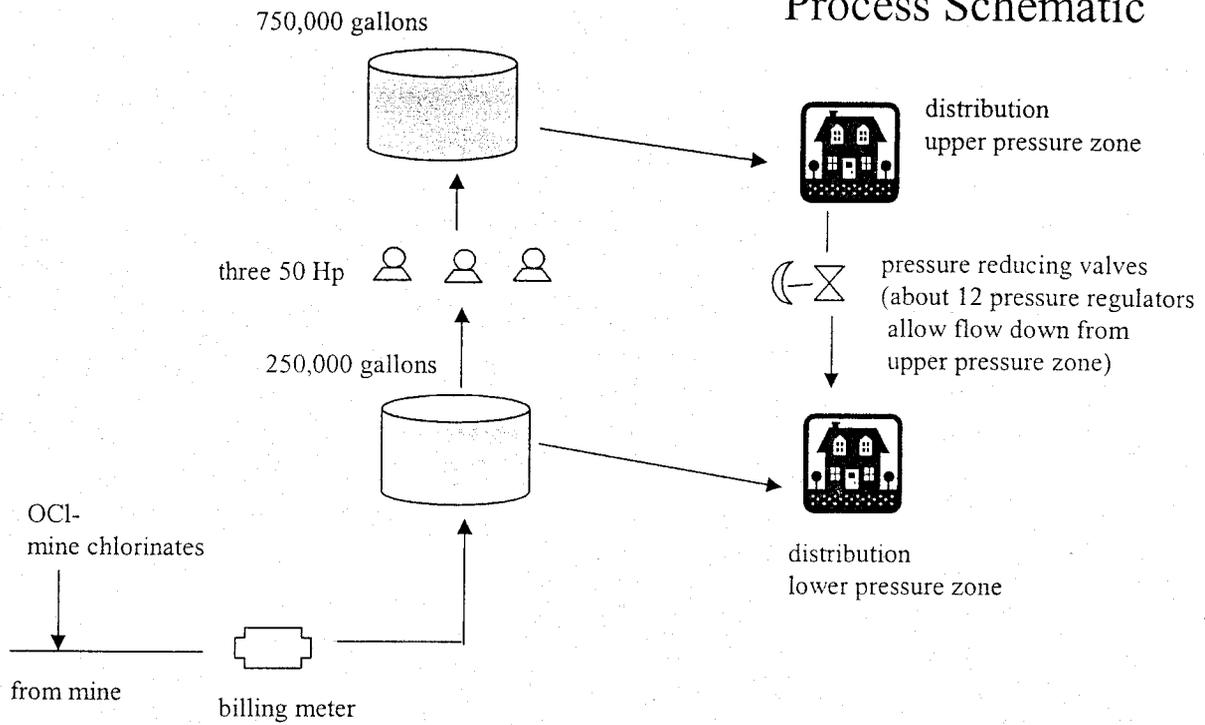


Exhibit C 4

San Manuel Process Schematic



Winkelman Process Schematic

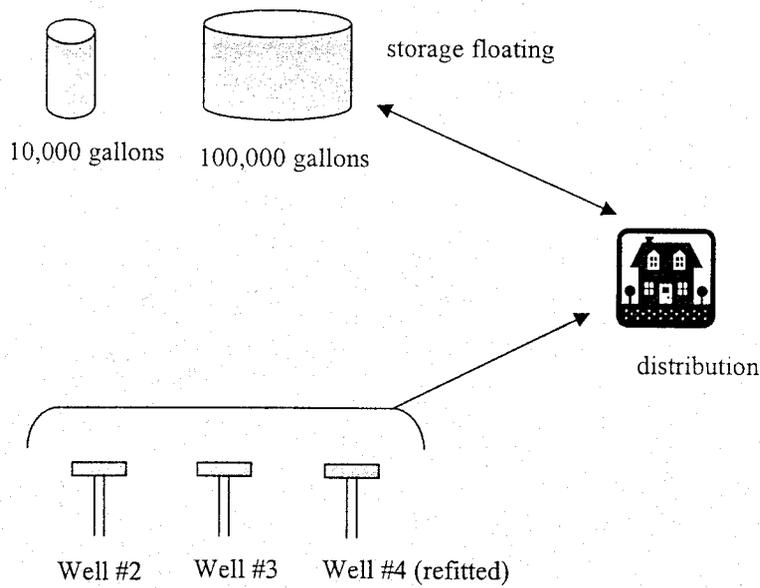
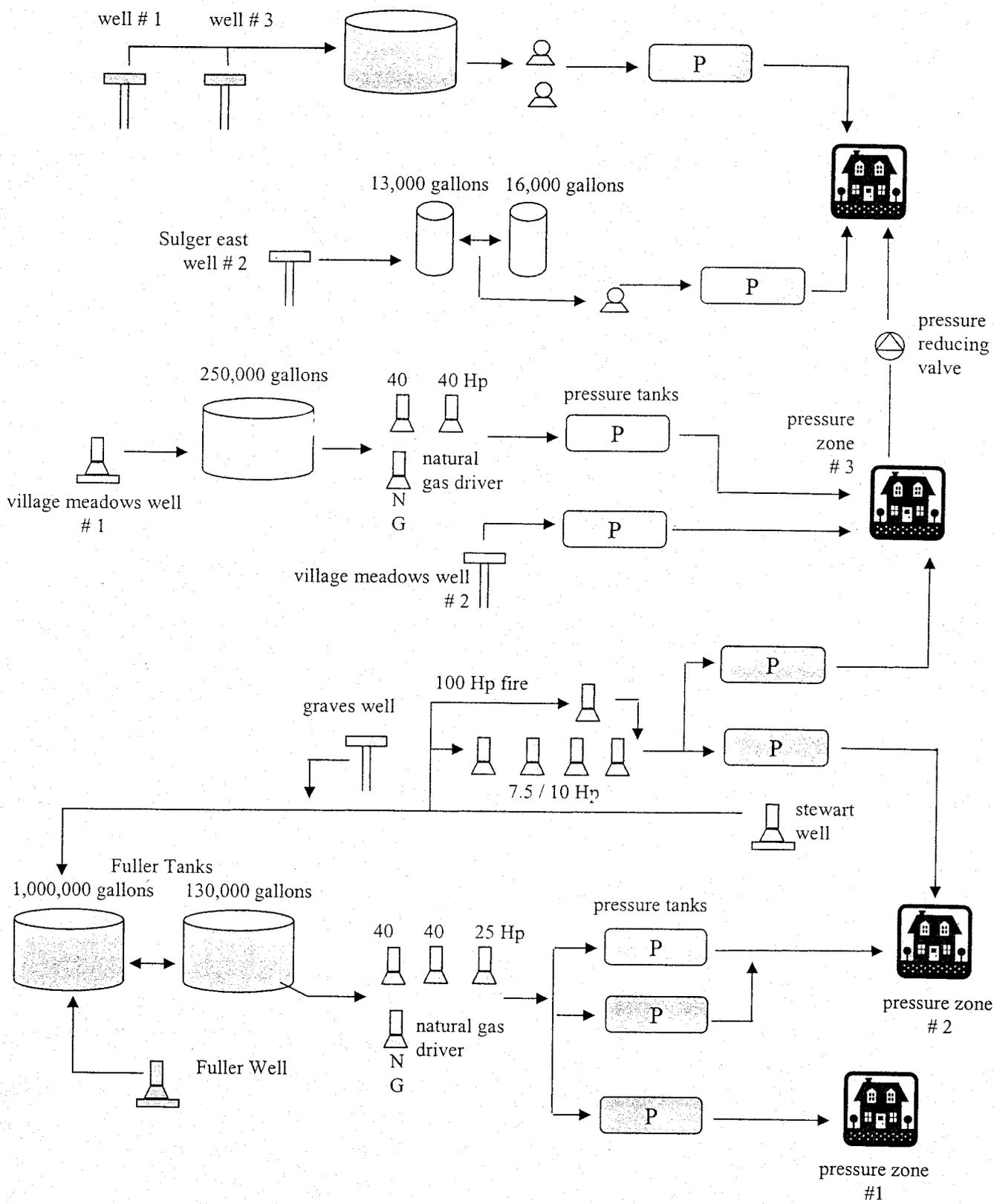
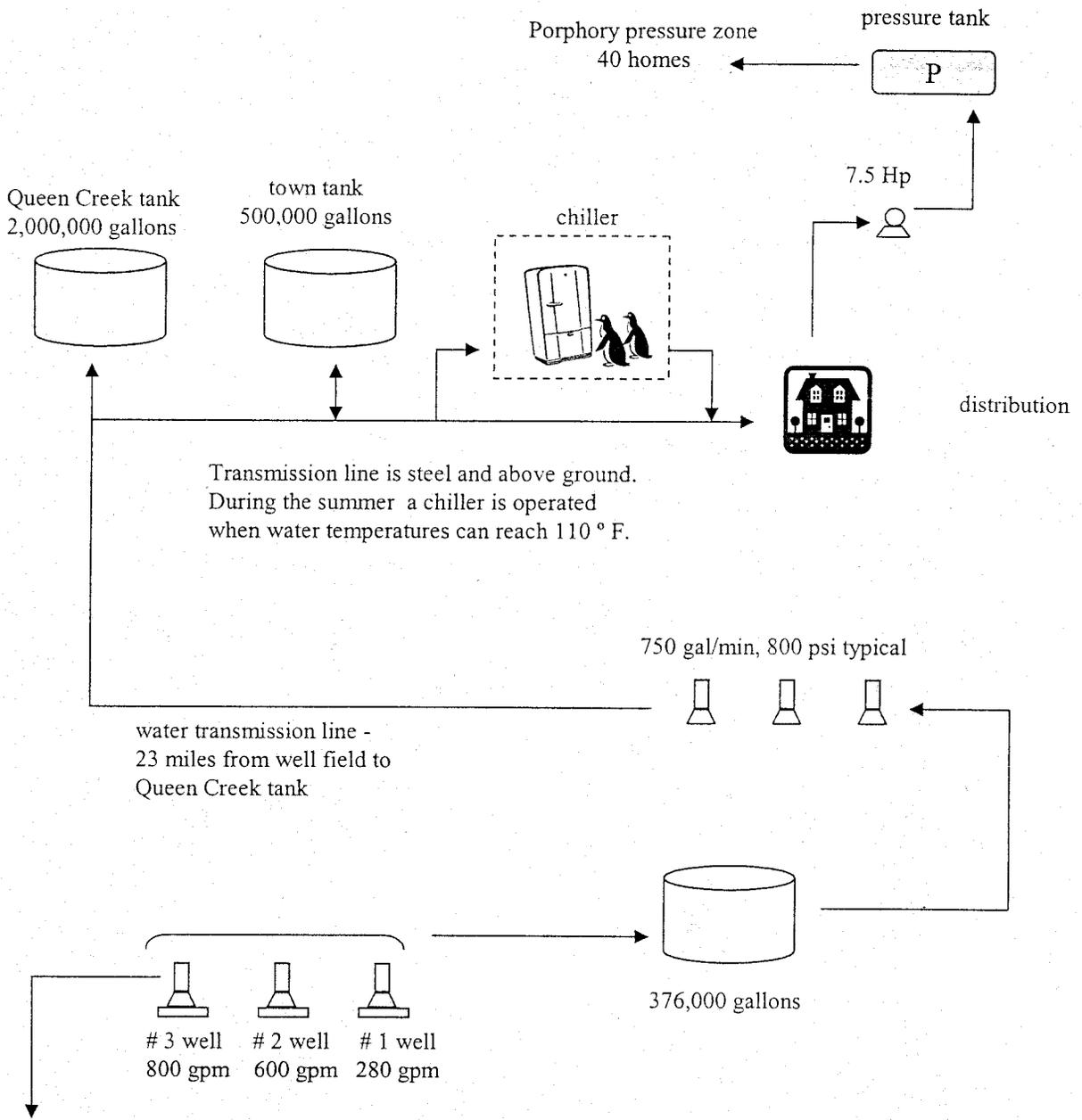


Exhibit C 5



Sierra Vista
Process Schematic

Exhibit C 6



Transmission line is steel and above ground. During the summer a chiller is operated when water temperatures can reach 110 ° F.

water transmission line - 23 miles from well field to Queen Creek tank

750 gal/min, 800 psi typical

3 well 800 gpm # 2 well 600 gpm # 1 well 280 gpm

376,000 gallons

future interconnection to Apache Junction system

Superior Process Schematic

Exhibit C 7

Annual Average
 Average Peak Month
 Average Minimum Month

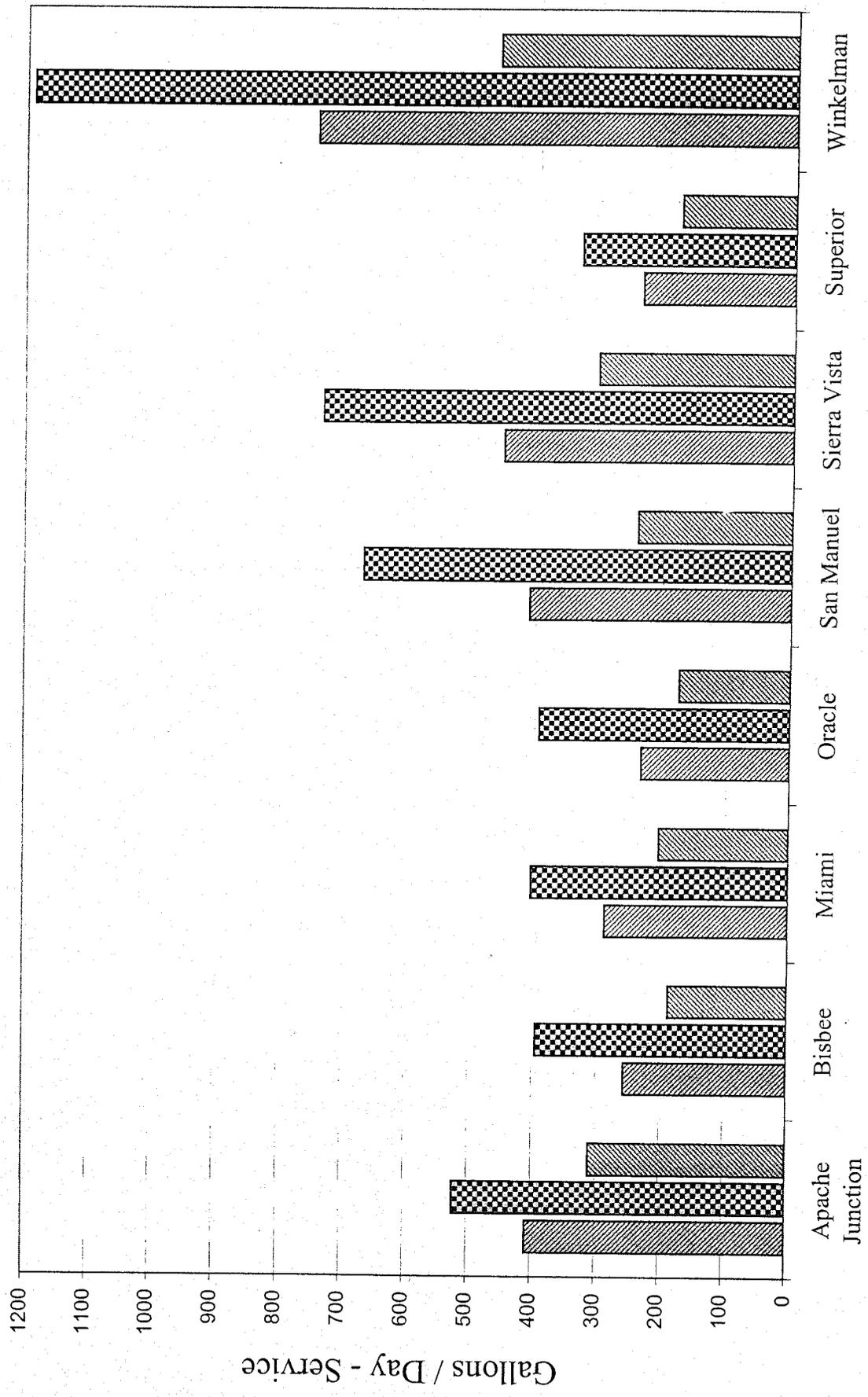


EXHIBIT D
 Eastern Group Water Use

Exhibit E

PROPOSED DEPRECIATION RATES FOR ARIZONA WATER COMPANY

Company Account No.	Depreciable Plant	Service Life (years)	AZ water Proposed Rate (%)
314	Wells & Springs	32	3.13
321	Pumping Plant Structures & Improvements	35	2.86
325	Electric Pumping Equipment	17	5.88
328	Gas Engines	25	4.00
331	Water Treatment Structures & Improvements	40	2.50
332	Water Treatment Equipment	35	2.86
341	Transmission/Distribution Structures	30	3.33
342	Storage Tanks	50	2.00
343	Transmission/Distribution Mains	56	1.79
344	Fire Sprinkler Taps	50	2.00
345	Services	42	2.38
346	Meters	22	4.55
348	Hydrants	55	1.82
390	General Plant Structures	40	2.50
340	Office Furniture & Equipment	15	6.67
393	Warehouse Equipment	20	5.00
394	Tools, Shop & Garage Equipment	25	4.00
395	Laboratory Equipment	20	5.00
396	Power Operated Equipment	15	6.67
397	Communication Equipment	15	6.67
398	Miscellaneous Equipment	30	3.33

EXHIBIT F

POST TEST YEAR PLANT IN SERVICE (a)

Work Auth.	Amount(b)	Description
Apache Junction		
2551	\$ 605,263 (c)	Retention basin for new Well 16
2981	\$ 18,285	Rehab pump assembly for Well 12
3167	\$ 14,216	Replace 8 inch gate valve at Ironwood & Apache
3212	\$ 153,925	Install 1,850ft of 6" DIP to replace 2" steel (near Merrill)
3213	\$ 45,157	Reconstruct tank overflow lines
3215	\$ 48,511	Replace pump assembly for Well 13
3216	\$ 7,423	Replace booster pump at Superstition tank site
3218	\$ 69,951	Replace services at Thunder Mountain School & Trails West
3317	\$ 11,480	Abandon 330 ft on Superstition Blvd near AJ Fire Station #2
3318	\$ 11,860	Interconnect 16" & 6" on Tomahawk and Second Ave.
3322	\$ 36,204	Replace pump & motor at Well 14
Bisbee		
3219	\$ 558,663	Drill and equip new well (Well #5)
3311	\$ 47,724	Abandon and relocate water mains in Spring Canyon
3356	\$ 13,934	Rebuild booster pump at Naco pump station
Miami		
3027	\$ 87,373	Abandon and replace water mains near Central Heights Rd.
3193	\$ 14,694	Pull and rehab pump assembly for Well 18
3249(d)		Install ladder safety systems at storage tanks
3250	\$ 84,456	Replace water mains near Hwy 60, 3 rd St, and Claypool Yard.
3251	\$ 31,608	Install MOSCAD remote controls and programming.
3252(e)		Install chlorinators at Wells 20 & 25
3253	\$ 54,273	Install 1,250 DIP on Hwy 88
3254	\$ 49,943	Replace various house connection services
3350	\$ 15,500	Replace pump and motor at Well 26

Notes

- (a) excludes capital items in blanket authorizations
- (b) dollar amounts are estimates, subject to 2002 AZ Water year end reconciliation & audit
- (c) includes drilling & equipping well 16, which is test year addition
- (d) ascender lines installed and charged to blanket accounts
- (e) installed and charged to blanket accounts

Oracle

3031	\$ 102,929	Parallel 8"CA with 2,640 ft 12" DIP on Hwy77
3033	\$ 21,760	Install pressure regulating station at Rockcliffe Blvd.
3257	\$ 32,078	Replace pump house at Booster #2
3281	\$ 16,269	Replace 350 ft of 4" with 6 " DIP near Cody Loop Road.

San Manuel

3030	\$ 21,813	Replace pressure regulator on Avenue A and 6 th Ave.
------	-----------	-----------------------------------------------------------------

Sierra Vista

3220	\$ 52,238	Replace various house connection services
3221	\$ 17,500	Install 3 new booster pumps at Fuller

Superior

3268	\$ 44,802	Replace 800 ft pipe on Hwy 60 to Town Tank
3269	\$ 183,435	Replace 2,050 ft pip on Hwy 177 from Lobb to Terrace

Winkelman

3258(f)		Paint well yard
3352	\$ 9,319	Replace pump and motor at Well 4

Notes

(f) *completed and charged to blanket account*

Exhibit G
TARIFF SCHEDULE

Utility: _____
Docket No.: _____
Phone No.: _____

Tariff Sheet No.: 1 of 3
Decision No.: _____
Effective: _____

CURTAILMENT PLAN FOR: _____

ADEQ Public Water System Number: _____

_____ ("Company"), is authorized to curtail water service to all customers within its certificated area under the terms and conditions listed in this tariff.

This curtailment plan shall become part of the Arizona Department of Environmental Quality Emergency Operations Plan for the Company.

The Company shall notify its customers of this new tariff as part of its next regularly scheduled billing after the effective date of the tariff or no later than sixty (60) days after the effective date of the tariff.

The Company shall provide a copy of the curtailment tariff to any customer, upon request.

Stage 1 Exists When:

Company is able to maintain water storage in the system at 100 percent of capacity and there are no known problems with its well production or water storage in the system.

Restrictions: Under Stage 1, Company is deemed to be operating normally and no curtailment is necessary.

Notice Requirements: Under Stage 1, no notice is necessary.

Stage 2 Exists When:

- a. Company's water storage or well production has been less than 80 percent of capacity for at least 48 consecutive hours, and
- b. Company has identified issues such as a steadily declining water table, increased draw down threatening pump operations, or poor water production, creating a reasonable belief the Company will be unable to meet anticipated water demand on a sustained basis.

Restrictions: Under Stage 2, the Company may request the customers to voluntarily employ water conservation measures to reduce water consumption by approximately 50 percent. Outside watering should be limited to essential water, dividing outside watering on some uniform basis (such as even and odd days) and eliminating outside watering on weekends and holidays.

Exhibit G
TARIFF SCHEDULE

Utility: _____
Docket No.: _____
Phone No.: _____

Tariff Sheet No.: 2 of 3
Decision No.: _____
Effective: _____

Notice Requirements: Under Stage 2, the Company is required to notify customers by delivering written notice door to door at each service address, or by United States first class mail to the billing address or, at the Company's option, both. Such notice shall notify the customers of the general nature of the problem and the need to conserve water.

Stage 3 Exists When:

- a. Company's total water storage or well production has been less than 50 percent of capacity for at least 24 consecutive hours, and
- b. Company has identified issues such as a steadily declining water table, increased draw down threatening pump operations, or poor water production, creating a reasonable belief the Company will be unable to meet anticipated water demand on a sustained basis.

Restrictions: Under Stage 3, Company shall request the customers to voluntarily employ water conservation measures to reduce daily consumption by approximately 50 percent. All outside watering should be eliminated, except livestock, and indoor water conservation techniques should be employed whenever possible.

Notice Requirements:

1. Company is required to notify customers by delivering written notice to each service address, or by United States first class mail to the billing address or, at the Company's option, both. Such Notice shall notify the customers of the general nature of the problem and the need to conserve water.
2. Beginning with Stage 3, Company shall post at least _____ signs showing the curtailment stage. Signs shall be posted at noticeable locations, like at the well sites and at the entrance to major subdivisions served by the Company.
3. Company shall notify the Consumer Services Section of the Utilities Division of the Corporation Commission at least 12 hours prior to entering stage 3.

Once Stage 3 has been reached, the Company must begin to augment the supply of water by either hauling or through an emergency interconnect with an approved water supply in an attempt to maintain the curtailment at a level no higher than Stage 3 until a permanent solution has been implemented.

Stage 4 Exists When:

- a. Company's total water storage or well production has been less than 25 percent of capacity for at least 12 consecutive hours, and

Exhibit G
TARIFF SCHEDULE

Utility: _____
Docket No.: _____
Phone No.: _____

Tariff Sheet No.: 3 of 3
Decision No.: _____
Effective: _____

- b. Company has identified issues such as a steadily declining water table, increased draw down threatening pump operations, or poor water production, creating a reasonable belief the Company will be unable to meet anticipated water demand on a sustained basis.

Restrictions: Under Stage 4, Company shall inform the customer of a **mandatory** restriction to employ water conservation measures to reduce daily consumption. Failure to comply will result in customer disconnection. The following uses of water shall be prohibited:

- ◆ Irrigation of outdoor lawns, trees, shrubs, or any plant life is prohibited
- ◆ Washing of any vehicle is prohibited
- ✓ The use of water for dust control or any outdoor cleaning uses is prohibited
- ◆ The use of drip or misting systems of any kind is prohibited
- ◆ The filling of any swimming pool, spas, fountains or ornamental pools is prohibited
- ◆ Restaurant patrons shall be served water only upon request
- ◆ Any other water intensive activity is prohibited

Notice Requirements:

1. Company is required to notify customers by delivering written notice to each service address, or by United States first class mail to the billing address or, at the Company's option, both. Such notice shall notify the customers of the general nature of the problem and the need to conserve water.
2. Company shall post at least _____ signs showing curtailment stage. Signs shall be posted at noticeable locations, like at the well sites and at the entrance to major subdivisions served by the Company.
3. Company shall notify the Consumer Services Section of the Utilities Division of the Corporation Commission at least 12 hours prior to entering stage 4.

Once Stage 4 has been reached, the Company must augment the supply of water by hauling or through an emergency interconnect from an approved supply or must otherwise provide emergency drinking water for its customers until a permanent solution has been implemented.

Customers who fail to comply with the above restrictions will be given a written notice to end all outdoor use. Failure to comply within two (2) working days of receipt of the notice will result in temporary loss of service until an agreement can be made to end unauthorized use of outdoor water. To restore service, the customer shall be required to pay all authorized reconnection fees. If a customer believes he/she has been disconnected in error, the customer may contact the Commission's Consumer Services Section at 1-800-222-7000 to initiate an investigation.

WATER RATES**ARIZONA WATER COMPANY**

Phoenix, Arizona

Filed by: James R. Livingston

Title: President

Date of Original Filing: March 7, 1994

System: APACHE JUNCTION, CASA GRANDE,
COOLIDGE, WHITE TANK

A.C.C. No. 440

Cancelling A.C.C. No. (not applicable)

Tariff or Schedule No. NP-260

Filed: February 2, 1999

Effective: March 15, 1999

ORIGINAL**NON-POTABLE CENTRAL ARIZONA PROJECT WATER****AVAILABILITY:**

In the Company's Apache Junction, Casa Grande, Coolidge and White Tank water systems, where and when Central Arizona Project ("CAP") water is available.

SUITABILITY:

It is the customer's responsibility to determine the initial and continuing suitability of the non-potable CAP water furnished under this tariff for any intended uses. The Company does not treat, test or monitor non-potable CAP water and furnishes it to customers strictly on an "as received" basis from the Central Arizona Water Conservation District ("CAWCD"). The customer agrees to accept non-potable CAP water "as received." Compliance with any requirement of the Arizona Department of Environmental Quality, or any other agency having jurisdiction, concerning the use or quality of non-potable CAP water shall be the sole responsibility of the customer. The Company will not be liable for, and the customer will hold harmless, indemnify and defend the Company against, any injuries or damages arising from its service of non-potable CAP water.

FACILITIES AND DEMAND:

When applying for non-potable CAP water service, the customer shall specify the maximum annual quantity of CAP water in acre feet (AF) that it intends to use under this tariff schedule and pursuant to a Non-Potable Water Facilities Contribution Agreement. This quantity of water will be used to determine the facilities required to serve the customer and will be the customer's maximum demand for non-potable CAP water ("CAP Demand") during any calendar year. The customer will be responsible for both the deferred (including holding costs) and the current annual CAWCD M&I Water Service Capital Charges on the CAP Demand and on any water use in excess of the CAP Demand.

The customer will contribute the funds required to install all facilities needed to provide CAP water. Such facilities will be owned by the Company.

The Deferred CAP Demand Charge includes the deferred annual CAWCD M&I Water Service Capital Charges and associated holding costs for the customer's CAP Demand. The Deferred CAP Demand Charge is payable prior to the start of service or within fifteen (15) days of any approved increase in CAP Demand. The Deferred CAP Demand Charge will be payable only on any future increase in CAP Demand for those customers receiving service under this tariff as of the effective date. The Deferred CAP Demand Charge is not refundable if the customer's CAP Demand is later reduced.

APPROVED FOR FILING**DECISION #:** 61579

Effective 3/15/99
Revised 1/18/95
Revised 1/15/99

ARIZONA WATER COMPANY

NON-POTABLE CENTRAL ARIZONA PROJECT WATER - continued

NP-260

MONTHLY BILL:**ORIGINAL**

The monthly billing will consist of the following components:

1. A monthly CAP Demand charge equal to 1/12th of the customer's CAP Demand in AF times the applicable CAWCD M&I Water Service Capital Charge per AF plus four percent (4%) of such costs to cover the Company's administrative and handling costs. Should the customer's actual water use exceed the customer's CAP Demand, the customer will be billed an additional demand charge, based on the applicable CAWCD M&I Water Service Capital Charge, on the excess water use, plus a four percent (4%) administrative and handling fee.

2. A meter charge based on the applicable monthly minimum charge by meter size as set forth in each system's General Service tariff schedule. This meter charge shall not include any water.

3. A commodity charge designed to pass on all costs of non-potable CAP water, except the monthly CAP Demand charge, as billed to the Company during the previous month by the CAWCD or any other authorized governmental agency, plus one percent (1%) of such costs to cover the Company's administrative and handling costs.

4. A power, maintenance and depreciation charge based on the specific requirements of each customer.

A. The power component will be the direct and separately metered cost of the power billed to the Company during the previous month for CAP water delivered to the customer, plus one percent (1%) of the power cost to cover the Company's administrative and handling costs. If multiple customers are being served by common facilities, the power component will be prorated based on CAP water actually used during the month by each customer.

B. The maintenance component will be the actual costs of maintaining the facilities required to serve the customer, plus a ten percent (10%) charge to provide for overhead and margin. If multiple customers are being served by common facilities, the maintenance component will be prorated based on each customer's CAP Demand.

C. The depreciation component will be 1/12th of the product of the Company's book depreciation rate, as authorized by the Arizona Corporation Commission, times the original cost of the plant facilities serving the customer. If multiple customers are being served by common facilities, the depreciation component will be prorated based on each customer's CAP Demand.

Late Charge: Any payment not received within fifteen (15) days from the postmark date of the bill will be delinquent and subject to a late charge of one and one-half percent (1½%) per month.

Adjustment: An adjustment for state and local taxes, which will be the applicable proportionate part of any taxes or governmental impositions which are, or in the future may be, assessed on the basis of the gross revenues of the Company and/or the price or revenue from the water or service sold and/or the volume of water pumped or purchased for sale and/or sold hereunder. In the event of any increase or decrease in taxes or other governmental impositions, rates shall be adjusted to reflect such tax increase or decrease.

TERMS AND CONDITIONS:

Subject to the Company's Tariff Schedule TC-243.

APPROVED FOR FILING

DECISION #: 61579

Effective 3/15/99
Revised 1/18/95
Revised 1/15/99

Arizona Water Company

1/01/2002

SLV Golf Properties, L.L.C.
 DBA Mountain Brook Golf Club
 Attn. Ken Vegors
 Non-Potable CAP Water Billing
 November 2002 Statement For January 2003 Order

Acct No. 021 - 10 - 99905 - 1

Invoice No. 5110102

		Amount	
(1) MONTHLY 2003 CAP DEMAND CHARGE			
1/12 Annual CAP Demand in Acre Feet	33.33		
CAWCD M&I Water Service Capital Charge per AF	\$43.00		
	<u>\$1,433.33</u>		
4% - Administrative and Handling Costs	57.33		
Total CAP Demand Charge	<u>\$1,490.67</u>	\$1,490.67	
		\$382.53	
(2) MONTHLY MINIMUM CHARGE - 6" METER			
(3) MONTHLY 2003 COMMODITY CHARGE			
1/12 Annual CAP Order in Acre Feet	25.00		
CAWCD Commodity Rate per AF	\$66.00		
	<u>1,650.00</u>		
1% - Administrative and Handling Costs	16.50		
Total Commodity Charge	<u>\$1,666.50</u>	\$1,666.50	
(4) ADDITIONAL 2002 COMMODITY CHARGE			
Additional CAP Order in Acre Feet	34.00		
CAWCD Commodity Rate per AF	\$62.00		
	<u>2,108.00</u>		
1% - Administrative and Handling Costs	21.08		
Total Commodity Charge	<u>\$2,129.08</u>	\$2,129.08	
(5) MONTHLY DEPRECIATION CHARGE			
Original Cost of Plant Facilities	\$2,446.00		
Company's Book Depreciation Rate	2.59%		
Annual Depreciation	63.35		
1/12 Annual Depreciation	\$5.28	\$5.28	
(6) MAINTENANCE			
September 3, 2002 - Repair Water Meter	\$890.66		
10% - Administrative Overhead	\$89.07		
	<u>\$979.73</u>		
Late Charge 1.5%	\$14.70		
Total Repair Services		\$994.42	
		Sub-Total \$6,648.48	
(7) SALES TAXES @ 6.813%		\$452.96	
(8) TOTAL AMOUNT NOW DUE		<u>\$7,101.44</u>	
2002 DEMAND		2002 ORDER	
Annual CAP Demand in AF	400.00	Annual CAP Order in AF	300.00
Acre Feet Billed Year to Date	400.00	Acre Feet Billed Year to Date	300.00
Acre Feet Used Thru	0.00	Acre Feet Used Thru September	339.00
Additional CAP Demand in AF	0.00	Additional CAP Order in AF	0.00
Additional Previously Billed	0.00	Additional Previously Billed	5.00
Additional to be Billed	<u>0.00</u>	Additional to be Billed	<u>34.00</u>
<p>Bills are due and payable when rendered, and are delinquent and subject to a 1.5% Late Charge 15 days after the mailing.</p>		<p>Please Send Payment To :</p> <p>ARIZONA WATER COMPANY Attention : David Kupres Post Office Box 29006 Phoenix Arizona 85038-9006</p>	

R-8

EXHIBIT J

Arizona Water Company – Application For A Rate Increase
Docket No. W-01445A-02-0619

WATER RATES

ARIZONA WATER COMPANY

Phoenix, Arizona

Filed By

Canceling ACC No.

NP-260 1/15/99 revision

Title:

Tariff No.

NP-260

Date of Original Filing

Filed

Systems **APACHE JUCTION,**

Effective

CASA GRANDE, COOLIDGE, WHITE TANKS

NON-POTABLE CENTRAL ARIZONA PROJECT WATER

APPLICABILITY:

To the Company's Apache Junction, Casa Grande, Coolidge and White Tank water systems, where and when Central Arizona Project ("CAP") water is available.

SUITABILITY:

It is the customer's responsibility to determine the initial and continuing suitability of the non-potable CAP water furnished under this tariff for any intended uses. The Company does not treat, test or monitor non-potable CAP water and furnishes it to customers strictly on an "as received" basis from the Central Arizona Water Conservation District ("CAWCD"). The customer agrees to accept non-potable CAP water "as received". Compliance with any requirement of the Arizona Department of Environmental Quality, or any other agency having jurisdiction, concerning the use or quality of non-potable CAP water shall be the sole responsibility of the customer. The Company will not be liable for, and the customer will hold harmless, indemnify, and defend the Company against any injuries or damages arising from its service of non-potable CAP water.

FACILITIES AND DEMAND:

When applying for non-potable CAP water service, the customer shall specify the maximum annual quantity of CAP water in acre feet (AF) that it intends to use under this tariff schedule and pursuant to a Non-Potable Water Facilities Contribution Agreement. This quantity of water will be used to determine the facilities required to service the customer and will be the customer's maximum demand for non-potable CAP water ("CAP Demand") during any calendar year. The customer will be responsible for both the deferred (including holding costs) and the current annual CAWCD M&I Water Service Capital Charges on the CAP Demand and on any water use in excess of the CAP demand.

The customer will contribute the funds required to install all facilities needed to provide CAP water. Such facilities will be owned by the Company.

The Deferred CAP Demand Charge includes the deferred annual CAWCD M&I Water Service Capital Charges and associated holding costs for the customer's CAP Demand. The Deferred CAP Demand Charge is payable prior to the start of service or within fifteen (15) days of any approved increase in CAP Demand. The Deferred CAP Demand Charge will be payable only on any future increase in CAP Demand for those customer receiving service under this tariff as of the effective date. The Deferred CAP Demand Charge is not refundable if the customer's CAP Demand is later reduced.

EXHIBIT J

Arizona Water Company – Application For A Rate Increase

Docket No. W-01445A-02-0619

MONTHLY BILL:

The monthly billing will consist of the following components:

1. A monthly CAP Demand share equal to 1/12 of the customer's CAP Demand in AF times the applicable CAWCD M&I Water Service Capital Charge per AF. Should the customer's actual water use exceed the customer's CAP Demand, the customer will be billed an additional demand charge, based on the applicable CAWCD M&I Water Service Capital Charge, on the excess water use.
2. A commodity charge designed to pass on all costs of non-potable CAP water, except the monthly CAP Demand charge, as billed to the Company during the previous month by the CAWCD or any other authorized governmental agency.
3. A power and maintenance charge based on the specific requirements of each customer.
 - A. The power component will be the direct and separately metered cost of the power billed to the Company during the previous month for CAP water delivered to the customer. If multiple customers are being served by common facilities, the power component will be prorated based on CAP water actually used during the month by each customer.
 - B. The maintenance component will be the actual costs of maintaining the facilities required to serve the customer, plus a ten per cent (10%) charge to provide for overhead and margin. If multiple customers are being served by common facilities, the maintenance component will be prorated based on each customer's CAP Demand.

The customer shall not be liable for maintenance, repair, or replacement charges, when the damage or injuries to the CAP facilities are a result of the failure of the Company to operate the facilities or install protective devices in accordance with customary or sound construction and engineering practices.

The customer shall be responsible for the repair or replacement of the meter. However, the repair charges, during a single maintenance event, shall not exceed the replacement cost of the item under repair.
4. A fixed administrative cost of fifty dollars (\$50) per month.

Late Charge: Any payment not received within fifteen (15) days from the postmark date of the bill will be delinquent and subject to a late charge of one and one-half per cent (1 1/2%) per month.

Adjustment: An adjustment for state and local taxes, which will be the applicable proportionate part of any taxes or governmental impositions which are, or in the future may be, assessed on the basis of the gross revenues of the Company and/or the price or revenue from the water or service sold and/or the volume of water pumped or purchased for sale and/or sold hereunder. In the event of any increase or decrease in taxes or other government impositions, rates shall be adjusted to reflect such tax increase or decrease.

TERMS AND CONDITIONS:

Subject to the Company's Tariff Schedule TC-243.

CONFIDENTIAL

[REDACTED]

BEFORE THE ARIZONA CORPORATION COMMISSION

MARC SPITZER

Chairman

JIM IRVIN

Commissioner

WILLIAM A. MUNDELL

Commissioner

JEFF HATCH-MILLER

Commissioner

MIKE GLEASON

Commissioner

IN THE MATTER OF THE APPLICATION OF)
ARIZONA WATER COMPANY, AN ARIZONA)
CORPORATION, FOR ADJUSTMENTS TO ITS)
RATES AND CHARGES FOR UTILITY)
SERVICE FURNISHED BY ITS EASTERN)
GROUP AND FOR CERTAIN RELATED)
APPROVALS)

DOCKET NO. W-01445A-02-0619

SURREBUTTAL

TESTIMONY

OF

LYNDON R. HAMMON

UTILITIES CONSULTANT

UTILITIES DIVISION

SEPTEMBER 03, 2003

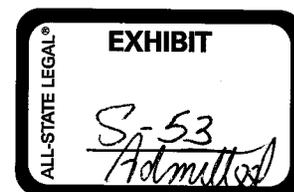


TABLE OF CONTENTS

	<u>Page</u>
I. Introduction.....	1
II. Non-Account Water	1
III. Tariff For Non-Potable Central Arizona Project Water.....	2
IV. Curtailment Tariff.....	3
V. Miami Power Adjustment.....	3
 AWWA Committee Report.....	 Exhibit A

1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Lyndon R. Hammon. My business address is 1200 West Washington Street,
4 Phoenix, Arizona 85007.

5
6 **Q. Are you the same Lyndon R. Hammon who has previously filed testimony in this
7 Arizona Water Company rate proceeding?**

8 A. Yes. I filed direct testimony on July 08, 2003.

9
10 **Q. Do you wish to make any additions, or corrections to that testimony at this time?**

11 A. Yes.

12
13 **Q. What are those additions or corrections?**

14 A. The additions comprise responses to the Company's Rebuttal Testimony. My responses
15 specifically address the following issues: (1) non-account water, (2) the tariff for non-
16 potable Central Arizona Project water NP-260, (3) the curtailment tariff, and (4) the
17 Miami power adjustment.

18
19 **II. NON-ACCOUNT WATER**

20 **Q. Of course you disagree with the Company's position concerning "Water Loss" in its
21 rebuttal testimony.**

22 A. To the contrary, I generally agree with the Company's presentation. Hopefully, this
23 opportunity can be used to expand and clarify the Staff's position on the non-account
24 water issue for Arizona Water Company.

25
26 First of all, and I can not say this strongly enough, the 10 percent lost water value was
27 never meant to be an absolute measure. Instead, it was meant to be used as an indicator
28 or signal of the need to examine water losses more closely. Certainly a water loss value

1 derived from gross water pumped and water sold is subject in some degree to the
2 limitations and flaws presented in Mr. Garfield's rebuttal testimony. However, this type
3 of calculation does provide a number which is consistent, reliable, and readily calculated
4 from information that most utilities record. Too high of a non-account water number
5 should trigger a water audit and evaluation.

6
7 In this case, the Company avows that it has already implemented a water loss and
8 conservation program, including such activities as tracking monthly losses, evaluating the
9 cost and benefits of making water loss reductions, and replacing meters at an
10 economically optimum interval. All that Staff is requesting is that the Company quantify,
11 compile, and present the pertinent information. As the record stands today, the Company
12 has yet to identify the sources of the water losses or the specific corrective actions.

13
14 **Q. Are the 10 percent and 15 percent gross water loss values arbitrary?**

15 A. These are values which have long been used as guideposts within the water industry. A
16 copy of the article, "Committee Report: Water Accountability", published in the Journal
17 of the American Water Works Association, discusses these water loss standards, and is
18 attached as Exhibit A. I can also add that a 10 percent water loss is a measure applied by
19 the Arizona Department of Water Resources in its 3rd management plans. It is not my
20 answer that these specific values, and the way they are calculated should be strictly
21 applied to each of the Company's water systems. Instead, my point is that the 10 percent
22 and 15 percent values for water losses are not new or unusual.

23
24 **III. TARIFF FOR NON-POTABLE CENTRAL ARIZONA PROJECT WATER**

25 **Q. Was it your position in your direct testimony that there should be a fixed meter
26 charge collected by the NP-260 tariff?**

27 A. No, it was not and perhaps I could have been clearer. It was my position that the fixed
28 rate charges for the Apache Junction system represent the fixed costs from Apache

1 Junction and the use of an Apache Junction fixed cost is not appropriate when the capital
2 investment is different and contributed. Moreover, these fixed costs are embedded in the
3 CAP Demand Charge and are already collected. I recommended elimination of the fixed
4 meter charges.

5
6 **IV. CURTAILMENT TARIFF**

7 **Q. Do you agree with the Company's position that they should not have to prepare a**
8 **curtailment tariff as a result of this proceeding and it should not have to conform to**
9 **Staff's model tariff?**

10 A. I was gladdened to learn that the Company is preparing a master curtailment tariff, and
11 the Company is free to craft that master tariff according to their specific needs. In my
12 direct testimony, I stated that it may be necessary for the Company to modify the model
13 tariff "...according to their specific management, operation, and design requirements."
14 Since the Company is already working on a curtailment tariff, compliance with the 120
15 day schedule for completion of the curtailment tariff should not be burdensome.

16
17 **V. MIAMI POWER ADJUSTMENT**

18 **Q. Do you agree with the Company's position that the Miami power adjustment was**
19 **wrong and without supporting evidence?**

20 A. The adjustment was made on the basis of actual water use data, power costs, and
21 reasonable assumptions. Staff's calculations and work papers were given to the
22 Company during the discovery process. The response from the Company was merely a
23 narrative without any hard numbers. No calculations and work papers were offered.

24
25 The Company has the data and system knowledge to quantify and refine the adjustment.
26 If the Company believes Staff's adjustment is incorrect, it should provide calculations,
27 workpapers and hard numbers of its own for the Commission and Staff to review.
28

1 Q. Does this conclude your surrebuttal testimony?

2 A. Yes, it does.

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

18

19

20

21

22

23

24

25

26

27

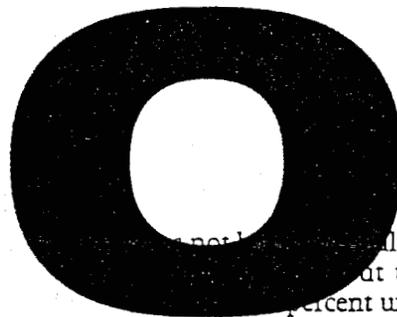
28



Committee report: water accountability

Advances in technologies and expertise should make it possible to reduce lost and unaccounted-for water to less than 10 percent.

AWWA Leak Detection and Water Accountability Committee



Often, decision-makers in the water supply field are satisfied when they can account for 85 percent of the water they produce. Recognizing the problem of lost or nonrevenue-producing water and desiring to find solutions for member utilities, AWWA's Distribution and Plant Operations Division asked the Leak Detection and Water Accountability Committee to write this report, which recommends that because of increasing demand and higher operational costs, the goal for lost or nonrevenue-producing water should be less than 10 percent. The report also proposes that certain guidelines should be followed when the goal of 10 percent is not met.

Over the past several years, it has been difficult to hear statements from water utilities throughout the country such as, "AWWA's 15 percent unaccounted-for water is acceptable" or "Our water loss is pretty close to the AWWA guidelines of 15 percent." In fact, AWWA has never adopted a policy or issued guidelines to the effect that 15 percent unaccounted-for water is acceptable. AWWA's Distribution and Plant Operations Division asked the National Committee on Leak Detection and Water Accountability to deter-



Water lost through leaks, underregistering meters, or water theft takes a financial toll on utility operation.

mine how this impression arose, to research the issue of unaccounted-for water, and to issue guidelines and recommendations that specifically address unaccounted-for water and effective water loss management for water utilities.

1957 report identified as source of figure

Apparently, the source of the frequently heard statement that AWWA accepts a 15 percent rate of unaccounted-for water is a committee report presented at the 1957 AWWA annual conference in Atlantic City, N.J., and subsequently published in *JOURNAL AWWA*.¹ The committee report states that unaccounted-for water "may vary from 10 to 15 percent in a well operated system where the consumption is between 100 and 125 gpcd [379 and 473 L/d]. Good performance is generally indicated by a metered ratio of 85-90 percent (unaccounted-for water of 10-15 percent) where the use of water is between 100 and 125 gpcd [379 and 473 L/d]." Since that article was published 39 years ago, two areas of water loss management—operating costs and technological resources—have undergone dramatic changes.

Operating costs increase. Virtually all costs of producing and distributing potable water have increased dramatically over the past 30 to 40 years—treatment plant expansions and improvements, development of additional water supplies, distribution system construction, energy charges (pumping costs), labor at all staff levels, regulatory compliance, restoration expenses, and so on. As the total cost of operation rises, the cost of unaccounted-for water also rises at a corresponding rate.

Technology developed to reduce water loss. Because of increasing costs of production, distribution,

and unaccounted-for water, many technological advances aimed at reducing water loss have been developed. These include leak detection and pinpointing instruments, more accurate metering devices, instrumentation to test meter accuracy, rate-of-flow recording for meter sizing and typing, and data collection. In addition, a wide range of techniques and methodologies provide practical application of these advanced technologies to identify losses within a water system and to implement cost-effective corrective action.

Because of these significant advances, AWWA's Leak Detection and Water Accountability Committee recommends the goal for unaccounted-for water should be less than 10 percent.

Method given to determine "true" unaccounted-for water

The basic steps for quantifying the amount of water loss within a water system are as follows:

Regardless of the water system's size, water loss should be expressed in terms of actual volume, not as a percentage.

(1) Accurately determine the amount of water being produced or purchased and delivered to the distribution system for a 13-month period of operation. The production quantities are used to establish the base number against which all other calculations in the water accountability process will be made. It is therefore imperative that the production quantities be accurate. This requires annual accuracy testing of source meters.

(2) Determine the total amount of water sales for the same period of operation as measured by all meters in the system. This includes estimated accounts.

(3) Subtract the total amount of water sold from the total amount of water produced or purchased.

(4) Identify and quantify all other categories of water use in the system. It is recommended that all water use in the various categories be metered, so the

water can be accurately accounted for instead of ending up in the unaccounted-for water category where it does not belong. If actual metering is not possible, every effort should be made to accurately estimate each type of water use to determine realistic usage quantities for each category.

The various categories of water use in a water system include bulk water sales (including construction), known leakage, tank (storage facility) drainage, storage tank overflows, line flushing, fire protection, bleeding or blowoff done during the winter or for taste and odor episodes, and municipal uses (sewer cleaning, street cleaning, golf course, parks and recreation facilities, hydrant flow tests, unknown miscellaneous uses, and all other nonrevenue uses).

(5) Subtract the total quantity of water use for the same period of operation for all of the identified categories in step 4 from the quantity of water remaining after step 3.

(6) The quantity of water that remains is the water system's true amount of unaccounted-for water. True unaccounted-for water consists of the following: unidentified leakage, meter inaccuracies, theft, underestimated accounts, improperly typed and sized meters, meter-reading errors, and accounting errors.

Express water loss in terms of volume

Regardless of the water system's size, water loss should be expressed in terms of actual volume, not as a percentage. This is necessary for the utility to be able to determine the true annual cost of unaccounted-for water. Consider the following example.

A water utility produces 2 mgd (7.6 ML/d) and has a true unaccounted-for water rate of 20 percent. The utility adds a large-volume user that uses 0.5 mgd (1.9 ML/d), which increases production to 2.5 mgd (9.5 ML/d). What happens to the 20 percent unaccounted-for water? It becomes 16 percent. Has the utility actually reduced its water loss and the associated costs of the loss?

Don't be misled by percentages. Measure performance with respect to unaccounted-for water strictly by comparing the volume of water lost with the volume that was lost in prior years. The "percentage unaccounted" so often used, although it is a convenient yardstick of comparison, can be misleading.

Additional Information

For additional information about leak detection and repair, consult the following AWWA or AWWA Research Foundation publications. Catalog numbers are in parentheses. To purchase copies, call the AWWA Bookstore at (303) 795-2449.

Leaks in Water Distribution Systems (20236)

Leak Detection and Water Loss Reduction (20194)

Leak Repair After You Locate It (20022)

Introduction to Water Distribution, Vol. 3—Principals and Practices of Water Supply Operations Series (1951)

Water Audits and Leak Detection M36 (30036)

Water and Revenue Losses—Unaccounted-for Water (90531)

Convert water loss to dollar loss

The amount of water loss is more meaningful than the percentage of unaccounted-for water. When the total volume of unsold water is known, the utility can place a value on that water and determine the cost-effectiveness of implementing corrective action.

The simplest way to estimate the potential financial loss is to make two assumptions:

- All water loss results from underground pipe leakage.
- All water loss results from underregistering water meters.

Usually the least amount of financial loss would be related to underground leakage, because that amount of the loss depends on the

direct production costs associated with producing that amount of water. Three components make up direct production costs: costs of raw water, energy costs (electricity), and treatment costs (chemicals). Therefore, the total volume of underground lost water is multiplied by the unit production rate (excluding labor) to determine the approximate financial loss to the utility.

Of course, the cost of underground leakage would be of greater value if leakage repairs eliminated the need for plant expansion.

Usually the most expensive water loss in the distribution system is caused by both underregistration of water meters and theft of water. This water loss has the highest potential value because it is "sellable" at the retail water rate. The total water loss volume related to underregistration and theft should be multiplied by the retail rate to determine the approximate lost revenue.

Experience dictates that total water loss in a system does not result from one cause but from several. Generally, a utility can split the difference between financial loss from leakage and from metering. The utility could then estimate how much money is being lost because of unaccounted-for water. The actual split will vary from one utility to another and will be determined by the age of meters, water quality, system pressure, age of pipe, and pipe material. For instance, if a utility has excellent water quality (e.g., minimal buildup of sand or minerals) and an aggressive meter-maintenance program, it will tend to weigh the cost factors toward production costs rather than

retail rate. An example of determining the dollar value of unaccounted-for water is:

Total daily production: 1 mgd (3.8 ML/d)
Total known usage: 0.8 mgd (3 ML/d)
Difference: 0.2 mgd (0.8 ML/d)
Production costs: \$0.30/1,000 gal (\$0.08/1,000 L)
Average retail rate: \$2.50/1,000 gal (\$0.70/1,000 L)

To determine the minimum lost revenue, multiply 0.2 mgd (0.8 ML/d) of unmetered water by the production cost. If all unmetered water was lost through leakage, the direct cost to the utility would be \$21,900.

To determine the maximum amount of financial loss to the water system, multiply the 0.2 mgd (0.8 ML/d) by the retail rate; the result is \$182,500 per year. If all unmetered losses occurred in the area of underregistering water meters, the financial loss attributable to that condition would be nearly nine times that of the loss attributable to leakage.

If the utility knows what is causing distribution system water losses, it may want to weigh the cost factors toward either leakage or metering. For instance, it may be determined that metering is a greater problem than leakage by a factor of 2:1. The approximate cost of lost water in the system would then be \$130,000 per year. When wastewater revenue loss is added to this example, the effect on the system is amplified. For many systems, this could be a significant loss.

Weigh the costs

After the utility has determined the annual cost (or cost range) of unaccounted-for water, management can make a more informed decision concerning the cost-effectiveness of corrective action. For example, if a utility is losing \$100,000 per year because of unaccounted-for water and it has an aggressive meter accuracy testing and repair program, it can be reasonably sure most of the loss is attributable to leakage. If a leak detection and pinpointing survey of the distribution system will cost about \$10,000, it is likely that such a survey will be cost-effective.

Likewise, if a utility is losing \$100,000 per year in unaccounted-for water and it has recently conducted a comprehensive leakage detection and pinpointing survey, it can reasonably conclude that most of the loss is attributable to meter inaccuracies or underregistration. If a testing and repair program to determine meter accuracy will cost about \$20,000, it would be cost-effective.

Regardless of the size of the water utility, determining the cost of loss should be conducted on a case-by-case basis. Each water system has unique characteristics and variables that must be considered when the cost of water loss is calculated for any given

system—e.g., the quantity and the quality of the raw water, the number and size of commercial and industrial meters, the extent of pumping required (energy costs), and treatment costs.

Today's water system managers are faced with a variety of challenges to be met and problems to be solved. Drought, contamination, lack of available funding sources, increased regulations for water quality and monitoring, and aging distribution systems are among some of the issues that confront water utilities.

As the cost of producing and distributing potable water continues to escalate, it will be important for water system managers to implement effective water loss management programs. Excessive amounts of

As the total cost of operation rises, the cost of unaccounted-for water also rises at a corresponding rate.

water loss or unaccounted-for water will not be tolerated by regulatory agencies or the general public as water rates continue to increase.

It is fortunate that the necessary technologies, expertise, and methodologies are available to identify and substantially reduce lost water and to reduce unaccounted-for water to a more acceptable and realistic level. As the twenty-first century approaches, the goal for unaccounted-for water should be less than 10 percent.

Reference

1. Revenue-Producing Versus Unaccounted-For Water. *Jour. AWWA*, 49:12:1587 (Dec. 1957).

Bibliography

- BROWN, T.G. Basic Leak Detection Is Necessary for Any System. *OpFlow*, 11:10:1 (Oct. 1985).
- BROWN, T.G. The Tangible and Intangible Benefits of Leakage Control. Proc. 1986 AWWA Distribution System Symposium, Minneapolis, Minn.
- HOCK, J.G. A Comprehensive Approach to the Control of Unaccounted-For Water. Proc. 1989 AWWA Distribution System Symposium, Dallas, Texas.
- Leak Detection Programs Save Water, Money; Twelve Helpful Hints For Getting Started in Leak Detection. *OpFlow*, 17:12:1 (Dec. 1991).

About the authors: Members of the Leak Detection and Water Accountability Committee are: David A. Liston (chair), Timothy G. Brown (vice-chair), F.S. Brainard Jr., Donald E. Britt, John P. Corless Jr., Reed G. Craft, William A. Finger, John G. Hock, Chris J. Kleinert, William E. Luta, Keith J. Nelson, Glen C. Phipps, Keith Wadsworth, Dean A. Wheadon, L. Harvey Wicklund, and Glennon N. Zelch.

Arizona Water Company - Apache Junction
Docket No. W-01445A-02-0619
Test Year Ended December 31, 2001

CIAC Amortization - Expense

	<u>CIAC Amount</u>	<u>Depr. Rate</u>	<u>Staff's Amortization Amount</u>
Apache Junction	6,228,486	2.34%	145,747
Bisbee	372,133	2.69%	10,010
Sierra Vista	699,448	2.95%	20,634
Miami	188,394	2.87%	5,407
Sa Manuel	20,375	2.64%	538
Oracle	258,151	2.62%	6,764
Winkelman	1,835	3.25%	60
Superior	82,088	2.75%	2,257

CIAC Amortization - Expense Revised - September 18, 2003

	<u>CIAC Amount</u>	<u>Depr. Rate</u>	<u>Staff's Surrebuttal</u>	<u>Staff's Direct Testimony</u>	<u>Variance + (or) - Direct Testimony</u>
Apache Junction	\$ 6,228,486	2.00%	\$ 124,570	\$ 145,747	\$ (21,177)
Bisbee	372,133	1.99%	7,405	10,010	(2,605)
Sierra Vista	699,448	2.04%	14,269	20,634	(6,365)
Miami	188,394	2.10%	3,956	5,407	(1,451)
Sa Manuel	20,375	2.29%	467	538	(71)
Oracle	258,151	1.93%	4,982	6,764	(1,781)
Winkelman	1,835	2.22%	41	60	(19)
Superior	<u>82,088</u>	1.99%	<u>1,634</u>	<u>2,257</u>	<u>(624)</u>
	<u>\$ 7,850,910</u>	2.00%	<u>\$ 157,323</u>	<u>\$ 191,416</u>	<u>\$ (34,093)</u>

